Site Audit Report ALC_1 by Dr Ian Swane

REMEDIATION OF ASBESTOS CONTAMINATION AT THE FORMER BARTALUMBA BAY HOMESTEAD SITE, GROOTE EYLANDT, NORTHERN TERRITORY 0822

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IAN SWANE & ASSOCIATES

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Ian Swane & Associates Pty Ltd
ABN 51 102 396 565
PO Box 359 Mortdale NSW 2223
Australia

Tel: +61 (0) 418 867 112
Email: iswane@bigpond.com

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1. Introduction site

1.1 Background Information

This Site Audit Report (**SAR**) contains the results of a site audit for the remediation of asbestos contamination at the former Bartalumba Bay Homestead (the '**Homestead Site**') at Groote Eylandt in the Northern Territory (**NT**), and the disposal of asbestos contaminated soil removed from the Homestead Site into a containment cell constructed in bushland adjacent to Bartalumba Bay Road (the '**Disposal Site'**). The Homestead Site covered an area of 31 ha and formed part of NT Portion 1199 plan(s) B 000517. The Disposal Site was located 1.5 km south of the Homestead Site, covered an area of 0.4 ha and formed part of NT Portion 1632, Survey Plan CP 004201. Both areas of land were owned by the Anindilyakwa Land Trust (**ALT**) and administered by the Anindilyakwa Land Council (**ALC**), with the locations of the Homestead and Disposal Sites shown in **Figures 1-1** and **1-2**.

The source of asbestos contamination at the Homestead Site was asbestos containing materials (**ACM**) in derelict and damaged buildings, which had been spread across the area and contaminated soil. The remediation of the ACM was subject to a Pollution Abatement Notice No. 2018/6 (**PAN**) issued by the NT Environment Protection Authority (**EPA**) dated 18/12/18 (Ref [21]), which required among other things that the remediation work be subject to an environmental (i.e. site) audit conducted in accordance with the NT Waste Management and Pollution Control (**WMPC**) Act 1998. A copy of the PAN is provided in **Appendix C**.

Figure 1-1 Site Location (Source: Figure 1, Ref [9])

Figure 1-2 Site and Cell Area Locations (Source: Figure 2, Ref [9])

The site audit was undertaken by Dr Ian Swane, an approved qualified person under Section 68 of the WMPC Act, being a NSW EPA accredited Site Auditor accreditation no. 9821. The site audit was commissioned by Wesley van Zanden, the Mining and Environment Officer for the ALC, until 2021 when the position was taken over by Dr Ian Hollingsworth. The audit was numbered ALC_01 and was undertaken in accordance with a proposal issued by Ian Swane & Associates (**ISAA**) dated 11/09/18. All audit work was undertaken by Dr Swane and no input was obtained from his support team since all review work was within the expertise of the Site Auditor.

1.2 Audit Purpose and Scope

1.2.1 Audit Purpose

The Site Auditor considered that the purpose of the PAN issued by the NT EPA on 18/12/18 (Ref [21]) was to:

- Remove ACM from remnant structures and asbestos contaminated soil near the ground surface from the Homestead Site and to render the premises suitable for its ongoing land use in accordance with NT requirements;
- Bury these materials in a containment cell at the Disposal Site in accordance with NT EPA requirements;

- Have a Site Auditor issue an SAS and SAR for the remediated Homestead Site and the completed containment cell at the Disposal Site; and
- Have the Site Auditor endorse an updated Asbestos Register.

The Site Auditor understands that this focus on asbestos contamination in remnant structures and shallow soil was due to the serious risks that these forms of contamination posed to the local community and the urgent need for this contamination to be remediated.

In this site audit, the Site Auditor reflected the PAN requirements in the data quality objectives (**DQOs**) that needed to be met by the investigation and remediation work. Nevertheless, the Site Auditor also considered that as part of the site audit process, it was important to identify other contamination risks that may be present at the Site so this information is available to the NT EPA when making decisions on the potential suitability of the premises for future redevelopment.

The main requirements of the PAN that needed to be met by the ALC were, among other things:

1. The remediation work needed to be the subject of an environmental (i.e. site) audit undertaken by an approved qualified person under Section 68 of the WMPC Act
2. Prior to the commencement of remediation work, a remediation action plan (**RAP**) needed to be prepared by a suitably qualified environmental consultant and reviewed by the accredited environmental Site Auditor
3. Prior to the commencement of remediation work, additional documentation needed to be endorsed by the Auditor and then provided to the NT EPA comprising:
    a) Detailed plans, technical specifications and a construction quality assurance plan (**CQAP**) for the containment cell and any associated infrastructure that met requirements specified in the PAN;
    b) An environmental management plan (**EMP**) for the construction and operation of the containment cell that met requirements specified in the PAN.
4. The containment cell needed to be designed to be fit for purpose
5. Take remedial action to return the polluted land as far as possible to a specified condition that the NT EPA thinks appropriate for the protection of the environment or the use of the land [i.e. low-density residential land use – Residential A as specified in NEPM (2013)]
6. Construct a containment cell located within NT Portion 1632, Survey Plan CP 004201 (known as the **Disposal Site**) and dispose the asbestos contaminated materials removed from the Site into the cell. [The proposed cell locations are shown in **Figures 1-3** and **1-4**]
7. Only asbestos contaminated materials removed from the Site were to be placed in the containment cell
8. Protect human health and the environmental during the remediation work
9. Make the Disposal Site suitable for ongoing use [i.e. open space / parkland – Recreational C as specified in NEPM (2013)]
10. Provide the NT EPA with an Aftercare Management Plan within 1 month following the commencement of containment cell filling that met requirements specified in the PAN
11. Within 3 months after the completion of waste disposal, the ALC must provide the NT EPA with:
    a) The exact boundary coordinates of the containment cell and any associated infrastructure; and
    b) The final quantities for each type of waste material contained in the cell for the purpose of registering the cell as an area of contaminated land on the NT EPA Contaminated Land and Environmental (i.e. Site) Audit Results register and the land title.
12. Within 3 months after the completion of waste disposal, the Site the Auditor must provide to the NT EPA:
    a) An environmental (i.e. site) audit statement [herein referred to as a site audit statement (**SAS**)] and a SAR; and
    b) An endorsement of an updated Asbestos Register.

Figure 1-3 Proposed Location of Containment Cell as Specified in the PAN (Source: Attachment A, Ref [21])

Figure 1-4 Coordinates of Proposed Cell Location as Specified in the PAN (Source: Attachment B, Ref [21])

1.2.2 Scope of Audit Work

The scope of work undertaken for this site audit comprised the following tasks:

- **Task 1 – Early Audit Work**: Project setup, review investigation reports, a RAP, plans and design documentation and provide the environmental consultant with interim audit advice;
- **Task 2 – Remediation**: Review SRVRs prepared by the environmental consultant following completion of the remediation work;
- **Task 3 – Site Inspection**: Inspect the Homestead and Disposal Sites following the completion of the remediation work; and
- **Task 4 – Site audit documentation**: Document the results of the site audit in an EAR and site audit statements prepared in accordance with NT EPA and NSW EPA requirements.

1.3 Standards

1.3.1 NT EPA Approved Guidelines

The site audit was undertaken in accordance with the requirements of the NT EPA and the provisions of the WMPC Act and the NSW Contaminated Land Management (**CLM**) Act 1997 as specified in their endorsed documents. Waste materials removed from the Homestead Site needed to be assessed in accordance with the PAN and the latest NT EPA waste guidelines.

1.3.2 Decision Process for Sensitive Sites

The Site Auditor has assessed the risks posed by ground contamination at the Homestead and Disposal Sites by following the *'Decision-making process for assessing urban redevelopment sites'* as given in Appendix A of the NSW EPA (October 2017) '*Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd edition)'*, which involved ten issues.

The first issue in the NSW EPA decision process is that:

> *'all site assessment, remediation and validation reports follow applicable guidelines'.*

The Data Quality Indicators (DQI's) and assessment criteria that the Site Auditor set for the environmental assessments conducted at the Site are summarised in **Table 1-1**.

Table 1-1 Data Quality Objectives and Evaluation Criteria

DQI	Evaluation Criteria
Documentation completeness	• DQO process properly described • Site properly identified • Site history adequately known • The conceptual site contamination model for the site is known to a high level of confidence • The condition of the site and surrounding areas are adequately known • Completion of field calibration records, borehole logs, chain of custody (**COC**) documentation, laboratory test certificates from NATA-registered laboratories
Data completeness	• Sampling density comparison meets EPA (1996) *'Sampling Design Guidelines'* for all potential contaminants of concern at all areas of environmental concern (AECs) • Use of systematic and judgemental sampling to provide sufficient data representative of all AECs

DQI	Evaluation Criteria
Data comparability	• Use of appropriate techniques for the sampling, storage and transportation of samples • Use of NATA certified laboratory using NEPM procedures
Data representativeness	• Good sampling coverage of all AECs at the site, and selection of representative samples • Location, distribution & extent of samples appropriate to characterise contamination at all AECs
Precision and accuracy for sampling and analysis	• Use properly trained and qualified field personnel • Blind field duplicates collected at min. rate of 1 in 10 • RPD's to be less than 30% for inorganic and 50% for organic analyses • Acceptable levels for equipment rinsate blanks • Achieve laboratory QC criteria

These DQI's and criteria were set by the Site Auditor in order to assess the reliability and adequacy of the data provided by the environmental consultants. The DQI's were used by the Site Auditor to identify any areas in the documentation where the level of non-compliance was considered to be significant.

The remaining issues in the NSW EPA decision process were that:

- *'any aesthetic issues relating to site soils have been adequately addressed';*
- *soils have been assessed against relevant health-based investigation levels and potential for migration of contamination from soils to groundwater has been considered';*
- *groundwater (where relevant) has been assessed against relevant health-based investigation levels and, if required, any potential impacts to buildings and structures from the presence of contaminants considered.'*
- *hazardous ground gases (where relevant) have been assessed against relevant health-based investigation levels and screening values'*
- *any issues relating to local area background soil concentrations that exceed relevant investigation levels have been adequately addressed in the site assessment report(s);*
- *the impacts of chemical mixtures have been assessed;*
- *any potential ecological risks have been assessed;*
- *any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks to off-site receptors, and reported to the site owner or occupier; and*
- *the site management strategy (where relevant) is appropriate including post-remediation environmental plans.'*

The Site Auditor applied this 10-step decision process to the review of the investigation, remediation and validation reports prepared for the Homestead and Disposal Sites.

1.4 Audited Documentation

The environmental consultant who investigated, developed the remediation strategy and supervised the remediation of the Site was Agon Environmental (**Agon**).

The environmental reports reviewed for this SAR comprise:

1. Agon Environmental (14 August 2018) *'Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336/01 prepared for Anindilyakwa Land Council

2. Agon Environmental (17 October 2018) *'Sample Analysis and Quality Plan, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336-SAQP/01 prepared for Anindilyakwa Land Council
3. Agon Environmental (5 November 2018a) *'Asbestos Management Plan, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336_AMP/02 prepared for Anindilyakwa Land Council
4. Agon Environmental (5 November 2018b) *'Containment Cell Siting Design & Management Plan, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
5. Agon Environmental (5 November 2018c) *'Remediation Action Plan, Bartalumba Bay, Groote Eylandt, NT'*. Document No: JA0336_RAP/02 prepared for Anindilyakwa Land Council
6. Agon Environmental (7 December 2018) *'Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project'*. Document No: JA0336 prepared for Anindilyakwa Land Council
7. Agon Environmental (22 March 2019) *'Close Out Report, Bartalumba Bay Homestead, Groote Eylandt'*. Document No: JA0336 Close Out Report - Final prepared for Anindilyakwa Land Council
8. Agon Environmental (5 September 2022) *'Audit Advice Response - Bartalumba Bay Homestead Asbestos Remediation Project, Groote Eylandt'*. Document No: JA0336_L-01 prepared for Anindilyakwa Land Council
9. Agon Environmental (16 September 2022) *'Remediation and Validation Report, Bartalumba Bay Homestead and Containment Cell, Groote Eylandt NT'*. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
10. ALS (13 July 2023) '*Certificate of Analysis, Work Order EN2305275 for Anindilyakwa Land Council (ALC)*'. 8 pages

Other information reviewed for this SAR comprise:

20. ALC (16 November 2018) '*Proposed Containment Cell, Bartalumba Bay Road'*. Figure No. LP-0012-01
21. NT EPA (18 December 2018) '*Pollution Abatement Notice No. 2018/6, Issued to Anindilyakwa Land Trust*'

Additional information was obtained by the Site Auditor when a site inspection and additional validation program was conducted between 22-24/05/23 following the completion of the 2018-2019 remediation work, with copies of photos taken by the Site Auditor provided in **Appendix D**.

1.5 Chronology of the Site Audit Program

The chronology of the site audit program consisted of the following events:

- 14 August 2018: Agon issued a report (Ref [1]) that documented the findings of an asbestos survey performed at the Site
- 15 August 2018: ALC issued a location plan for the proposed containment cell (Ref [20])
- 19 September 2018: The Site Auditor reviewed the Agon summary report and the ALC containment cell plan and provided interim audit advice (**Appendix C**)
- 17 October 2018: Agon issued a Sample Analysis and Quality Plan (**SAQP**) for investigating contamination at the Site (Ref [2])
- 25 October 2018: The Site Auditor provided interim audit advice concerning the proposed asbestos remediation work (**Appendix C**)
- 5 November 2018: Agon issued an asbestos management plan (**AMP**) for the remediation of asbestos contamination at the Site (Ref [3]), a containment cell siting design and management plan (Ref [4]), and a RAP (Ref [5])
- 9, 13 & 20 November 2018: The Site Auditor reviewed the Agon SAQP, AMP and RAP and provided interim audit advice (**Appendix C**)

- 7 December 2018: Agon issued a site remediation and validation report (**SRVR**) for the Site (Ref [6])
- 18 December 2018: The NT EPA issued the PAN (Ref [21]) for asbestos contamination at the Site
- 22 March 2019: Agon issued a follow-up SRVR for the Site (Ref [7])
- 3 September 2019: The Site Auditor reviewed the Agon SRVR and provided interim audit advice (**Appendix C**)
- 6 October 2020: Agon issued an email provided additional information on the remediation work
- 2 February 2021: The Site Auditor completed a review of the additional information and issued interim audit advice #07 (**Appendix C**), advising that the additional information did not address the majority of issues previously raised by the Site Auditor
- 3 Februaty 2021: The Site Auditor issued a status report on the site audit and clarification email to NT EPA and ALC
- 22 February 2021: Online meeting held between the Site Auditor and NT EPA
- 26 February 2021: Online meeting held between the Site Auditor and NT EPA
- 22 October 2021: Online meeting held between the Site Auditor, NT EPA and ALC
- 5 August 2022: Online meeting held between the Site Auditor, NT EPA and ALC
- 5 September 2022: Agon issued a response (Ref [8]) to interim audit advice issued by the Site Auditor on 3/09/19
- 16 September 2022: Agon issued a detailed SRVR for the Site (Ref [9])
- 23 April 2023: The Site Auditor reviewed all ESAs and SRVRs and prepared a draft SAR. A copy of the document was sent to ALC and the NT EPA
- 12 May 2023: The Site Auditor issued interim audit advice #08 describing a proposed site inspection / additional validation testing methodology to be undertaken at the Disposal and Homestead Sites (**Appendix C**)
- 22-24 May 2023: The Site Auditor conducted a site inspection / additional validation program at the Disposal and Homestead Sites with copies of photos taken provided in **Appendix D**
- 13 July 2023: A certificate of analysis was issued by ALS for the validation samples sent by Dr Swane for asbestos testing (Ref [10])
- 21 November 2023: The Site Auditor completed a review of the available data and issued a combined SAR for the Homestead Disposal Sites together with a Section B SAS for the Homestead Site numbered ALC_1 and a Section B SAS for the Disposal Site numbered ALC_2.

1.6 Abbreviations

ACM	Asbestos containing material
AEC	Area of Environmental Concern
AF	Asbestos fines
AFM	Airborne fibre monitoring
AHD	Australian Height Datum
ALC	Anindilyakwa Land Council
ALT	Anindilyakwa Land Trust
AMP	Asbestos management plan
ANZECC	Australia and New Zealand Environment and Conservation Council
ARI	Annual Recurrence Interval
ASS	Acid sulfate soil
B&D waste	Building and demolition waste
BaP	Benzo(a)pyrene
bgl	Below ground level

BTEX	Benzene, toluene, ethyl benzene, xylenes
CCA	Copper chrome arsenate
CCO	Chemical Control Order
COC	Chain of custody
COV	Coefficient of variation
CQAP	Construction quality assurance plan
DADS	Darwin Asbestos and Demolition Services
DBYD	Dial before you dig
DCP	Development control plan
DP	Deposited plan
DQI	Data quality indicators
DQO	Data quality objectives
DSI	Detailed site investigation
EA	Environment Australia
EC	Electrical conductivity
EIL	Ecological investigation level
EMP	Environmental management plan
ENM	Excavated natural material
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ESD	Ecologically sustainable development
FA	Fibrous asbestos
GIL	Groundwater investigation level
GPS	Global positioning system
HAZMAT	Hazardous (building) material assessment
HDPE	High density polyethylene
HIL	Health investigation level
ISAA	Ian Swane & Associates
kg	Kilograms
L	Litres
Landfill BPEM	Victorian EPA Publication 788.3, dated August 2015: "*Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills"*
LF	Low frequency
LGA	Local Government Area
m	metres
MAHs	Monocyclic aromatic hydrocarbons
mg	Milligrams
NATA	National Association of Testing Authorities
NEHF	National Environment Health Forum
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NRMMC	Natural Resource Management Ministerial Council
NSW	New South Wales
NT	Northern Territory
NT EPA	Northern Territory EPA
NW	North-west
OCP	Organochlorine pesticides
PAH	Polycyclic aromatic hydrocarbons
PAN	Pollution Abatement Notice No. 2018/6

PASS	Potential ASS
PCBs	Polychlorinated biphenyls
PID	Photoionisation detector
PPE	Personal protective equipment
ppm	Parts per million
PSI	Preliminary site investigation
RAC	Remediation acceptance criteria
RAP	Remediation action plan
RL	Reduced level
RSL	Regional Screening Level (US EPA)
SAC	Soil acceptance criteria
SAQP	Sample analysis and quality plan
SAR	Site audit report
SAS	Site audit statement
SBWMF	Shoal Bay Waste Management Facility
SCW	Scheduled Chemical Waste
SE	South-east
SEPP	State environment planning policy
SIL	Soil investigation level
SMP	Site Management Plan
SOMC	Standard optimum moisture content
SRVR	Site remediation and validation report
SVOCs	Semi volatile organic compounds
SWL	Standing water level
SWMP	Soil and water management plan
SWMS	Site work method statement
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solids
TPH	Total petroleum hydrocarbons
TRH	Total Recoverable hydrocarbons
UCL	Upper confidence limit
UFP	Unexpected finds protocol
US EPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds
WHS	Work, health and safety
WMPC Act	NT Waste Management and Pollution Control Act 1998

2. Review of Investigation Data

This section provides a review of the adequacy of investigation data provided by ESAs (Refs [1] – [9]) prepared for the Homestead Site between 2018 and 2022 and assesses the reports in terms of their compliance with NT EPA reporting requirements.

Sections 2.1 – 2.5 review the available data relevant to the development of a Conceptual Site Model (CSM) for contamination at the Homestead Site. Section 2.6 then reviews the asbestos investigation criteria relevant for the remediation work required by the PAN. The SAR then reviews data relevant to an assessment of contamination risks at the Homestead Site and how contamination risks should be addressed.

2.1 DQO Process

The purpose of the PAN issued by the NT EPA on 18/12/18 (Ref [21]) was to:

- Remove ACM from remnant structures and asbestos contaminated soil near the ground surface from the Homestead Site and to render the premises suitable for its ongoing land use in accordance with NT requirements;
- Bury these materials in a containment cell at the Disposal Site in accordance with NT EPA requirements;
- Have a Site Auditor issue an SAS and SAR for the remediated Homestead Site and the completed containment cell at the Disposal Site; and
- Have the Site Auditor endorse an updated Asbestos Register.

The Site Auditor understands that this focus on asbestos contamination in remnant structures and shallow soil was due to the serious risks that these forms of contamination posed to the local community and the urgent need for this contamination to be remediated.

In this site audit, the Site Auditor reflected the PAN requirements in the DQOs that needed to be met by the investigation and remediation work. Nevertheless, the Site Auditor also considered that as part of the site audit process, it was important to identify other contamination risks that may be present at the Site so this information is available to the NT EPA when making decisions on the potential suitability of the premises for future redevelopment.

The DQO's adopted by the Site Auditor for this site audit, which are considered to meet NT EPA requirements, are:

- **Step 1: State the Problem** – Potential contamination at the Site may affect its use for the current and future land use. There is also the potential for off-site migration of contamination.
- **Step 2: Identify the Decisions** – These include:
  - To assess the likelihood and / or extent of significant soil contamination which may have resulted from past activities at the Site
  - Identify contamination at the Site and non-compliance with environmental regulations
  - Recommend management strategies which may be required at the Site, including additional investigations and/or remediation works.
- **Step 3: Identify Inputs to the Decisions** – These include:
  - Existing site information, site history, regional geology, topography and hydrogeology
  - The use of proper investigation techniques
  - Development of a CSM for contamination at the Site
  - The use of appropriate site assessment criteria and compared results as measured against these criteria

- **Step 4: Define the Study Boundaries** – The property boundaries and the legal property definitions.
- **Step 5: Develop a Decision Rule** – The decision rules in characterising the Site were:
  - Laboratory and field test results measured against EPA-approved criteria
  - The Site would be deemed not contaminated if soil and groundwater concentrations were within background levels, QA/QC data demonstrate acceptable reliability and representativeness, results generally met regulatory criteria, results were from National Association of Testing Authorities (**NATA**) accredited laboratories, detection limits were below assessment criteria and the results shown to be of minimal concern.
- **Step 6: Specify Limits on Decision Errors** – These included:
  - The acceptable limits for inter/intra laboratory duplicate sample comparisons were laid out within the fieldwork protocols
  - The acceptable limits for laboratory QA/QC parameters were based upon the laboratory reported acceptable limits and those stated within the NEPM (2013) guidelines.
- **Step 7: Optimise the Design for Obtaining Data** – Identify the most resource-effective sampling and analysis design for general data expected to satisfy the DQOs. This may involve the use of field screening tests and use of biased sampling.

A summary of the Data Quality Indicators (**DQI's**) for field & laboratory test programs are specified in **Table 1-1**.

2.2 Site Location Details

Agon reported that the Homestead Site was located on the eastern shore of Deception Bay (also referred to as Bartalumba Bay), approximately 2 km north-east from the township of Alyangula (refer to **Figure 1-1**). The site location data provided in the ESAs is summarised in **Table 2-1**.

Table 2-1: Summary of Site Location Details

Site Location Detail	Detail	References
Site name	Former Bartalumba Bay Homestead	Sectn 1, Ref [1]; Sectn 3.5, Ref [5]
Address/location	Bartalumba Bay Road near Anindilyakwa, Groote Eylandt	Sectn 1, Ref [9]; Ref [21]
Legal property description & areas	NT Portion 1199 plan(s) B 000517 described as Certificate of Title Volume 863 Folio 533	Sectn 3.5, Ref [5]Sectn 3, Ref [9]; Ref [21]
Site area	31.11 ha (311,100 m^2), which covers the Homestead Site, jetty and foreshore area	Sectn 3.5, Ref [5]; Sectn 3, Ref [9]
Owner	Aboriginal freehold land scheduled under the Aboriginal Land Rights (Northern Territory) Act 1976 held by the ALT	Sectn 3.5, Ref [5]; Sectn 3, Ref [9]; Ref [20]
Developer	Not applicable	--
LGA	Northern Territory Government	Ref [21]
Past Zoning	No planning zone applied but was previously has a maritime use followed by a residential and open space use – refer **Section 2.3**	Sectn 3, Ref [9]
Current zoning	Current use at the time of the 2018 investigations was residential and open space	Sectn 3, Ref [9]
Future zoning	No known changes – presumed residential	Ref [21]
Surrounding land use	North & west: Marine environment (Deception Bay)	Sectn 3, Ref [9]

Site Location Detail	Detail	References
	East & south: Undisturbed natural bushland and rock escarpment	

Legend:

Inadequate information provided by investigation reports

The Site Auditor assessed the accuracy of the site location information provided in the reports by:

- Comparing the multiple lines of evidence provided by the source data;
- Reviewing publicly available data provided by Google aerial views, NT Government website and other sources of online data; and
- The Site Auditor inspecting the Homestead Site between 22-24/05/23 following the completion of 2018-2019 remediation work, with a copy of photos taken provided in **Appendix D**.

2.3 Site History Details

The ESAs provided a scarcity of historical data on activities at the Homestead Site. The information provided comprised:

- The Homestead Site had a history of maritime use as a prawn/fish processing base followed by residential use[1];
- Structures present in 2018 comprised a rock wall jetty that extended north into Deception Bay from the foreshore, a duplex dormitory, a recreational club, 11 remnant concrete slabs (numbered 1 - 11) from other former structures that had previously been demolished, unsealed roadways, an ablution block, four residential buildings, a rock wall and fire pit as shown by **Figures 2-1** to **2-3**[2];
- A pipeline ran the full length of the jetty wrapped in fibrous matting, with gaskets at regular intervals[3]. It is possible the pipeline may have been for fuelling fishing boats, which meant there may have been USTs at the Homestead Site;
- An extensive amount of ACM building material was present at the Homestead Site, either in derelict buildings or scattered across the area as broken or degraded ACM fragments
- The north-west foreshore house was estimated to have been constructed in the 1990's and an asbestos register was required for the building[4];
- The south elevated house was constructed before 2003 and an asbestos register was required for the building[5]; and
- An historic landfill was located south of the Homestead Site.

Data gaps in the site history were identified by the Site Auditor in an interim audit advice issued on 25/10/18 (**Appendix D**). The Site Auditor sought to address these data gaps by reviewing online historical data, which consisted of four photos provided in **Figure 2-4** to **2-7**. The Site Auditor considered the photos showed:

- The maritime use was as a prawn/fish processing factory that was demolished sometime between the late 1970s and early 2000's and then the area was used for housing;
- Some of the prawn/fish processing factory buildings were sheeted in ACM;

[1] Section 1.2, Ref [2]; Sectn 3.5, Ref [5]
[2] Sections 3, 4.1 & 5.7.4, Ref [9]
[3] Section 2.3, Ref [1]
[4] Section 2.8, Ref [1]
[5] Section 2.9, Ref [1]

- Operations at the prawn/fish processing factory and possibly the later homestead was likely to have been powered by a diesel generator supplied by diesel stored in above ground storage tanks (**ASTs**) / underground storage tanks (**USTs**) and in 205L drums;
- Liquid wastes generated by the prawn/fish processing factory and sewage were likely to have been disposed in buried septic tanks (such as the one beside the Duplex Dormitory as shown in **Figure 2-8**);
- Some of the older structures were likely to have been covered in lead-based paint; and
- Prawn/fishing trawlers docked at the jetty. There is a risk that a fuel storage facility may have been located near the jetty; and
- It was possible that waste generated by the prawn/fish processing factory and later homestead were disposed at a former landfill located near the Disposal Site to the south near Bartalumba Bay Road, with the former landfill termed the "Repository Site in **Figure 2-9**[6].

Figure 2-1 Aerial View of Site (Source Figure 3, Ref [9])

[6] Sections 3.4 & 3.5, Ref [4]

Figure 2-2 Aerial View of Bartalumba Homestead Site 2018

(Source: Figure 3, Ref [5])

Figure 2-3 Additional Site Features Identified by Agon (Source: Figure 8, Ref [9])

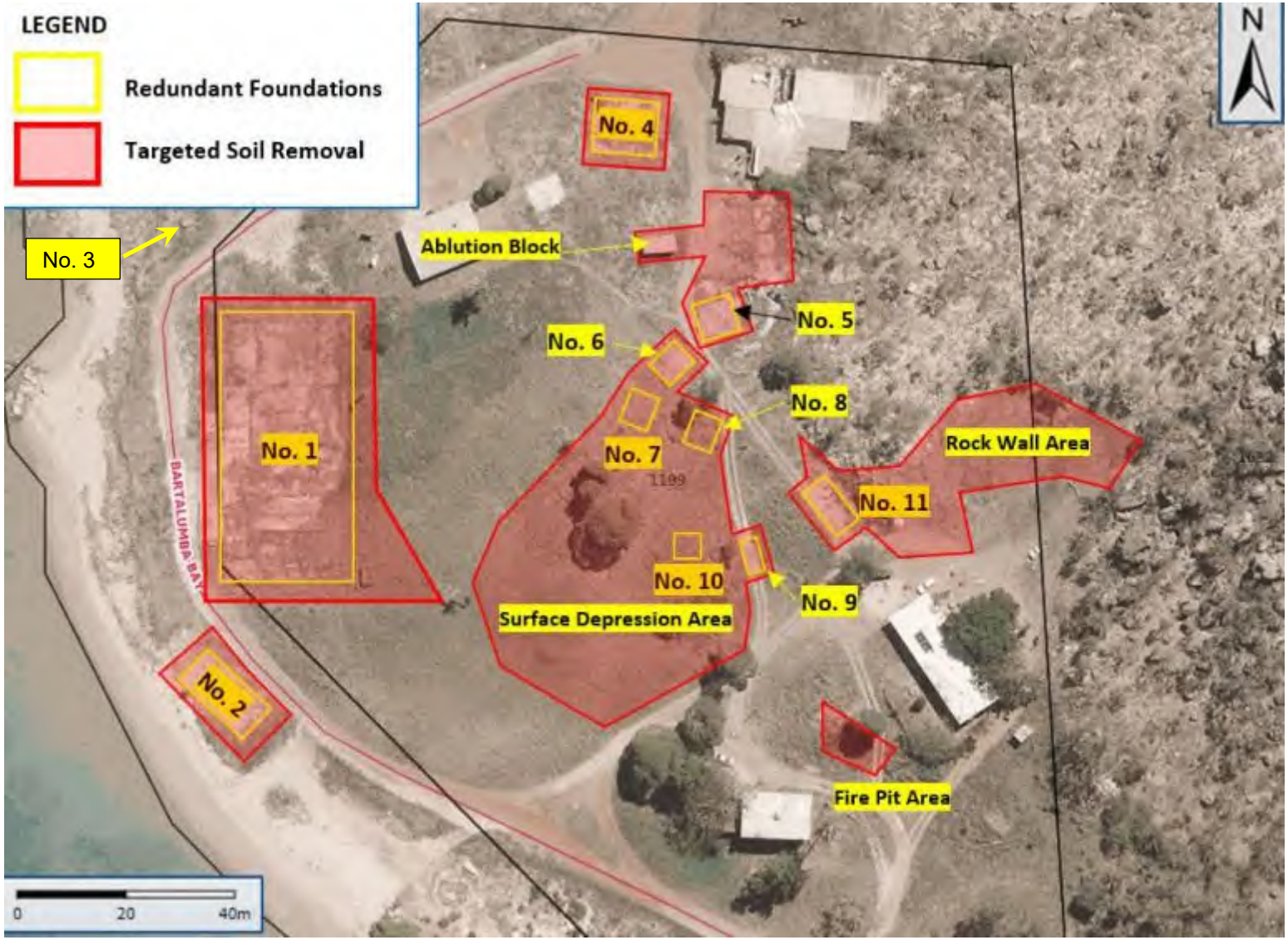


Figure 2-4 The Prawn/Fish Processing Factory in 1970[7]

Figure 2-5 Prawn/Fishing Boat Jetty 1979[8]

7 https://territorystories.nt.gov.au/10070/678372/0
8 https://territorystories.nt.gov.au/10070/720303

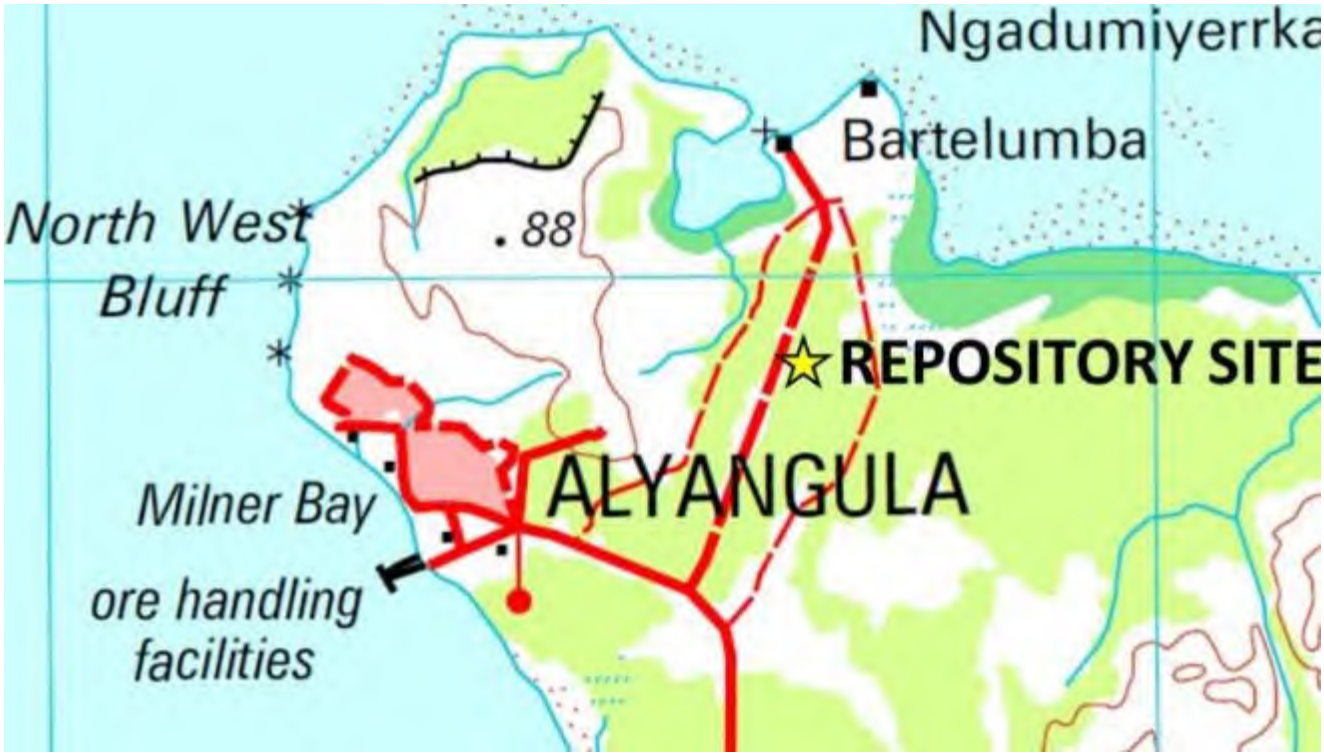
Figure 2-6 Bartalumba Bay Jetty 1976

Figure 2-7 Part of the Prawn/Fish Processing Facility at Bartalumba Bay in 1976[9]

[9] https://ozoutback.com.au/Australia/groote/index.html

Figure 2-8 Septic Tank Adjacent to Duplex Dormitory (Source: Photo 2, Appn B, Ref [1])

Figure 2-9 Location of Historic Repository Site (Source: Figure 11, Ref [4])



The Site Auditor assessed the significance of these data gaps in the site history assessment when reviewing the CSM in **Section 2.5**.

2.4 Site Conditions

Site condition data provided by the ESAs for the Site is summarised in **Table 2-2.**

Table 2-2: Summary of Site Condition Details

Site Condition Detail	References
Topography and Surface Conditions	
Regional and site topography	Online topographic maps
Regional and site drainage patterns	Online topographic maps
Flood potential	Not relevant
Quality of surface water	Not relevant
Conditions at site boundary (e.g. type and condition of fencing, soil stability and erosion)	Not relevant
On-site developments, buildings and buried services	Sectn 3, Ref [9]
Hazardous building materials	Ref [1]
Surface conditions (e.g. paving, vegetation)	Sectn 2, Ref [1]
Physical evidence of contamination (visual, odours, plant stress)	**Asbestos yes but other forms of contamination no**
Presence of USTs, ASTs, drums & wastes	**Not provided**
Geology and Hydrogeology	
Regional geology and site stratigraphy	Sectn 3.1, Ref [4]; Sectn 3.1, Ref [5]
Borehole / test pit logs	**Not available**
Fill	**Not provided**
Acid sulfate soils	Sectn 3.1, Ref [4]; Sectn 3.1, Ref [5]
Hydrogeological system operating at the site	Sectn 3.2, Ref [4]; Sectn 3.2, Ref [5]
On-site wells and springs	Sectn 3.2, Ref [4]; Sectn 3.2, Ref [5]
Nearby wells and springs	
Background groundwater quality	**Not available**
Local meteorology	Not relevant
Surrounding Environment	
Location of nearest groundwater receptors	Sectn 3.2, Ref [4]; Sectn 3.2, Ref [5]
Location of nearest surface water receptors	
Surrounding land uses and details of local sensitive environments (e.g. rivers, lakes, creeks, wetlands, local habitat areas, endangered flora and fauna)	Sectns 3.3 & 3.6, Ref [4]; Sectn 3.3, Ref [5] & online data
Surrounding areas that may pose a pollution hazard to the site	Not relevant for an isolated site

Legend:

Inadequate information provided in investigation reports

The main features of the Site described in the ESA's considered to be most relevant to the assessment of contamination risks were:

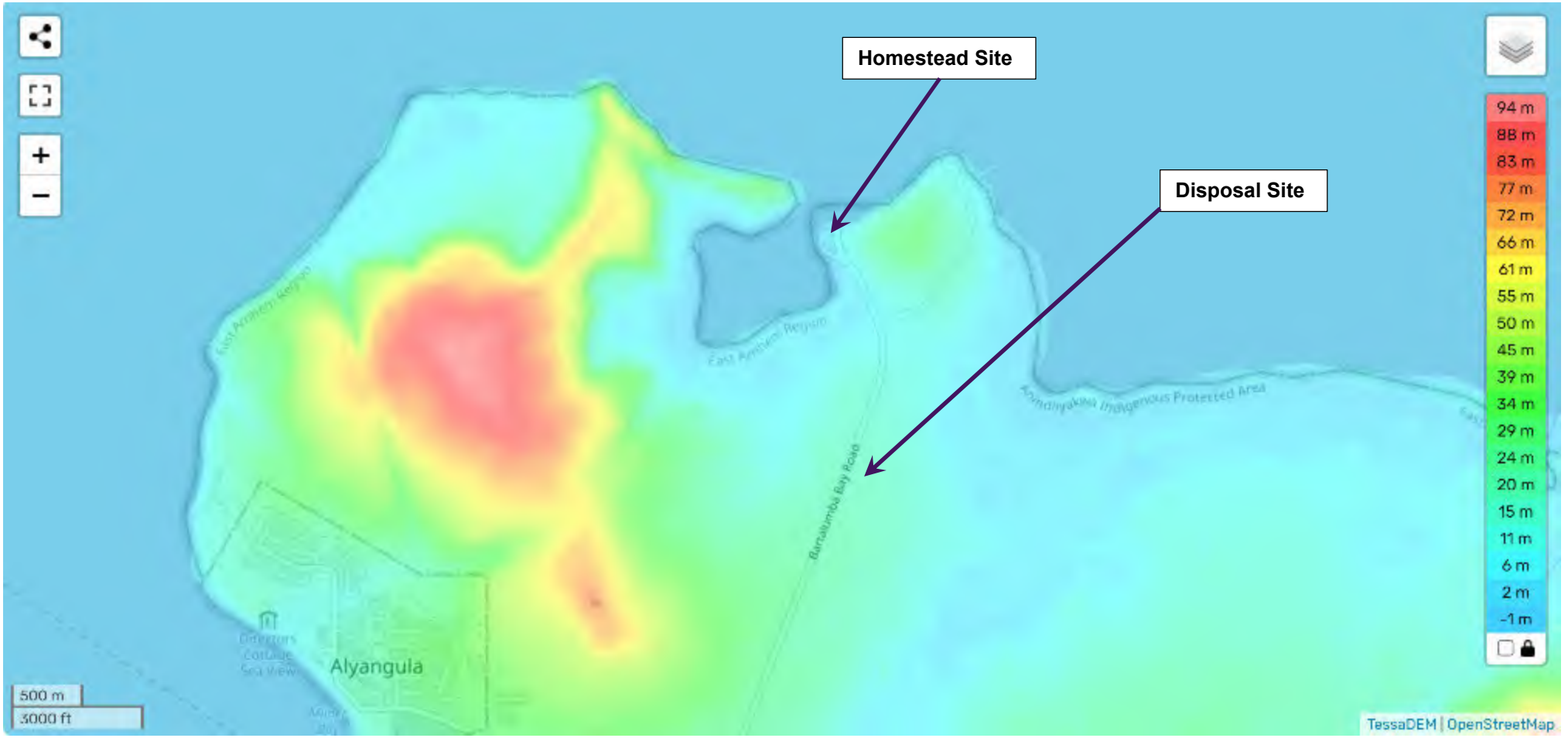
- **Topography, surface drainage & features**: Low lying foreshore land (**Figure 2-9**).
- **On-site developments & surface conditions**: Structures present in 2018 comprised a rock wall jetty that extended north into Deception Bay from the foreshore, a duplex dormitory, a recreational club, 11 remnant concrete slabs (numbered 1 - 11) from other former structures that had previously been demolished, unsealed roadways, an ablution block, four residential buildings, a rock wall and fire pit as shown by **Figures 2-1** to **2-3**[10].
- **Hazmat for remaining structures:** Extensive ACM in structures remaining at the Homestead Site was identified by the Agon (August 2018) report (Ref [1]), which is reviewed in **Section 2.10**.
- **Physical evidence of contamination (asbestos)**: Extensive asbestos contamination was identified by the Agon (August 2018) report (Ref [1]), which is reviewed in **Section 2.10**.
- **Surface conditions**: Refer **Sections 2.9 & 2.10**
- **Geology & stratigraphy**: Groote Eylandt was characterised by lateritic plains, hills and sandstone plateaus, with significant dune fields and sand plains along the coast. The Homestead Site was covered by a sandy clay topsoil of approximately 0.2 m with an intermittently banded substrate of lateritic clays and sandstone at thicknesses of up to 20 m.
- **Acid Sulfate Soil (ASS)**: Located within an area where the probability of encountering ASS or Potential Acid Sulfate Soil (**PASS**) was extremely low but with a low level of confidence.
- **Hydrogeology**: Licensed well data indicated that standing water levels (SWLs) at the Homestead Site were likely to be deep at 7.8 – 12.5 mbgl, which would place the regional groundwater in the lateritic clay and sandstone. The Site Auditor considered it was likely that shallow, transient, phreatic groundwater was likely to exist in the overlying sandy soil deposits, with flow directions controlled by the local topography and draining to the foreshore.
- **Licensed wells** – NT DIPL (2018) groundwater records indicated there were two wells (RN8107 & RN 8108) installed in 1972 were located 1.6 km south of the Homestead Site (**Figure 2-10**), near the junction of Bartalumba Bay Road and Ngadumiyerrka Road and just north of the Disposal Site. The standing water level (**SWL**) in both wells was 10.6 mbgl. Two other wells (RN21299 installed 1979; RN21300 installed 1980) were located to the east along Ngadumiyerrka Road and recorded SWLs of 7.8 and 12.53 mbgl, respectively.
- **Surface water and groundwater receptors**: Bartalumba Bay that forms the northern and western parts of the Homestead Site. There was no surface water body at the Site.
- **Environmentally sensitive areas**: Vegetation at the Homestead Site was described under the National Vegetation Information System as "*Eucalyptus open forest / Livistona low sparse palmland / Heteropogon tall tussock grassland*" (DENR 2018). The open woodland in this part of Groote Eylandt was dominated by Darwin stringybark and woollybutt (NRETAS 2009).

  The Groote Eylandt Group was identified as a Site of Conservation Significance (NRETAS 2009).

  The whole of Groote Eylandt and its surrounding waters lie within the Anindilyakwa Indigenous Protected Area. Groote Eylandt had a variety of habitats: dense stands on monsoon forests rising behind coastal sand dunes, alternating with mangrove and mudflats. Sandstone outcrops and laterite provide excellent niches for shellfish. BirdLife International classified an unnamed islet off the north-eastern coast as an important bird area because of its global importance as a roseate tern breeding site[11].

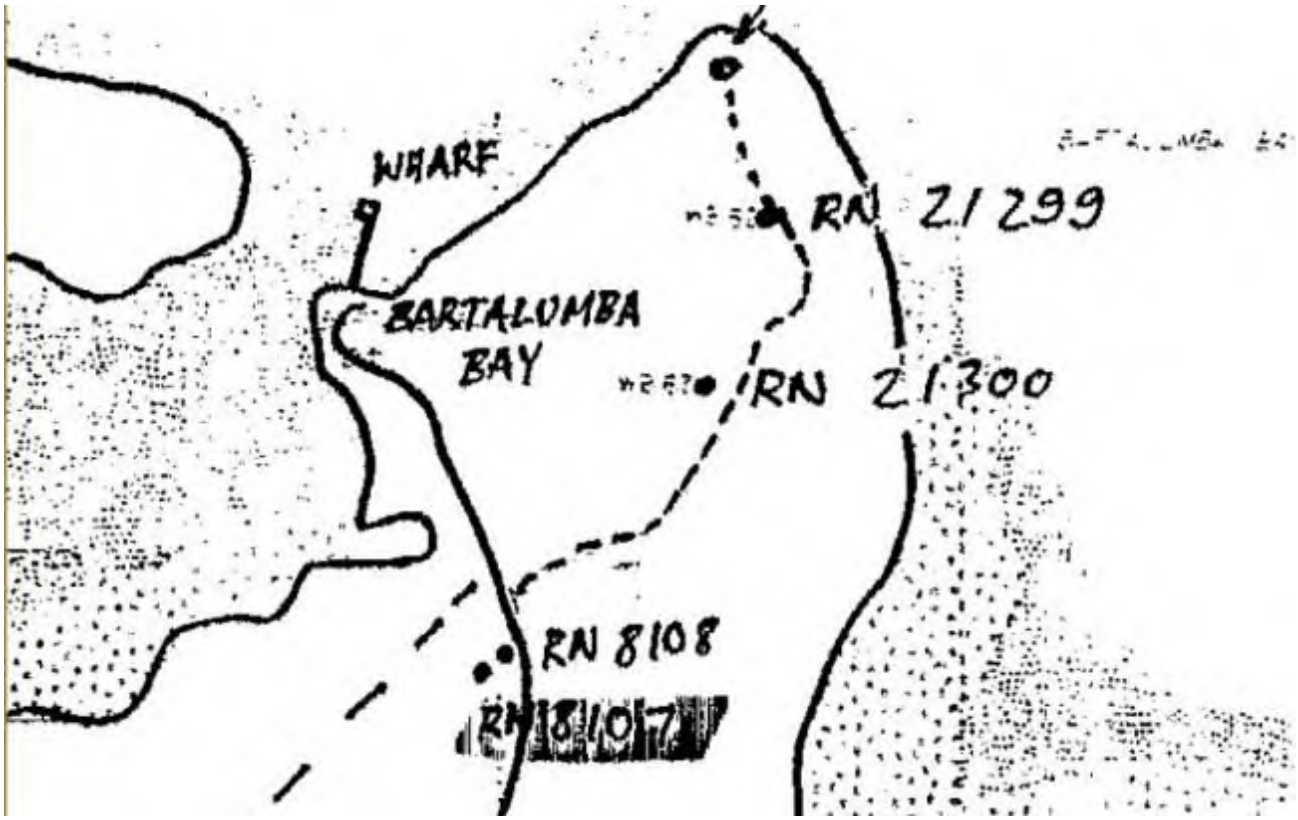
[10] Sections 3, 4.1 & 5.7.4, Ref [9]
[11] https://en.wikipedia.org/wiki/Groote_Eylandt#Mining

Figure 2-9 Topographic Plan of Homestead and Disposal Sites



Source: https://en-au.topographic-map.com/map-fqlp3l/Groote-Eylandt/?center=-13.83301%2C136.45058&zoom=14

Figure 2-10 Licensed Groundwater Wells (Source: Figure 8, Ref [5])



The Site Auditor considered the site condition assessments provided by the ESAs did not meet the documentation completeness DQI. The data gaps identified consisted of information on :

- The site plan showing the location of all structures and infrastructure at the Homestead Site;
- Physical evidence of non-asbestos contamination (visual, odours, plant stress);
- ASTs, USTs, drummed waste;
- Buried services;
- Location and extent of fill; and
- Background groundwater quality.

The Site Auditor assessed the significance of these data gaps in the site condition assessment when reviewing the CSM in **Section 2.5**.

2.5 Conceptual Site Model

2.5.1 Potential Contaminant Sources and Contaminants of Concern

The Agon (August 2018) report (Ref [1]) identified the potential sources of asbestos contamination at the Homestead Site as including:

- The use of ACM in former buildings that had deteriorated, poorly demolished and/or damaged such that ACM was spilt of the ground;
- The presence of ACM in structures that remained at the premises; and
- The potential for the burial of asbestos contaminated materials at the premises.

The Site Auditor considered the weight of evidence supported these potential sources of asbestos contamination based on the data provided in the Agon (August 2018) report and the PAN.

The Site Auditor also considered there was potential for other sources and types of contamination to be present at the Site, based on the data provided in **Sections 2.3** and **2.4**. These included:

- ASTs/USTs and associated infrastructure used for diesel storage to power generators and/or used for marine fuel storage to supply prawn/fishing vessels that docked at the jetty;
- Drummed waste, chemicals, dumped waste that may remain on-site;
- Buried services that may contain asbestos (e.g. telecommunication pits, conduits);
- Septic tanks used by the former prawn/fish processing facility and/or homestead;
- Areas of buried waste; and
- Other types of hazardous building waste such as lead-based paint residues and PCB filled electrical capacitors.

The Site Auditor addressed the risks posed by other contaminant sources and contaminant types by completing a Section B SAS that included comments on these other risks.

2.5.2 Potential Receptors

The potential receptors identified by the Agon (August 2018) report (Ref [1]) comprised:

- Existing and future residents and members of the general public;
- Existing and future construction / maintenance workers.

The Site Auditor considered the residential land use of the Homestead Site supported the identification of these potential receptors together with other receptors that may be impacted by other forms of contamination if present at the Site. These other receptors comprised:

- On-site ecological receptors (e.g. plants, animals);
- Local groundwater;
- Users of potential extracted groundwater; and
- The marine ecology in Bartalumba Bay.

2.5.3 Potential Pathways

The potential pathway associated with the asbestos contamination identified by the Agon (August 2018) report (Ref [1]) was inhalation of asbestos fibres. The Site Auditor considered the potential pathways associated with the other types of contamination that may have been present at the Homestead Site comprised:

- Ingestion and dermal contact for human receptors;
- Inhalation of fibres/dust and/or vapours for human receptors;
- Leaching of contaminants and vertical migration into groundwater;
- Surface water run-off; and
- Direct contact with terrestrial and marine ecology.

2.5.4 Source – Pathway - Receptor Linkages

The Site Auditor considered there was potential for source – pathway – receptor linkages to be present at the Homestead Site for all identified potential sources and contaminants identified in **Section 2.5.1**.

2.6 Investigation Criteria

2.6.1 Aesthetic

The second check in the NSW EPA decision process was that '*any aesthetic issues relating to site soils have been adequately addressed*'.

The Agon (August 2018) report (Ref [1]) did not provide an assessment on potential aesthetic issues relating to site soils that needed to be considered. The Site Auditor addressed this data gap by reviewing the available data for a Residential A land use.

The Site Auditor considered that potential aesthetic issue at the Homestead Site associated with asbestos contamination that needed to be considered comprised:

- No visible ACM fragments on the groundsurface; and
- No known asbestos was to remain on-site in order to minimise the potential, to the extent practical, for presently unknown asbestos to remain at the ground surface and the need for excavated fill to be classified as Asbestos Waste if disposed off-site by future maintenance / construction work.

In additional, other aesthetic criteria specified in the NEPM (2013) Schedule B1 guidelines that needed to be considered at the Homestead Site comprised:

- The presence of staining / discolouration, odorous soil conditions;
- Fill containing a significant amount of anthropogenic material;
- No known odorous or stained materials were to remain on-site; and
- Fill material remaining on-site was not to contain demolition rubble or other types of anthropogenic material greater than trace quantities (>5%). This criterion was considered to reflect a common condition placed in Development Consents[12], such as '*Contaminated soil, soil for which the contamination status is unknown, waste (including but not limited to concrete/ bricks/ demolition material) is prohibited from being buried, capped, contained or similar onsite as part of any proposed Remediation Action Plan (including under public or private roads and land which will be dedicated or acquired for any other public purpose)'.*

2.6.2 Soil

The third check in the NSW EPA decision process was that '*soils have been assessed against relevant health-based investigation levels and potential for migration of contamination from soils to groundwater has been considered*'.

The sixth check in the NSW EPA decision process was that '*any issues relating to local area background soil concentrations that exceed relevant investigation levels have been adequately addressed in the site assessment report(s).'*

The seventh check in the NSW EPA decision process was that '*the impacts of chemical mixtures have been assessed'*.

The eighth check in the NSW EPA decision process was that '*any potential ecological risks have been assessed'*.

The Site Auditor reviewed contamination risks at the Homestead Site using the NEPM (2013) guidelines, given that they provided the current NSW EPA-endorsed investigation levels. Where soil investigation levels (**SILs**) were not provided by these guidelines for potential contaminants of concern, reference was made to the latest USEPA Regional Soil Levels (**RSLs**) or Canadian guidelines.

[12] The Hills Shire Council (24 June 2019) 'Notice of Determination of a Development Application No: 2312/2018/ZB'

SILs were given in the NEPM (2013) guideline for four types of land uses:

- **A** **residential with garden / accessible soil (home-grown produce < 10% of fruit and vegetable intake; no poultry), also includes children's day care centres, preschools and primary schools**
- B residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats
- C public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate
- D commercial / industrial such as shops, offices, factories and industrial sites.

Asbestos

The Agon (August 2018) report (Ref [1]) did not specify SILs for asbestos presumably because their remediation approach was to remove all visible asbestos from remnant structures and the ground surface. The Site Auditor considered these criteria were appropriate for the PAN requirements because they were consistent with:

- Work health and safety (**WH&S**) criteria for a work site specified in the SafeWork Australia (July 2020) "*How to Manage and Control Asbestos in the Workplace Code of Practice*";
- The NEPM (2013) criteria for no visible asbestos for surface soil; and
- The scope of remediation work required by the PAN.

For the purpose of this site audit, the Site Auditor also specified SILs for asbestos below the ground surface that were relevant for future developments that may disturb soils at the Site. These additional criteria are specified in **Table 2-3**.

Other Contaminants of Concern

Based on the CSM described in **Section 2.5**, the Site Auditor considered other contaminants of concern at the Homestead Site were heavy metals, TRH, BTEX, PAHs, phenols, OCPs and PCBs. SILs adopted by the Site Auditor for these other contaminants of concern are summarised in **Table 2-3**.

The Site Auditor considered the appropriate land use category for the Homestead Site was Residential A. EILs for Residential A were based on generic values provided by the NEPM (2013) guidelines where available, and the NEPM 'Interactive (Excel) Calculation Spreadsheet' for some heavy metals.

2.6.3 Groundwater and Surface Water

The fourth check in the NSW EPA decision process was that *'groundwater (where relevant) has been assessed against relevant health-based investigation levels and, if required, any potential impacts to buildings and structures from the presence of contaminants considered.'*

The eighth check in the NSW EPA decision process was that '*any potential ecological risks have been assessed'*.

The ninth check in the NSW EPA decision process was that '*any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks to off-site receptors, and reported to the site owner or occupier'.*

Prior to 2018, the NSW EPA had endorsed the use of the water quality trigger levels given in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ, 2000). These guidelines provided criteria for aquatic ecosystems (marine and fresh waters), primary industries, recreational water and drinking water. These guidelines were superseded on 29/08/18 by the Australian New Zealand 2018 water quality guidelines (ANZG) and the NHMRC (August 2018) *"Australian Drinking Water Guidelines"* (**ADWG**).

Table 2-3: Soil Investigation Levels for Homestead Site

Substances	HILs (mg/kg)			Residential EILs (mg/kg)
	HIL A	HIL B	HIL C	
Metals / Metalloids (in sand)				
Arsenic (total)	100	500	300	100
Cadmium	20	150	90	--
Chromium (III)	--	--	--	200
Chromium (VI)	100	500	300	--
Copper	6,000	30,000	17,000	210
Lead	300	1,200	600	1,100
Mercury (inorganic)	40	120	80	--
Nickel	400	1,200	1,200	190
Zinc	7,400	60,000	30,000	490
Other Organics				
Aldrin + Dieldrin	6	10	10	--
Chlordane	50	90	70	--
Chlorpyriphos	160	340	250	--
DDT+DDD+DDE	240	600	400	180
Heptachlor	6	10	10	--
PAHs (total)	300	400	300	--
Benzo(a)pyrene	3 (BaP TEQ)	4 (BaP TEQ)	3 (BaP TEQ)	0.7
Phenol	3,000	45,000	40,000	--
PCBs (total)	1	1	1	--
Petroleum Hydrocarbons (in sand 0 to <1m)				
TRH F1	45		NL	180
TRH F2	110		NL	120
TRH F3	2,500		2,500	300
TRH F4	6,300	8,100	7,400	2,800
Benzene	0.5		NL	50
Toluene	160		NL	85
Ethyl Benzene	55		NL	70
Xylenes (total)	40		NL	105
Naphthalene	3		NL	170
Asbestos				
FA & AF (friable asbestos)	0.001% w/w			--
Bonded ACM	0.01% w/w	0.04% w/w	0.02% w/w	--
All forms of asbestos	No visible asbestos for surface soil			--

Legend:

Applicable SILs for Residential A land use at Homestead Site

The NEPM (2013) guidelines[13] also advised that *"At the point of use or exposure, GILs may be considered as response levels: the response may include further investigation or management as appropriate. Contaminant levels marginally in excess of the GILs do not imply unacceptability or that a significant human health or ecosystem risk is likely to be present. The decision on whether clean-up is required (and, if so, to what extent) should be based on site-specific assessment. Risk assessment is one aspect of making the decision though other considerations such as practicality, timescale, effectiveness, cost, durability, relevant regulatory policy, and community acceptance are also important"*.

The Site Auditor considered that the potential receptors of groundwater contamination that needed to be considered at the Homestead Site were:

[13] Refer Section 3.5 in NEPM (2013) "*Schedule B6 Guideline on The Framework for Risk-Based Assessment of Groundwater Contamination*"

- Nearby surface water bodies (i.e. Bartalumba Bay);
- Recreational (i.e. non-potable) use of extracted groundwater and surface water at and off-site; and
- Irrigation use of extracted groundwater and surface water at and off-site.

A summary of the criteria that the Site Auditor considered were reasonable for assessing groundwater and surface water quality at the Site is provided in **Table 2-4**. GILs used for soil vapour are discussed in **Section 2.6.4.**

Table 2-4: Groundwater Investigation Levels

Substances	Marine protection levels (1) (µg/L)	Irrigation criteria (6) (µg/L)	Recreational water criteria (5) (µg/L)
Metals			
Arsenic (V)	13	100	100
Cadmium	0.7	10	20
Chromium (III)	27	100	220,000 (4)
Chromium (VI)	4.4		500
Copper	1.3	200	20,000
Lead	4.4	2,000	100
Mercury (inorganic)	0.1	2	10
Nickel	7	200	200
Zinc	15	2,000	na(2)
Petroleum Hydrocarbons			
TRH (C6-C9)	150 (3)	--	--
TRH (C10-C36)	600 (3)	--	--
Benzene	500	--	10
Toluene	180	--	8,000
Ethylbenzene	80	--	3,000
Xylenes	75 - 350	--	6,000
PAHs			
Naphthalene	50	--	1.7 (4)
Anthracene	PQL (0.1)	--	18,000 (4)
Fluoranthene	1.0	--	8,000 (4)
Phenanthrene	0.6	--	--
Benzo(a)pyrene	0.1	--	PQL 0.1
Organochlorine Pesticides			
Aldrin	PQL (0.01)	--	PQL (0.01)
Chlordane	PQL (0.01)	--	20
DDT	PQL (0.01)	--	90
Dieldrin	PQL (0.01)	--	PQL (0.01)
Heptachlor	PQL (0.01)	--	PQL (0.01)
Organophosphate Pesticides			
Chlorpyrifos	PQL (0.01)	--	100
Fenitrothion	PQL (0.01)	--	70
Glyphosate	1,200	--	--
Malathion	0.05	--	700
Parathion	0.004	--	200

Notes

(1) Marine water protection levels from ANZG guidelines wherever available
(2) Not used
(3) Dutch (2000) Intervention Level
(4) US EPA (November 2018) RSLs – tapwater criteria (with target cancer risk $1x10^{-6}$ and hazard quotient of 1) multiplied by 10
(5) NHMRC (August 2018) drinking water criteria used wherever possible
(6) ANZECC (2000) LTVs for long-term use (up to 100 years) used for irrigation water criteria where possible

2.6.4 Soil Vapour Criteria

The fifth check in the NSW EPA decision process was that '*hazardous ground gases (where relevant) have been assessed against relevant health-based investigation levels and screening values'.*

The ninth check in the NSW EPA decision process was that '*any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks to off-site receptors, and reported to the site owner or occupier'*.

The NSW EPA endorsed the use of the soil vapour criteria provided in Schedule B1 of the NEPM (2013) guidelines. These guidelines provided a range of criteria for the four main land use types, comprising:

- Interim soil vapour HILs for volatile chlorinated organic compounds based on soil vapour measurements [NEPM Table 1A(2)];
- Soil HSLs for vapour intrusion based on soil concentrations [NEPM Table 1A(3)];
- Groundwater HSLs for vapour intrusion based on groundwater concentrations [NEPM Table 1A(4)]; and
- Soil vapour HSLs for vapour intrusion based on soil vapour measurements [NEPM Table 1A(5)].

The NEPM (2013) guidelines also referred to the CRC CARE source documents[14], which provided additional soil vapour criteria for protecting an intrusive maintenance worker in a shallow trench. A summary of the criteria that the Site Auditor considered were reasonable for assessing soil vapour at the Site is provided in **Table 2-5**.

Table 2-5: Soil Vapour Criteria from NEPM & CRC CARE Guidelines

Contaminant	Residential A & B	Intrusive Maintenance Worker (Shallow Trench)
Soil vapour (mg/m^3)		
Toluene	1,300	NL
Ethylbenzene	330	NL
Xylenes	220	NL
Benzene	1	760
Naphthalene	0.8	880
F1	180	180,000
F2	130	NL
Soil (mg/kg)		
Toluene	160	NL
Ethylbenzene	55	NL
Xylenes	40	NL
Benzene	0.5	77
Naphthalene	3	NL
F1	45	NL
F2	110	NL
Groundwater (mg/L)		
Toluene	NL	NL
Ethylbenzene	NL	NL
Xylenes	NL	NL
Benzene	0.8	NL
Naphthalene	NL	NL
F1	1	NL
F2	1	NL

Legend: NL = No limit

[14] Friebel E and Nadebaum P (September 2011) "*Technical report No. 10, Health screening levels for petroleum hydrocarbons in soil and groundwater, Part 1: Technical development document*". CRC CARE

2.7 Review of Data Quality for Asbestos Survey

2.7.1 Background

The investigation and remediation work conducted at the Homestead Site focused on asbestos in remnant structures and at the ground surface, since this was the focus of the PAN. No investigations were undertaken for:

- Asbestos below ground;
- Other types of soil contamination;
- Underground structures that may contain chemicals / wastes (e.g. USTs, septic tanks, pits); or
- Contamination of groundwater, surface water or soil vapour.

The Site Auditor's review of data quality was therefore restricted to the investigation and remediation work conducted at the Homestead Site that focused on visible asbestos in remnant structures and at the ground surface.

The Site Auditor addressed potential risks associated with other forms of contamination at the Homestead Site by completing a Section B SAS that included comments on these other risks.

2.7.2 Documentation Completeness – Fieldwork

A summary of the fieldwork undertaken for the Agon (August 2018) investigation is provided in **Table 2-6**.

Table 2-6 Summary of Fieldwork Conducted by Agon (2018) Asbestos Survey

Location	Visual survey		Samples Collected				
	May 2018	July 2018	Building material	Building dust swabs	Surface debris from area	Surface soil	Airborne fibres
Duplex dormitory	✓		✓				✓
Recreation club	✓		✓				✓
NW foreshore house		✓	✓	✓			✓
Southern elevated house		✓	✓	✓			✓
North orange house				✓			✓
House centre site							✓
Ablution block			✓				
Jetty pipeline	✓		✓				
Western foreshore area	✓				✓		
Eastern foreshore area		✓			✓	✓	
Roadways	✓				✓	✓	
Remaining grounds	✓	✓			✓	✓	✓

Data gap discussed in **Section 2.7.5**

Fieldwork documentation provided by the Agon (August 2018) report included:

- Plans showing airborne asbestos fibre monitoring locations, soil sampling locations, areas of asbestos contamination on roadways, areas of significant asbestos contamination across the Homestead Site;
- Descriptions of the fieldwork performed; and
- Photos taken during the fieldwork conducted in July 2018.

The Site Auditor identified data gaps in the fieldwork documentation, these being:

- A description of the procedures used for the asbestos surveys conducted in buildings and around the ground;
- A description of the sampling methods used;
- Wind conditions at the time of airborne fibre testing; and
- Copies of site inspection field records.

The Site Auditor assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

2.7.3 Documentation Completeness – Laboratory Testing

Copies of laboratory test certificates from NATA accredited labs were provided in the Agon (August 2018) report. These comprised:

- Octief Certificate NT1807301753 for 32 samples (S1 – S32) collected on 25/07/18 comprising 14 building materials (S1 – S7, S14 – S20), 6 samples of ACM on ground (S8 – S13), 12 dust swab samples (S21 – S32);
- Agon airborne fibre monitoring report JA0336.2 for 10 samples collected on 25 – 25/07/18 (JA0336_1 to JA0336_10); and
- Octief Certificate WA1807301011 for 7 samples (SS1 – SS7) collected on 25/07/18 comprising

The lab certificates indicated that:

- The lab was NATA accredited for asbestos testing;
- The sampling date was recorded;
- The test methods used;
- The detection limit for solid materials was 0.01 %w/w and for air samples was 0.01 fibre/ml; and
- The purpose of the test method was to determine whether asbestos was present in the sample.

However, laboratory test certificates were not provided in the Agon (August 2018) report for many samples that Agon reported as having been collected and tested for asbestos. These missing lab certificates and associated samples comprised:

- Duplex dormitory[15] – 20 samples of external eave linings, vinyl floor sheeting, ground surface debris;
- Recreation club[16] - 15 samples of ACM fragments and paperback vinyl sheeting;
- Jetty pipeline[17] – 1 sample of the outer fibrous matting covering the pipeline

Also, no COC forms were provided acknowledging receipt of date and time, and the identify of samples included in the shipment.

The Site Auditor has assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

[15] Section 2.1.1, Ref [1]
[16] Section 2.2.1, Ref [1]
[17] Section 2.3.1, Ref [1]

2.7.4 Documentation Completeness – Contamination Assessment

Contamination assessment documentation provided by the Agon (August 2018) report consisted of an assessment of the field survey and laboratory test results for each area investigated at the Homestead Site together with recommendations on further investigation and remediation work required. The areas investigated are described in **Table 2-6**.

The report provided asbestos contamination assessments on:

- The results of the airborne asbestos fibre monitoring;
- Asbestos finds in remnant structures and the type and condition of asbestos present;
- Asbestos in building dust and air;
- The presence of visible asbestos on the ground surface in surveyed areas together with a description of the type and condition of asbestos present; and
- Asbestos in shallow soil.

Data gaps in asbestos contamination assessments for the Homestead Site identified by the Site Auditor were:

- The nature and extent of asbestos contamination in remnant structures, supported by plans showing the locations where asbestos was present;
- The aesthetic condition of the ground surface and shallow soils
- The nature and extent of bonded and friable asbestos on the ground surface and shallow soils across the Homestead Site; and
- An assessment of the potential of buried asbestos to be present.

The Site Auditor has assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

2.7.5 Data Completeness and Representativeness

The sampling and laboratory testing documented in the Agon (August 2018) report (Ref [1]) for the Homestead Site is summarised in **Table 2-7**.

The Agon (August 2018) report did not determine the data completeness and representative DQOs that needed to be met by their investigation. The Site Auditor addressed this deficiency by determining the minimum number and location of samples that needed to be tested in order to characterise the nature and extent of asbestos contamination at the Homestead Site in accordance with NSW EPA guidance[18]. These were:

- **Houses, dormitories, club houses**: 4 external eave lining samples, 4 vinyl floor samples, 4 external wall lining samples, 4 internal wall lining samples, 4 swab samples;
- **Small buildings without eaves or floor covering (e.g. ablution block)**: 2 external wall lining samples, 2 internal wall lining samples, 2 swab samples;
- **Jetty pipeline**: 5 samples at 30 m spacing along the 120 m long pipeline for each material type (outer matting and gaskets);
- **Surface soils / roadways**: 341 samples for a 31 ha area based on 55 sampling points per 5 ha area; and
- **Airborne fibres**: 10 samples per sampling event with a minimum of two sampling events (low and moderate wind in dry conditions).

[18] NSW EPA (August 2022) Sampling design guideline

Table 2-7 Summary of Sampling and Laboratory Testing Conducted by Agon (2018) Asbestos Survey

Location	Number of Samples Tested for Asbestos				
	Building material	Building dust swabs	Ground surface debris	Surface soil samples	Airborne fibres
Duplex dormitory	20	**0**	--	--	**1 (JA0336_4)**
Recreation club	15	**0**	--	--	**3 (JA0336_5, 9 & 10)**
NW foreshore house	**4 (S01-S03, S06)**	4 (S25-S28)	--	--	**1 (JA0336_2)**
Southern elevated house	**5 (S16-S20)**	4 (S29-S32)	--	--	**1 (JA0336_8)**
North orange house	**0**	4 (S21-S24)	--	--	**1 (JA0336_7)**
House centre site	**0**	**0**	--	--	**1 (JA0336_1)**
Ablution block	**2 (S14, S15)**	**0**	--	--	**0**
Jetty pipeline	**1 (fibrous matting) 0 (gaskets)**	--	--	--	**0**
Western foreshore area	--	--	**3 (S04, S05, S07)**	**0**	**1 (JA0336_3)**
Eastern foreshore area	--	--	**2 (S08, S09)**	**1 (SS3)**	**0**
Roadways	--	--	**2 (S10, S11)**	**1 (SS2)**	**0**
Remaining grounds	--	--	**2 (S12, S13)**	**5 (SS1, SS4-SS7)**	**1 (JA0336_6)**
TOTALS	**47**	**12**	**9**	**7**	**10**

Number of samples tested for asbestos significantly less than minimum requirements

The Site Auditor considered that the number of samples tested for asbestos met NSW EPA minimum requirements for:

- Building materials: Duplex dormitory and recreation club
- Building dust swabs: NW foreshore house, southern elevated house and north orange house.

However, the number of samples tested for asbestos did not meet NSW EPA minimum requirements for most areas at the Homestead Site because:

- NW foreshore house, southern elevated house, north orange house, house centre of site, and ablution block: Insufficient building material samples
- Duplex dormitory, recreation club, house centre of site, and ablution block: Insufficient building dust swabs
- Jetty pipeline: 1 fibrous matting sample (< 5 minimum), 0 gaskets samples (< 5 minimum)
- Ground surface debris and shallow soil samples: The 16 samples tested was well below the 341 required

- Airborne fibre tests: Tests were conducted on only one occasion and it is not known whether the wind condition was light or moderate.

The Site Auditor has assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

2.7.6 Data Comparability

The Agon (August 2018) report described the scope of work undertaken for the asbestos survey, where sampling was conducted and provided general descriptions of conditions encountered. However, the information provided in the report indicates that the asbestos survey was unlikely to have met the data comparability DQO because:

- No information was provided on the protocols used for selecting sample locations and the sampling procedures used, which included:
  - Building material sampling;
  - Building dust sampling;
  - Jetty pipeline sampling;
  - Surface debris and shallow soil sampling; and
  - Airborne fibre sampling.
- The ground surveys appeared to have been opportunistic walkovers of the Homestead Site, which did not meet the NEPM (2013) Schedule B(2) guideline recommendation for a detailed grid-based survey;
- Vegetation / leaf litter was present on the ground surface around building footprints in the May 2018 inspection, which obstructed ACM being observed. Agon advised that thick vegetation was particularly an issue at this time for the western side of the Duplex Dormitory and Recreation Club. Only the area around the Recreation Club was recorded as having been re-inspected in July 2018 when the dense vegetation had been burnt exposing the soils at the ground surface;
- Moderately dense grass cover and native shrubs covered the dunes above the high-water mark in the foreshore area to the west of the jetty that was inspected in May 2018. There was no record of this area having been re-inspected in July 2018 after the vegetation had been thinned out;
- The Agon report did not indicate that any raking of the ground surface occurred to disturb the top 100mm of ground and identify additional asbestos;
- The inspection of the Jetty pipeline was not conducted at low tide so that some asbestos material may not have been identified as advised by Agon; and
- It is likely that the airborne fibre sampling was not undertaken in conditions of moderate wind or when soils at the Homestead Site could be disturbed by normal residential activities.

The Site Auditor has assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

2.7.7 Data Precision & Accuracy

Documentation on data precision and accuracy achieved by the Agon (August 2018) report comprised:

- All samples were collected by a licensed asbestos assessor;
- Some of the samples were tested at a NATA-accredited lab for the tests used; and
- The detection limit of laboratory tests was 0.01 % w/w asbestos.

However, no test certificates from a NATA accredited lab were provided in the Agon report for:

- The 20 building material samples reported to have been taken from the Duplex Dormitory;
- The 15 building material samples reported to have been taken from the Recreation Club; and
- The one sample of the fibrous matting covering the jetty pipeline.

The Site Auditor has assessed the significance of these deficiencies in **Sections 2.10** and **2.14**.

2.8 Aesthetic Issues

The second check in the NSW EPA decision was that '*any aesthetic issues relating to site soils have been adequately addressed*'.

The main aesthetic issues relevant to the PAH that was issued by the NT EPA for the Homestead Site were considered with the condition of the ground surface. These included the presence of waste material and stained / odorous soil.

A summary of aesthetic data provided by the Agon (August 2018) report is provided in **Table 2-8**. Agon concluded that there was a significant quantity of asbestos debris in poor condition across the Homestead Site. The areas where significant asbestos contamination was reported at the Homestead Site by the Agon (August 2018) report are shown in **Figure 2-11**.

Table 2-8 Summary of Aesthetic Data Provided by Agon (August 2018) Asbestos Survey

Location	Aesthetic Data
Duplex dormitory area[19]	ACM was observed scattered on the ground north of the Duplex Dormitory and on the eastern side to the rock outcrop. Some material was friable because it exhibited signs of extensive burning and was in poor condition
	The aesthetic condition of the ground around the Duplex Dormitory was not accurately assessed due to vegetation / leaf litter (particularly on the western elevation)
Recreation Club area[20]	The building (both internal and external) was severely damaged. The former wall and ceiling linings throughout the building were considerably damaged (likely a combination of years of seasonal destructive weather and vandalism). As a consequence, the concentration of debris strewn across the concrete flooring in the building and around the footprint of the building was significant
	The paperback vinyl sheeting and associated debris in the central bar area contained asbestos, was in poor condition and friable
	ACM debris around the building was in fair to poor condition
	A large amount of ACM debris (including friable asbestos) covered the ground around the Recreation Club
NW foreshore house area	**No data**
Southern elevated house area	**No data**
North orange house area	**No data**
House centre site area	**No data**
Ablution block area	**No data**

[19] Section 2.1.1, Ref [1]
[20] Section 2.2.1, Ref [1]

Location	Aesthetic Data
Jetty pipeline[21]	**The inspection was not taken at low tide. No aesthetic issues were reported**
Western foreshore area[22]	Sparsely concentrated ACM fragments were present across the area
Eastern foreshore area[23]	A large amount of ACM debris in poor condition (including friable asbestos) and waste (including brake pads, old car parts) covered the ground from the Recreation Club to the foreshore. The surface layer of the soil covered by a significant quantity of ash
Roadways[24]	Seven hotspots ACM fragments were encountered on the roadways, with their locations shown in **Figure 2-11**
Remaining grounds[25]	The 12 concrete pads across the Homestead Site were heavily contaminated by ACM fragments that were in poor condition and in some cases friable
	A depression in the centre of the Homestead Site was contaminated by a significant amount of surface asbestos debris. The ground surface was also covered by a significant quantity of ash
	The rock wall area on the north side of the Duplex Dormitory was heavily contaminated with asbestos debris in poor condition and in some cases friable (same material as found on the concrete slabs)

The Site Auditor considered the weight of evidence supported the Agon conclusion because of:

- The observations summarised in **Table 2-8**;
- The photos of site conditions in 2018 provided in Appendix B in the Agon (August 2018) report, with copies of these photos provided in **Appendix A**;
- Vegetation around the Duplex Dormitory had not been cleared when this area was inspected;
- Observations made by Agon for six of the structures were not recorded in their report; and
- The asbestos survey did not include a detailed grid-based survey of the Homestead Site or the raking of shallow soils, which would have resulted in more aesthetic impacts in the near surface soils being identified.

[21] Section 2.3, Ref [1]
[22] Section 2.4.1, Ref [1]
[23] Sections 2.2.1 & 2.4.1, Ref [1]
[24] Section 2.6.1, Ref [1]
[25] Section 2.5.1, Ref [1]

Figure 2-11 Extent of Significant Asbestos Contamination Identified by Agon 2018 Asbestos Survey (Source: Appn A, Ref [1])

2.9 Background Contaminant Levels

The sixth check in the NSW EPA decision process is that '*any issues relating to local area background soil concentrations that exceed relevant investigation levels have been adequately addressed in the site assessment report(s).'*

The Agon (August 2018) report did provide background asbestos levels for soils at the Homestead Site. The Site Auditor did not consider this data gap was significant since it was reasonable and conservative to assume that any asbestos at the Homestead Site was anthropogenic and not naturally occurring.

The Agon (August 2018) report[26] also described airborne fibre monitoring tests within four homes at the Homestead Site as providing background air quality data. The Site Auditor considered this monitoring did not represent background conditions due to the significant amount of asbestos contamination at the Homestead Site. For the purpose of this site audit the Site Auditor adopted a background concentration of airborne asbestos fibres of zero.

2.10 Soil Contamination

The third check in the NSW EPA decision process is that '*soils have been assessed against relevant health-based investigation levels and potential for migration of contamination from soils to groundwater has been considered*'.

The eighth check in the NSW EPA decision process was that *'any potential ecological risks have been assessed.*

2.10.1 Overview

The Agon (August 2018) report[27] concluded that significant asbestos contamination was noted for the Recreation Club, foreshore areas, and the grounds across the Homestead Site. The Site Auditor considered the weight of evidence supported this conclusion for the reasons given in **Sections 2.10.3, 2.10.6 and 2.10.7**.

The Site Auditor also considered that asbestos contamination at the Duplex Dormitory posed a high health risk for the reasons given in **Section 2.10.2**.

The Site Auditor also considered that there was a risk of more extensive asbestos contamination at the Homestead Site than identified by the Agon (August 2018) report due to data gaps and deficiencies in the asbestos survey as described in **Sections 2.3 – 2.8** and **2.10**. These additional areas of asbestos contamination included:

- Other buildings and structures;
- Buried structures; and
- Locations where wastes had been buried.

The Site Auditor also considered there was a risk of other forms of contamination at the Homestead Site that had not been investigated. This is because the available historical and site condition data indicated there was a risk of other types of contamination due to the potential for:

- Diesel fuels and petroleum oils having been used and stored at the site in drums, ASTs and USTs due to the past prawn/fish processing facility and use of electrical generators by the homestead;
- Chemical usage associated with the past prawn/fish processing facility;

[26] Sections 2.7 & 3.7, Ref [1]
[27] Section 5.0, Ref [1]

- Septic tanks that are likely to remain at the site containing pathogens and chemical wastes;
- Buried pits / conduits containing asbestos and/or wastes; and
- Use of lead-based paint and PCB containing electrical equipment.

The Site Auditor addressed the risk of more extensive asbestos contamination in remnant structures and across the ground surface by reviewing the Agon site management strategy in **Section 2.14**.

The Site Auditor addressed the risk of other types of contamination at the Homestead Site by completing a Section B SAS that included comments on these other risks.

2.10.2 Duplex Dormitory

Agon[28] concluded that asbestos contamination at the Duplex Dormitory and surrounding area posed a very high health risk. The Site Auditor considered the weight of evidence supported this conclusion because:

- ACM was observed scattered on the ground north of the Duplex Dormitory and on the eastern side to the rock outcrop. Some material was friable because it exhibited signs of extensive burning and was in poor condition. Furthermore, the aesthetic condition of the ground around the Duplex Dormitory was not accurately assessed due to vegetation / leaf litter (particularly on the western elevation) (**Section 2.8**);
- 3 of the 20 samples from the building reportedly detected asbestos (although copies of lab certificates were not provided in the Agon report). These samples were reportedly taken from the external eave linings around the building, vinyl floor sheeting to the south of the building, and cement sheet fragments from the NW building footprint; and
- There was a high risk of more extensive asbestos contamination in this building and surrounding area given that:
  - Agon was limited to a non-intrusive inspection with no raking of the shallow soil undertaken;
  - The number of samples taken did not meet the minimum requirements described in **Section 2.7.5**;
  - The absence of soils being tested for evidence of friable and bonded asbestos;
  - Other deficiencies in data quality as mentioned in **Section 2.7**.

2.10.3 Recreation Club Area

Agon[29] concluded that asbestos contamination at the Recreation Club and surrounding area posed a very high health risk. The Site Auditor considered the weight of evidence supported this conclusion because:

- The building (both internal and external) was severely damaged. The former wall and ceiling linings throughout the building were considerably damaged (likely a combination of years of seasonal destructive weather and vandalism). As a consequence, the concentration of debris strewn across the concrete flooring in the building and around the footprint of the building was significant (**Section 2.8**);
- The paperback vinyl sheeting and associated debris in the central bar area contained asbestos, was in poor condition and friable;
- ACM debris around the building was in fair to poor condition;
- A large amount of ACM debris (including friable asbestos) covered the ground around the Recreation Club;
- 6 of the 15 samples from the building detected asbestos (although copies of lab certificates were not provided in the Agon report). These samples mainly consisted of cement sheeting fragments, some of which were in poor and friable condition;

[28] Section 2.1.2, Ref [1]
[29] Section 2.2.2, Ref [1]

- Agon considered that there was a risk of friable asbestos through all internal parts of the building due to the friable nature and poor condition of the ACM that was spread throughout the building and because of the open floor plan of the building;
- The first inspection in May 2018 found ACM debris in fair to poor condition around the external footprint of the building;
- The second inspection in July 2018 found significant surface ACM debris along the foreshore north of the building. The debris included ACM fragments and brake pads. Some of the ACM fragments were deemed to be friable because it had been burned and was in poor condition.
- There was a high risk of more extensive asbestos contamination in this building and surrounding area given that:
  - The ground surface was covered in vegetation / leaf litter at the time of the first inspection that would have prevented the full extent of visible asbestos contamination being defined;
  - The second inspection on 25/07/18 appeared to have only inspected the area to the north of the building where the vegetation had been burnt; and
  - Agon was limited to a non-intrusive inspection;
  - The number of samples taken did not meet the minimum requirements described in **Section 2.7.5**;
  - The absence of soils being tested for evidence of friable and bonded asbestos;
  - Other deficiencies in data quality as mentioned in **Section 2.7**.

2.10.4 Other Buildings

Agon[30] made no conclusions regarding asbestos contamination at other buildings at the Homestead Site and the risks that such contamination posed for a residential land use. The Site Auditor considered the weight of evidence supported the conclusion that there was a risk of asbestos contamination in the other buildings. This is because:

- The Agon report provided no information on how sample locations were selected or the sample procedures used (**Sections 2.7.2 & 2.7.6**);
- No COC forms were provided acknowledging receipt of date and time, and the identify of samples included in the shipment (**Section 2.7.3**);
- No assessment was provided of the nature and extent of asbestos contamination in remnant structures, supported by plans showing the locations where asbestos was present (**Section 2.7.4**); and
- The number of building material samples tested for asbestos were well below the recommended minimum numbers for the NW foreshore house, the southern elevated house, the north orange house, the house centre of site and the ablution bock (**Section 2.7.5**).

The Site Auditor addressed this risk by reviewing the Agon site management strategy in **Section 2.14**.

Building Dust Swab Tests

The Agon (August 2018) asbestos survey[31] included the collection of 12 building dust swabs from the NW foreshore house, the southern elevated house and the north orange house. It was understood that building dust swabs were taken at these three houses because they were occupied by residents and the risk posed by asbestos fibres in dust needed to be assessed. The samples were tested at a NATA-accredited lab and no asbestos was detected, with a summary of the data provided in **Table 2-9**.

[30] Section 2.2.2, Ref [1]
[31] Sections 2.7 & 3.7, Ref [1]

Table 2-9 Summary of Building Dust Swab Results (Source: Table 1, Ref [1])

Building	Location Table Header	Asbestos Detected (Yes/No)
North Orange House	Pantry Cupboard	No
	Bathroom Benchtop	No
	Bedroom 2 Cupboard	No
	Kitchen Sink Top	No
North West Foreshore House	Kitchen Sink Top	No
	Laundry Washing Machine	No
	Bedroom 3 Drawers	No
	Bedroom 1 Drawers	No
South Elevated House	Kitchen Window	No
	Bedroom 1 TV Desk	No
	Bathroom Cupboard Top	No
	Hallway Storage Shelf	No

No conclusions were made by Agon regarding the building dust swab data. The Site Auditor considered the data showed that asbestos was not present in the dust samples collected but that no conclusions could be made regarding the potential for asbestos to be present in other buildings at the Homestead Site. This is because:

- The Agon report provided no information on how sample locations were selected or the sample procedures used;
- No building swab samples were collected from the two high-risk buildings, namely, the Duplex Dormitory and the Recreation Club; and
- Significant asbestos contamination existed on the ground surface across the Homestead Site that posed a contamination risk to air quality.

Airborne Fibre Tests

The Agon (August 2018) asbestos survey[32] included the collection of 10 airborne fibre tests from 10 locations across the Homestead Site. The data showed that 8 samples were collected from inside houses and 2 samples were collected outside at locations where high levels of asbestos contamination were present. The samples were tested at a NATA-accredited lab and no asbestos was detected, with a summary of the data provided in **Table 2-10** and the sample locations are shown in **Figure 2-12**.

[32] Sections 2.7 & 3.7, Ref [1]

Table 2-10 Summary of Airborne Fibre Results (Source: Table 2, Ref [1])

Date	Sample Location	Internal/External	Fibre Conc. (per ml)
25/07/2018	House (Centre of Site) – Bedroom 2	Internal	<0.01
	House (NW Foreshore) – Kitchen	Internal	<0.01
	NW Foreshore	External	<0.01
26/07/2018	Track – North of Duplex Dormitory	External	<0.01
	SW Side of Recreation Club	External	<0.01
	Centre of Site	External	<0.01
	North Orange House – Living Room	Internal	<0.01
	South Elevated House – Living Room	Internal	<0.01
27/07/2018	Recreation Club – SW Side	Internal	<0.01
	Recreation Club – Centre Section	Internal	<0.01

Figure 2-12 Asbestos Airborne Fibre Monitoring Locations (Source: Figure 4, Ref [1])

Agon concluded that the houses were fit for occupation because the airborne fibre levels were not detectable. The Site Auditor considered that insufficient data was obtained by the Agon (August 2018) asbestos survey to support this conclusion because of deficiencies in the investigation as described in **Section 2.7**. These included:

- Data gaps included the lack of a description of the protocols and procedures used for the sampling and copies of field records, and wind conditions at the time of testing (**Section 2.7.2**);
- The absence of COC records (**Section 2.7.3**);
- No samples were collected from the Duplex Dormitory or Recreation Cub where the airborne asbestos fibre risks were higher (**Section 2.7.5**); and
- Tests were conducted on only one occasion and it is not known whether the wind condition was light or moderate (**Sections 2.7.5 & 2.7.6**).

The Site Auditor addressed this deficiency when reviewing the site management strategy in **Section 2.14**.

2.10.5 Jetty Pipeline

The Agon (August 2018) report[33] did not identify any asbestos at the jetty but advised that the gasket joint to a broken-off pipe joiner (25 m from the jetty end) should be assumed to contain asbestos because a sample had not been collected and tested.

The Site Auditor considered that the need to assume the gasket contained asbestos was reasonable given the absence of data. The Site Auditor also considered the fibrous matting that covered the pipeline also needed to be assumed as containing asbestos because:

- Data gaps included the lack of a description of the protocols and procedures used for the sampling and copies of field records, and wind conditions at the time of testing (**Section 2.7.2**);
- The absence of COC records (**Section 2.7.3**); and
- The number of samples tested for asbestos was well below the NSW EPA minimum recommendation (**Section 2.7.5**).

2.10.6 Foreshore Areas

Western Foreshore

The Agon (August 2018) report[34] concluded that significant asbestos contamination was present at the foreshore areas. The Site Auditor considered the weight of evidence supported this conclusion for the western foreshore because:

- ACM fragments were identified along the western foreshore at a time when vegetation had not been cleared (**Section 2.8**);
- Three samples of cement sheeting fragments were collected and tested for asbestos, with two of the samples confirmed to be ACM;
- No soils samples were collected and tested for asbestos from the area (**Section 2.7.5**); and
- Deficiencies in the inspection method as described in **Section 2.7.6**.

[33] Section 2.3, Ref [1]
[34] Section 5, Ref [1]

Eastern Foreshore Area

The Agon (August 2018) report[35] concluded that significant asbestos contamination was present at the foreshore areas. The Site Auditor considered the weight of evidence supported this conclusion for the eastern foreshore because:

- A large amount of ACM debris in poor condition (including friable asbestos) and waste (including brake pads, old car parts) covered the ground from the Recreation Club to the foreshore. The surface layer of the soil covered by a significant quantity of ash (**Section 2.8**);
- A soil sample detected AF/FA in the soil, which meant the concentrations exceeded the NEPM (2013) AF/FA criteria of 0.001 %w/w;
- Data gaps included the lack of a description of the protocols and procedures used for the sampling and copies of field records, and wind conditions at the time of testing (**Section 2.7.2**);
- The absence of COC records (**Section 2.7.3**); and
- The number of samples tested for asbestos was well below the NSW EPA minimum recommendation (**Section 2.7.5**).

2.10.7 Roadways / Remaining Ground

The Agon (August 2018) report[36] concluded that significant asbestos contamination was noted for the grounds across the Homestead Site. The Site Auditor considered the weight of evidence supported this conclusion because:

- Seven hotspots ACM fragments were encountered on the roadways, with their locations shown in **Figure 2-11** (**Section 2.8**). Two sheeting fragment samples were collected with asbestos measured in both samples. The presence of asbestos at the ground surface in roadways was considered to pose a high risk due to the poor condition of the materials and the potential for asbestos fragments to be crushed by vehicles;
- The 12 concrete pads across the Homestead Site were heavily contaminated by ACM fragments that were in poor condition and in some cases friable **(Section 2.8).** Three sheeting fragments were collected with asbestos detected in two samples;
- A depression in the centre of the Homestead Site was contaminated by a significant amount of surface asbestos debris. The ground surface was also covered by a significant quantity of ash **(Section 2.8);**
- The rock wall area on the north side of the Duplex Dormitory was heavily contaminated with asbestos debris in poor condition and in some cases friable (same material as found on the concrete slabs) (**Section 2.8**). Two debris samples were collected from the rock wall area and asbestos was measured in both samples;
- Five soil samples were collected from heavily contaminated areas of the grounds including from the central depression, from adjacent the rock wall to the north of the duplex dormitory, from the fire pit to the west of the duplex dormitory, and from adjacent two pads. AF/FA was measured in the soil sample taken from the central depression;
- Data gaps included the lack of a description of the protocols and procedures used for the sampling and copies of field records (**Section 2.7.2**);
- The absence of COC records (**Section 2.7.3**); and
- The number of soil samples tested for asbestos was well below the NSW EPA minimum recommendation (**Section 2.7.5**).

A summary of the asbestos in soil sample test results is provided in **Table 2-11** with a plan showing the soil sample locations provided in **Figure 2-13**.

[35] Section 5, Ref [1]
[36] Section 5.0, Ref [1]

Table 2-11 Summary of Asbestos in Soil Sample Results (Source: Table 3, Ref [1])

Sample ID	Sample Location	AF/FA (2-7mm) (% w/w)	AF/FA (<2mm) (% w/w)
SS1 (13°49'31.02" S, 136°26'56.10" E)	Grounds – South East of Pad 1	<0.001	<0.001
SS2 (13°49'27.92" S, 136°26'58.24" E)	Roadway – West of Recreation Club	<0.001	<0.001
SS3 (13°49'27.26" S, 136°26'59.24" E)	Foreshore – North of Recreation Club	<0.001	**0.002**
SS4 (13°49'29.68" S, 136°26'58.26" E)	Grounds – Between Pads 6 and 8	<0.001	<0.001
SS5 (13°49'30.22" S, 136°26'59.09" E)	Grounds – Adjacent Rock Wall, North of Duplex Dormitory	<0.001	<0.001
SS6 (13°49'31.11" S, 136°26'57.93" E)	Grounds – Central Depression	**0.001**	**0.002**
SS7 (13°49'31.26" S, 136°27'0.93" E)	Grounds – Fire Pit, East of Duplex Dormitory	<0.001	<0.001

Figure 2-13 Soil Sample Locations (Source: Figure 5, Ref [1])

2.11 Chemical Mixtures

The seventh check in the NSW EPA decision process was that '*the impacts of chemical mixtures have been assessed'*.

This issue was not considered by the Agon (August 2018) report because the only contaminant of concern investigated was asbestos. The Site Auditor addressed this data gap by completing a Section B SAS that included comments on these other risks.

2.12 Groundwater Contamination

The fourth check in the NSW EPA decision process was that *'groundwater (where relevant) has been assessed against relevant health-based investigation levels and, if required, any potential impacts to buildings and structures from the presence of contaminants considered.'*

The ninth check in the NSW EPA decision process is that '*any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks to off-site receptors, and reported to the site owner or occupier'.*

This issue was not considered by the Agon (August 2018) report because the only contaminant of concern investigated was asbestos. The Site Auditor addressed this data gap by completing a Section B SAS that included comments on these other risks.

2.13 Soil Vapours

The fifth check in the NSW EPA decision process was that '*hazardous ground gases (where relevant) have been assessed against relevant health-based investigation levels and screening values.*

The ninth check in the NSW EPA decision process is that '*any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks to off-site receptors, and reported to the site owner or occupier'*.

This issue was not considered by the Agon (August 2018) report because the only contaminant of concern investigated was asbestos. The Site Auditor addressed this data gap by completing a Section B SAS that included comments on these other risks.

2.14 Ecological Risks

The eighth check in the NSW EPA decision process was that '*any potential ecological risks have been assessed'*.

This issue was not considered by the Agon (August 2018) report because the only contaminant of concern investigated was asbestos. The Site Auditor addressed this data gap by completing a Section B SAS that included comments on these other risks.

2.15 Site Management Strategy

The ninth check in the NSW EPA decision process was that *'the site management strategy is appropriate'.*

The Agon (August 2018) report[37] concluded that significant asbestos contamination was noted for the Recreation Club, foreshore areas, and the grounds across the Homestead Site. The Site Auditor considered the weight of evidence supported this conclusion but considered that more extensive asbestos contamination may have been present than was identified for the reasons given in **Section 2.10.1**.

[37] Section 5.0, Ref [1]

The Agon report stated that it provided a short-term management strategy for the Homestead Site that targeted the high-risk areas and proposed to manage residual risks through an Asbestos Management Plan (**AMP**). A summary of the works proposed by the management strategy for each area is provided in **Table 2-12**.

Features of the proposed management strategy included:

- All asbestos removal work needed to be undertaken by a licensed asbestos removalist;
- Ambient air monitoring be undertaken across the Homestead Site during the remediation work program to demonstrate that air quality met regulatory requirements;
- The final inspection needed to be done by an independent licensed asbestos assessor;
- Vegetation clearance could be done by poisoning and/or mechanical means;
- A PVA glue application needed to be applied to the inside of the Recreation Club due to the high risk posed by friable asbestos;
- Dust suppression using fine water mists was required when removing the top 100mm of soil;
- Asbestos contaminated soil needed to be disposed in accordance with regulatory requirements; and
- Preparation of an Asbestos Management Plan (AMP) for the Homestead Site.

The Site Auditor considered the strategy proposed by Agon was generally capable of addressing the high-risk areas in the short-term. However, some additional tasks needed to be considered including:

- The preparation of a RAP;
- Internal air monitoring as part of validation work for the Duplex Dormitory due to the identified presence of friable asbestos in the area;
- Asbestos clearances for all houses at the Homestead Site;
- Validation soil sampling around all other houses and cross the western foreshore area;
- The removal of the top 100mm of soil from around all four sides of the Recreation Club on just the northern side; and
- Additional validation sampling of the fibrous matting covering the jetty pipeline.

The Site Auditor also considered that more extensive remediation / validation work would be required in the long-term to address contamination risks posed by buried asbestos, other potential contaminants of concern, and below ground structures.

Table 2-12 Agon Suggested Short-Term Management Strategy for Asbestos Contamination at Homestead Site

Location	Structure			Ground surface				
	ACM removal	Final inspection	Internal air monitoring	Vegetation clearance	Emu pick	Remove top 100mm soil	Final inspection	Validation sampling
Duplex dormitory area	✓	✓		✓	✓	✓	✓	✓
Recreation club area	✓ (class A)	✓	✓	✓	✓	✓ (northern side only)	✓	
NW foreshore house area					✓			
Southern elevated house area					✓			
North orange house area					✓			
House centre site area					✓			
Ablution block area					✓			
Jetty pipeline	✓	✓		--	--	--		
Western foreshore area	--	--	--	✓	✓	✓	✓	✓
Eastern foreshore area	--	--	--	✓	✓			
Roadways	--	--	--		✓	✓ (heavily contam areas)	✓	✓ (heavily contam areas)
Remaining grounds	✓ (vacuum/wash down pads)				✓	✓ (around pads & central depression)	✓	✓ (around pads & central depression)

3. Review of Remediation Strategy

This section of the SAR assesses the adequacy of the remediation strategy prepared by Agon for the Homestead Site that was documented in three documented dated 5/11/18:

- *Ref [3]): 'Asbestos Management Plan';*
- *Ref [4]: 'Containment Cell Siting Design & Management Plan'; and*
- *Ref [5]: 'Remediation Action Plan'.*

These three documents were issued prior to the PAN issued on 18/12/18.

The review assesses the adequacy of the proposed remediation strategy in terms of its compliance with NT EPA reporting requirements and its ability to mitigate high-rise areas at the Homestead Site in the short-term. The review has been organised under the following headings:

- *Section 3.1: Project background;*
- *Section 3.2: Extent of remediation work required;*
- *Section 3.3: Remediation acceptance criteria;*
- *Section 3.4: Assessment of remedial options;*
- *Section 3.5: Containment cell design and construction;*
- *Section 3.6: Remediation methodology; and*
- *Section 3.7: Roles and responsibilities.*

3.1 Project Background

3.1.1 RAP Objectives

The RAP[38] advised that its purpose was to provide an overarching framework for the management of environmental risks associated with the remediation of asbestos at the Homestead Site and was to be supported by other plans. The objectives of the RAP were to:

- Identify potential risk to the environment and/ or human health associated with the project;
- Provide a framework for the assessment of potential environmental risks; and
- Provide all documentation required for the project, including:
  - A temporary stockpiling plan (included in the AMP);
  - An AMP;
  - A containment cell siting design and management plan (Cell Plan); and
  - Other specific action plans (e.g. for dust and erosion).

The Site Auditor considered these objectives were generally consistent with regulatory requirements specified in NSW EPA guidance[39].

[38] Section 1.6, Ref [5]
[39] Section 1.5, NSW EPA (May 2020) '*Consultants reporting on contaminated land, Contaminated Land Guidelines'*

3.1.2 Remediation Goals

The remediation goals adopted by the RAP[40] were to:

- Protect the health of the local community by removing health risks posed by asbestos contamination at the Homestead Site;
- Restore the land to a safe condition and make it suitable for ongoing residential use for the local community in accordance with NT EPA requirements;
- Undertake the work in a manner that protected the workforce and the environment and avoided impacts to environmental and indigenous values;
- Rehabilitate the proposed temporary stockpile and Disposal Site to restore the natural environmental values of the land;
- Minimise waste generation and the unnecessary use of resources;
- Comply with regulatory requirements;
- Adopt a remediation strategy that was practical and feasible; and
- Minimise costs and ongoing obligations to the local community.

The Site Auditor considered these remediation goals were consistent with NT EPA requirements as described in NSW EPA guidance[41], ecological sustainable development (**ESD**) principles specified in the CLM Act, and waste minimisation requirements.

3.1.3 NT EPA Remediation Policy

The NT EPA policy on the remediation of contaminated sites was specified by the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in May 2013 ("NEPM guidelines"). The NEPM guidelines[42] advised that when assessing contamination, the site assessor and others should take into account the preferred hierarchy of options for site clean-up and/or management, this being:

- "*on-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and*
- *off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or,*

if the above are not practicable,

- *consolidation and isolation of the soil on site by containment with a properly designed barrier; and*
- *removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material;*

or,

- *where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.*

When deciding which option to choose, the sustainability (environmental, economic and social) of each option should be considered, in terms of achieving an appropriate balance between the benefits and effects of undertaking the option.

In cases where no readily available or economically feasible method is available for remediation, it may be possible to adopt appropriate regulatory controls or develop other forms of remediation.

[40] Section 1.4, Ref [5], Sections 1.1 & 1.2, Ref [3]
[41] Section 1.5 & Table 2.5, NSW EPA (May 2020) "*Consultants reporting on contaminated land*" and NSW EPA (March 2007) Groundwater Guidelines
[42] Section 16 in Volume 1 NEPM guidelines

It should be emphasised that the appropriateness of any particular option will vary depending on a range of local factors. Acceptance of any specific option or mix of options in any particular set of circumstances is therefore a matter for the responsible participating jurisdiction."

In this SAR, the Site Auditor assessed the RAP's compliance with NT EPA remediation policy.

3.2 Extent of Remediation Work Required

The extent of asbestos removal work required in the short-term at the Homestead Site was specified in the Agon (August 2018) report, which was reviewed by the Site Auditor in **Section 2.14**. The Site Auditor considered the weight of evidence supported the need for this work but considered there was a risk of more extensive asbestos contamination being present that may also need to be addressed in the short and long-term.

The RAP addressed the possible need for additional remediation work by including a more detailed assessment of the nature and extent of buried ACM in the initial stage of work at the Homestead Site. The Site Auditor considered such an approach was appropriate.

3.3 Remediation Acceptance Criteria

The RAP did not specify Remediation Acceptance Criteria (**RAC**) for asbestos presumably because their remediation approach was to remove all visible asbestos from remnant structures and the ground surface. The Site Auditor considered these criteria were appropriate for the PAN requirements because they were consistent with:

- WHS criteria for a work site specified in the SafeWork Australia (July 2020) "*How to Manage and Control Asbestos in the Workplace Code of Practice*";
- The NEPM (2013) criteria for no visible asbestos for surface soil; and
- The scope of remediation work required by the PAN.

However, additional RAC would need to be specified to address other contamination risks at the Homestead Site not addressed by the RAP such as buried asbestos, other potential contaminants of concern, and below ground structures.

3.4 Assessment of Remedial Options

The PAN[43] advised that an assessment of asbestos management options was undertaken by the ALC in consultation with the NT EPA. The preferred option was the appropriate burial of asbestos impacted material excavated from the Homestead Site in an engineered containment cell.

The Site Auditor considered this approach was reasonable given the project constraints posed by the remote location, the nature of contamination needing to be remediated, the urgency of the work given that the site was being actively used for residential land use.

3.5 Containment Cell Design and Construction

3.5.1 Disposal Site Location

The planned location of the containment cell at the Disposal Site was specified by the NT EPA as being an area within NT Portion 1632, Survey Plan CP 004201 at the location adjacent to Bartalumba Bay Road shown in **Figures 1-3** and **1-4**.

Agon[44] reported that the proposed Disposal Site was flat land with no nearby land uses or water bodies, had no cultural concerns, and was located near a former landfill, as shown in **Figure 2-9**. Vegetation at the Disposal Site was open woodland (**Figure 3-1**), with no significant vegetation communities or fauna records identified.

[43] Point 8, Ref [21]
[44] Sections 3.3 - 3.6 & Figure 11, Ref [4]; Section 3.3, Ref [5]

Figure 3-1 View of Selected Disposal Site in 2018 (Source: Figure 10, Ref [4])

An assessment of the environmental suitability of the Disposal Site for the containment cell was prepared by Agon, with a copy of the assessment provided in **Table 3-1**. Agon concluded that the Disposal Site was a suitable location for the containment cell. The Site Auditor considered the weight of evidence as described herein supported this conclusion.

3.5.2 Concept Design

The concept design of the containment cell[45] (from base to top) consisted of:

- Base layer: scarified and compacted in situ clay materials;
- Waste layer: asbestos contaminated soil and bagged ACM; then
- Capping layer: consisting of compacted site-won clay (minimum 500 mm thick) covered by topsoil (minimum 200 mm thick) to support vegetation regrowth by natural reseeding but with no trees.

The vertical and lateral dimensions of the containment cell needed to be confirmed prior to construction and the capacity of the cell be made sufficient to receive all asbestos waste removed from the Homestead Site (estimated to be 650 m^3). A schematic plan of the concept design is provided in **Figure 3-2**.

The Site Auditor considered the concept design generally met NT EPA design standards provided the additional requirements recommended in an interim audit advice issued on 13/11/18 (**Appendix C**) were met. These additional requirements were:

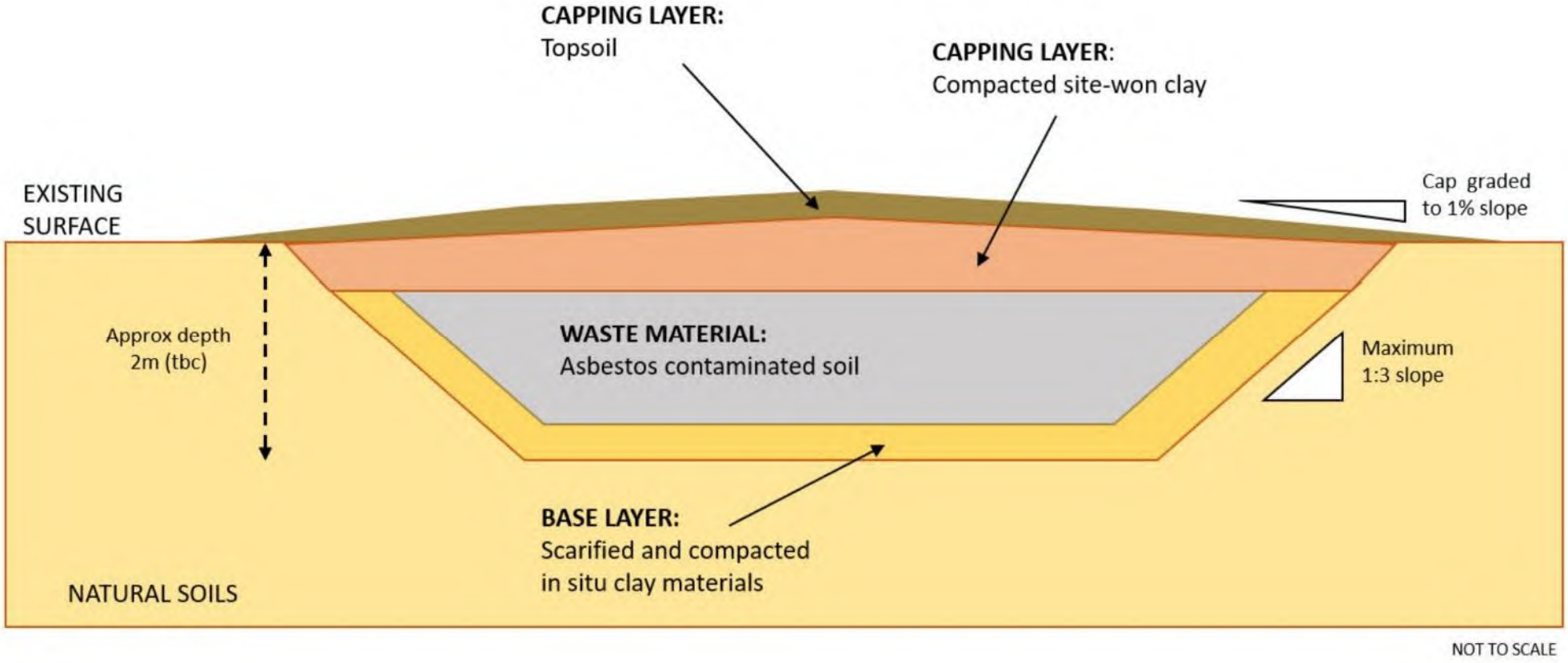
- The location and boundaries of the containment cell needed to be accurately surveyed prior to the commencement of filling and shown on a survey plan;
- The containment cell needed to be capable of being expanded in order to hold asbestos contaminated material in addition to the 650 m^3 estimated by Agon. This is because there was a risk that more asbestos contaminated material may need to be removed from the Homestead Site;
- A coloured marker layer (e.g. orange geotextile) placed over the top surface of the waste layer;

[45] Section 4, Ref [4]

Table 3-1 Suitability Assessment of Disposal Site for Containment Cell (Source: Table 2, Ref [4])

Environmental Aspects	Comment	Suitability for Containment Cell	
1 Geology and Soil	Site soils comprised of clay/ laterite, low permeability materials suitable for lining and capping of containment cell. Neither Actual ASS nor Potential ASS are likely to occur on site.	✓	Site considered suitable.
2 Hydrogeology	Depth to groundwater is approximately 10 m below ground level. Containment cell will not intersect groundwater. ACM is non-putrescible and unlikely to produce leachate or landfill gas, or migrate in water.	✓	Site considered suitable.
3 Hydrology	Site is not near or adjcent to any mapped water bodies, catchments, gullies, estuaries or floodplains. Erosion and sediment control plans will be implemented to control runoff from the containment cell.	✓	Site considered suitable.
4 Environmentally Sensitive Areas	No environmentally sensitive areas or areas of high environmental value have been identified at the Repository site. No sensitive fauna communities have been identified at the Repository site. No spreading of waste/ litter from the containment cell is anticipated as the asbestos contaminated soil/ ACM will be placed beneath a clay cap, and the containment cell will not be used for disposal of waste on an ongoing basis. No new habitats will be created for pest, scavenger or vermin species.	✓	Site considered suitable.
5 Vegetation Types	The site is surrounded by woodland with minimal understorey. No significant vegetation communities have been identified at the Repository site. The site is adjacent to a former landfill and as such is in a previously disturbed area. No significant loss of habitat is anticipated with large areas of similar woodland ecosystem present in the wider area.	✓	Site considered suitable.
6 Stability	Site is geologically stable and not susceptible to ground movements. Disturbance of the containment cell by subsidence, differential settlement or ground movement will not result in significant impact; if capping layer is disturbed by ground movement, this can be easily remedied by placement and compaction of additional site-won clay materials.	✓	Site considered suitable.
7 Topography	Site is generally level, and the slope of the site is anticipated to be well below the EPA (2013) recommended maximum slope of 5%. Minimal erosion risk is anticipated, and the capping landform will be graded to enable appropriate runoff. The site is readily accessible for construction of the containment cell and transport of ACM to site.	✓	Site considered suitable.
8 Land Use	No current land use on or near the site. Sufficient buffer distances exist between Repository site and any sensitive land uses (e.g., residential/ occupied areas or areas of cultural significance). Site is owned by the Anindilyakwa Land Council (project proponents). Site has sufficient land area to contain the anticipated volume of material produced by the proposed asbestos abatement project; no ongoing waste production and disposal is anticipated for the site.	✓	Site considered suitable.
9 Cultural Heritage	The Repository site has no known Aboriginal or European heritage value.	✓	Site considered suitable.

Figure 3-2 Schematic Cross-section of Containment Cell Design (Figure 13, Ref [4])



- The minimum cap thickness be increased to 1,000 mm (as recommended in Section 5.2.1 of the WA DOH (2009) asbestos guideline for open space areas);
- Procedures for measuring and validating the cap thickness needed to be provided;
- The clay cap be track-rolled to achieve a compaction density not less than 95% standard compaction;
- All features of the excavated cell needed to be measured and recorded for inclusion in the containment cell completion report. These features are to include, among other things, subsurface conditions and soil profile, cell depth and cap thickness;
- A rehabilitation plan was included that addressed the requirements of Section 8.1 in the Victorian EPA Publication 788.3, dated August 2015: "*Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills*" (**landfill BPEM**);
- The ground surface across the completed containment cell and surrounding area disturbed by the work was validated to demonstrate the final land condition met NT EPA requirements for open space and residential land use;
- All works associated with the construction, filling and capping of the containment cell needed to be supervised and documented by a suitability qualified and experienced environmental professional from Agon ('Site Supervisor'). The Site Supervisor needed to ensure the work was undertaken in accordance with the revised Cell Plan, PAN 2018 /6, NT EPA requirements and interim audit advice provided by the Site Auditor. Should deviations from the revised Cell Plan be required, these should be discussed and approved in writing by the Site Auditor before the work proceeding;
- Agon must prepare a report documenting the construction, filling and capping of the containment cell. The objectives of the report should include, but not be limited to, providing data that:
  - Demonstrated the work was undertaken in accordance with the PAN and Site Auditor requirements; and
  - Supported the conclusion that contamination placed in the containment cell could be managed by a long-term EMP.

The PAN[46] also required that prior to commencing filling of the containment cell:

- A design report was prepared meeting requirements specified in the PAN and a copy sent to the NT EPA;
- The containment cell design was prepared in accordance with the landfill BPEM;
- An EMP for the construction and operation of the containment cell was prepared and a copy was sent to the NT EPA; and
- The design report and EMP were approved by the Site Auditor.

3.6 Remediation Methodology

3.6.1 Overview

The Site Auditor arranged the proposed remediation work in seven main tasks:

- Task 1: Early work;
- Task 2: Asbestos removal;
- Task 3: Containment cell construction, filling and capping;
- Task 4: Unexpected finds and contingency measures;
- Task 5: Disposal to licensed landfill;

[46] Conditions 4 – 7, 12 – 13, Ref [21]

- Task 6: Validation and reporting; and
- Task 7: Long term management.

3.6.2 Task 1: Early Work

The RAP advised that early work needed to involve:

- ALC obtaining all relevant regulatory approvals required by the project[47]
- Community engagement by ALC[48]
- Preparation of additional project plans such as[49]:
  - Project safety plans prepared by the Contractor and Asbestos Consultant that will include individual Job Safety Analyses (**JSAs**) and/or Safe Work Method Statements (**SWMSs**) for specific tasks;
  - Contractor's asbestos removal and control plan (no copy provided in Appendix C of the RAP I received); and
  - Contractor's erosion and sediment risk control plan.
- The RAP needed to be approved by the Site Auditor prior to the commencement of work at the Site[50].

The Site Auditor considered the Task 1 Early Work specified in the RAP/AMP was generally appropriate provided the following additional early work was undertaken as required by the PAN:

- Provide the NT EPA with a copy of a report containing detailed plans, technical specifications and a construction quality assurance plan for the design and construction of the containment cell and any associated infrastructure; and
- The EMP for the construction and operation of the containment cell that needed to provide information on, among other things;
  - dust control and monitoring;
  - measures to ensure staff and contractor awareness of pollution abatement notice requirements;
  - signage and security to prevent unauthorised access;
  - waste to be accepted within the landfill containment cell;
  - waste prohibited from disposal within the landfill containment cell; and
  - reporting requirements e.g. contraventions of the pollution abatement notice, requirements of section 14 of the Act.
- An approval of the containment cell design report from the Site Auditor.

3.6.3 Task 2: Asbestos Removal

As previously mentioned in **Section 3.2**, the extent of asbestos removal work required in the short-term at the Homestead Site was specified in the Agon (August 2018) report, which was reviewed by the Site Auditor in **Section 2.14**. The Site Auditor considered the weight of evidence supported the need for this work but considered there was a risk of more extensive asbestos contamination being present that may also need to be addressed in the short and long-term.

[47] Table 5, Section 4, Ref [5]
[48] Table 5, Section 4, Ref [5]
[49] Section 8, Ref [5]
[50] Section 1.3.2, Ref [3]; Section 4.2, Ref [5]

The RAP addressed the possible need for additional remediation work by including a more detailed assessment of the nature and extent of buried ACM in the initial stage of work at the Homestead Site. The Site Auditor considered such an approach was appropriate.

The RAP did not repeat the description of the extent of asbestos removal work given by the Agon (August 2018) report, but instead specified procedures that needed to be used by some of the asbestos removal work. For the purpose of this site audit, the Site Auditor has taken the scope of asbestos removal work specified in the Agon (August 2018) report as being the minimum scope of work that needed to be completed at the Homestead Site.

The AMP/RAP[51] provided procedures for some of the asbestos removal work that needed to be undertaken at the Homestead Site. These procedures were:

1. **Worker training**[52]: The training and induction of all on-site workers;
2. **Daily meetings**[53]: Environmental and safety toolbox talks every morning prior to work commencing;
3. **Corrective actions**[54]: Responses to incidents, complaints, environmental auditing, non-conformances, corrective actions, document control, emergency response and emergency procedures;
4. **Work related competencies**[55]: Asbestos related work activities needed to be
    - Directed and supervised full time by an Asbestos Removal Supervisor with CPCCBC4051A – Supervise Asbestos Removal and CPCCDE3015A – Remove Friable Asbestos national competencies;
    - The Asbestos Removal Supervisor needed to be an approved supervisor by NT WorkSafe;
    - All equipment operators needed to have the appropriate competencies or have received an exemption from NT Worksafe for conducting these works;
    - All manual asbestos works needed to be conducted by personnel with the CPCCDE3015A – Remove Friable Asbestos national competencies;
    - A record of staff competencies needed to be maintained on file and provided upon request to the Principal; and
    - Supervisors needed to ensure staff competencies prior to site works commencing.
5. **Establishment of Asbestos Exclusion Zones**[56]**:**
    - Prior to the commencement of site work, Asbestos Exclusion Zones needed to be established a minimum of 10 m from each Asbestos Work Area. The Asbestos Exclusion Zones needed to be delineated by bunting and signage to form a temporary enclosed exclusion zone. Entry needed to be restricted to personnel only involved in the asbestos removal activities with wet decontamination at all Asbestos Work Areas;
    - Decontamination and staging areas needed to be established at the exit point from the Homestead and Disposal Sites;
    - Signage needed to be established at the entrance to each Asbestos Exclusion Zone providing details for the Asbestos Removal Supervisor, Asbestos Consultant, signage warning of asbestos removal and PPE requirements;
    - Daily inspection of each Asbestos Exclusion Zone needed to be conducted by either the Site Foreman or Asbestos Removal Supervisor and the Asbestos Assessor;
    - Any areas requiring repair needed to be made safe prior to works continuing; and

[51] Sections 2.1 - 2.9, Ref [3]
[52] Section 5, Ref [5]
[53] Section 3.6, Ref [3]; Section 5, Ref [5]
[54] Section 3.5, Ref [3]; Section 6, Ref [5]
[55] Section 2.6, Ref [3]
[56] Sections 3.1 & 3.8, Ref [3]

- Any incidents needed to be reported via a Corrective Action Report submitted to the Principal.

6. **Decontamination areas and decontamination[57]:**
   - The Asbestos Contractor needed to remove air filters from equipment and replace them with new filters. The used filters needed to be disposed on or offsite as asbestos contaminated materials;
   - The Asbestos Contractor needed to ensure that all areas of the vehicles are thoroughly washed and once cleared they will be removed from the decontamination area and not allowed back into the Asbestos Exclusion Zone;
   - Decontamination (**Decon**) areas needed to be established at the edge of the Asbestos Exclusion Zone of each Asbestos Work Area; and
   - A wet Decon unit needed to be established at the perimeter of each Asbestos Exclusion Zone. All workers needed to enter and exit an Asbestos Exclusion Zone via the Decon area and all workers needed to decontaminate themselves every time they left an Asbestos Exclusion Zone in accordance with the procedures specified in the AMP.
7. **WH&S[58]**: Procedures specified in the AMP included:
   - The majority of the works needed to be conducted by personnel stationed within the cabins of equipment (e.g. excavator, tippers, loaders, water cart) that had been smoke tested, with air conditioning set to recirculate, and HEPA filtered. This would permit these operators to wear base level personal protective equipment (**PPE**) such as long trousers, shirts, steel cap boots;
   - Each vehicle needed to have PPE kits containing P3 respirators, Tyvek coveralls, etc that operators could wear in an emergency;
   - Under no circumstances was a truck operator permitted to exit equipment inside an Asbestos Exclusion Zone, access to and from these vehicles was only to occur in the vehicle laydown areas. Vehicles could only enter this area in a decontaminated state. In the event of equipment failure, machinery was to be retrieved by people wearing asbestos full PPE (including minimum P3 respirator, Tyvek coveralls, gloves and laceless boots [or wearing boot covers or taped laces]);
   - Other operators (e.g. excavators and loaders) would be required to enter and exit equipment when parked within the Asbestos Exclusion Zone. These operators needed to enter and exit equipment wearing full PPE;
   - In the event of a breakdown, a fitter/ mechanic trained in asbestos awareness and wearing PPE was to access the area safely. An incident report form needed to be completed and submitted to the Principal within 48 hours together with proposed mitigation measures; and
   - All activities conducted on foot within the Asbestos Exclusion Zone needed to be undertaken wearing full PPE.
8. **Equipment smoke tests[59]:**
   - The excavation of the asbestos contaminated soil needed to be conducted using an excavator with air-intakes fitted with High Efficiency Particulate Air (**HEPA**) filters and the cabin seal tested (using smoke). A compliant smoke test certificate would be issued by the Asbestos Consultant for all equipment to be operated within the Asbestos Exclusion Zone;
   - Prior to project commencement, a satisfactory smoke test certificate needed to be provided for all equipment to be used during the works. Additional smoke test certificates needed to be prepared every 28 days. Copies of these certificates needed to be held on file at the site office and provided to key stakeholders; and

[57] Sections 2.8 & 3.2, Ref [3]
[58] Sections 2.2 & 3.3, Ref [3]
[59] Sections 2.2 & 4.4, Ref [3]

- In the event of equipment failing a smoke test, the machine would need to be fixed and re-assessed prior to be used on site.

9. **Delineation and removal of asbestos contamination**[60]:
   - The extent of asbestos remediation work was to be delineated during asbestos removal work in accordance with NT Worksafe requirements and the WA DOH (2009) guidelines. The work may incorporate a combination of methods such as emu pick, raking / tilling, and trenching (excavation to determine depth/ lateral extent of asbestos contaminated soil);
   - The Asbestos Consultant needed to liaise closely with the Contractor to ensure the appropriate delineation and removal of the asbestos contaminated soil. In accordance with the WA DOH guidelines, excavations would nominally include an extra 1 m laterally and an additional 0.30 m depth from where the contamination was delineated to account for uncertainty in the contamination delineation and removal process;
   - Wetted asbestos contaminated soil would be loaded into an unlined tipper, the lid of the tipper closed / covered and the external body of the truck washed, before proceeding to the wheel wash where the wheels and vehicle needed to be washed. Asbestos waste materials would only be transported along the designated waste transit route and waste transit activities would be observed by the Asbestos Consultant and the Contractor's Asbestos Removal Supervisor;

     The Asbestos Removal Supervisor needed to regularly inspect the route and ensure all trucks were following the procedure. Daily site records needed to be maintained and provided to the Principal as part of the Contractor's close out report;

     If incorrect use of the route was observed, the driver needed to be instructed on the correct process and undergo further training. All incidents of non-conformance needed to be reported to the Principal and a Corrective Action Report prepared; and

10. **Material tracking**[61]**:**
    - Material tracking forms would be completed daily for each load by the operator of the tippers documenting the operator, time, origin and destination. The Contractor will retain all Material Tracking Forms. Copies of the forms needed to be provided to the Principal and included in the Contractor's close-out report;
    - The contractor will maintain records of the removal of material from each Asbestos Work Area and its placement in the temporary stockpile. These will include the boundaries (GPS coordinates, survey plan or similar) of each Asbestos Work Area and a summary of the types and volumes of materials removed from each area. Copies of these records will be provided to the Asbestos Consultant; and
    - The material tracking documentation needed to be included in the validation report.

11. **Dust suppression**[62]**:**
    - During earthworks, two water carts needed to be employed to ensure that materials were kept wet during loadout to ensure no visible dust was created during the excavation, transport and unloading of asbestos contaminated material;
    - Dust suppression needed to be monitored regularly by the Asbestos Removal Supervisor and Asbestos Consultant, and additional resources used where required. This may require slowing down the rate of progress to ensure material was kept wet throughout the works or additional water suppression outside of normal shift hours; and
    - If visible dust was observed, works needed to cease, and additional controls implemented (e.g. more water, change of work method, resume works when less wind present).

60 Sections 2.1 – 2.3, Ref [3]; Section 2.1, Ref [5]
61 Sections 2.2, 5.2 & 5.3, Ref [3]
62 Section 2.4, Ref [3]

12. **Temporary stockpiling**[63]:
    - During construction of the containment cell, soil from the Homestead Site needed to be stockpiled near the cell. The stockpile needed to be located away from any sensitive receptor. The stockpiled soil needed to be managed appropriately;
    - A temporary compacted bund 0.5 m high needed to be constructed around 3 m from the stockpile edge for erosion control. Other measures that may need to be taken include the use of silt fences;
    - The stockpile needed to be capped daily with inert (asbestos free soil) soil;
    - The licenced assessor needed to conduct visual checks at the beginning and end of each day to ensure no visible ACM was present;
    - If any visible ACM was observed, the contractor needed to be informed and rectification works completed. The capping layer thickness over the temporary stockpile would also need to be increased;
    - Overnight airborne monitoring needed to be completed each day. In the event that any impacts were observed, works needed to cease until a revised management measure was developed; and
    - If the temporary stockpile had been completed and construction of the containment cell was delayed, then the stockpile needed to be covered by 200 µm plastic and clean soil in order to protect the temporary stockpile.
13. **Project generated asbestos waste**[64]**:** Asbestos contaminated wastes were expected to be generated by the works, including air filters, PPE and decontaminating equipment (coveralls, rags etc.). All asbestos waste needed to be placed in 200 µm plastic waste bags and disposed either to the temporary stockpile or offsite in accordance with regulations.
14. **Asbestos airborne fibre monitoring**[65]:
    - Airborne Fibre Monitoring (**AFM**) needed to be conducted on a daily basis during asbestos removal work in accordance with NOHSC.3003 (2005)[66] by the independent Asbestos Consultant (a Licensed Asbestos Assessor) at static locations at the Homestead Site, the Disposal Site and the waste transit road;
    - Air monitoring locations will be determined by the Asbestos Consultant and the appointed Asbestos Removal Supervisor, with a minimum of eight pumps allocated across the Asbestos Work Zones to verify the effectiveness of the asbestos controls and effectiveness of the Asbestos Exclusion Zones;
    - No asbestos remediation activities were to commence until all AFM pumps had been set-up and were functioning;
    - Asbestos in air monitoring results will be analysed by a NATA accredited laboratory with results communicated the day after sampling occurred at the daily toolbox meeting to ensure that ongoing verification of asbestos controls was adequate;
    - The Contractor needed to be immediately notified if the control level of more than 0.01 fibres/mL was exceeded. If the control level of more than 0.02 fibres/mL was exceeded, then NT WorkSafe needed to be notified in writing and all works must cease while a review was undertaken. and
    - Records of daily tool box meetings including results of the previous days monitoring works needed to be maintained on file and provided upon request to the Principal.

63 Sections 2.5 & 2.8, Ref [3]
64 Section 2.9, Ref [3]
65 Sections 2.7, 3.4 & 4, Ref [3]
66 Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres NOHSC:3003 (2005)

The Site Auditor considered these procedures were generally appropriate and were close to meeting regulatory requirements. Additional measures that the Site Auditor considered to be required included[67]:

- **CSM**: Agon needed to provide the Site Auditor with a separate document that explained the CSM that Agon adopted for contamination at the Homestead Site. The CSM needed to be prepared in accordance with recommendation provided in NEPM (2013) Schedule B2 guidelines;
- **Temporary stockpiling**: The 200 µm plastic sheeting covering the temporary stockpile would need to be well secured to stop it from being blown off or torn. This may involve placing tyres or other types of weights over the plastic sheeting sufficient to ensure the sheeting is not damaged; and
- **Documentation of site work**: It was critical that Agon ensured that all site works undertaken by the Asbestos Contractor and Asbestos Consultant were documented in detail on a daily basis, since this documentation would form an important set of data that the Site Auditor will need to review. Daily site operations should be documented in daily field records designed to capture all key remediation and environmental data. The documentation needed to include daily site records that used a standardised form, checklists, material tracking forms, photographic records, plans and figures.

3.6.4 Task 3: Containment Cell Construction, Filling and Capping

Refer **Section 3.5**.

3.6.5 Task 4: Unexpected Finds and Contingency Measures

Unexpected finds

The AMP[68] provided a UFP for the remediation of additional asbestos fragments found at the Homestead Site. If the quantity was minor, the asbestos material needed to be wetted down and bagged as asbestos waste. If the quantity was more than minor or another form of contamination was identified, then the Asbestos Contractor was to determine and implement an appropriate course of action.

In an interim audit advice dated 9/11/18 (**Appendix C**), the Site Auditor advised Agon that additional asbestos contamination found at the Homestead Site would not be unexpected because such contamination was identified by the CSM. The Site Auditor advised that a legitimate Unexpected Find was contamination whose presence at a site was unlikely and could not reasonably be found by investigations undertaken in accordance with regulatory requirements. Consequently, finding additional asbestos contamination at the Homestead Site should not constitute an Unexpected Find but be termed a new find whose presence had not been previously discovered. The Unexpected Finds procedure should not be relied upon to justify finding additional contamination at a site simply because poor standards were used by earlier investigation or remediation work

In a reply issued on 10/11/18, Agon advised that they agreed with the Site Auditor's definition.

The Site Auditor considered the absence of a legitimate Unexpected Find procedure was not a significant issue for the purpose of this site audit since the focus of the remediation work was the removal of asbestos in structures and on the ground surface where the presence of additional asbestos being a new find. The presence of an Unexpected Find would be addressed by later remediation work that may need to be undertaken at the Homestead Site, which was outside the scope of this site audit.

Contingency Plan

The AMP/RAP did not provide a contingency plan for the proposed asbestos remediation work. The Site Auditor addressed this deficiency by issuing interim audit advice #04 dated 13/11/18 (Appendix C), which required the containment cell to be capable of being expanded in order to hold asbestos contaminated material in addition to the 650 m^3 estimated by Agon. This is because there was a risk that more asbestos contaminated material may need to be removed from the Homestead Site.

[67] Interim audit advice #03 dated 9/11/18 (Appendix C)
[68] Section 3.9, Ref [3]

3.6.6 Task 5: Disposal to Licensed Landfill

The AMP[69] advised that asbestos waste from the Homestead Site may be disposed at a licensed landfill. The closest licensed landfill was at Shoal Bay, Darwin.

3.6.7 Task 6: Validation and Reporting

Homestead Site

The validation plan for the asbestos remediation work at the Homestead Site was specified in the AMP[70]. The plan advised:

- **Remediation goal**: No visible asbestos within the Asbestos Work Area
- **Material tracking**: The Asbestos Contractor will maintain records of the removal of material from each Asbestos Work Area and its placement in the temporary stockpile. These will include the boundaries (GPS coordinates, survey plan or similar) of each Asbestos Work Area and a summary of the types and volumes of materials removed from each area. Copies of these records would be provided to the Asbestos Consultant
- **Validation methodology**:
  - Visual inspection of the Asbestos Work Area, including the surfaces (walls and floors) of excavations to confirm no visible asbestos present; and
  - The extent of asbestos remediation work was to be delineated during asbestos removal work in accordance with NT Worksafe requirements and the WA DOH (2009) guidelines. The work may incorporate a combination of methods such as emu pick, raking / tilling, and trenching (excavation to determine depth/ lateral extent of asbestos contaminated soil)[71].
- **Asbestos airborne fibre monitoring**[72]: Once asbestos has been removed from the Homestead Site and the containment cell had been filled and completed at the Disposal Site, asbestos airborne fibre monitoring needed to be conducted by the Asbestos Consultant for the Asbestos Work Areas (Homestead and Disposal Sites).
- **Validation report**: A Validation Report was to be prepared for each Asbestos Work Area following the completion of remediation works in that area. Each report would include:
  - Asbestos Clearance Certificate: Prepared in accordance with NT Worksafe requirements, and include details of the Asbestos Work Area, a summary of the remediation works undertaken and confirmation the area was fit for re-occupation;
  - Materials Tracking Documentation: Include all materials tracking documentation (to be provided by the Asbestos Contractor) pertaining to materials removed from the described area;
  - Airborne Fibre Monitoring Reports: Include copies of all reports completed during remediation work in each Asbestos Work Area, at the Disposal Site, and along the transport route.

The RAP[73] also advised that the Asbestos Consultant (Agon) was responsible for validating the Homestead Site in accordance with regulatory requirements to a standard suitable for residential land use.

The Site Auditor considered the validation plan provided by Agon did not meet NT EPA requirements for validating land suitable for Residential A land use In interim audit advice #02 dated 19/09/18 (**Appendix C**), the Site Auditor advised that the RAP needed to meet the requirements of the NEPM (2013) Schedule B2 and

69 Sections 2.8 & 2.9, Ref [3]
70 Section 5, Ref [3]
71 Section 2.1, Ref [3]
72 Section 2.8, Ref [3]
73 Table 5, Section 4, Ref [5]

Section 4.3 of the WA DOH (2009) guidelines. The additional requirements that needed to be met included, but not limited to:

- The design of DQOs meeting NT EPA requirements;
- Rationale for the selection of sampling pattern, sampling density including an estimated size of the residual hot spots that may remain undetected, sampling locations including locations shown on a site map, sampling depths, samples for analysis and samples not analysed, analytical methods, analytes for samples;
- Detailed description of the sampling methods including sample containers and type of seal used, sampling devices and equipment, equipment contamination procedures, sample handling procedures, sample preservation methods and reference to recognised protocols;
- Detailed description of field screening protocols; and
- Production of a validation report in accordance with NT EPA guidance.

In a follow-up interim audit advice #03 dated 9/11/18 (**Appendix C**), the Site Auditor advised that the validation work required the collection of soil samples in accordance with the sampling procedures specified in Schedule B2, NEPM (2013), and their testing by a NATA-accredited lab for bonded and friable asbestos. Soil samples should be collected on a square grid at a spacing of 10 m.

In a reply email dated 10/11/18, Agon noted these requirements and advised that they would be completed during the work. In a subsequent email dated 20/11/18, Agon proposed validated the Homestead Site by:

- Establish 10 m spaced grid lines across the site;
- NT Licenced Asbestos Assessors to walk the length of the transect (in each direction) and record observations
- Every 50 m^2 collect a sample for asbestos in soil determination;
- 10% QA samples to be collected;
- Any asbestos fragments identified during the transect walkover to be remediated at the time of the find; and
- Records to include photographs, GPS coordinates and a field log.

The Site Auditor reviewed the asbestos validation strategy proposed by Agon and in a response issued later the same day advised that the sampling frequency could be reduced from 1 sample every 50 m^2 to 1 sample every 100 m^2 (as previously suggested) provided a thorough and detailed walkover clearance was conducted and documented by Agon. There may be areas where validation samples may need to be collected at a one per 50m^2 frequency, which would be left to Agon's discretion.

Disposal Site

The Agon (November 2018) cell design report[74] advised that following completion of the containment cell, a post closure report needed to be prepared that would present details of the actual works completed including the volume of soil deposited and GPS coordinates for its location.

In an interim audit advice issued on 13/11/18 (**Appendix C**), the Site Auditor advised that the close-out report must document the construction, filling, and capping of the containment cell. The objectives of the report should include, but not be limited to, providing data that:

- Demonstrated the work was undertaken in accordance with the PAN and Site Auditor requirements; and
- Supported the conclusion that contamination placed in the containment cell could be managed by a long-term EMP.

[74] Section 5.7, Ref [4]

3.6.8 Task 7: Long Term Management

Homestead Site

As previously mentioned in **Section 3.1.2**, the main remediation goals adopted by the RAP[75] were to:

- Protect the health of the local community by removing health risks posed by asbestos contamination at the Homestead Site; and
- Restore the land to a safe condition and make it suitable for ongoing residential use for the local community in accordance with NT EPA requirements;

However, the extent of remediation work that Agon proposed to undertake at the Homestead Site was limited to the short-term goal of removing asbestos from remnant structures and removing asbestos contamination from the ground surface. The Site Auditor considered that following the completion of this work, there was a risk that other contamination risks may remain at the Homestead Site that would need to be investigated and possibly remediated. These other contamination risks would be posed by buried asbestos, other potential contaminants of concern, and below ground structures.

The Site Auditor considered the risks posed by other contaminant sources and contaminant types could be addressed by completing a Section B SAS that included comments on these other risks.

Disposal Site

The Agon cell design report did not recognise the need for an EMP to be prepared for the long-term management of the asbestos contamination buried in the containment cell.

The Site Auditor considered this deficiency was addressed by the PAN issued by the NT EPA, which required among other things, that:

- Condition 9 – The Disposal Site needed to be made suitable for ongoing use [i.e. open space / parkland – Recreational C as specified in NEPM (2013)];
- Condition 10 - The NT EPA needed to be provided with an Aftercare Management Plan within 1 month following the commencement of containment cell filling that met requirements specified in the PAN;
- Condition 11 - Within 3 months after the completion of waste disposal, ALT must provide the NT EPA with:
  - The exact boundary coordinates of the containment cell and any associated infrastructure; and
  - The final quantities for each type of waste material contained in the cell for the purpose of registering the cell as an area of contaminated land on the NT EPA Contaminated Land and Environmental (i.e. Site) Audit Results register and the land title.
- Condition 12 - Within 3 months after the completion of waste disposal, the Site the Auditor must provide to the NT EPA:
  - An SAS and SAR; and
  - An endorsement of an updated Asbestos Register.

[75] Section 1.4, Ref [5], Sections 1.1 & 1.2, Ref [3]

3.7 Roles and Responsibilities

The RAP[76] described the roles and responsibilities of the entities involved in the remediation work. The entities were:

- The Principal – ALC;
- The Asbestos Contractor – Darwin Asbestos and Demolition Services (**DADS**) was appointed by ALC as the licensed asbestos removalist
- The Asbestos Consultant – Agon was appointed by ALC, with Jack Pilkington being the licensed asbestos assessor;
- Site Auditor – Dr Ian Swane appointed by ALC

A summary of the key responsibilities for the entities is provided in **Table 3-2**.

Table 3-2 Summary of Responsibilities (Source: Table 5, Ref [5])

Task	Responsibility
Obtaining all relevant regulatory approvals required by the project	**Principal**
Preparing a RAP in accordance with regulatory requirements	**Asbestos Consultant**
Community engagement	**Principal**
Conducting and directing remediation work at the Site	**Contractor**
Protecting human health and the environment during the remediation work	**Asbestos Consultant**
Remediating the Site in accordance with regulatory requirements to a standard suitable for residential land use	**Contractor**
Removing asbestos contaminated material from the Site and placing it in a temporary stockpile in accordance with regulatory requirements	**Contractor**
Supervising the remediation work	**Contractor**
Environmental and WorkSafe monitoring during remediation work in accordance with regulatory requirements	**Asbestos Consultant**
Validating the Site in accordance with regulatory requirements to a standard suitable for residential land use	**Asbestos Consultant**

The Site Auditor considered the roles and responsibilities specified in the RAP were generally adequate provided the additional responsibilities were also met by the Asbestos Consultant (as specified in interim audit advice #04 dated 13/11/18):

- **Plans**: Ensure plans were prepared in accordance with NT EPA requirements and recommendations made by the Site Auditor in interim audit advice #02 prior to the commencement of work;
- **Documentation of site work**: Ensure all site work undertaken by the Asbestos Contractor and the Asbestos Consultant was documented in detail on a daily basis, since this documentation will form an

[76] Section 4, Ref [5]; Section 1.3, Ref [3]

important set of data that the Site Auditor would need to review. Daily site operations needed to be documented in daily field records designed to capture all key remediation and environmental data. The documentation needed to include daily site records that used a standardised form, checklists, material tracking forms, photographic records, plans and figures; and

- **Validation report**: The validation report must document all remediation and validation work in accordance with Schedule B2, NEPM (2013).

4. Review of Remediation and Validation Work

This section of the SAR reviews documentation provided by Agon on the asbestos remediation work undertaken at the Homestead Site and the construction of a containment cell at the Disposal Site. The review has been organised under the following headings:

- *Section 4.1: Overview;*
- *Section 4.2: Task 1 early work;*
- *Section 4.3: Task 2 asbestos removal;*
- *Section 4.4:* Task 3 containment cell construction, filling & capping*;*
- *Section 4.5: Task 4 unexpected finds and contingency measures;*
- *Section 4.6: Task 5 disposal to licensed landfill;*
- *Section 4.7: Task 6 validation & reporting; and*
- *Section 4.8: Task 7 long term management.*

4.1 Overview

The Contractor who undertook asbestos remediation work at the Homestead and Disposal Sites was Darwin Asbestos and Demolition Services (**DADS**), who undertook the work between November 2018 and February 2019 under the supervision and direction of the Asbestos Consultant Agon, who was also responsible for undertaking the validation work.

Agon described the remediation work as having involved:

- The removal of ACM from nominated dilapidated buildings at the Homestead Site, with the buildings to be subsequently demolished. Removed ACM was to be transported offsite and disposed at the Shoal Bay Waste Management Facility (**SBWMF**), Karama NT; and
- The construction of a containment cell at a location (the Disposal Site) approximately 1.5 km to the south-east of the Homestead Site, with asbestos debris and impacted soils across the site removed via a combination of surface emu-pick and soil excavation and contained for long term management within the containment cell.

Agon initially documented the work in two site remediation and validation reports (**SRVRs**):

- Ref [6]: 7 December 2018 *'Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project*'; and
- Ref [7]: 22 March 2019 *'Close Out Report, Bartalumba Bay Homestead, Groote Eylandt'*.

The Site Auditor reviewed these reports and issued an interim audit advice #06 dated 3/09/19 (**Appendix C**). The advice concluded that the combined information provided by these two SRVRs did not meet NT EPA guidance on site contamination validation reports, and did not allow the Site Auditor to reach a conclusion regarding compliance with the PAN or the suitability of the sites for their intended land uses.

A revised SRVR (Ref [9]) was then issued by Agon on 16/09/22 that provided additional data on the remediation and validation work together with the earlier data. The third SRVR provided more detailed information on the remediation and validation work such that it was considered to supersede the previous two reports. With the issuing of three SRVRs over a 3.5 year period, the Site Auditor considered that reasonably endeavours had been taken to obtain all relevant data on the remediation work undertaken at the Homestead and Disposal Sites.

The results of this review are documented in this section of the SAR. The review has been organised using the seven main tasks listed in **Section 3.6**, these being:

- Task 1: Early work;
- Task 2: Asbestos removal;
- Task 3: Containment cell construction, filling, and capping;
- Task 4: Unexpected finds and contingency measures;
- Task 5: Disposal to licensed landfill;
- Task 6: Validation and reporting; and
- Task 7: Long term management.

4.2 Task 1: Early Work

The Task 1 early work that needed to be completed prior to the commencement of remediation work is outlined and reviewed in **Section 3.6.2**. Documentation on the as-completed Task 1 work provided in the SRVRs is summarised in **Table 4-1** together with the Site Auditor's compliance assessment.

Table 4-1: Task 1 Early Work Compliance Assessment

Tasks		Work Completed & Documented in SRVR
1.1	Obtained regulatory approvals required by the project	• PAN – (Ref [21]) • NT Worksafe notification (Sectn 5.4, Ref [9])
1.2	Community engagement by ALC	No data provided by SRVRs
1.3	Provide NT EPA with detailed plans, technical specs & construction QA plan for design/construction of containment cell & infrastructure (PAN condition 3)	No data provided by SRVRs. Agon (5/11/18) Cell Design report did not address PAN condition 3 (refer interim audit advice #04)
1.4	Provide NT EPA with EMP for the construction & operation of containment cell (PAN condition 3)	Sectn 5, Ref [4]
1.5	Preparation of JSAs & SWMSs by Asbestos Contractor	No data provided by SRVRs
1.6	Asbestos removal & control plan by Asbestos Contractor	Sectn 5.4, Ref [9]
1.7	Erosion & sediment risk control plan by Asbestos Contractor	No data provided by SRVRs
1.8	Approval of RAP by Site Auditor prior to commencement of work	Interim audit advice #03 issued by the Site Auditor on 9/11/21 required 13 matters to be addressed prior to site work commencing. Feedback provided by Agon on 10/11/21 and approved by the Site Auditor on 12/11/21
1.9	Approval of containment cell design report from Site Auditor	Interim audit advice #04 issued by the Site Auditor on 13/11/21 required 12 matters to be addressed in a revised Cell Design report. No revised report issued

Legend:

Inadequate information provided in SRVRs

The Site Auditor considered the available Agon documentation supported the conclusion that the data provided by the SRVRs did not meet four of the nine early work tasks. The Site Auditor has assessed the significance of these non-compliances in **Section 4.8**.

4.3 Task 2: Asbestos Removal

4.3.1 Review of Remediation Procedures Used

The procedures that needed to be used by the Task 2 asbestos removal work were outlined and reviewed in **Sections 2.15** and **3.6.3**.

The Site Auditor considered the weight of evidence supported the conclusion that most remediation work undertaken by DADs and Agon at the Homestead and Disposal Sites generally complied with the procedures specified in the AMP / RAP / Cell Design reports and was undertaken in general compliance with the PAN and other regulatory requirements. The weight of evidence provided in the September 2022 SRVR (Ref [9]) supporting this conclusion comprised:

- **Worker training**: Field records (Appn C)
- **Daily meetings**: Field records (Appn C)
- **Corrective actions**: Field records (Appn C)
- **Work related competencies**:
  - Agon was engaged by ALC as the asbestos consultant and Licensed Asbestos Assessor (**LAA**) to supervise and direct the removal of ACM and asbestos impacted soils from the Homestead Site; its placement in a containment cell at the Disposal Site; conduct daily asbestos airborne fibre monitoring; clearance inspections / certification; on-site adaptive management and technical advice; establish in consultation with the removal contractor safe work practices and standards, ensuring that asbestos works were undertaken in accordance with applicable legislation and standards, and conducted in a manner that was safe and without risk to workers health and safety and the public (Sectns 1.0, 2.2, 5.1, Table 4, Appn C);
  - DADS was engaged by ALC as the Class A Asbestos Removal Contractor (Removalist Licence No. 38942) to develop and implement the Asbestos Removal Control Plan; notify NT Worksafe; construct the containment cell; planning, administration, and supervision of asbestos removal-related tasks; ensure all tasks were conducted in a safe manner that was without risk to workers health and safety and the public (Sectns 5.1, 5.6, Table 4, Appn C)
- **Establishment of Asbestos Exclusion Zones**: Photos show that the whole Homestead Site was declared an Asbestos Exclusion Zone, as shown in **Figure 4-1**
- **Delineation and removal of asbestos contamination in Phase 1 (November 2018)**: Agon advised (Sectn 5.7) that:
  - Asbestos contaminated soil was excavated over defined areas of the Homestead Site. The excavated soil was placed directly into a single trailer mounted tipper truck with covers that sealed the load prior to transport to the containment cell. Soils were excavated to a depth at which no further visible ACM was identified;
  - Following completion of contaminated soil removal, surficial ACM debris was hand-picked from across the entire site using a 5m survey grid was established, with emu picking conducted within each gridded transects. Three personnel walked each initially in a north-south direction, positioned shoulder-width apart. The area was then re-surveyed using the same methodology with a second pass over the area in a perpendicular (90°) angle (west-east) to the first gridded direction. Agon confirmed through concurrent visual clearance inspections that there was no visible surface ACM on the soil surface across the removal area once the emu pick was completed. ACM fragments were secured in a labelled, heavy duty plastic bag for subsequent transport; and
  - Dense ground vegetation cover was present in some site areas, rendering the identification of ACM (if present) difficult. However, remedial locations were guided by extents of ACM identified through previous survey. Vegetation removed within extents of soil excavation was managed as asbestos waste.

Figure 4-1 Homestead Site Made into a Single Asbestos Exclusion Zone (Source: Appn B, Ref [9])

- **Delineation and removal of asbestos contamination in Phase 2 (February 2019)**: Agon advised (Sectn 5.8) that AF contaminated soil was excavated from four locations previously identified by the Agon (August 2018) asbestos survey (Ref [1]) as shown in **Figure 2-11**, these being:
  - NW corner of remnant concrete pad No. 1;
  - NW corner of remnant concrete pad No. 5;
  - The central surface depression area encompassing redundant concrete pads No. 9 and 10; and
  - The SE part of the Fire Pit area.

  Works involved shallow soil excavation, with an additional 300 mm of soil then removed. The lateral extent of additional soil removal was generally 5 m in each direction from where soil validation samples exceeded the adopted Remediation Criteria.
- **Decontamination areas and decontamination**: Work description (Table 3, Sectns 5.7.2 – 5.7.4, 6.1, 6.3, 6.4), photos (Appn B), field work records (Appn C), asbestos clearance certificates (Appn E), asbestos fibre monitoring reports (Appn H)
- **WH&S**: Agon described the WH&S controls and procedures that were implemented during the project (Sectn 6); PPE was provided to all personnel working in the asbestos removal work area with spare PPE also available within the decontamination area (Section 6.4); Signage and barricades (Section 6.5); Asbestos airborne fibre monitoring was conducted to comply with all relevant regulatory requirements (Sectn 7.1)
- **Equipment smoke tests**: Agon advised that prior to commencing asbestos removal activities, all equipment used was smoke tested and approved for use within designated exclusion zones (Sectn 6.2); A smoke test was also conducted within the Recreation Club enclosure to demonstrate achieving negative pressure (Sectn 6.3); Summary of when smoke testing was undertaken (Table 3); Field records (Appn C); Smoke test reports (Appn F)
- **Dust suppression**: Agon advised that dust control measures were implemented during all forms of work associated with the excavation, transport and disposal of ACM and asbestos contaminated soils.

The licensed asbestos removalist had a water tank and trailer (with hose attachments) on-site to sufficiently supress dust and prevent the potential liberation of asbestos fibres (Sectn 6.6)

- **Temporary stockpiling**: Temporary stockpiling of the asbestos material at the proposed containment cell site was not implemented (**Sectn 4.3.1**)
- **Management of project generated asbestos waste**: All wastewater generated through decontamination processes was passed through a HEPA filter fabric and recycled, with used fabric disposed within the containment cell as asbestos waste (Sectn 6.1)
- **Asbestos airborne fibre monitoring**: Agon advised that they conducted daily asbestos airborne fibre monitoring (Sectn 5.1), asbestos airborne fibre monitoring plan (Sectn 7), asbestos clearance certificates (Appn E), asbestos airborne fibre monitoring reports (Appn H).

One deficiency in the data provided by the SRVR concerned material tracking. The AMP[77] required:

- Material tracking forms to be completed daily for each load by the operator of the tippers documenting the operator, time, origin and destination. The Contractor needed to retain all Material Tracking Forms. Copies of the forms needed to be provided to the Principal and included in the Contractor's close-out report;
- The contractor needed to maintain records of the removal of material from each Asbestos Work Area and its placement in the temporary stockpile. The data needed to include the boundaries (GPS coordinates, survey plan or similar) of each Asbestos Work Area and a summary of the types and volumes of materials removed from each area. Copies of these records needed to be provided to the Asbestos Consultant; and
- The material tracking documentation needed to be included in the validation report.

However, no material tracking records were provided in the SRVR. The Site Auditor considered this non-compliance was significant because it meant that the Site Auditor was unable to determine:

- The quantity of asbestos contaminated soil removed from each Asbestos Work Area and whether at least the top 100 mm of asbestos contaminated soil was removed from the ground surface areas as required by the RAP[78];
- Whether the extent of soil removal given by the SRVR were reasonable. These areas consisted of the area around the Duplex Dormitory, the Recreation Club, eastern foreshore area, western foreshore area and remaining grounds;
- The quantity of asbestos contaminated waste that was placed in the containment cell and whether it agreed with the as-constructed storage capacity of the cell;
- Whether all asbestos contaminated waste removed from the Homestead Site was placed in the containment cell constructed at the Disposal Area; and
- Whether only asbestos contaminated material from the Homestead Site was buried in the containment cell as required by condition 7 in the PAN.

The Site Auditor has assessed the significance of this deficiency in **Section 4.8**.

4.3.2 Review of Extent of Asbestos Removal

The SRVR advised that the asbestos removal work undertaken at the Homestead Site consisted of the removal of asbestos building materials from selected structures, the emu picking of visible asbestos from the ground surface, and the excavation and removal of shallow soil. The locations where this work was reported by the SRVR to have been undertaken is summarised in **Table 4-2**, with plans showing the extent of remediation provided in **Figures 4-2** to **4-6**.

[77] Sections 2.2, 5.2 & 5.3, Ref [3]; Section 2.1, Ref [5]
[78] Section 2.1, Ref [5]

Information provided in the SRVR indicated that most of the remediation work recommended in **Section 2.15** was undertaken, the exceptions being:

- **Duplex dormitory**: Shallow soil impacted by friable asbestos was removed from only a small area (50m^2) to the east of the building as shown in **Figure 4-2**. There was a risk of additional asbestos contamination being present in shallow soil around other parts of the building for the reasons given in **Section 2.10.2**;
- **NW foreshore house & southern elevated house**: An emu pick needed to be done in the area surrounding these structures for the reasons given in **Section 2.15**;
- **Western foreshore area**: There was a risk of additional asbestos contamination being present in shallow soil in the area for the reasons given in **Section 2.10.6**;

Table 4-2 As-Completed Asbestos Remediation Work at Homestead Site

Location	Structure	Ground surface	
	ACM removal	Emu pick	Remove top 100mm soil
Duplex dormitory area	✓	✓	✓
Recreation club area	✓	✓	✓
NW foreshore house area		✓	
Southern elevated house area			
North orange house area			
House centre site area		✓	
Ablution block area		✓	
Jetty pipeline	✓		
Western foreshore area		✓	✓
Eastern foreshore area		✓	✓
Roadways		✓ (some areas)	✓ (some areas)
Remaining grounds		✓	✓ (around pads & central depression)

- Other areas: There was a risk of presently unknown asbestos contamination being present at other areas of the Homestead Site due to the limitations of the asbestos surveys documented in the Agon (August 2018) report. These limitations included:
  - Interference caused by vegetation;
  - Absence of raking the shallow soils when surveys were conducted;
  - The limitations of using an opportunistic survey approach;
  - The paucity of laboratory tests on soil samples; and
  - Other limitations of the asbestos surveys documented in the Agon (August 2018) report, as identified in **Section 2.7**.

The Site Auditor has assessed the significance of this deficiency in **Section 4.8**.

Figure 4-2 Reported Extent of Remediation at Duplex Dormitory (Source: Fig 5, Ref [9])

Figure 4-3 Reported Extent of Remediation at Recreation Club (Source: Fig 6, Ref [9])

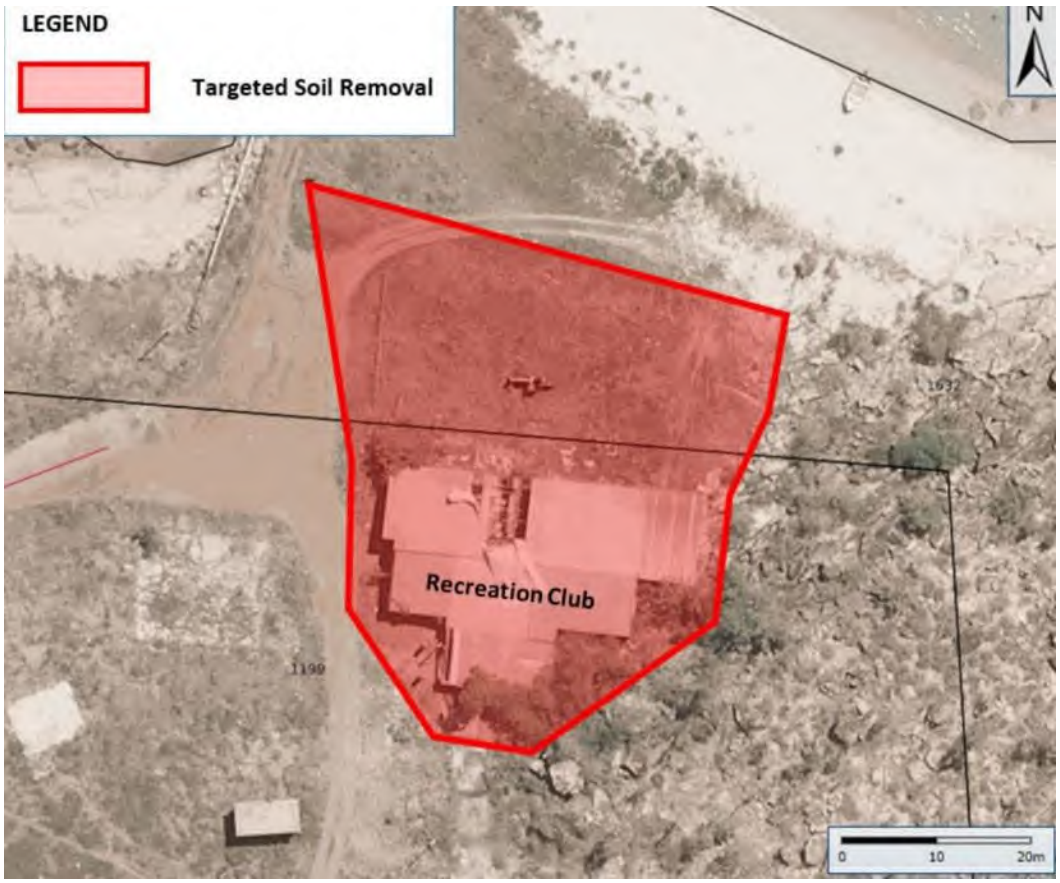


Figure 4-4 Reported Extent of Remediation at Eastern Foreshore (Source: Fig 7, Ref [9])

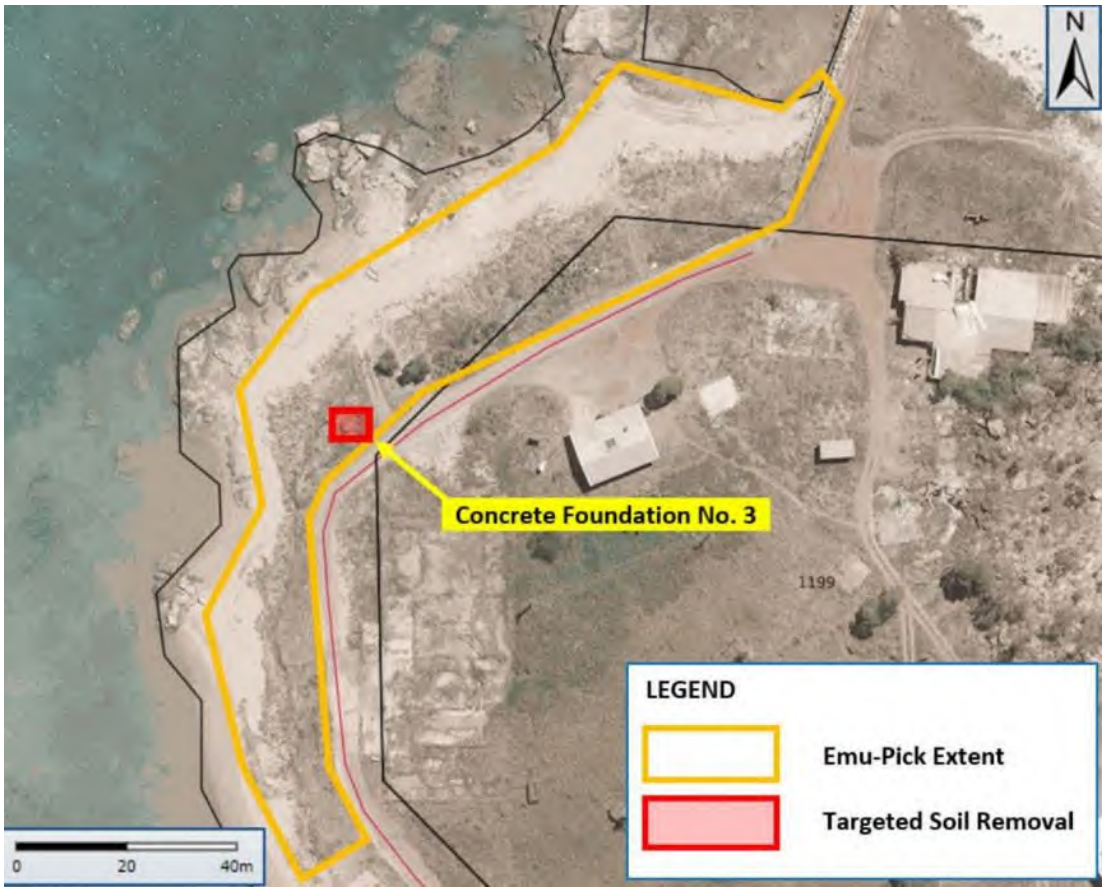


Figure 4-5 Reported Extent of Remediation at Various Areas (Source: Fig 8, Ref [9])

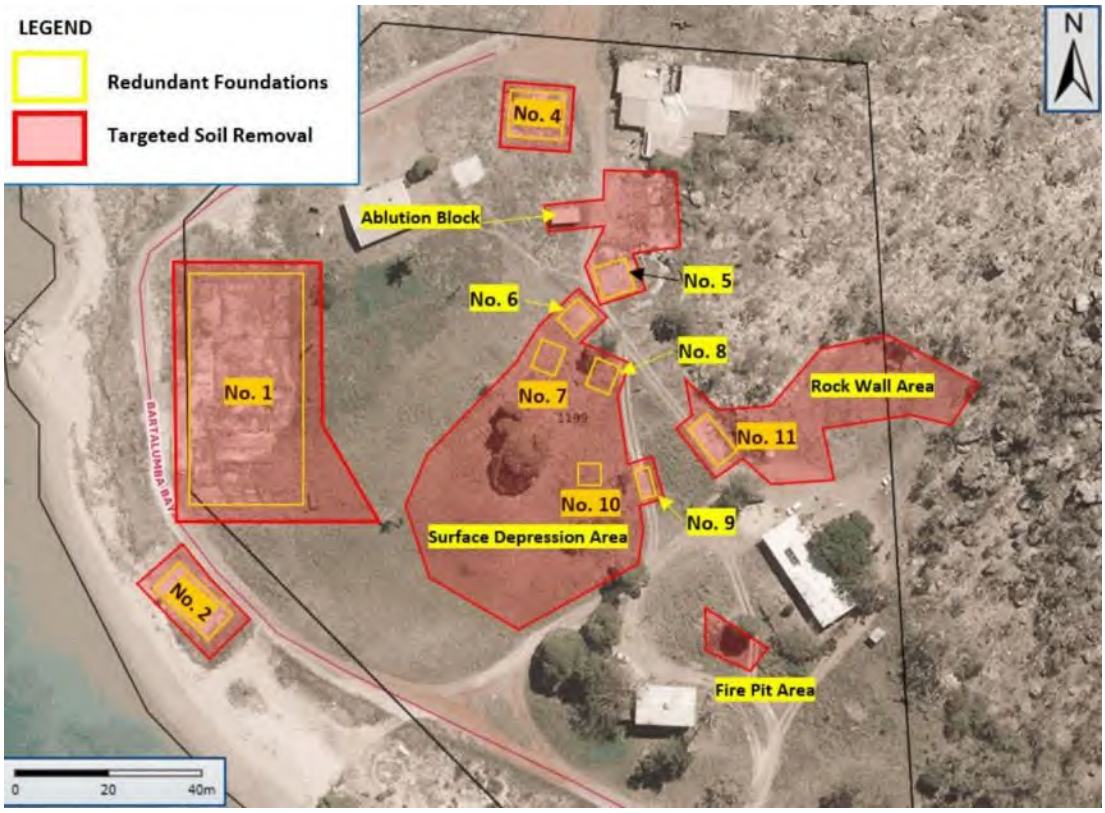
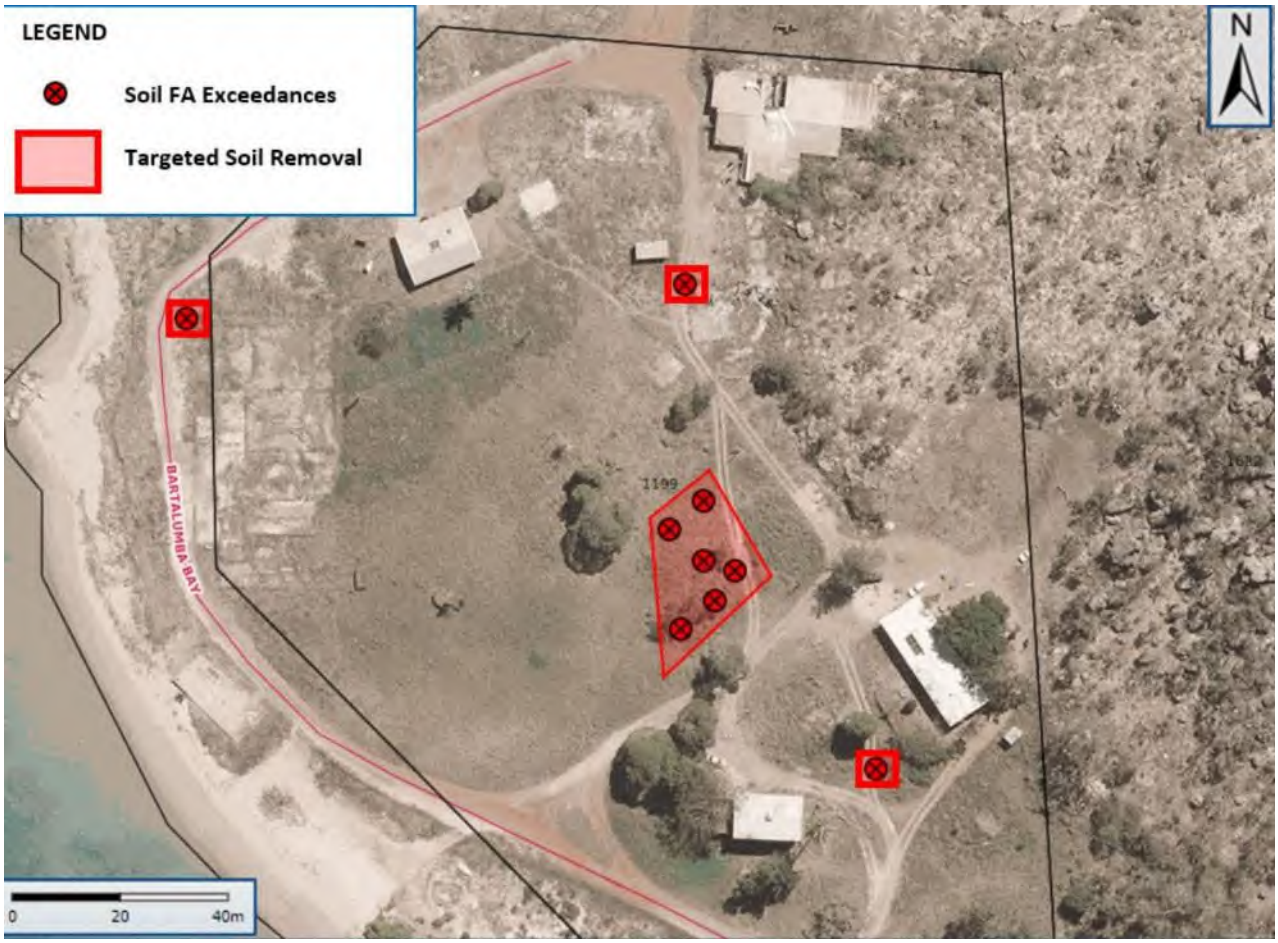


Figure 4-6 Reported Extent of Remediation at Various Areas (Source: Fig 9, Ref [9])



4.4 Task 3: Containment Cell Construction, Filling & Capping

The Task 3 containment cell construction, filling and capping work that needed to be completed is outlined and reviewed in **Section 3.5**. Documentation on the as-completed Task 3 work provided in the SRVRs is summarised in **Table 4-3** together with the Site Auditor's compliance assessment. Copies of photos taken by Agon of the cell construction and capping work are provided in **Figures 4-8** to **4-15**.

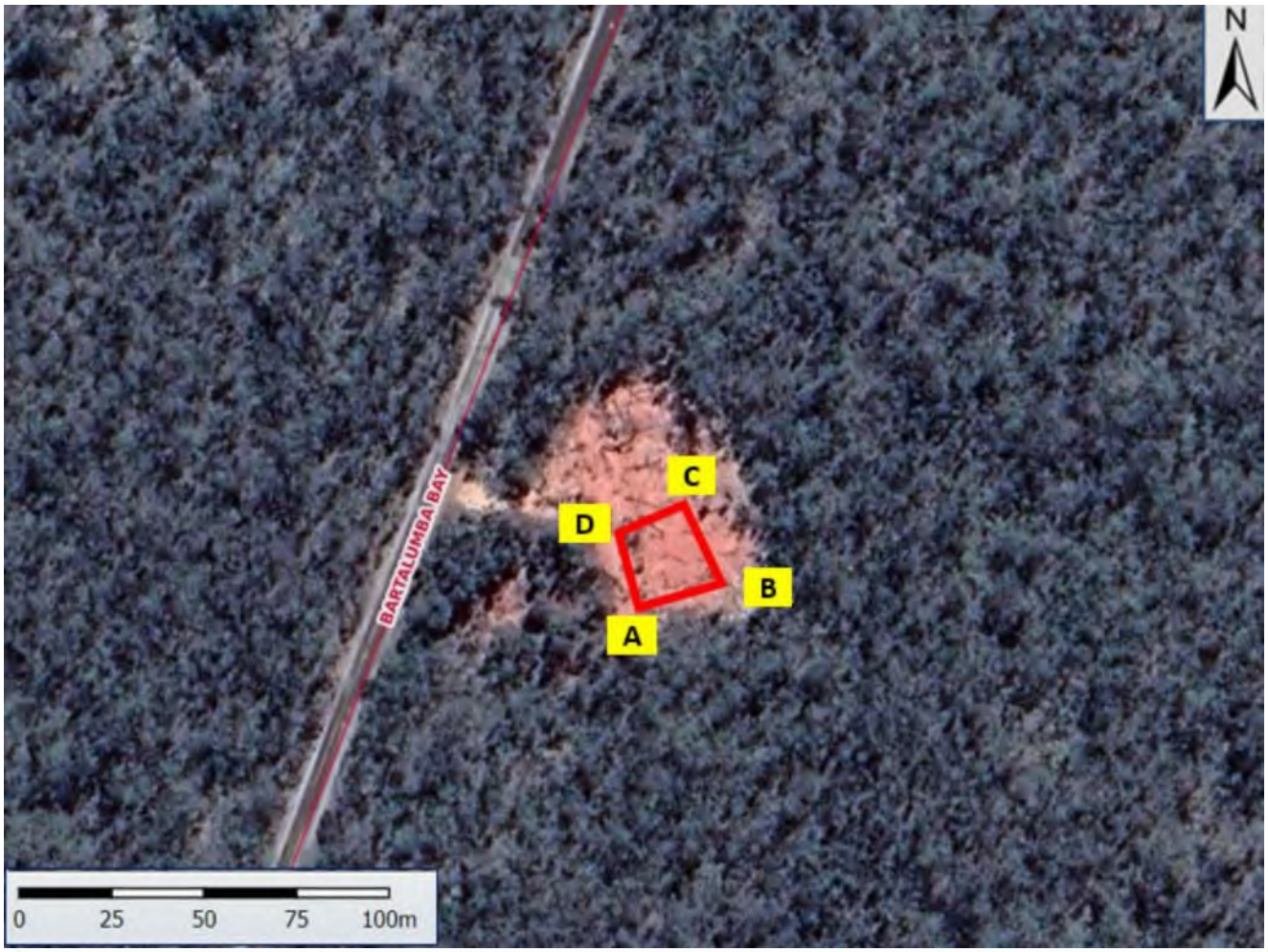
Table 4-3: Task 3 Containment Cell Construction, Filling & Capping Work

Tasks		Work Completed & Documented in SRVR
3.1	Procedures for measuring & validating cap thickness	Not provided
3.2	Rehabilitation plan meeting Victorian EPA landfill BPEM	Not provided
3.3	Cell location & boundaries accurately surveyed prior to the commencement of filling and shown on survey plan	Section 5.6, Figure 4 & Appn B, Ref [9] – refer **Figure 4-7**
3.4	Vertical / lateral cell dimensions confirmed prior to construction	28 x 20 x 3m deep (Sectn 5.6 & Appn B, Ref [9])
3.5	Cell construction work supervised/ documented by a suitability qualified / experienced enviro professional from Agon	Field records and photos (Appns B & C, Ref [9])
3.6	Base layer scarified & compacted in situ clay material	Field records and photos (Appns B & C, Ref [9])
3.7	Excavated cell features measured & recorded (e.g. subsurface conditions, soil profile, cell depth, cap thickness)	Section 5.6, Figure 4, Appns B & C, Ref [9]
3.8	Coloured marker layer (e.g. orange geotextile) placed over top surface of waste layer	Sectn 5.11 & Appn B, Ref [9]
3.9	Clay cap track-rolled to not less than 95% standard compaction	Sectn 5.11 & Appn B, Ref [9]
3.10	Minimum cap thickness 1,000 mm	No data provided
3.11	Cap covered by topsoil (minimum 200 mm thick) to support vegetation regrowth by natural reseeding but with no trees	No data provided
3.12	Final cap surface graded to 1% grade	Field records and photos (Appns B & C, Ref [9])
3.13	Ground surface across completed cell & disturbed surrounding area validated to Recreational C	No data provided
3.14	Long term EMP prepared for ongoing management of Disposal Site	Not provided

Legend:

Inadequate information provided in SRVR

Figure 4-7 Containment Cell Location and GPS Coordinates (Source: Fig 4 & Tab 5, Ref [9])



Corner	GPS Coordinates	
	Latitude	Longitude
A	13°50'28.31"S	136°26'59.82"E
B	13°50'28.07"S	136°27'0.62"E
C	13°50'27.25"S	136°27'0.24"E
D	13°50'27.63"S	136°26'59.58"E

Figure 4-8 Containment Cell Being Excavated (10/11/18) (Source: Appn B, Ref [9])

Figure 4-9 Disposal of Asbestos Waste in Containment Cell (16/11/2018) (Source: Appn B, Ref [9])

Figure 4-10 Disposal of Asbestos Waste in Containment Cell (18/11/2018) (Source: Appn B, Ref [9])

Figure 4-11 Containment Cell Prior to Capping (23/11/2018) (Source: Appn B, Ref [9])

Figure 4-12 Progressive Cap Compaction (23/11/2018) (Source: Appn B, Ref [9])

Figure 4-13 Geofabric and High Visibility Mesh Marker Layer (23/11/2018) (Source: Appn B, Ref [9])

Figure 4-14 Expansion of Containment Cell (4/02/2019) (Source: Appn B, Ref [9])

Figure 4-15 Final Condition of Containment Cell (7/02/2019) (Source: Appn B, Ref [9])

The Site Auditor considered the available Agon documentation supported the conclusion that the as-constructed cell was likely to provide a reasonably secure containment of the asbestos waste removed from the Homestead Site while the Disposal Site remained undisturbed and unused. This is because photos provided in the SRVR[79] showed:

- The cell was excavated into stiff, dry, natural clay to a 2.5 - 3 m depth;
- The excavated cell area in November 2018 was consistent with a 25 x 20m footprint, with the additional cell excavated in February 2019 consistent with an additional 3 x 20 m footprint
- The asbestos waste being buried in the cell;
- A geofabric marker layer being placed into the cap;
- A clean soil cap was being placed across the cell and being track rolled; and
- A cap thickness of at least 0.5 m.

However, the absence of more and accurate data on the as-constructed condition of the containment cell meant that the Site Auditor was unable to certify compliance with the Cell Design Report, interim audit advice provided by the Site Auditor and the landfill BPEM. This is because of the following data gaps:

- The SRVR does not indicate the accuracy of the cell coordinates or whether the survey data (**Figure 4-7**) was provided by a licensed surveyor;
- Data showing that the cap had a minimum thickness of 1.0 m;
- A rehabilitation plan meeting the landfill BPEM;
- Data showing that a 200 mm minimum thickness of topsoil covered the cell footprint;
- Validation data showing that no visible asbestos was present across the final surface of the completed cell and the cap soils met Recreational C NEPM criteria; and
- A long-term EMP for ongoing management of the Disposal Site.

The Site Auditor has assessed the significance of these data gaps in **Section 4.8**.

4.5 Task 4: Unexpected Finds and Contingency Measures

The SRVRs did not mention that any unexpected finds were made when remediating the Homestead Site.

The SRVR[80] did advise that the plan area of the containment cell was increased from a 25 x 20m area on 9/11/18 to a 28 x 20 m area on 4/02/19. The Site Auditor considered this increase in containment cell was reasonable given the data gaps in the August 2018 investigation data.

4.6 Task 5: Disposal to Licensed Landfill

The AMP[81] advised that asbestos waste from the Homestead Site may be disposed at a licensed landfill. The closest licensed landfill was at Shoal Bay, Darwin.

The SRVR[82] advised that ACM removed from nominated dilapidated buildings at the Homestead Site was transported off-site and disposed at the Shoal Bay Waste Management Facility at Karama NT. The Site Auditor considered that copies of landfill tip dockets provided in the SRVR[83] indicated that 16.2 tonnes of asbestos waste was likely to have been removed from the Homestead Site and disposed at the Shoal Bay landfill.

[79] Appn B, Ref [9]
[80] Section 5.6, Ref [9]
[81] Sections 2.8 & 2.9, Ref [3]
[82] Sections 1.0 & 9.1, Ref [9]
[83] Appendix D, Ref [9]

4.7 Task 6: Validation & Reporting

The SRVR advised that validation of the condition of structures and the ground surface following the completion of remediation work involved asbestos clearance certification by means of visual inspection, and soil sampling and laboratory testing.

4.7.1 Asbestos Clearance Certification

The SRVR[84] advised that visual inspections were carried out at the completion of asbestos removal works in each area by Agon's LAAs. Following the removal of scattered debris by emu pick and the removal of asbestos contaminated soils by excavation, a visual inspection for the presence of visible surface asbestos debris was undertaken. The inspection included the asbestos removal work zone, the immediate vicinity of the work zone, and waste transit routes. Following the final emu-pick across the Homestead Site, a site-wide Clearance Certificate was issued. Copies of the Asbestos Clearance Certificates prepared by Agon were provided in Appendix E of the SRVR. A summary of these certificates is provided in **Table 4-3**.

The Site Auditor considered the asbestos clearance certification supported the conclusion that no visible asbestos was found by Agon at the Homestead Site at the time of the clearance inspections. However, there was a risk that asbestos remained at and below the ground surface for the reasons given in Section 4.7.2. The Site Auditor has assessed the significance of these risks in **Section 4.8**.

4.7.2 Soil Sampling and Laboratory Testing

The SRVR[85] advised that soil samples[86] were collected from 51 sample locations between 21/11/18 and 23/11/18 from remediated areas at the Homestead Site. These sample locations are shown in **Figure 4-16**. Documentation provided on the soil sampling and testing included:

- Sampling methodology – judgemental locations from exposed soils at excavated areas;
- Plan showing the sample locations;
- 6 duplicate samples (representing >10% frequency);
- Copies of COC forms and test certificates from a NATA-accredited laboratories (ALS then Eurofins);
- Summary tables of the lab test results, with copies provided in **Appendix B**; and
- Contamination assessment.

The Site Auditor considered that the data met most DQOs, as described in **Section 2.1**. However, the data completeness and representative DQOs were not met because:

- Soil samples were collected from only 51 locations, which was well below the recommended minimum of 341 locations for a 31 ha area (**Section 2.7.5**);
- Soil samples were only collected from remediated areas. No soil samples were collected from unremediated areas where there was a risk of fibrous asbestos;
- No soil samples were collected from the western foreshore area, a large part of the eastern foreshore area, and many other areas of the Homestead Site where the Agon (August 2018) report advised had significant asbestos contamination as shown in **Figure 2-11**; and
- No test pits were excavated at filled areas where asbestos may have been buried and below ground structures may contain asbestos (e.g. pits, conduits).

[84] Section 5.10, Ref [9]
[85] Section 8.2, Ref [9]
[86] Labelled GPS2-146 to , GPS2-200 excluding GPS2-148, GPS2-152, GPS2-154, GPS2-159

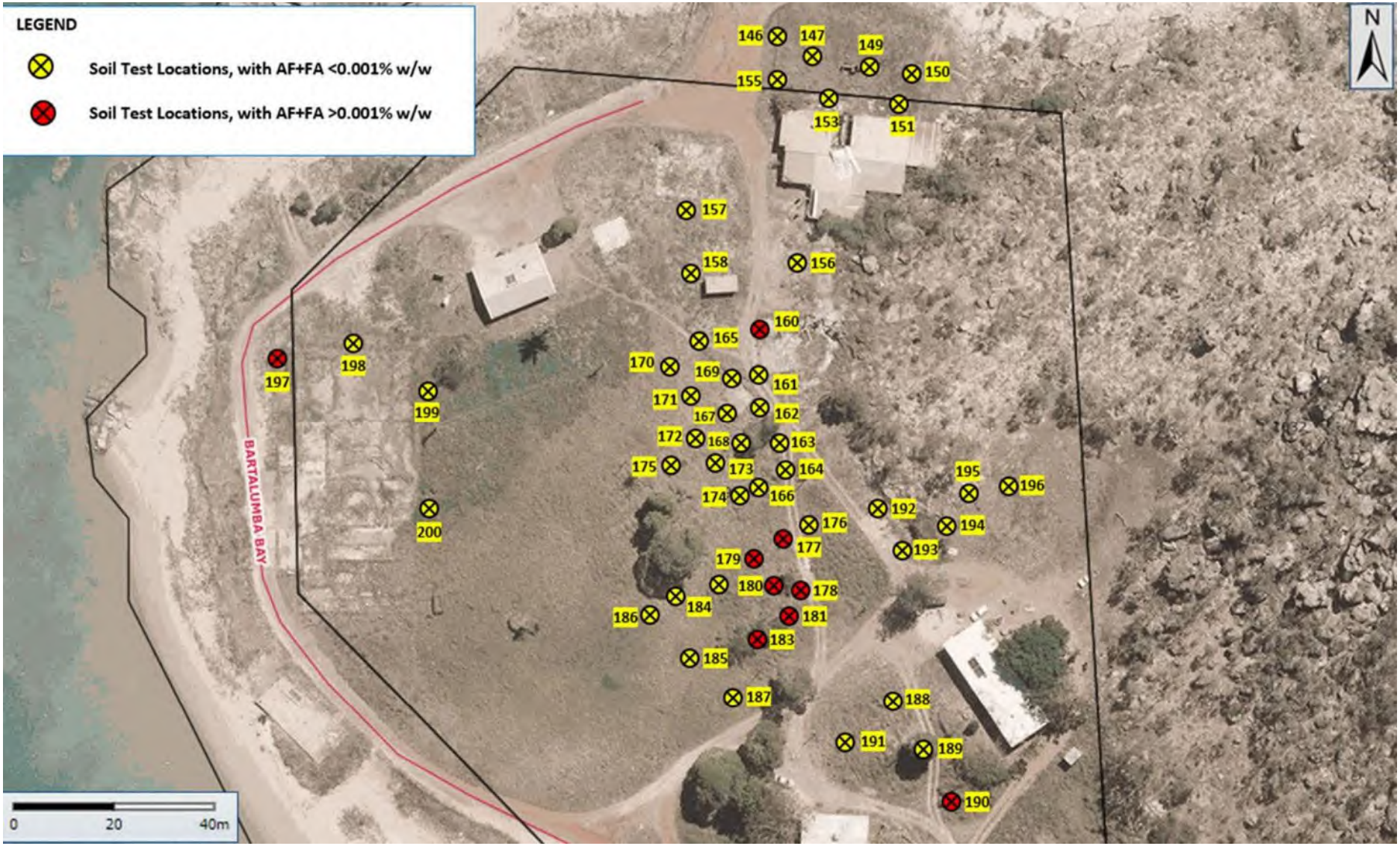
Table 4-3 Summary of Agon Asbestos Clearance Certificates (page 1 of 2)

No.	Inspection Date	Location	Works Undertaken	Inspection Notes	Outcome
JA0336	20/11/2018	Recreation Club	Removed asbestos materials & associated contaminated items from Recreation Club	Asbestos debris in asbestos work area, in immediate vicinity of work area (in accessible areas) or in waste transit route not visible. Air monitoring measured airborne asbestos fibre level <0.01 f/ml	Area fit for reoccupation
JA0336.1	21/11/2018	Duplex Dormitory	Removed asbestos eave linings from the externals, vinyl sheeting from throughout south unit, & cement sheet debris from around building footprint	Asbestos debris in asbestos work area, in immediate vicinity of work area (in accessible areas) or in waste transit route not visible. Air monitoring measured airborne asbestos fibre level <0.01 f/ml	Area fit for reoccupation
JA0336.2	20/11/2018	Jetty pipeline gaskets	Removed asbestos flange gaskets from pipeline	Asbestos debris in asbestos work area, in immediate vicinity of work area (in accessible areas) or in waste transit route not visible. Air monitoring measured airborne asbestos fibre level <0.01 f/ml	Area fit for reoccupation
JA0336.3	21/11/2018	Hitchi Zaxis (Serial No HCDDA20F000405400)	Equipment decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.4	22/11/2018	Hitchi Zaxis 21OLC (Serial No HCMDCK21J00307765)	Equipment decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.5	23/11/2018	Toyota Hilux Ute licence No CB66FJ	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.6	23/11/2018	Nino Hook Truck licence No CB66FJ	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.7	23/11/2018	Side Tipper Truck Licence No CB51MY	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.8	22/11/2018	Water Truck Vehicle No GCCTR13	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities

Table 4-3 Summary of Agon Asbestos Clearance Certificates (page 2 of 2)

No.	Inspection Date	Location	Works Undertaken	Inspection Notes	Outcome
JA0336.9	6/02/2019	Hitchi Zaxis 21OLC (Serial No HCMDCK21J00307765)	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.10	6/02/2019	Hitchi Zaxis (Serial No HCDDA20F000405400)	Equipment decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.11	6/02/2019	Side Tipper Truck Licence No CB51MY	Vehicle decontaminated after asbestos removal works at Homestead Site	Asbestos debris from asbestos related work on vehicle not visible	Vehicle fit to exit the asbestos work zone and resume normal activities
JA0336.12	7/02/2019	Grounds at Homestead Site	Removed visible ACM debris / impacted soil	Asbestos debris in asbestos work area, in immediate vicinity of work area (in accessible areas) or in waste transit route not visible. Air monitoring measured airborne asbestos fibre level <0.01 f/ml	Area fit for reoccupation

Figure 4-16 Soil Sampling Locations at Homestead Site (21/11/18 – 23/11/18) (Source: Figure 10, Ref [9])



The data showed that fibrous asbestos was detected at 9 of the 51 locations investigated. The SRVR advised that additional remediation work was undertaken at these nine locations in February 2019, with the excavated soil placed into an expanded containment cell. A second round of validation samples were then collected on 7/02/19 involving 26 samples. The extent of this additional remediation work and the additional validation samples are shown in **Figure 4-17**. All additional validation samples did not detect any asbestos at a detection limit of 0.001 %w/w.

Agon[87] concluded that the works undertaken achieved the primary remediation goals of reducing the risk posed to human receptors from the identified ACM via the removal of surface ACM and asbestos contaminated soils across the Homestead Site, with clearances validating that no visible asbestos was remaining on soil surfaces at the site.

The Site Auditor considered the weight of evidence supported the Agon conclusions for the reasons given in **Section 4**. However, there was a risk that asbestos remained at and below the ground surface at concentrations exceeding the RAC (**Section 2.6.2**) because:

- There was a risk that some asbestos contamination at the ground surface had not been identified due to the inherent limitations of walkover inspection, particularly if covered by vegetation;
- No data was provided by the SRVR[88] that the Site Auditor could review to assess the thoroughness and accuracy of the asbestos clearances performed by Agon. Missing data included a description of the survey procedures used, the number of personnel used, the survey tracks, or the time it took for the surveys to be undertaken;
- Asbestos contamination in shallow soils below the ground surface can become exposed over time due to ground disturbance, soil erosion and the wetting/drying of soils;
- It is possible that ACM remains in buildings at the Homestead Site that could become damaged, broken and burnt as occurred prior to 2018;
- The presence of asbestos in soils below the ground surface (say > 0.1mbgl) had not been investigated;
- The soil sampling conducted in November 2018 showed that fibrous asbestos exceeding the RAC remained undetected at 9 out of 51 locations, which corresponds to 18% of sample locations where the soil had previously been considered to have been remediated. This suggests that fibrous asbestos could remain at areas of the Homestead Site that had not been remediated.

The Site Auditor has assessed the significance of these risks in **Section 4.8**.

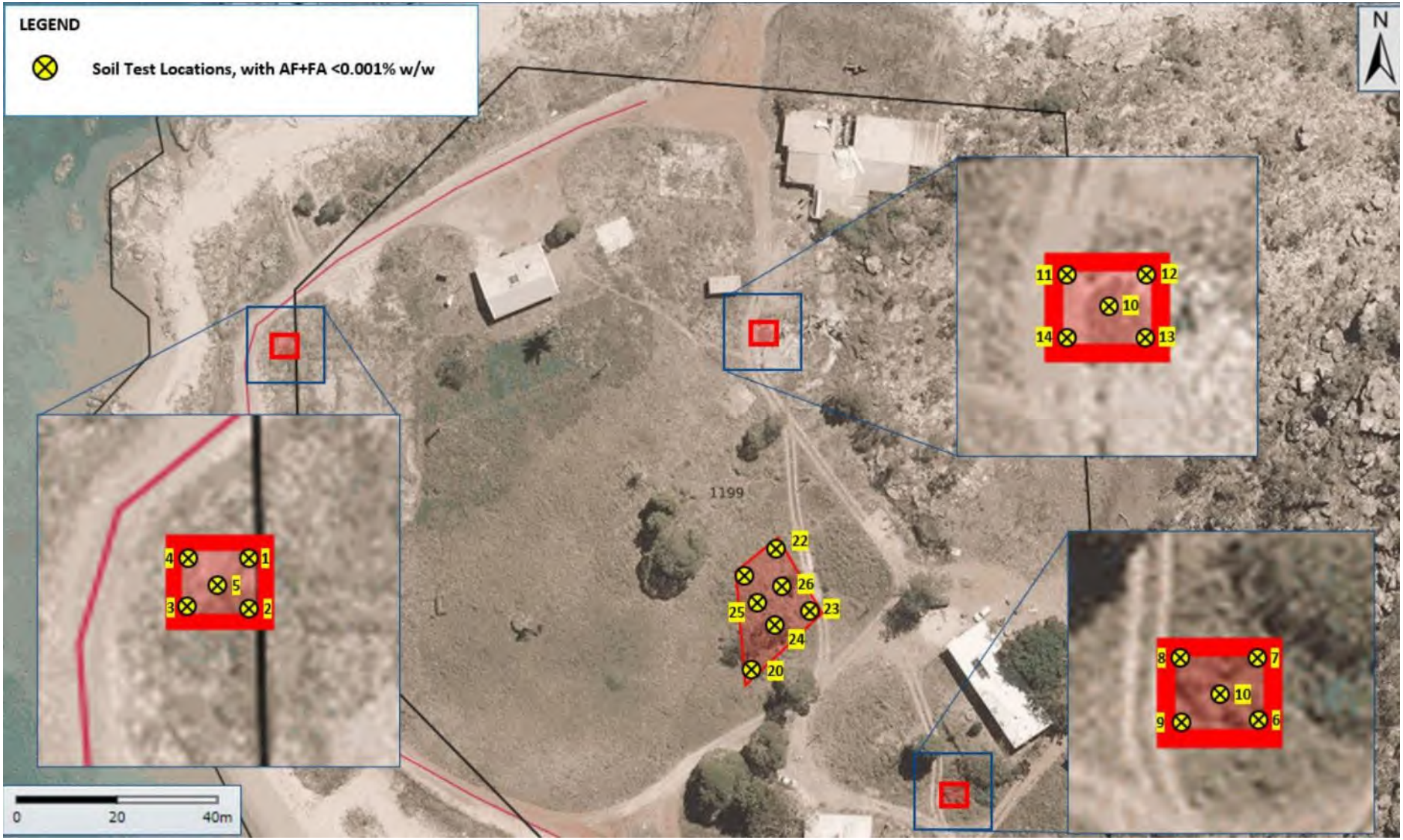
4.8 Task 7: Long Term Management

The SRVR[89] recommended that

- The containment cell be subject to maintenance and monitoring of the capping, with a Long Term Environmental Management Plan (**LTEMP**) to be developed for the Disposal Site;
- The Homestead Site be subject to ongoing monitoring, with future exposure of asbestos in soils that were not visible during site surveys remaining a possibility, particularly in areas of dense vegetation and where wind and water erosion occurs to the soil surface;
- The existing asbestos register for the Homestead Site be updated to reflect the site conditions post remediation works described in this report;
- An Aftercare Management Plan for the containment cell be prepared consistent with Section 8.2 of the Landfill BEMP; and

[87] Section 8.3, Ref [9]
[88] Section 5.10, Ref [9]
[89] Section 9.2, Ref [9]

Figure 4-17 Additional Soil Sampling Locations at Homestead Site (7/02/19) (Source: Figure 11, Ref [9])



- A review be conducted of the containment cell construction with regard to the level of compliance with the Landfill BEMP guidance.

The Site Auditor considered all recommendations made in the SRVR were appropriate for asbestos contamination risks because:

- Condition 10 of the PAN required an Aftercare Management Plan to be provided to the NT EPA within 1 month following the commencement of containment cell filling that met requirements specified in the PAN
- Condition 12 of the PAN required the Asbestos Register for the Homestead and Disposal Sites to be updated and endorsed by the Site Auditor;
- There was a risk that asbestos remained at and below the ground surface at the Homestead Site concentrations exceeding the RAC for the reasons given in **Section 4.7.2**; and
- The absence of more and accurate data on the as-constructed condition of the containment cell meant that the Site Auditor was unable to certify compliance with the Cell Design Report, interim audit advice provided by the Site Auditor and the landfill BPEM for the reasons given in **Section 4.4**;

The Site Auditor also considered that additional soil validation data needed to be collected:

- At the Homestead Site to determine whether it met NT EPA requirements for Residential A land use, as required by Condition 5 of the PAN; and
- At the Disposal Site to determine whether it met NT EPA requirements for Recreational C land use, as required by Condition 9 of the PAN.

To address these risks the Site Auditor issued a draft SAR to the ALC and NT EPA on 23/04/23 and recommended that the Site Auditor inspect the Homestead and Disposal Sites without further delay and collect additional soil validation samples that could address the data gaps mentioned in **Section 4.7.2**.

During the site inspection, the Site Auditor would also obtain a better understanding as to other types of contamination risk at the Homestead Site due to its past use as a prawn/fish processing factory.

5. Additional Site Auditor Validation

This section of the SAR presents additional validation work conducted by the Site Auditor to address the data gaps in the documentation provided by Agon on the asbestos remediation work undertaken at the Homestead Site and the construction of a containment cell at the Disposal Site, as described in Section 4. The review has been organised under the following headings:

- *Section 5.1: Methodology;*
- *Section 5.2: Disposal Site; and*
- *Section 5.3: Homestead Site.*

5.1 Methodology

The Site Auditor considered the most efficient and practical approach to address the data gaps in the documentation provided by Agon on the asbestos remediation and validation work reviewed in **Section 4** was for the Site Auditor to inspect the two sites and undertake additional sampling and testing. This approach was initially discussed with the ALC and the NT EPA.

The methodology was initially documented in an interim audit advice issued by the Site Auditor on 12/05/23 (**Appendix C**) and refined at the time of the site inspection. A summary of data gaps in the validation assessment for the Disposal Site identified in **Sections 4.4** and **4.8** and how the Site Auditor proposed to address them is provided in **Table 5-1**.

Table 5-1 Proposed Audit Methodology to Address Data Gaps at Disposal Site

No.	Data Gap	Proposed Mitigation Approach by Site Auditor
1	The SRVR did not indicate the accuracy of the cell coordinates or whether the survey data was provided by a licensed surveyor	Site Auditor to inspect the as-built containment cell site and compare the location and extent of the area with the data specified in the PAN
2	Data showing that the cap had a minimum thickness of 1.0 m	Site auditor to drill 5 hand auger holes across the cell footprint and verify whether the cap had a minimum thickness of 1.0 m
3	A rehabilitation plan meeting the landfill BPEM	Site Auditor to verify acceptable site condition by inspection & photographic record
4	Data showing that a 200 mm minimum thickness of topsoil covers the cell cap	Site auditor to drill 5 hand auger holes across the cell footprint and confirm the presence of the topsoil layer
5	Validation data showing that no visible asbestos is present across the final surface of the completed cell and the cap soils met Recreational C NEPM criteria	• Detailed survey across cell in accordance with NEPM (2013) Schedule B(2) to check for any visible asbestos. Raking and/or use of mattock/spade to remove vegetation. • Collect soil samples at 5 locations using sampling methodology given in NEPM (2013) Schedule B(2)
6	A LTEMP for ongoing management of Disposal Site	LTEMP to be prepared by Site Auditor and attached to a Section B SAS. The EMP to be consistent with the requirements of the Aftercare Management Plan specified in Section 8.2 of Landfill BEMP
7	Existing asbestos register for Homestead Site be updated to reflect site conditions post remediation	A condition of the Section B SAS is to require the ALC to update asbestos register for Homestead Site to include Disposal Site
8	A review be conducted of the containment cell construction with regard to the level of compliance with the Landfill BEMP guidance.	Results of site inspection & the document provided in the SAR

A summary of data gaps in the validation assessment for the Homestead Site identified in **Sections 4.2, 4.3, 4.7** and **4.8** and how the Site Auditor proposed to address them is provided in **Table 5-2**.

Table 5-2 Proposed Audit Methodology to Address Data Gaps at Homestead Site

No.	Data Gap	Proposed Mitigation Approach by Site Auditor
1	Community engagement by ALC	ALC to complete all community engagement work associated with the site auditor's site inspection prior to the commencement of work
2	Provide NT EPA with detailed plans, technical specs & construction QA plan for design/construction of containment cell & infrastructure (PAN condition 3)	Site Auditor to undertake additional validation work documented in this SAR
3	Erosion & sediment risk control plan by Asbestos Contractor	Site auditor to verify acceptable site condition by inspection & photographic record
4	Approval of containment cell design report from Site Auditor	Issue this SAR
5	Absence of material tracking document	Results of site inspection & issue this SAR
6	Risk of asbestos remaining in buildings	Site auditor to check that all site buildings were newly constructed, all old buildings had been demolished, and all building and demolition (**B&D**) waste had been removed
7	Risk of visible asbestos remaining on ground surface at Homestead Site	Detailed survey across site in accordance with NEPM (2013) Schedule B(2) to check for any visible asbestos. Raking and/or use of mattock/spade to remove vegetation
8	Risk of fibrous asbestos remaining at the Homestead Site	Collect soil samples at 15 locations using judgemental sampling methodology given in NEPM (2013) Schedule B(2)
9	Homestead Site subject to ongoing monitoring, with future exposure of asbestos in soils that were not visible during site surveys remaining a possibility, particularly in areas of dense vegetation and where wind and water erosion occurs to the soil surface	LTEMP to be prepared by Site Auditor and attached to a Section B SAS
10	Existing asbestos register for Homestead Site to be updated to reflect site conditions post remediation works	A condition of the Section B SAS is to require the ALC to update asbestos register for Homestead Site to include Disposal Site

The additional validation work completed by the Site Auditor comprised:

- 22/05/23: Spent whole day at the Disposal Site. The work involved a detailed inspection of the cell and surrounding area and taking a photographic record, taking GPS coordinates for main features in the area, drilling 5 hand auger holes to the extent practicable, logging each borehole, and the collection of a soil sample from each borehole;
- 23/05/23: Spent whole day at the Homestead Site. The work involved a detailed inspection of the Site and taking a photographic record, taking GPS coordinates for main features in the area, emu picking suspected visible ACM fragments when found, collecting surface soil samples from 15 locations spread across the Site; and
- 24/05/23: Spent whole day in the ALC office documenting the validation data and preparing samples for dispatch under COC to the NATA-accredited lab ALS located in Newcastle, which is where ALS do their asbestos testing.

5.2 Disposal Site

5.2.1 Scope of Field Work

The ALC Mining & Sustainability Manager, Dr Ian Hollingsworth[90], inspected the Disposal Site on 17/05/23 and used a GARMIN GPSMAP 66s on averaging setting to obtain GPS coordinates at the four corners of the galvanised pipe fence constructed around the containment cell. These coordinates are:

- 0656690E, 8469349N
- 0656734E, 8469357N
- 0656726E, 8469391N
- 0656687E, 8469380N

The Site Auditor and Dr Hollingsworth from the ALC investigated the Disposal Site for the whole of the day on 22/05/23. The work undertaken involved:

- Community engagement involved have an ALC elder accompany Dr Swane throughout the investigation;
- Walkover inspection along the galvanised pipe fence to observe conditions outside the Disposal Site;
- Walkover inspection across the Disposal Site;
- Collection of a photographic record of site conditions, with copies provided in **Appendix D**;
- Drilling 5 hand auger holes through the cap to a maximum depth of 1.2 m, and
- The collection of a sample of the top 100 ml of soil from each hand auger hole.

5.2.2 Site Observations

The main observations of the Disposal Site made by the Site Auditor were:

- A galvanised pipe fence defined the boundary of the galvanised pipe fence constructed around the containment cell (Photos 1 – 3). The area was rectangular in shape with lengths of 33 x 47 m;
- The topography was flat with no depressions with the ground surface having a gentle slope away from the centre of the area. The soils at the ground surface corresponded to natural clay soil from the area. There was no evidence of subsidence;
- No visible asbestos was observed during the site inspection and fieldwork;
- Warning signs were attached to the boundary fence surrounding Disposal Site stating "*Warning, Asbestos Materials Buried in this Area*, refer to the site asbestos register and asbestos management plan" (Photo 2);
- Natural revegetation of the area was occurring, with native plant and tree species re-establishing across the area (Photos 2, 3, 9 & 11); and
- Some soil erosion mitigation measures had been established across the area involving the placement of tree trunks to form a stormwater barriers and the re-establishment of native vegetation (Photo 4).

5.2.3 Borehole Drilling, Soil Sampling & Lab Testing

Five hand auger boreholes were drilled across the Disposal Site at the locations shown in **Figure 5-1**.

[90] ALC 18/05/23 email

Figure 5-1 Borehole Locations at Disposal Site (Basemap: Google Maps)

Details recorded for these sample locations are:

- BH01 (GPS coordinates 0656706E, 8469368N): Located at the centre of the cell, hand augered to 1.2m. Cap had a thickness > 1.2 m comprising red brown clay with moisture content increasing with depth (Photo 5). Surface soil sample 1;
- BH02 (GPS coordinates 0656721E, 8469365N): Located near SE corner of the cell, hand augered to 1.2m. Cap had a thickness > 1.2 m comprising deep red clay with moisture content increasing with depth (Photo 6). Surface soil sample 2;
- BH03 (GPS coordinates 0656720E, 8469384N): Located near NE corner of the cell, hand augered to 1.2m. Cap had a thickness > 1.2 m comprising deep red clay with moisture content increasing with depth (Photo 7). Surface soil sample 3;
- BH04 (GPS coordinates 0656698E, 8469363N): Located near SW corner of the cell, hand augered to 1.2m. Cap had a thickness > 1.2 m comprising deep red clay with moisture content increasing with depth (Photo 8). Surface soil sample 4; and
- BH05 (GPS coordinates 0656693E, 8469376N): Located near NW corner of the cell, hand augered to 1.2m. Cap had a thickness > 1.2 m comprising deep red clay with moisture content increasing with depth (Photos 9 & 10). Surface soil sample 5.

The Site Auditor collected a sample of the top 100 ml of soil from each hand auger hole. This involved:

- Laying out the hand auger drill spoil on a plastic sheet with depth indicator, as shown by the photos in **Appendix D**;
- Each sample was collected using a hand trowel, with the soil placed in a metal tray;
- The soil in the tray was then mixed and inspected for visible asbestos. No evidence of asbestos was found in any sample;
- The sampling equipment and hand auger where then cleaned after each borehole and sample was collected;
- The soil was then transferred to double sealed zip-lock bags and labelled; and
- A COC form was completed and sent with the samples to the NATA-accredited asbestos testing ALS lab in Newcastle, NSW.

The lab tests detected no asbestos in any of the five soil samples (numbered 1 to 5).

5.2.4 Site Auditor Review

The Site Auditor considered the additional validation data obtained for the Disposal Site addressed data gaps 1 – 5 and 8 listed in **Table 5-1,** and supported the conclusions that the containment cell:

- was constructed to an appropriate standard that was protective of human health and the environment; and
- met NT EPA guidance;

provided it was subject to appropriate long-term management.

The evidence supporting these conclusions included:

- The data collected by the earlier remediation and validation work, as documented and reviewed in **Section 4**;
- The observations made by the Site Auditor as recorded by field notes and sampling plan prepared at the time of the investigation work and the photographic record (**Appendix D**);
- The soil sampling and lab testing met the DQOs, with copies of the lab test certificate, COC form and QA/QC lab certificates provided in **Appendix B**;

- The location and size of the containment cell was consistent with the plan provided in the PAN and earlier data provided by Agon;
- The five boreholes indicated that the cap was at least 1.0 m thick and constructed of the natural red/brown clay soils that were excavated when the containment cell was excavated;
- The ground surface across the containment cell was stable and not subject to any significant soil erosion;
- Native vegetation was re-establishing itself across the Containment Cell;
- The site inspection found no visible ACM at the ground surface;
- The borehole drilling found no visible ACM in the cap; and
- The lab tests measured no detectible asbestos in the five soil samples collected from the surface soils at the 5 boreholes.

The Site Auditor addressed the other data gaps listed in **Table 5-1** (items 6 – 8) by preparing a concise LTEMP for the Disposal Site that was attached to a Section B SAS numbered ALC_2, with a copy provided in **Appendix F**.

5.3 Homestead Site

5.3.1 Scope of Field Work

The Site Auditor and Dr Hollingsworth from the ALC investigated the Homestead Site for the whole of the day on 23/05/23. The work undertaken involved:

- Observation of the site layout, the buildings present and the areas that were not on private land that could be investigated;
- Walkover inspection across the accessible parts of the Homestead Site;
- Collection of a photographic record of site conditions, with copies provided in **Appendix D**;
- The emu picking of visible ACM fragments were found; and
- The collection of surface soil samples from 11 locations spread across the Homestead Site and suspected solid ACM fragments from 4 locations.

5.3.2 Site Observations

The main observations of the Homestead Site made by the Site Auditor were:

- All structures from the former fish factory had been demolished and the B&D waste removed;
- The topography was flat with surface water draining to the ocean. Vegetation was relatively sparse and mainly consisted of a grass cover, and there was no evidence of any significant soil erosion at the Site;
- The Homestead Site was occupied by six occupied houses enclosed with fences as shown by the Google Map in **Figure 5-2**;
- Public roads had been constructed around the area;
- There was some relatively minor dumped waste across the Homestead Site likely to have been of recent origin associated with the area's residential land use;
- Fragments of old visible ACM were found in three areas, these being:
  - The former Duplex Building area (**Figure 5-3**) - 12 fragments of varying sizes (4 – 40 cm^2);
  - The former Process Factory area (**Figure 5-3**) - 13 fragments of varying sizes (1.5–15cm^2); and
  - The new generator area (**Figure 5-3**) - 1 fragment (1.5 cm^2).

Figure 5-2 Aerial Photo of Homestead Site in 2023 (Source: Google Maps)

Figure 5-3 Fieldwork and Sample Locations at Southern Part of Homestead Site

Figure 5-4 Fieldwork and Sample Locations at Northern Part of Homestead Site

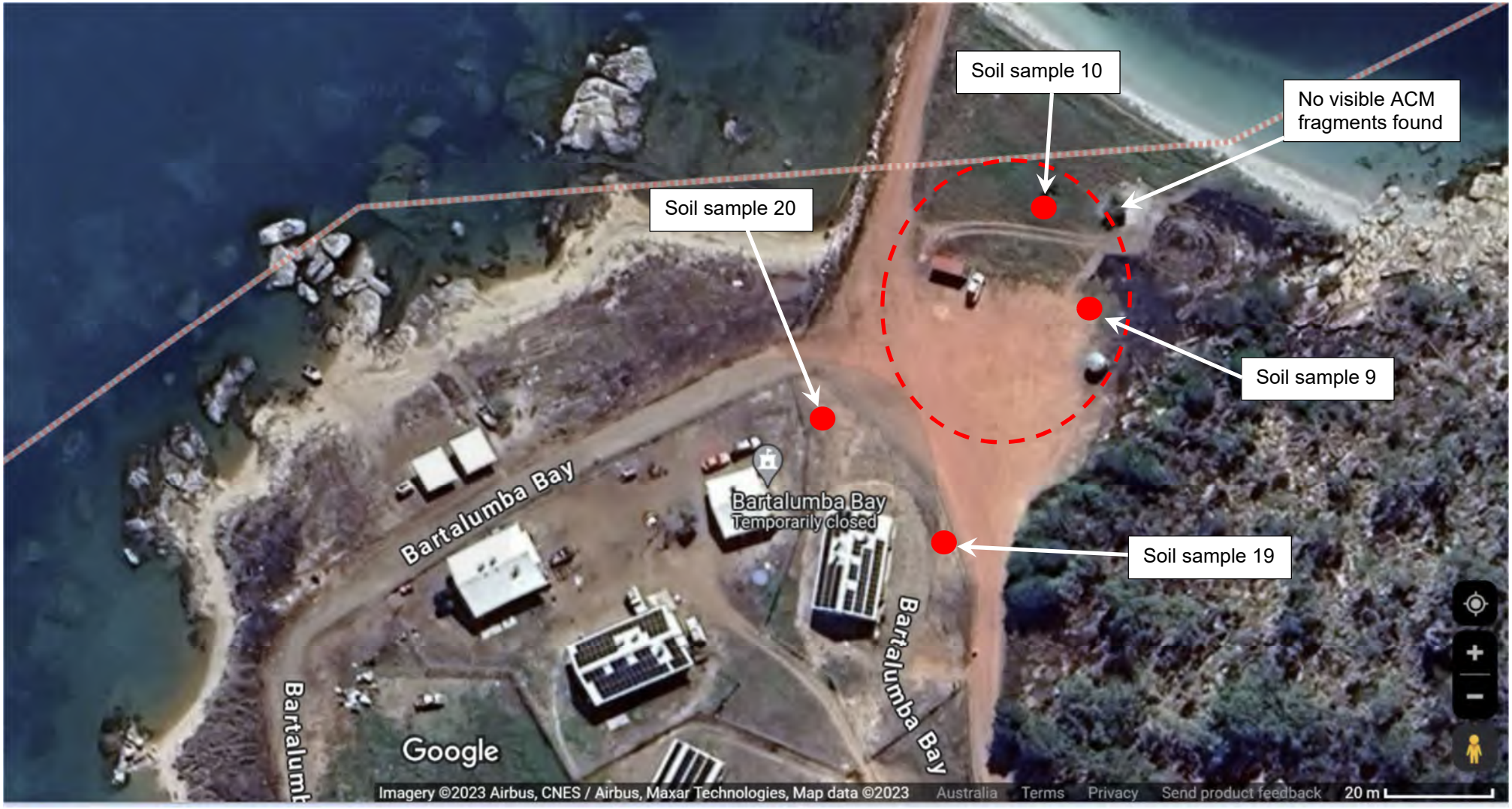


Figure 5-5 Fieldwork and Sample Locations at Northern Jetty

- No visible ACM was found at any other part of the Homestead Site;
- No odorous or stained soils indicative of hydrocarbon contamination was observed;
- The only bulk fuel storage in the area was a bunded AST containing diesel fuel for the generator (Photo 25); and
- An exposed pipeline ran along the western toe of the rock jetty. The pipeline was old and brown at its joints. The pipe was wrapped in fabric, possibly for insultation. No evidence of ACM gaskets were found. The pipe was possibly used for wastewater from the process building.

5.3.3 Borehole Drilling, Soil Sampling & Lab Testing

Surface soil samples were collected from 11 locations spread across the Homestead Site together with solid samples of bonded ACM fragment collected from 4 locations. These sample locations are shown in **Figures 5-3** to **5-5**, with a description of the samples summarised in **Table 5-3**.

Table 5-3 Summary of Samples Collected at Homestead Site

Sample No	Type	Location	Description
6	Solid	Former Duplex Building area	12 bonded ACM fragments of varying size (4 – 40 cm^2)
7	Soil	Western side of former Duplex Building area	Deep red brown silty gravelly sand
8	Soil	Eastern side of former Duplex Building area	Light red brown silty sand with some gravel
9	Soil	Eastern side of former Recreation Club area	Light creamy brown silty sand (natural soil not part of road - carparking area)
10	Soil	North of former Recreation Club area (065 6711E, 847 1266N)	Light brown silty sand collected on southern side of tree and picnic area
11	Solid	Western side of jetty (065 6661E, 847 1289N)	Cloth wrapping around 6 inch cast-iron pipe impregnated with a bitumen type substance
12	Solid	Former Process Factory area	13 bonded ACM fragments of varying size (1.5 – 15 cm^2)
13	Soil	Former Process Factory area (065 6562E, 847 1169N)	Deep red brown silty sand
14	Soil	Former Process Factory area (065 6541E, 847 1131N)	Light brown sand with some gravel
15	Solid	New Generator area	1 bonded ACM fragment 1.5 cm^2
16	Soil	New Generator area (same location as sample 15)	Dark red-brown silty sand
17	Soil	Near new Generator area (065 6674E, 847 1133N)	Brown silty sand with trace of gravel
18	Soil	Beside road (065 6694E, 847 1137N)	Light brown silty sand with shell fragments
19	Soil	Beside fence along eastern boundary road (065 6676E, 847 1169N)	Brown silty sand with gravel
20	Soil	Beside road & property fence at northern end of site (065 6662E, 847 1125N)	Red brown silty sand with gravel

Each grab was placed into double sealed zip-lock bags and labelled. A COC form was then completed and sent with the samples to the NATA-accredited asbestos testing ALS lab in Newcastle, NSW.

The lab tests:

- Detected no asbestos in any of the 11 soil samples collected from the Homestead Site (samples 7 – 10, 13, 14, 16 – 20);
- Confirmed the fabric wrap around the jetty pipeline detected no asbestos (sample 11); and
- Confirmed all bonded fragments were ACM (samples 6, 12 and 15).

5.3.4 Site Auditor Review

The Site Auditor considered the additional validation data obtained for the Homestead Site addressed data gaps 1 – 8 listed in **Table 5-2,** and supported the conclusions that:

- The old buildings that contained asbestos had been demolished and the waste removed in 2018;
- Asbestos contamination at the Homestead Site had been appropriately remediated in 2018;
- All known asbestos contamination at the Homestead Site had been removed and either disposed at a suitably licensed waste facility in Darwin or at the Disposal Site;
- Presently unknown asbestos remaining at the Homestead Site was likely to pose a low risk to residents and the general public; and
- The Homestead Site met NT EPA requirements for residential and open space land use;

provided the Homestead Site was subject to appropriate long-term management.

The evidence supporting this conclusion included:

- The data collected by the earlier remediation and validation work, as documented and reviewed in **Section 4**;
- All structures from the former fish factory had been demolished and the B&D waste removed;
- The observations made by the Site Auditor as recorded by field notes and sampling plan prepared at the time of the investigation work and the photographic record (**Appendix D**);
- The soil sampling and lab testing met the DQOs, with copies of the lab test certificate, COC form and QA/QC lab certificates provided in **Appendix B**;
- Only a relatively small number of bonded ACM fragments were found by the additional validation work across the Homestead Site. All of these fragments were removed from the Site and disposed by the NATA-accredited lab ALS. No visible asbestos was found at any other locations;
- The sample of fabric wrapped around the cast-iron jetty pipe was lab tested and no asbestos was detected;
- The lab tests measured no detectible asbestos in the 11 soil samples collected from the surface soils at the Homestead Site.

The Site Auditor addressed the other data gaps listed in **Table 5-2** (items 9 and 10) by preparing a concise LTEMP for the Homestead Site that was attached to a Section B SAS numbered ALC_1, with a copy provided in **Appendix E**.

5.4 LTEMPs

As part of this site audit, the Site Auditor prepared LTEMPs for the Homestead Site and the Disposal Site that were attached to Section B SASs prepared for each site. The Site Auditor prepared these LTEMPs rather than an environmental consultant because:

- It was not known whether the environmental consultant Agon had been at either site since remediation work was completed in February 2019;
- It took over 3.5 years for Agon to prepare the final version of the SRVR, which was dated 16/09/22 (Ref [9]);
- The final version of the SRVR still contained data gaps that needed to be addressed by the Site Auditor;
- The Site Auditor inspected both sites in May 2023 and undertook additional validation testing that addressed the data gaps in the SRVR; and
- Section 3.4.6 of the NSW EPA (2017) Site Auditor Guidelines allows the Site Auditor to prepare an EMP when the requirements were of a minor nature.

6. Conclusions

6.1 Overview

This SAR contains the results of a site audit for the remediation of asbestos contamination at the former Bartalumba Bay Homestead (the 'Homestead Site') at Groote Eylandt in the Northern Territory (NT), and the disposal of asbestos contaminated soil removed from the Homestead Site into a containment cell constructed in bushland adjacent to Bartalumba Bay Road (the 'Disposal Site'). The Homestead Site covered an area of 31 ha and formed part of NT Portion 1199 plan(s) B 000517. The Disposal Site was located 1.5 km south of the Homestead Site, covered an area of 0.4 ha and formed part of NT Portion 1632, Survey Plan CP 004201. Both areas of land were owned by the Anindilyakwa Land Trust (ALT) and administered by the Anindilyakwa Land Council (ALC).

The source of asbestos contamination at the Homestead Site was asbestos containing materials (ACM) in derelict and damaged buildings, which had been spread across the area and contaminated soil. The remediation of the ACM was subject to a Pollution Abatement Notice No. 2018/6 (PAN) issued by the NT Environment Protection Authority (EPA) dated 18/12/18 (Ref [21]), which required among other things that the remediation work be subject to an environmental (i.e. site) audit conducted in accordance with the NT Waste Management and Pollution Control (WMPC) Act 1998.

6.2 Remediation and Validation Work

The remediation strategy for ACM building material and ACM contaminated soil at the Homestead Site was prepared by the environmental consultant Agon. The strategy evolved over a three month period, culminating in a RAP dated 5/11/18 (Ref [5]). Over this period the Site Auditor issued five interim audit advices dated 19/09/18, 25/10/18, 9/11/18, 13/11/18 and 20/11/18, copies of which are provided in **Appendix C**. The Site Auditor considered the RAP was capable of remediating the Homestead Site to a condition suitable for residential land use and generally met NT EPA requirements as specified in PAN No. 2018/6 provided the interim audit advice issued by the Site Auditor was also followed. A detailed review of the RAP is provided in **Section 3**.

The Contractor who undertook asbestos remediation work at the Homestead and Disposal Sites was Darwin Asbestos and Demolition Services (DADS), who undertook the work between November 2018 and February 2019 under the supervision and direction of the Asbestos Consultant Agon, who was also responsible for undertaking the validation work.

Agon described the remediation work as having involved:

- The removal of ACM from nominated dilapidated buildings at the Homestead Site, with the buildings to be subsequently demolished. Removed ACM was to be transported offsite and disposed at the Shoal Bay Waste Management Facility (SBWMF), Karama NT; and
- The construction of a containment cell at a location (the Disposal Site) approximately 1.5 km to the south-east of the Homestead Site, with asbestos debris and impacted soils across the site removed via a combination of surface emu-pick and soil excavation and contained for long term management within the containment cell.

Agon initially documented the work in two site remediation and validation reports (**SRVRs**):

- Ref [6]: 7 December 2018 *'Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project*'; and
- Ref [7]: 22 March 2019 *'Close Out Report, Bartalumba Bay Homestead, Groote Eylandt'*.

The Site Auditor reviewed these reports and issued an interim audit advice #06 dated 3/09/19 (Appendix C). The advice concluded that the combined information provided by these two SRVRs did not meet NT EPA

guidance on site contamination validation reports, and did not allow the Site Auditor to reach a conclusion regarding compliance with the PAN or the suitability of the sites for their intended land uses.

A revised SRVR (Ref [9]) was then issued by Agon on 16/09/22 that provided additional data on the remediation and validation work together with the earlier data. The third SRVR provided more detailed information on the remediation and validation work such that it was considered to supersede the previous two reports. With the issuing of three SRVRs over a 3.5 year period, the Site Auditor considered that reasonably endeavours had been taken to obtain all relevant data on the remediation work undertaken at the Homestead and Disposal Sites. A detailed review of the documentation provided by Agon on the remediation and validation work conducted at the Homestead and Disposal Sites is provided in **Section 4**.

The Site Auditor identified significant data gaps in the documentation provided by Agon on the remediation and validation work undertaken at the Homestead and Disposal Sites. The Site Auditor considered the most efficient and practical approach to address the data gaps was for the Site Auditor to inspect the two sites and undertake additional sampling and testing. This approach was initially discussed with the ALC and the NT EPA.

The methodology was initially documented in an interim audit advice issued by the Site Auditor on 12/05/23 (**Appendix C**) and refined at the time of the site inspection. The additional validation work was completed by the Site Auditor in May 2023, with documentation of the work provided in **Section 5**.

6.3 Suitability of Homestead Site for Intended Land Uses

The Site Auditor considered the additional validation data obtained for the Homestead Site addressed data gaps left from the earlier remediation and validation work conducted in 2018 – 2019. The Site Auditor considered the weight of evidence supported the conclusions that:

- The old buildings that contained asbestos had been demolished and the waste removed in 2018;
- Asbestos contamination at the Homestead Site had been appropriately remediated in 2018;
- All known asbestos contamination at the Homestead Site had been removed and either disposed at a suitably licensed waste facility in Darwin or at the Disposal Site;
- Presently unknown asbestos remaining at the Homestead Site was likely to pose a low risk to residents and the general public; and
- The Homestead Site met NT EPA requirements for residential and open space land use;

provided the Homestead Site was subject to appropriate long-term management.

The evidence supporting these conclusions is documented in **Section 5.3.4**.

Consequently, the Site Auditor prepared a Section B SAS for the Homestead Site numbered ALC_1. The SAS concluded that the Site can be made suitable for residential and open space land use with regard to asbestos contamination remediated under PAN No. 2018/6, provided the site was managed in accordance with the LTEMP prepared by the Site Auditor titled "*Long-Term Environmental Management Plan for Contamination Risks at the Former Bartalumba Bay Homestead Site*" dated 21/11/23.

Conditions placed on the SAS were:

1. *"This Section B SAS numbered ALC_1 only applies to the former Bartalumba Bay Homestead site covering 31.11 ha of land defined as NT Portion 01199 plan(s) B 000517.*
2. *The Anindilyakwa Land Trust (ALT) is responsible for ensuring that the Homestead Site remains free of contamination and that any new / unexpected contamination found is managed in a safe manner protective of human health and the environment in accordance with the LTEMP attached to this SAS or future amended versions accepted by the NT EPA.*

3. *Unknown asbestos contamination at low concentrations may remain at the Homestead Site. However, such contamination should not affect the site's suitability for residential land use provided any new asbestos find is managed in accordance with the LTEMP.*
4. *Unexpected finds of other types of contamination made during maintenance or construction work at the Homestead Site need to be managed in accordance with the LTEMP.*
5. *New contamination caused by future activities at the Homestead Site need to be managed in accordance with the LTEMP."*

The Site Auditor placed four comments on the SAS. These comments record key observations in light of the audit, which were not directly related to the suitability of the Site for the approved land use/s. Some of these observations covered aspects relating to the broader environmental context to aid in decision-making in relation to the site. These comments were:

1. *"This site audit statement (SAS) should be read in conjunction with its Site Audit Report (SAR). The SAR provides:*
   a) *A detailed review of documentation provided on the investigation, remediation and validation work conducted at the Homestead Site; and*
   b) *An assessment of contamination risks that remain at the Homestead Site and its suitability for continued residential / open space land uses.*
2. *The outcomes achieved by the investigation and remediation work for asbestos contamination at the Homestead Site have met the requirements of the PAN No. 2018/6. While the timing of some activities were delayed, the required outcomes were achieved or can be achieved through implementation of the LTEMP.*
3. *At the time this SAS was completed, no further investigation or remediation of asbestos contamination was needed to render the Homestead Site fit for its existing residential / open space uses. All known asbestos contamination exceeding Residential A soil criteria had been removed from the site and disposed off-site in accordance with PAN No. 2018/6.*
4. *A separate SAS numbered ALC_2 has been prepared for the long-term management of asbestos contamination placed in a containment cell located at the Disposal Site legally defined as NT Portion 1632, Survey Plan CP 004201 (Figure 1)."*

6.4 Suitability of Disposal Site for Intended Land Uses

The Site Auditor considered the additional validation data obtained for the Disposal Site addressed the data gaps left from the earlier remediation and validation work conducted in 2018 – 2018. The Site Auditor considered the weight of evidence supported the conclusions that the containment cell:

- was constructed to an appropriate standard protective of human health and the environment; and
- met NT EPA guidance;

provided the Disposal Site was subject to appropriate long-term management.

The evidence supporting these conclusions is documented in **Section 5.2.4**.

Consequently, the Site Auditor prepared a Section B SAS for the Disposal Site numbered ALC_2. The SAS concluded that the Site can be made suitable for a containment cell for asbestos contaminated soil waste removed from the Homestead Site under PAN No. 2018/6, provided the site was managed in accordance with the LTEMP prepared by the Site Auditor titled "*Long-Term Environmental Management Plan for the Disposal Site along Bartalumba Bay Road, Groote Eylandt*" dated 21/11/23.

Conditions placed on the SAS were:

1. *"This Section B SAS numbered ALC_2 only applies to the Disposal Site legally defined as NT Portion 1632, Survey Plan CP 004201 where an engineered containment cell for asbestos contaminated soil removed from the Homestead Site in 2018 – 2019 has been constructed.*
2. *The Anindilyakwa Land Trust (ALT) is responsible for ensuring that the Disposal Site is managed in accordance with the LTEMP attached to this SAS or future amended versions accepted by the NT EPA.*
3. *The area occupied by the Disposal Site and the engineered containment cell are to be registered as an area of contaminated land on the NT EPA Contaminated Land and Environmental Audit Results register and the land title, as required by Condition 16 of PAN No. 2018/6."*

The Site Auditor placed three comments on the SAS. These comments record key observations in light of the audit, which were not directly related to the suitability of the Site for the approved land use/s. Some of these observations covered aspects relating to the broader environmental context to aid in decision-making in relation to the site. These comments were:

1. *"This site audit statement (SAS) should be read in conjunction with its Site Audit Report (SAR). The SAR provides a detailed review of documentation provided on the design, construction and long-term management requirements for the engineered containment cell constructed at the Disposal Site.*
2. *The outcomes achieved by the design and construction work for the engineered containment cell at the Disposal Site have met the requirements of the PAN No. 2018/6. While the timing of some activities were delayed, the required outcomes were achieved or can be achieved through implementation of the LTEMP.*
3. *A separate SAS numbered ALC_1 has been prepared for the long-term management of contamination risks at the former Bartalumba Bay Homestead Site legally defined as NT Portion 01199 plan(s) B 000517 (Figure 1, LTEMP)."*

7. Other Relevant Information

This Site Audit Report and the accompanying Site Audit Statements relate to the Bartalumba Bay Homestead Site and the Disposal Site along Bartalumba Bay Road, Groote Eylandt. The report has been prepared in accordance with the NT WMPC Act and the NSW CLM Act. Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

The audit report and statement have been prepared for ALC (the 'Client') for the purposes nominated in the audit report. It is acknowledged that the audit report and statement may be used by the NT EPA in reaching their conclusions about the Homestead and Disposal Sites. The scope of work performed in connection with the audit review may not be appropriate to satisfy the needs of any other person. Any other person's use of, or reliance on, the audit report and statement, or the findings, conclusions, recommendations or any other material presented in them, is at that person's sole risk.

The audit was, and this report is, limited by and relies on the scope of work undertaken for this audit, the information made available to the Site Auditor by the Client and their consultant Agon through the documents provided to us, and also on our observations of the Site made during the audit period. The Site Auditor has taken this information to represent a fair and reasonable characterisation of the status of the land. Whilst all reasonable care has been taken, to the extent practical under normal auditing procedures, to assure adequacy of the information, the Site Auditor and Ian Swane & Associates (IS&A) cannot warrant that this is the case. If the information is subsequently determined to be false, inaccurate or incomplete, it is possible that the Site Auditor's conclusions, as expressed in the audit report and statement may change.

This Site Audit applies to the condition of the Homestead and Disposal Sites at the time the Site Auditor inspected the sites in May 2023. The Site Auditor and IS&A cannot be responsible for future activities that may result in changes to the site conditions. In the event that site conditions have since changed or are likely to change in the future, the Site Auditor recommends that the property owner engage an environmental consultant to confirm that the sites are being properly maintained to a condition suitable for their intended uses.

It must also be recognised that sub-surface conditions, including groundwater levels and contaminant concentrations, can change in a limited time. This should be borne in mind if the audit report and statement is used after a protracted delay.

There are always some variations in sub-surface conditions across a site that cannot be fully defined by investigation. No investigation, in practice, can be thorough enough to preclude the presence of materials on the subject property that presently, or in the future, may be considered hazardous. Hence it is possible that the measurements and values obtained from the sampling and testing presented do not represent the extremes of conditions which exist within the sites.

Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable at the time of this audit report and statement, may in the future become subject to different regulatory standards and require reassessment. It is not possible in a Site Audit Report to present all data that could be of interest to all readers of this report. Readers are therefore referred to the referenced documentation for further data.

Yours faithfully

Dr Ian C Swane (CPEng & CEnvP)
Accredited EPA Site Auditor in NSW and NT

Appendix A. Figures & Tables from Agon (August 2018) Asbestos Survey Report

APPENDIX B: PHOTOGRAPH LOG

Photograph 1 – ACM debris (including friable materials) to the east elevation of the Duplex Dormitory

Photograph 2 –Duplex Dormitory

Photograph 3 – ACM sheet debris (including friable materials) strewn throughout the internals of the Recreation Club

Photograph 4 – Current open layout of the Recreation Club

Photograph 5 – ACM sheet debris (including friable materials) strewn throughout the internals of the Recreation Club

Photograph 6 – Friable paperback vinyl sheeting within the Recreation Club

Photograph 7 – ACM sheet debris (including friable materials) strewn throughout the internals of the Recreation Club

Photograph 8 – ACM sheet debris (including friable materials) strewn throughout the internals of the Recreation Club

Photograph 9 – Dense grass cover to the north elevation of the Recreation Club (May 2018)

Photograph 10 – Dense grass cover burnt to the north elevation of the Recreation Club (July 2018)

Photograph 11 – Vegetative cover across the foreshore (May 2018)

Photograph 12 – Vegetative cover burnt across the foreshore (July 2018)

Photograph 13 – ACM debris on concrete pads across the site, with surrounding vegetation cover (May 2018)

Photograph 14 – ACM debris on concrete pads across the site

Photograph 15 – ACM debris on concrete pads across the site, with surrounding vegetation cover burnt, exposing further debris (July 2018)

Photograph 16 – ACM debris on concrete pads across the site

Photograph 17 – Vegetative cover across site (May 2018)

Photograph 18 – Vegetative cover burnt across site (July 2018)

Photograph 19 – ACM debris spread across surface of central depression

Photograph 20 – Recently burnt central depression

Photograph 21 – ACM debris spread across area encompassing the rock wall, north of the Duplex Dormitory

Photograph 22 – ACM vinyl tile debris on rock wall, north of Duplex Dormitory

Photograph 23 – ACM debris spread across area encompassing the rock wall, north of the Duplex Dormitory

Photograph 24 – Background airborne fibre monitoring conducted around the site

Photograph 25 – Background airborne fibre monitoring conducted around the site

Photograph 26 – Background airborne fibre monitoring conducted around the site

Photograph 27 – Background airborne fibre monitoring conducted within the Recreation Club

Photograph 28 – Background airborne fibre monitoring conducted within houses

Photograph 29 – Asbestos audit conducted of the North West Foreshore House (understood to be built pre-2003)

Photograph 30 – Asbestos audit conducted of the South Elevated House (understood to be built pre-2003)

APPENDIX C: NATA ACCREDITED BULK SAMPLE ANALYSIS REPORT NT1807301753 (INCLUDING SWAB SAMPLE RESULTS)

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Asbestos Bulk Sample Analysis Report
Certificate No NT1807301753

Client:	Agon Environmental	**Sampled By:**	Jack Pilkington
Client Contact:	Jack Pilkington	**# of Samples Submitted:**	32
Telephone:	0487 985 312	**Sampling Date:**	25/07/2018
Email:	jack.pilkington@agonenviro.com.au	**Date Received:**	30/07/2018
Project:	JA0336	**Identification Date:**	01/08/2018
Site Location:	Bartalumba Bay, Groote Eylandt	**Issue Date:**	01/08/2018

Test Methodology: Polarized light microscopy examination including dispersion staining techniques for the presence of asbestos in accordance with the methodology outlined in the In-House Procedure QP-930-001 which is based on Australian Standard (AS4964-2004)

Sample ID	Sample Location	Sample Description	Approximate Size or Weight	Asbestos Detected (Yes/No)	Fibre Types Detected
S01	North west foreshore house - Internal - Living room - Blue/green vinyl floor	Vinyl tile	45x20x2mm	No	NAD-NFD
S02	North west foreshore house - Internal - Kitchen - Blue/grey vinyl floor sheeting	Vinyl sheeting	40x35x2mm	No	NAD-NFD
S03	North west foreshore house - Internal - Kitchen - Adhered to blue/grey vinyl floor sheeting	Vinyl backing	40x35x1mm	No	NAD-ORG
S04	North west foreshore house - External - South west side of house - Debris	Fibre cement sheeting	100x55x10mm	No	NAD-ORG
S05	North west foreshore house - External - South west side of house - Debris	Fibre cement sheeting	5x2x1mm	No	NAD-ORG

Fibre Types

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
NFD	*No fibres detected*	*NAD*	*No Asbestos Detected*

Notes: *Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.*
Detection limit (AS 4964) – 0.1 g/kg.
Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.
The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only.

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Asbestos Bulk Sample Analysis Report
Certificate No NT1807301753

Sample ID	Sample Location	Sample Description	Approximate Size or Weight	Asbestos Detected (Yes/No)	Fibre Types Detected
S06	North west foreshore house - External - East and west elevations - Eave linings	Fibre cement sheeting	15x10x2mm	No	NAD-ORG
S07	North west foreshore house - External - North side (adjacent fence) - Debris	Fibre cement sheeting	10x10x2mm	No	NAD-ORG
S08	Foreshore north of Recreation Club - Brake pad to car parts	Brake pads	10x10x2mm	Yes	CHR
S09	Foreshore north of Recreation Club - Debris	Fibre cement sheeting	80x65x4mm	Yes	CHR
S10	Roadways - West of Recreation Club - Debris	Fibre cement sheeting	50x50x3mm	Yes	CHR
S11	Roadways - North of houses (adjacent foreshore) - Debris	Fibre cement sheeting	55x50x6mm	Yes	CHR
S12	Grounds - Rock wall (north of dormitory) - Debris	Fibre cement sheeting	50x30x15mm	Yes	CHR
S13	Grounds - Rock wall (north of dormitory) - Brake pads	Brake pads	15x5x2mm	Yes	CHR
S14	Ablution block - Internal - Toilet partitions	Fibre cement sheeting	2x2x1mm	Yes	CHR

Fibre Types

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
NFD	*No fibres detected*	*NAD*	*No Asbestos Detected*

Notes: *Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.*
Detection limit (AS 4964) – 0.1 g/kg.
Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.
The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only.

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Asbestos Bulk Sample Analysis Report
Certificate No NT1807301753

Sample ID	Sample Location	Sample Description	Approximate Size or Weight	Asbestos Detected (Yes/No)	Fibre Types Detected
S15	Ablution block - Internal - Ceiling lining	Fibre cement sheeting	5x5x1mm	Yes	CHR
S16	South elevated house - Internal - Living room - Wall lining	Fibre cement sheeting	2x2x1mm	No	NAD-ORG
S17	South elevated house - Internal - Bedroom 1 - Ceiling lining	Fibre cement sheeting	2x2x1mm	No	NAD-ORG
S18	South elevated house - External - Level 1 north and south entrances - Door frames	Fibre cement sheeting	2x2x1mm	No	NAD-ORG
S19	South elevated house - External - Ground floor laundry - Wall lining	Fibre cement sheeting	20x5x5mm	No	NAD-ORG
S20	South elevated house - External - Level 1 - Wall lining	Fibre cement sheeting	20x10x2mm	Yes	CHR-ORG
S21	North orange house - Pantry cupboard	Dust	80x75x0.5mm	No	NAD-ORG-SMF
S22	North orange house - Bathroom benchtop	Dust	80x75x0.5mm	No	NAD-ORG
S23	North orange house - Bedroom 2 cupboard	Dust	80x75x0.5mm	No	NAD-ORG-SMF

Fibre Types

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
NFD	*No fibres detected*	*NAD*	*No Asbestos Detected*

Notes: *Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.*
Detection limit (AS 4964) – 0.1 g/kg.
Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.
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Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
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Asbestos Bulk Sample Analysis Report
Certificate No NT1807301753

Sample ID	Sample Location	Sample Description	Approximate Size or Weight	Asbestos Detected (Yes/No)	Fibre Types Detected
S24	North orange house - Kitchen sink top	Dust	80x75x0.5mm	No	NAD-ORG
S25	North west foreshore house - Kitchen sink top	Dust	80x75x0.5mm	No	NAD-ORG
S26	North west foreshore house - Laundry washing machine	Dust	80x75x0.5mm	No	NAD-ORG
S27	North west foreshore house - Bedroom 3 drawers	Dust	80x75x0.5mm	No	NAD-ORG
S28	North west foreshore house - Bedroom 1 drawers	Dust	80x75x0.5mm	No	NAD-ORG
S29	South elevated house - Kitchen window	Dust	80x75x0.5mm	No	NAD-ORG-SMF
S30	South elevated house - Bedroom 1 TV desk	Dust	80x75x0.5mm	No	NAD-ORG-SMF
S31	South elevated house - Bathroom cupboard top	Dust	80x75x0.5mm	No	NAD-ORG
S32	South elevated house - Hallway storage shelf	Dust	80x75x0.5mm	No	NAD-ORG

Detection limit (AS 4964) – 0.1 g/kg

Fibre Types

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
NFD	*No fibres detected*	*NAD*	*No Asbestos Detected*

Notes: *Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.*
Detection limit (AS 4964) – 0.1 g/kg.
Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.
The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only.

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Asbestos Bulk Sample Analysis Report
Certificate No NT1807301753

Approved Identifier: Dianne Loffler

Report Approved By: Dianne Loffler

Fibre Types

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
NFD	*No fibres detected*	*NAD*	*No Asbestos Detected*

Notes: *Hand-picked refers to small discrete amounts of asbestos distributed unevenly in a large body of non-asbestos material.*
Detection limit (AS 4964) – 0.1 g/kg.
Due to their nature, confirmation using another independent analytical technique is recommended if no asbestos is detected in samples of vinyl tiles, bituminous materials, mastics, adhesives, paints, sealants, resins or ore.
The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only.

APPENDIX D: NATA ACCREDITED BACKGROUND AIRBORNE FIBRE MONITORING REPORTS

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336

MONITORING DATE:	Wednesday, 25 July 2018
REPORT DATE:	Thursday, 26 July 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	N/A
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Homestead Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Background airborne fibre monitoring around the Bartalumba Bay Homestead, including within residences.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_1	Int	House (Centre of Site) – Bedroom 2	054	11:58	14:05	3500	0.5/100	<0.01
JA0336_2	Int	House (NW Foreshore) – Kitchen	052	12:08	14:15	3500	0/100	<0.01
JA0336_3	Ext	NW Foreshore	035	12:10	15:40	2500	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.1

MONITORING DATE:	Thursday, 26 July 2018
REPORT DATE:	Thursday, 26 July 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	N/A
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Homestead Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Background airborne fibre monitoring around the Bartalumba Bay Homestead, including within residences.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_4	Ext	Track – North of Duplex Dormitory	035	07:40	12:42	2000	0/100	<0.01
JA0336_5	Ext	SW Side of Recreation Club	034	07:46	11:40	2000	0/100	<0.01
JA0336_6	Ext	Centre of Site	014	07:52	12:40	2000	0/100	<0.01
JA0336_7	Int	North Orange House – Living Room	052	10:30	12:37	3500	0/100	<0.01
JA0336_8	Int	South Elevated House – Living Room	034	11:50	13:58	3500	0.5/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.2

MONITORING DATE:	Friday, 27 July 2018
REPORT DATE:	Friday, 27 July 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	N/A
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Homestead Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Background airborne fibre monitoring around the Bartalumba Bay Homestead, including within residences.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_9	Int	Recreation Club – SW Side Internal	014	07:03	12:46	2000	0/100	<0.01
JA0336_10	Int	Recreation Club – Centre Section Internal	052	07:05	12:49	2000	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

APPENDIX E: NATA ACCREDITED ASBESTOS SOIL SAMPLE ANALYSIS REPORT WA1807301011

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Asbestos Soil Sample Analysis Report
Certificate No WA1807301011

Client:	Agon Environmental	**Sampled By:**	Jack Pilkington
Client Contact:	Jack Pilkington	**# of Samples Submitted:**	7
Telephone:	0487 985 312	**Sampling Date:**	25/07/2018
Email:	jack.pilkington@agonenviro.com.au	**Date Received:**	30/07/2018
Project:	JA0336	**Identification Date:**	01/08/2018
Site Location:	Bartalumba Bay, Groote Eylandt	**Issue Date:**	02/08/2018

Test Methodology: OCTIEF laboratory procedures and methods used for the identification and quantification of asbestos in soils are consistent with AS4964-2004 and the requirements of the NEPM 2013 Assessment of Site Contamination, and in accordance with In-House Procedures QP-930-001 and QP-931-001.

Acronyms

CHR	*Chrysotile (white asbestos) fibres detected*	*ORG*	*Organic fibres detected*
AMO	*Amosite (brown / grey asbestos) fibres detected*	*SMF*	*Synthetic mineral fibres detected*
CRO	*Crocidolite (blue asbestos) fibres detected*	*UMF*	*Unidentified mineral fibres detected*
ACM	*Asbestos containing material*	*NAD*	*No Asbestos Detected*
AF	*Asbestos fines*	*FA*	*Fibrous asbestos*

Notes

Detection limit (AS 4964) – 0.1 g/kg. LOR for asbestos quantification for AF and FA (NEPM) is 0.001% (Non NATA)

The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only. NATA does not accredit sampling.

Asbestos weights and percentages are not covered under the Scope of NATA Accreditation therefore 'NATA accreditation does not cover the performance of this service'. Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present). Percentages for Asbestos content in ACM and soil density are based on the NEPM 2013 default values. All numerical results under this method are approximate and should be used as a guide only.

Trace Asbestos Detected means the results can be interpreted as containing detectable 'respirable' asbestos fibres as per AS 4964 (LOR 5 fibres).

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calculations and/or measurements included in this document are traceable to Australian/National standards.
NATA accreditation number: 15172

Darwin Branch: Unit 12, 16 Charlton Court, Woolner NT 0820
Enquiries: 1800 628 433
www.octief.com.au

Table 1 - Results of sample examination using polarised light microscopy (PLM) including Dispersion Staining

Qualitative Results (NATA)							Quantitative Results (non NATA)					
AS 4964 – 2004 Identification of Asbestos in Bulk Samples							National Environment Protection (Assessment of Site Contamination) Measure (2013)					
								AF / FA (2 - 7mm)		AF / FA (<2mm)		
Sample ID	Sample Location	Sample Description	Approx. Sample Weight (dry) (g)	Asbestos Detected	Fibre Type Detected	Trace Asbestos Detected	Approx. Sample Weight (dry) (kg)	Weight of AF/FA (g)	AF/FA (as 100% Asbestos in AF/FA) (%)	Sub-sample Weight (g)	Weight of AF/FA (g)	AF / FA (as 100% asbestos in AF/FA) (%)
SS1	SS1 (13° 49'31.02"S, 136°26'56.10"E)	Soil	988	No	NAD-ORG	No	0.988	0.000	<0.001	103.00	0.0000	<0.001
SS2	SS2 (13° 49'27.92"S, 136° 26'58.24"E)	Soil	1254	No	NAD-ORG	No	1.254	0.000	<0.001	112.00	0.0000	<0.001
SS3	SS3 (13° 49"27.26"S, 136° 26'59.24"E)	Soil	896	Yes	CHR-ORG	No	0.896	0.000	<0.001	110.00	0.0020	0.002
SS4	SS4 (13° 49'29.68"S, 136°26'58.26"E)	Soil	964	No	NAD-ORG	No	0.964	0.000	<0.001	113.00	0.0000	<0.001

Notes

Detection limit (AS 4964) – 0.1 g/kg. LOR for asbestos quantification for AF and FA (NEPM) is 0.001% (Non NATA)

The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only. NATA does not accredit sampling.

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Trace Asbestos Detected means the results can be interpreted as containing detectable 'respirable' asbestos fibres as per AS 4964 (LOR 5 fibres).

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calculations and/or measurements included in this document are traceable to Australian/National standards.
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Qualitative Results (NATA)							Quantitative Results (non NATA)					
AS 4964 – 2004 Identification of Asbestos in Bulk Samples							National Environment Protection (Assessment of Site Contamination) Measure (2013)					
								AF / FA (2 - 7mm)		AF / FA (<2mm)		
Sample ID	Sample Location	Sample Description	Approx. Sample Weight (dry) (g)	Asbestos Detected	Fibre Type Detected	Trace Asbestos Detected	Approx. Sample Weight (dry) (kg)	Weight of AF/FA (g)	AF/FA (as 100% Asbestos in AF/FA) (%)	Sub-sample Weight (g)	Weight of AF/FA (g)	AF / FA (as 100% asbestos in AF/FA) (%)
SS5	SS5 (13° 49'30.22"S, 136°26'59.09"E)	Soil	867	Yes	CHR-ORG	No	0.867	0.000	<0.001	105.00	0.0010	<0.001
SS6	SS6 (13° 49'31.11"S, 136°26'57.93"E)	Soil	968	Yes	CHR-ORG	No	0.968	0.096	0.010	100.00	0.0020	0.002
SS7	SS7 (13° 49'31.26"S, 136° 27'0.93"E)	Soil	885	No	NAD-ORG	No	0.885	0.000	<0.001	103.00	0.0000	<0.001

Approved Identifier: Dianne Loffler

Report Approved By: Dianne Loffler

Notes

Detection limit (AS 4964) – 0.1 g/kg. LOR for asbestos quantification for AF and FA (NEPM) is 0.001% (Non NATA)

The results contained within this report relate only to the sample(s) submitted for analysis and OCTIEF accepts no responsibility for the collection, packaging and transportation of sample submitted by external parties. Sample descriptions, sizes and weights are approximate only. NATA does not accredit sampling.

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Trace Asbestos Detected means the results can be interpreted as containing detectable 'respirable' asbestos fibres as per AS 4964 (LOR 5 fibres).

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calculations and/or measurements included in this document are traceable to Australian/National standards.
NATA accreditation number: 15172

Appendix B. Figures & Tables from Remediation & Validation & Reports

Agon (7 December 2018) Asbestos Remediation Report

Table 1. Asbestos Fines/Fibrous Asbestos in Soil Sample Results

Sample ID	Latitude	Longitude	Duplicate	AF/FA Criteria for Residential Land Use (% w/w)	AF/FA Sample Result (% w/w)	AF/FA Detected
146	-13.82413	136.44956		<0.001	<0.001	No
147	-13.82414	136.44963	D1	<0.001	<0.001	No
149	-13.82418	136.44975		<0.001	<0.001	No
150	-13.82418	136.44982		<0.001	<0.001	No
151	-13.82424	136.44980		<0.001	<0.001	No
153	-13.82422	136.44967		<0.001	<0.001	No
155	-13.82418	136.44956		<0.001	<0.001	No
156	-13.82457	136.44961		<0.001	<0.001	No
157	-13.82448	136.44938		<0.001	<0.001	No
158	-13.82460	136.44938		<0.001	<0.001	No
160	-13.82471	136.44951	D2	<0.001	**0.001**	**Yes**
161	-13.82479	136.44951		<0.001	<0.001	No
162	-13.82487	136.44954		<0.001	<0.001	No
163	-13.82497	136.44957		<0.001	<0.001	No
164	-13.82503	136.44958		<0.001	<0.001	No
165	-13.82472	136.44938		<0.001	<0.001	No
166	-13.82480	136.44945		<0.001	<0.001	No
167	-13.82486	136.44946		<0.001	<0.001	No
168	-13.82496	136.44948		<0.001	<0.001	No
169	-13.82507	136.44952		<0.001	<0.001	No
170	-13.82475	136.44932	D3	<0.001	<0.001	No
171	-13.82484	136.44935		<0.001	<0.001	No
172	-13.82490	136.44938		<0.001	<0.001	No
173	-13.82500	136.44941		<0.001	<0.001	No
174	-13.82508	136.44947		<0.001	<0.001	No
175	-13.82496	136.44931		<0.001	<0.001	No
176	-13.82513	136.44963		<0.001	<0.001	No
177	-13.82514	136.44956		<0.001	**0.002**	**Yes**
178	-13.82527	136.44957		<0.001	**0.008**	**Yes**
179	-13.82517	136.44947		<0.001	**0.006**	**Yes**
180	-13.82526	136.44950	D4	<0.001	**0.002**	**Yes**
181	-13.82532	136.44953		<0.001	**0.004**	**Yes**
182	-13.82525	136.44941		<0.001	<0.001	No
183	-13.82534	136.44943		<0.001	**0.001**	**Yes**
184	-13.82527	136.44930		<0.001	<0.001	No
185	-13.82536	136.44933		<0.001	<0.001	No
186	-13.82529	136.44923		<0.001	<0.001	No
187	-13.82544	136.44941		<0.001	<0.001	No
188	-13.82547	136.44979		<0.001	<0.001	No
189	-13.82554	136.44985		<0.001	<0.001	No
190	-13.82562	136.44989	D5	<0.001	**0.001**	**Yes**
191	-13.82555	136.44969		<0.001	<0.001	No
192	-13.82508	136.44977		<0.001	<0.001	No
193	-13.82518	136.44979		<0.001	<0.001	No
194	-13.82514	136.44990		<0.001	<0.001	No
195	-13.82507	136.44993		<0.001	<0.001	No
196	-13.82506	136.45002		<0.001	<0.001	No
197	-13.82478	136.44855		<0.001	**0.003**	**Yes**
198	-13.82475	136.44872		<0.001	<0.001	No
199	-13.82491	136.44885		<0.001	<0.001	No
200	-13.82518	136.44885	D6	<0.001	<0.001	No

Appendix A - Photographs

Photograph 1 – Asbestos in soil sampling locations labelled on site

Photograph 2 – Bartalumba Bay Homestead post asbestos removal works

Photograph 3 – Bartalumba Bay Homestead post asbestos removal works

Photograph 4 – Bartalumba Bay Homestead post asbestos removal works

Photograph 5 – Bartalumba Bay Homestead post asbestos removal works

Photograph 6 – Sample locations marked across the site

AGON ENVIRONMENTAL

ADELAIDE (Head Office): Unit 3, 224 Glen Osmond Road, Fullarton SA 5063, T: 08 8338 1009
DARWIN: 1/41 Jessop Crescent Berrimah 0828, PO Box 38845, Winnellie NT 0821, T: 08 79187807
CANBERRA: PO Box 432, Mitchell ACT 2911, T: 0431 482 383

Groote Eylandt
Bartalumba Bay
Asbestos Remediation
Asbestos in Soil Sample Results

Legend

- Soil Sample Asbestos Detected
- Soil Sample No Asbestos Detected

0 25 50 75 m

Coordinate System: GDA94 / MGA zone 53

N W E S

Requestor: Jack Pilkington
Date: 20181206
Drawn by HJS

Agon (16 September 2022) Remediation and Validation Report

1.0 INTRODUCTION

Agon Environmental Pty Ltd (Agon) was engaged by Anindilyakwa Land Council (ALC) to provide Site Supervision for the removal of asbestos containing material (ACM) and asbestos impacted soils at the Bartalumba Bay Homestead precinct, Groote Eylandt Northern Territory (NT) (the site).

Previous asbestos inspections at the site identified significant asbestos contamination at the Recreation Club, the Foreshore area, and across the grounds of the Homestead precinct. In consultation with relevant stakeholders, site remediation was initiated, comprising:

1. The removal of ACM from nominated buildings at the site, with the buildings to be subsequently demolished. Removed ACM was to be transported offsite and disposed at the Shoal Bay Waste Management Facility (SBWMF), Karama NT.

2. The construction of an offsite containment cell at a selected location approximately 1.5 km to the south-east of the site, with asbestos debris and impacted soils across the site to be removed via a combination of surface emu-pick and soil excavation and contained for long term management within the containment cell.

The locality of the site and containment cell are shown in **Figure 1** and **Figure 2**. Key features of the site, relevant to remediation works, are shown in **Figure 3**.

Figure 1 Site Location

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

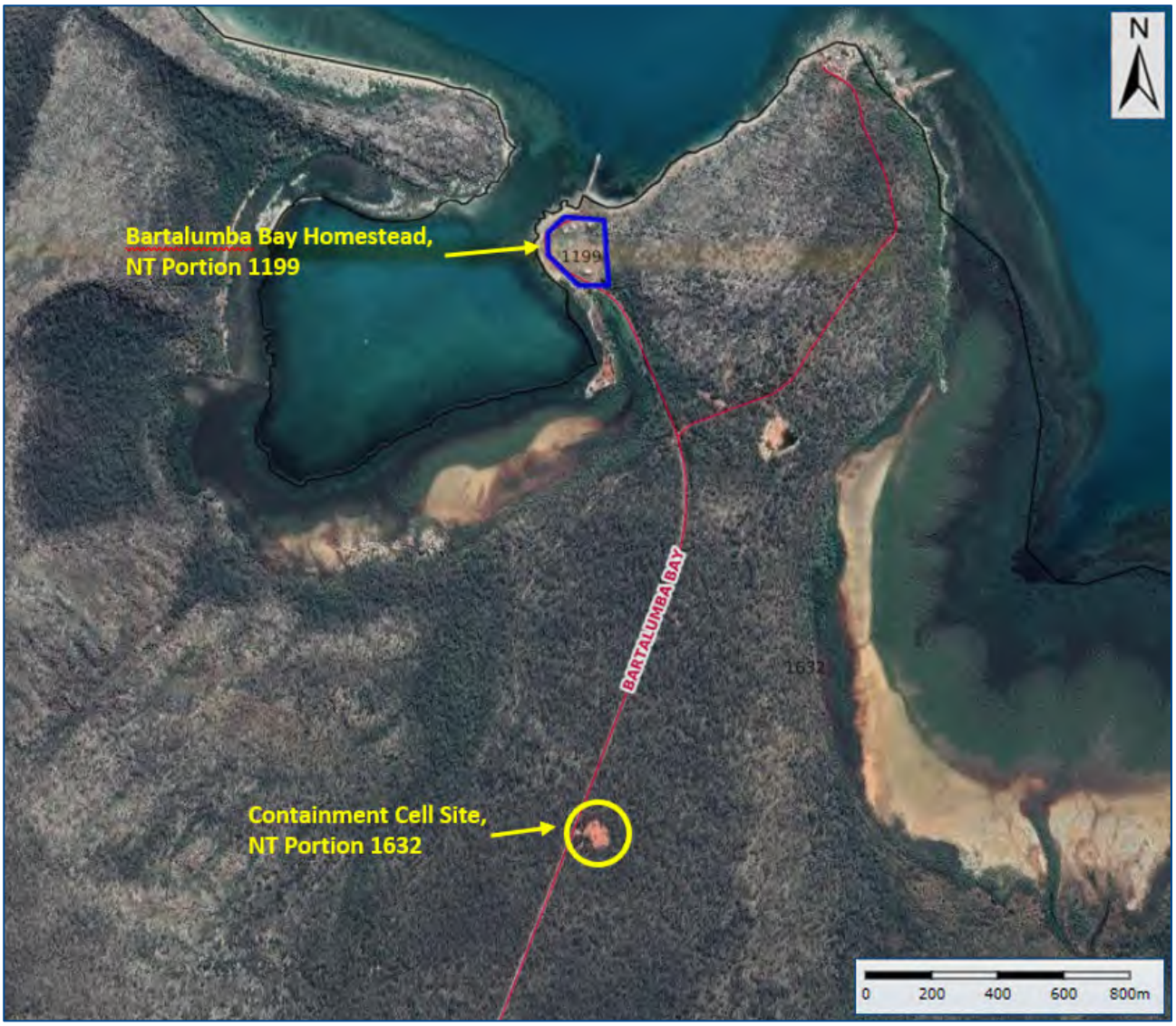

Figure 2 Site and Containment Cell Location

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

Figure 3 *Key Site Features*

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

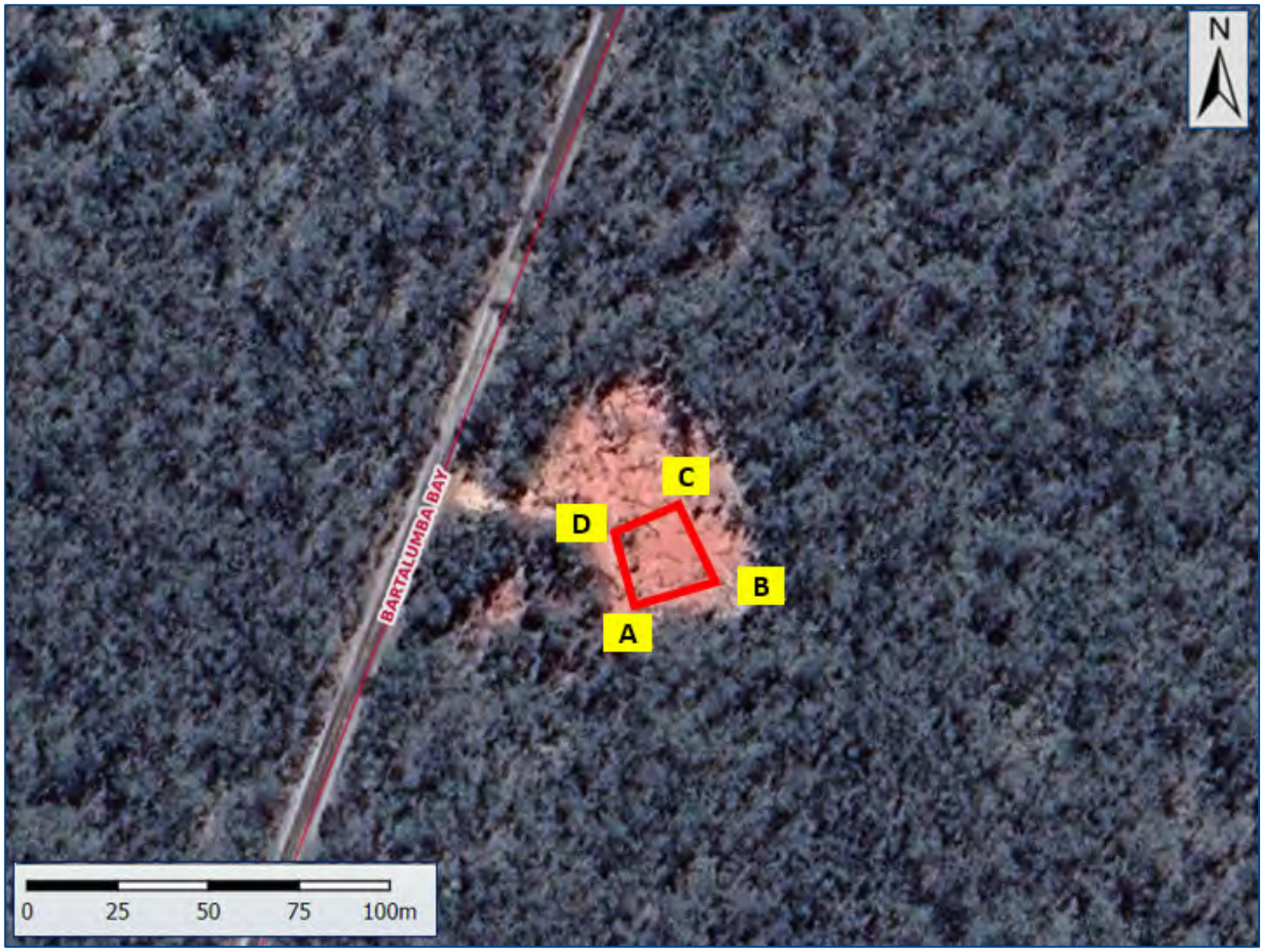

Figure 4 Containment Cell Location

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

5.7 Removal Methods – Phase 1

Details of the targeted and systematic removal and clearance of ACM/ asbestos contaminated soil locations is detailed in the following subsections. The following generalised removal method descriptions are provided. A photolog showing key work aspects is provided as **Appendix B** and digitised daily field records are provided as **Appendix C**.

Excavation of contaminated soil: Asbestos contaminated soil was excavated over defined areas of the site, with contaminated soil placed directly into a single trailer mounted tipper truck with covers, with covers deployed to seal the load prior to transport to the containment cell. Soils were removed to a depth at which no further visible ACM was identified.

Emu Pick: Following completion of contaminated soil removal, the hand picking of surficial ACM debris was undertaken across the entire site. A survey grid was established, with emu picking conducted in 5 metre gridded transects. Three personnel walked each initially in a north-south direction, positioned shoulder-width apart. The area was then re-surveyed using the same methodology with a second pass over the area in a perpendicular (90°) angle (west-east) to the first gridded direction. Agon confirmed through concurrent visual clearance inspections that there was no visible surface ACM on the soil surface across the removal area once the emu pick was completed. Fragments were secured in a labelled, heavy duty plastic bag for subsequent transport.

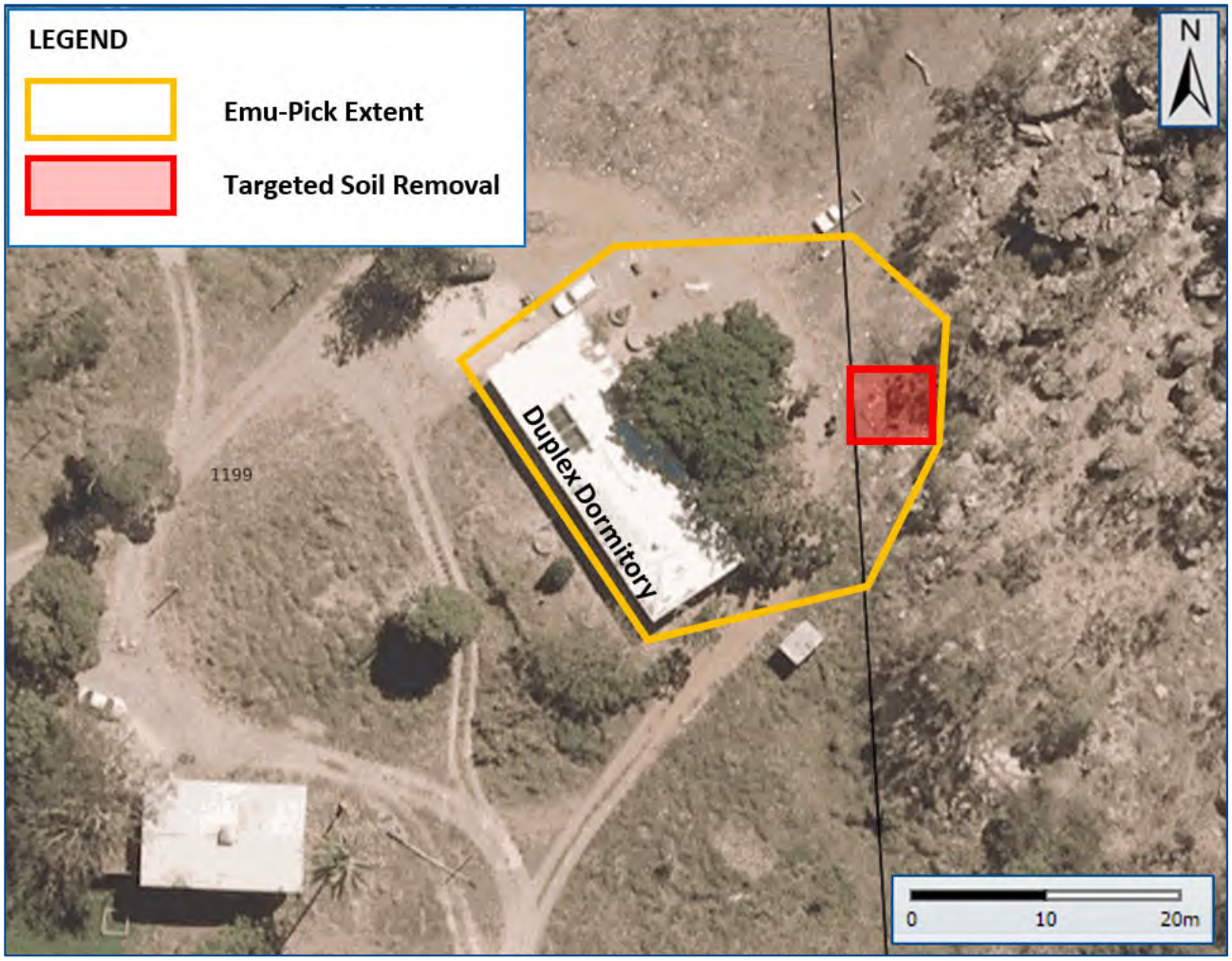

Figure 5 Extent of Asbestos Remediation at Duplex Dormitory

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

5.7.2 Recreation Club

Works comprised:

- Removal of internal asbestos containing materials (dominated by debris) under friable negative air conditions.
- Decontamination of internal surfaces and materials under friable negative air conditions.
- Shallow soil excavation, to approximately 0.1 metres below ground level (mbgl), encompassing an area of approximately 1,500 m^2 and including three metres around the perimeter of the ground level building and extending north to the foreshore affected area.

The Recreation Club was demolished post completion of remedial works.

The extent of remedial activities at and around the Recreation Club is shown in **Figure 6**.

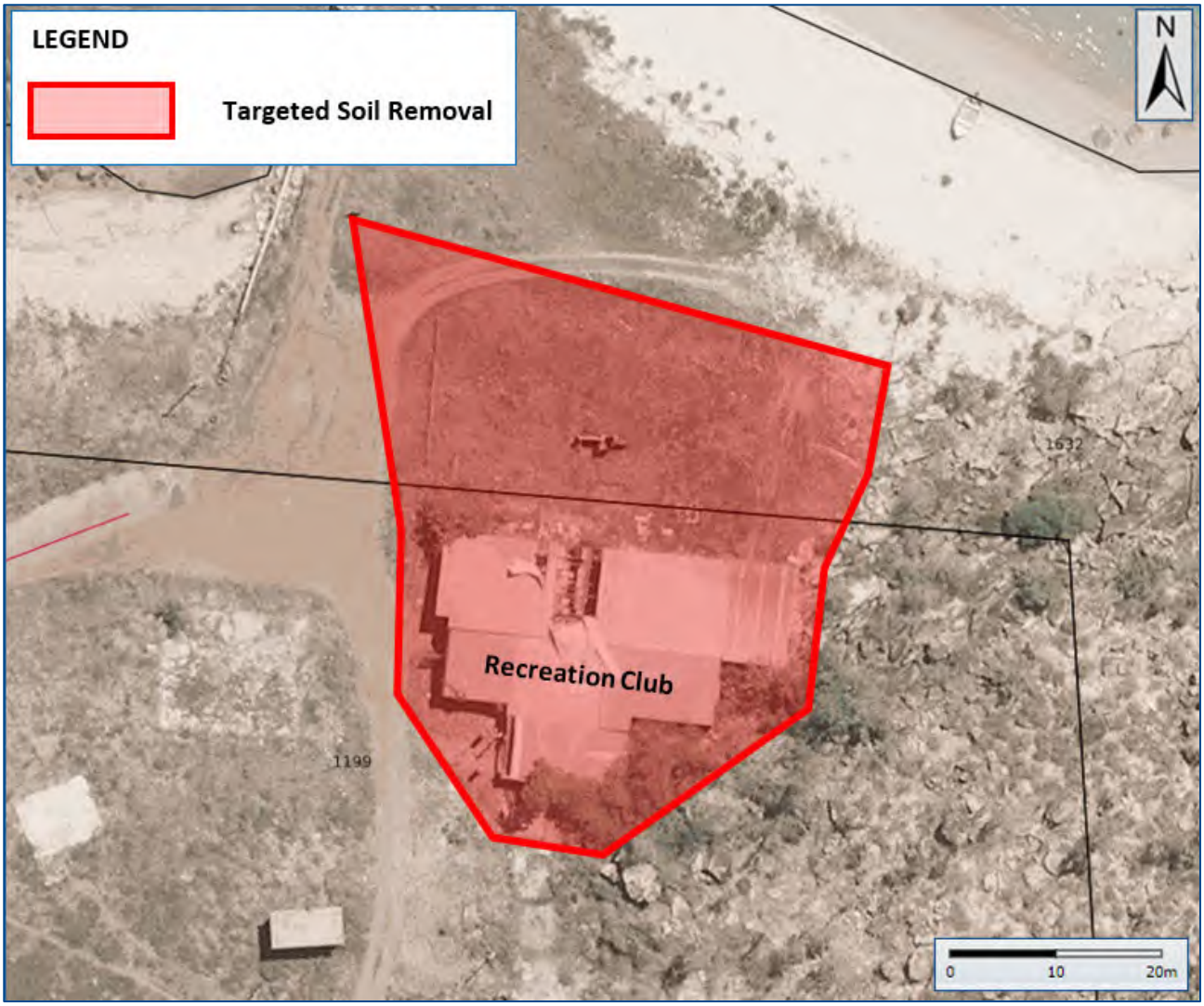

Figure 6 Extent of Asbestos Remediation at Recreation Club

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

5.7.3 Foreshore

Works comprised:

- Removal of non-friable cement sheet debris via emu-pick across the full extent of the foreshore area, encompassing an approximate area of 4,400 m^2.
- Targeted soil removal via use of hand shovel at locations within the foreshore extent where friable material was identified.
- Shallow soil excavation, to approximately 0.1 metres below ground level (mbgl), around redundant concrete foundation No. 3 encompassing an area of approximately 50 m^2 to the east of the building where friable debris was identified.

The extent of remedial activities at the Foreshore is shown in **Figure 7**.

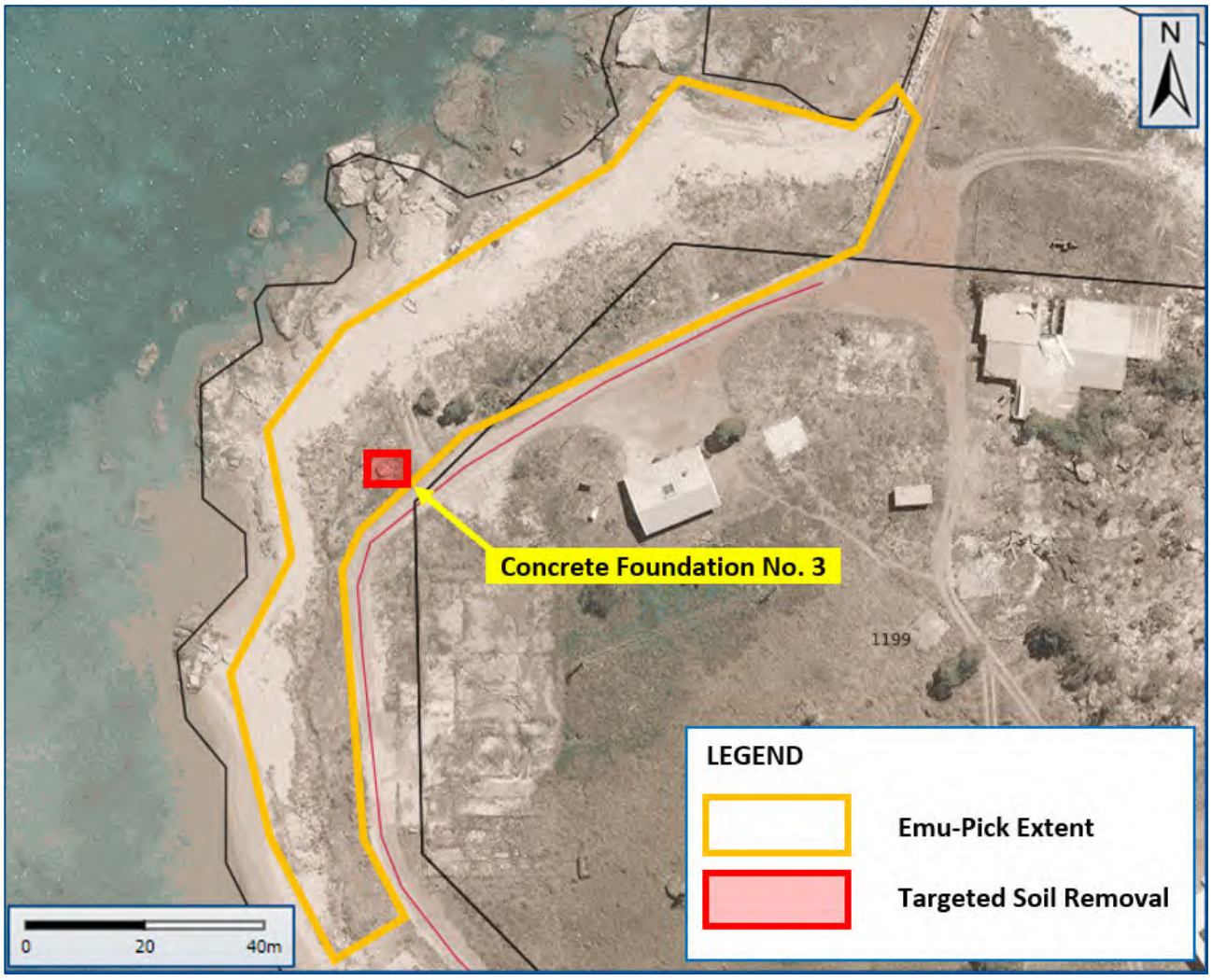

Figure 7 Extent of Asbestos Remediation at the Foreshore

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

5.7.4 Grounds

Works comprised the shallow soil excavation, up to a depth of 0.2 mbgl:

- Around all redundant concrete foundations (No's 1, 2, and 4 to 11 inclusive).
- Around the Ablution Block.
- The area encompassing the central surface depression.
- The area encompassing the rock wall to the north of the Duplex Dormitory, inclusive of the decontamination of the rocks to allow for beneficial reuse.
- The area encompassing a fire pit to the west of the Duplex Dormitory.

The extent of remedial activities across the grounds is shown in **Figure 8**.

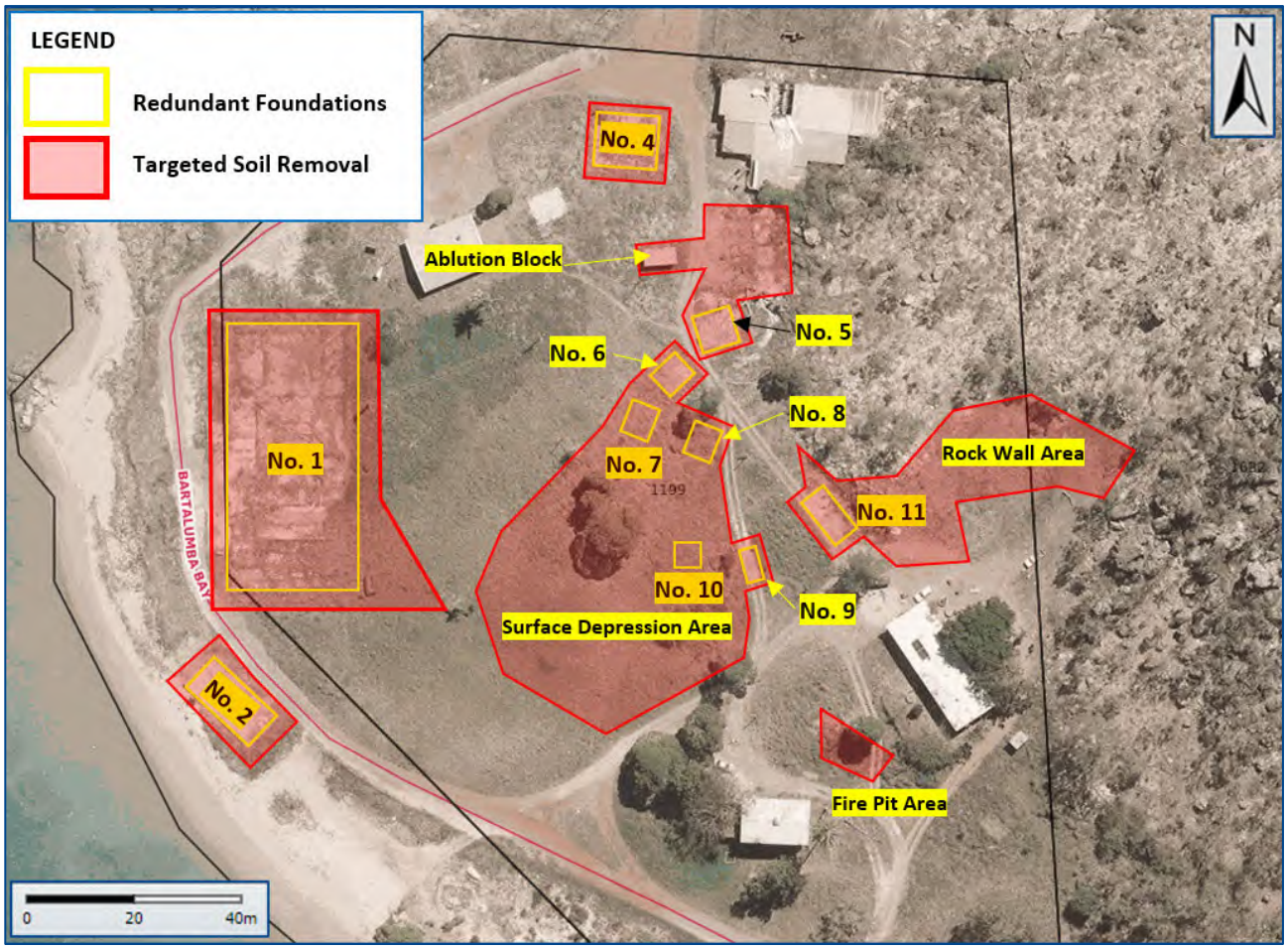

Figure 8 Extent of Asbestos Remediation Across Site Grounds

Base Map Source: Natural Resource Maps. Department of Environment, Parks and Water Security https://nrmaps.nt.gov.au/nrmaps.html (accessed 7/09/2022)

5.7.5 Jetty

The presumed asbestos containing flange gaskets from along the jetty rock wall were removed.

5.7.6 Final Emu Pick

Following completion of the targeted removal and clearance of ACM and asbestos contaminated soils, a final emu-pick event was undertaken across the entire site.

5.8 Removal Methods – Phase 2

Phase 2 comprised the targeted removal of soil from four locations where soil validation samples collected post Phase 1 remediation works returned AF concentrations in excess of adopted Remediation Criteria (refer to **Section 8**). The four target locations were:

1. North-west corner of redundant concrete location No. 1.
2. North-west corner of redundant concrete location No. 5.
3. The central surface depression area, encompassing redundant concrete foundations No's 9 and 10.
4. The south-east section of the Fire Pit area.

Works comprised hallow soil excavation, with an additional 300 mm of soil removed. The lateral extent of additional soil removal was generally 5 metres in each direction from where soil validation samples exceeded the adopted Remediation Criteria, as shown in **Figure 9**.

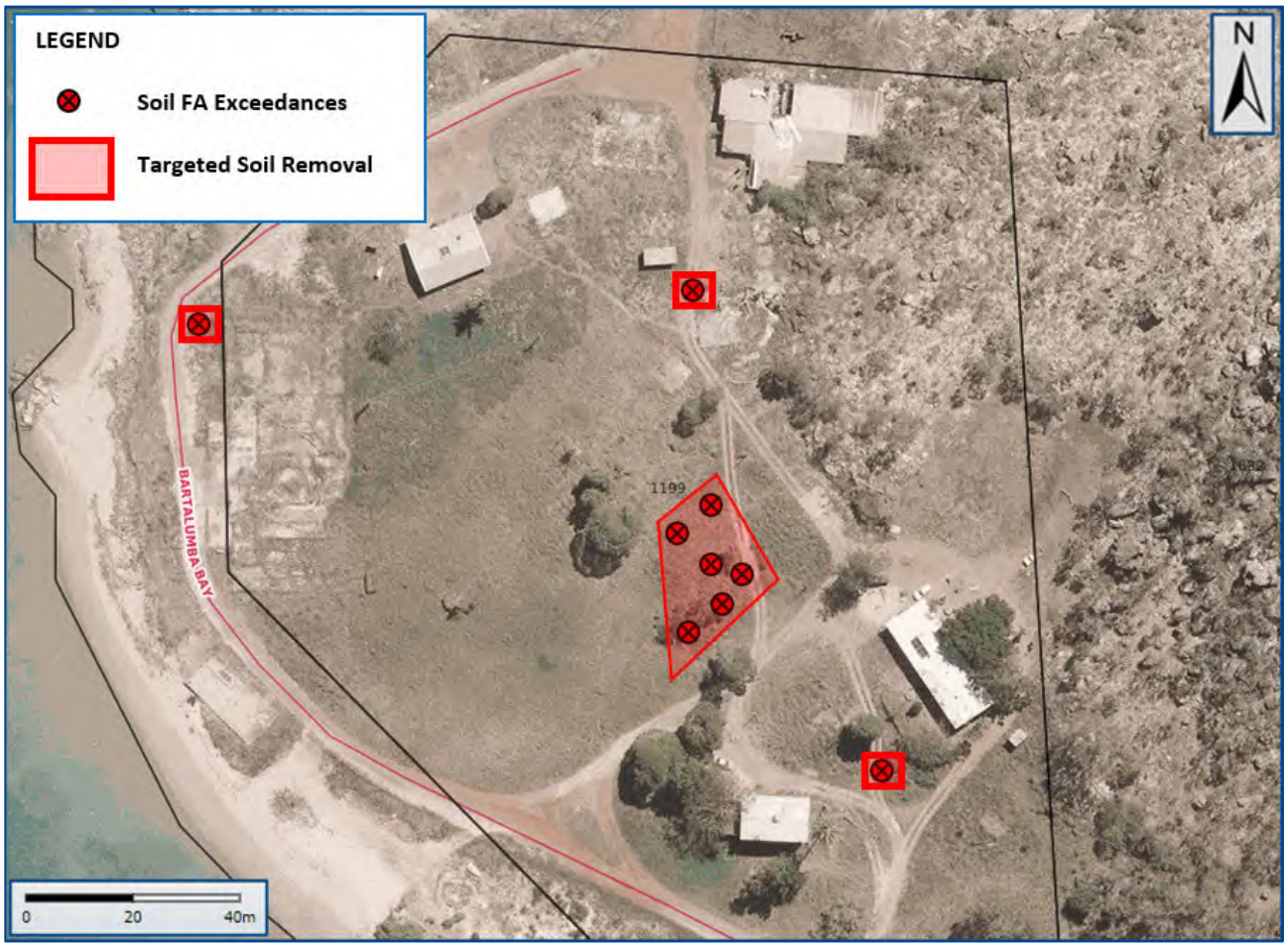

Figure 9 Phase 2 Targeted Soil Remediation Extent (Approximate)

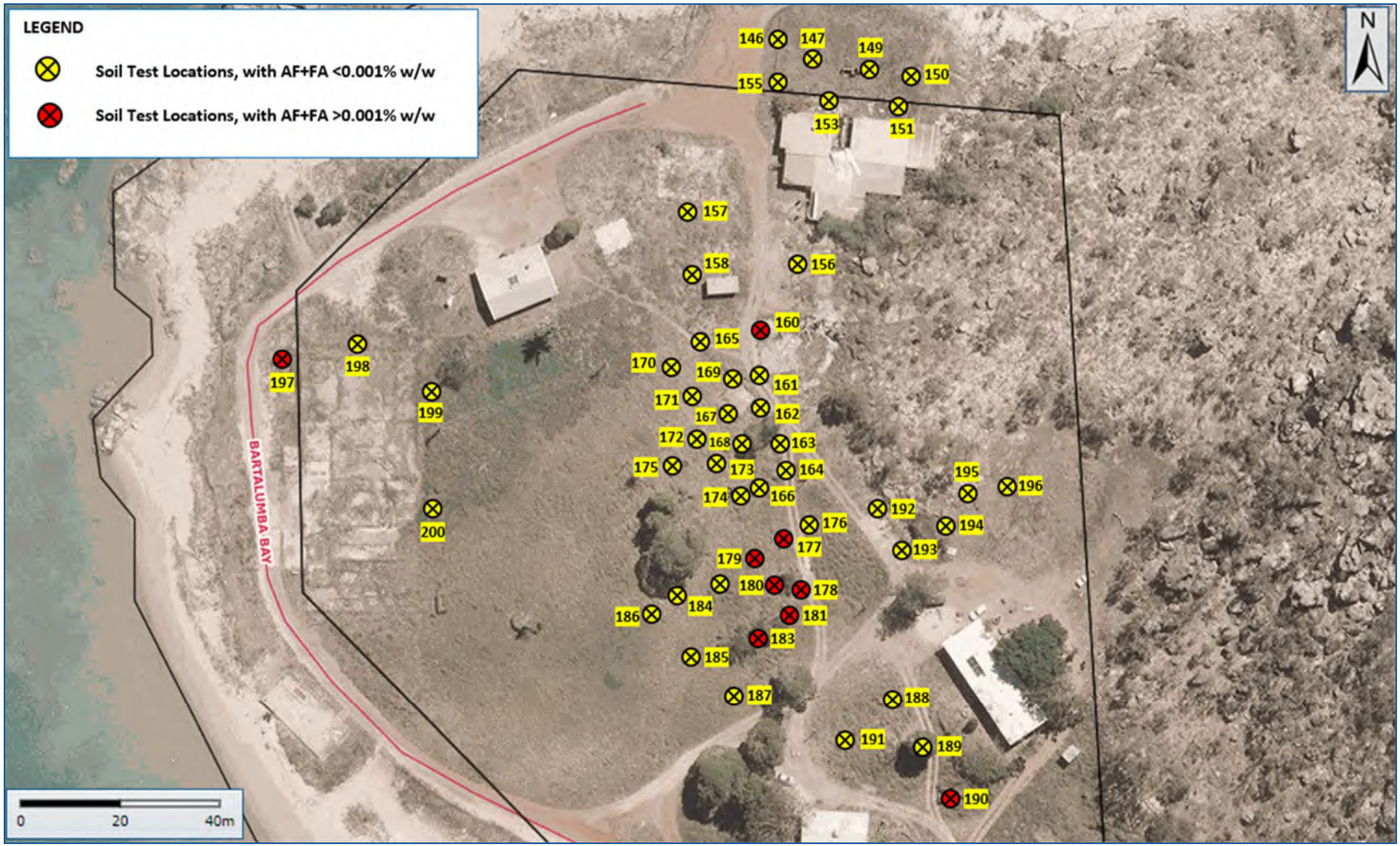

Figure 10 Sample Location Plan – Remediation Phase 1

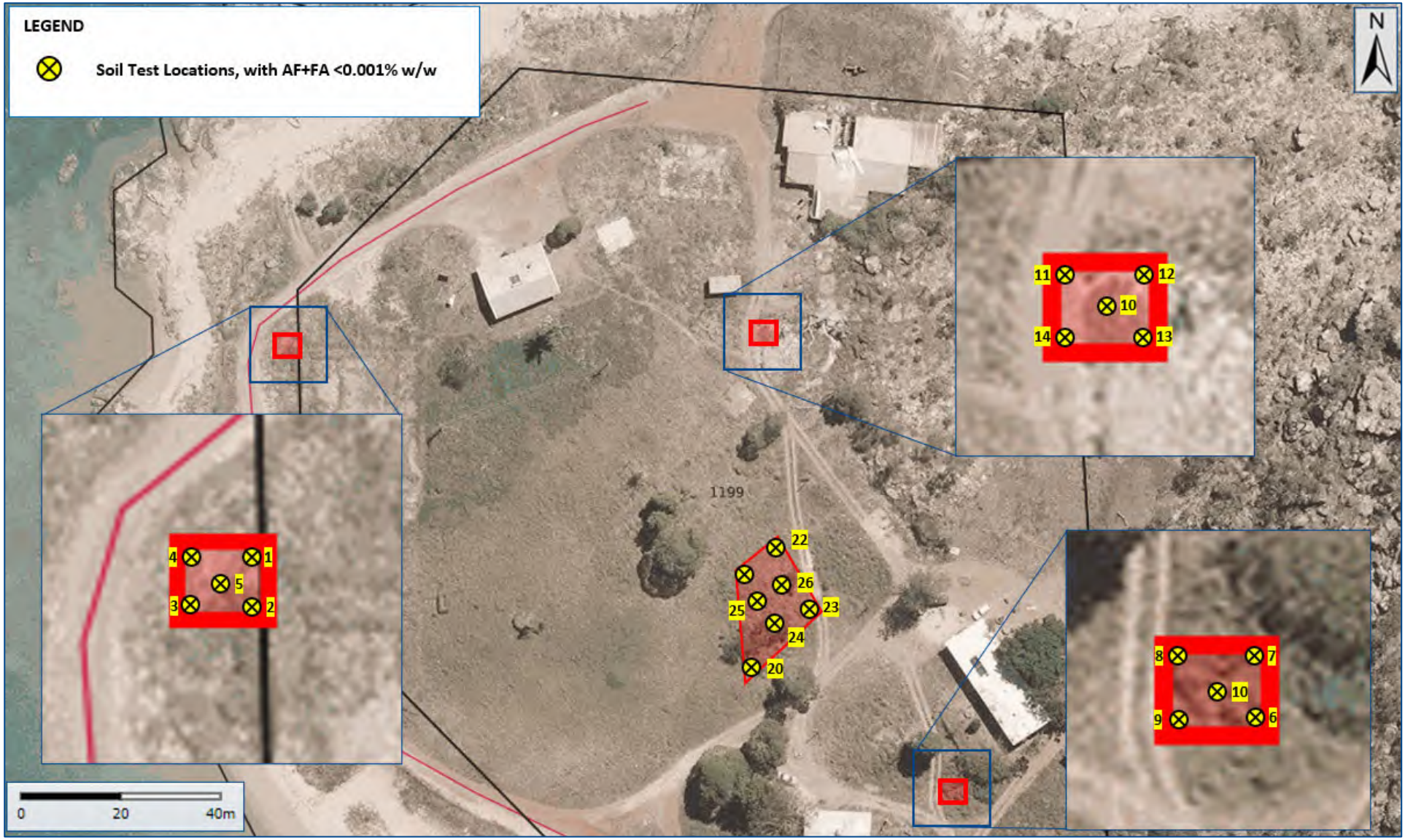

Figure 11 Sample Location Plan – Remediation Phase 2

APPENDIX B: REMEDIATION PHOTO LOG

Containment cell construction (10/11/2018)

Rumble grid and wash water containment system construction – Containment Cell site (10/11/2018)

Rumble grid and wash water containment system construction – Containment Cell site (10/11/2018)

Rumble grid and wash water containment system construction – Homestead site (10/11/2018)

Rumble grid and wash water containment system construction, and decontamination unit – Homestead site (11/11/2018)

Homestead site exclusion (12/11/2018)

Asbestos contaminated soil removal around redundant concrete foundation No. 4 (12/11/2018)

Asbestos contaminated soil removal around redundant concrete foundation No. 4 (12/11/2018)

Completed removal around redundant concrete foundation No. 4 (12/11/2018)

Removal of external eave linings of the Duplex Dormitory (12/11/2018)

Completed of internal vinyl tile from Duplex Dormitory (12/11/2018)

Removal and decontamination of rocks from rock wall (13/11/2018)

Asbestos contaminated soil removal from the rock wall (13/11/2018)

Asbestos contaminated soil removal from around the Recreation Club (13/11/2018)

Asbestos contaminated soil removal from around the Recreation Club (13/11/2018)

Encapsulation of the Recreation Club (14/11/2018)

Encapsulation of the Recreation Club (14/11/2018)

Negative Air Unit, Recreation Club (15/11/2018)

Asbestos contaminated soil removal from around the Redundant Concrete Foundation No.1 (16/11/2018)

Asbestos contaminated soil removal from around the Redundant Concrete Foundation No.1 (16/11/2018)

Asbestos contaminated soil removal from north of the Recreation Club (17/11/2018)

Disposal of asbestos waste within the containment cell (16/11/2018)

Asbestos contaminated soil removal from north of the Recreation Club (17/11/2018)

Disposal of asbestos waste within the containment cell (16/11/2018)

Disposal of asbestos waste within the containment cell (18/11/2018)

Asbestos contaminated soil removal from redundant concrete foundation No. 5 (18/11/2018)

Decontaminated room of Recreation Club (18/11/2018)

Decontaminated room of Recreation Club (18/11/2018)

Decontaminated rocks and concrete stored on foreshore area for potential beneficial reuse (19/11/2018)

Asbestos contaminated soil removal from central site area, encompassing multiple redundant concrete foundations (19/11/2018)

Asbestos contaminated soil removal from rock wall area (20/11/2018)

Final site condition looking north across central site area (22/11/2018)

Final site condition looking south across central site area (22/11/2018)

Final site condition looking north-west across central site area (22/11/2018)

Containment cell prior to capping (23/11/2018)

Capping in progress (23/11/2018)

Progressive cap compaction (23/11/2018)

Geofabric and high visibility mesh fencing material over contaminated material (23/11/2018)

Expansion of containment cell (4/02/2019)

Additional soil removal area from soil exceedance location (Sample 190) (5/02/2019)

Additional soil removal area from soil exceedance location (Sample 160) (5/02/2019)

Additional soil removal area from soil exceedance locations (Samples 177, 178, 179, 180, 181, 183) (6/02/2019)

Final condition of containment cell (7/02/2019)

APPENDIX C: DIGITISED FIELD RECORDS

Field Work Records
10 to 16 November 2018

Date	Day	Temp Range (min-max)	Wind conditions (low-high)	Rainfall (mm)	Agon staff onsite + Removalist on site + Assessor Numbers	Work Times (start - finish)	Plant equipment inside the work zone	Daily activities	Observations during days activities (if applicable)	AFM results	ACC/ETR/Smoke Test Reports	Relocation of waste details	Additional comments from works
10/11/2018	Saturday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS	06:30-17:00	Excavator (5 tonne open cab)	Installation of decontamination units and truck wash bays at the Homestead and Containment Cell sites. Peter Younger provides GCC personal with asbestos awareness training (RTO certificates provided). Containment cell construction.	nil	N/A	N/A	nil	nil
11/11/2018	Sunday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS	06:30-17:00	Excavator (5 tonne open cab)	Finalise installation of decontamination unit and truck wash bay at the Homestead. Commence emu picks for ACM debris across the foreshore. Commence asbestos removal at Duplex Dormitory. Construction of Containment Cell continues.	Incident - Dog attack	All 4 samples below detectable limit (<0.01 fibres/ml)	N/A	nil	nil
12/11/2018	Monday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS	06:30-17:00	Excavator (5 tonne open cab) Ute (Smoke tested)	Emu pick of ACM from foreshore. Temporary fence screening installed around houses. Asbestos Removal continues at the Duplex Dormitory.	nil	All 4 samples below detectable limit (<0.01 fibres/ml)	Smoke Test Report (Ute CB66FJ)	nil	nil
13/11/2018	Tuesday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested)	Decontamination of boulders and concrete rubble and relocation to adjacent the jetty at the foreshore. Stockpile of contaminated soil to be removed from the foreshore side of the Recreation Club. Commence setup of Recreation Club enclosure.	nil	All 5 samples below detectable limit (<0.01 fibres/ml)	Smoke Test Report (Hitachi Excavator)	nil	nil
14/11/2018	Wednesday	26-36	low/moderate	44.8mm	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Terrance Nance (Asbestos Awareness Trained) - GCC	06:30-17:15	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested)	Decontamination of concrete rubble from pads around the Homestead and relocation to adjacent jetty at the foreshore. Encapsulation of Recreation Club continues.	nil	5 samples returned below detectable limit (<0.01 fibres/ml). 1 sample voided due to water damage to filter from passing rainfall event.	Smoke Test Report (Truck CC71AE)	nil	nil
15/11/2018	Thursday	26-36	low/moderate	13.4mm	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested)	Decontamination of concrete rubble. Stockpiling of soil for tomorrow loadout to containment cell. Successful enclosure test of the Recreation Club.	nil	All 5 samples below detectable limit (<0.01 fibres/ml)	ETR (Recreation Clu	nil	nil
16/11/2018	Friday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested)	Removal of asbestos materials and contaminated items from the Recreation Club enclosure. Relocation of asbestos contaminated soil from the homestead to the containment cell	nil	9 samples returned below detectable limit (<0.01 fibres/ml). 1 sample voided due to pump being moved from original location.	nil	see attached waste movement log	nil

Field Work Records
17 to 23 November 2018

agon ENVIRONMENTAL

Date	Day	Temp Range (min-max)	Wind conditions (low-high)	Rainfall (mm)	Agon staff onsite + Removalist on site + Assessor Numbers	Work Times (start - finish)	Plant equipment inside the work zone	Daily activities	Observations during days activities (if applicable)	AFM results	ACC/ETR/Smoke Test Reports	Relocation of waste details	Additional comments from works
17/11/2018	Saturday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Ethan McIntyre (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Removal of asbestos materials and contaminated items from the Recreation Club enclosure. Relocation of asbestos contaminated soil from the homestead to the containment cell	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	Smoke Test Report (Hitachi Excavator-21 tonne)	see attached waste movement log	nil
18/11/2018	Sunday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Ethan McIntyre (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Removal of asbestos materials and contaminated items from the Recreation Club enclosure. Relocation of asbestos contaminated soil from the homestead to the containment cell	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	N/A	see attached waste movement log	nil
19/11/2018	Monday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Chris Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Ethan McIntyre (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Removal of asbestos materials and contaminated items from the Recreation Club enclosure. Commence wash down of Recreation Club internal structuress. Relocation of asbestos contaminated soil from the homestead to the containment cell	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	N/A	see attached waste movement log	nil
20/11/2018	Tuesday	26-36	low/moderate	nil	Jack Pilkington NT-WS-463514 - Agon Ricard Bowden NT-WS-458684 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS **Manu Thuch CPCCDE3015A - DA**DS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC		Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	The removeal of asbestos materials and contaminated items from the Recreation Club completed. Relocation of asbestos contaminated soil from the homestead to the containment cell	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	N/A	see attached waste movement log	nil
21/11/2018	Wednesday	26-36	low/moderate		Ricard Bowden NT-WS-458684 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS **Manu Thuch CPCCDE3015A - DA**DS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Ethan McIntyre (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	The removeal of asbestos materials and contaminated items from the Recreation Club completed. Relocation of asbestos contaminated soil from the homestead to the containment cell completed. Soil sampling commenced Demolition of duplex commenced	nil	All 10 samples below detectable limit (<0.01 fibres/ml)		see attached waste movement log	nil
22/11/2018	Thursday	26-36	low/moderate	nil	Ricard Bowden NT-WS-458684 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS **Manu Thuch CPCCDE3015A - DA**DS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC Ricard Bowden NT-WS-458684	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Demotion of duplex completed recreation club demolition commenced. Emu pick of site commenced Soil sampling continued.	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	N/A	see attached waste movement log	nil

Field Work Records
17 to 23 November 2018

agon ENVIRONMENTAL

Date	Day	Temp Range (min-max)	Wind conditions (low-high)	Rainfall (mm)	Agon staff onsite + Removalist on site + Assessor Numbers	Work Times (start - finish)	Plant equipment inside the work zone	Daily activities	Observations during days activities (if applicable)	AFM results	ACC/ETR/Smoke Test Reports	Relocation of waste details	Additional comments from works
23/11/2018	Friday	26-36	low/moderate	nil	Ricard Bowden NT-WS-458684 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS **Manu Thuch CPCCDE3015A - DA**DS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Demotion of recreation club . Emu pick of site and soil sampling continued. In filling of containment cell commenced	nil	All 10 samples below detectable limit (<0.01 fibres/ml)	N/A	see attached waste movement log	nil

Field Work Records
24 to 30 November 2018

Date	Day	Temp Range (min-max)	Wind conditions (low-high)	Rainfall (mm)	Agon staff onsite + Removalist on site + Assessor Numbers	Work Times (start - finish)	Plant equipment inside the work zone	Daily activities	Observations during days activities (if applicable)	AFM results	ACC/ETR/Smoke Test Reports	Relocation of waste details	Additional comments from works
24/11/2018	Saturday	26-36	low/moderate	nil	Ricard Bowden NT-WS-458684 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Robert Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS William Hart (Asbestos Awareness Trained) - GCC Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Capping of containment cell complete. Emu pick of homestead complete. Recreation Club Demolition complete. Vehicle decontamination complete. Fieldworks complete.	nil	All 6 samples below detectable limit (<0.01 fibres/ml)	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (ACC) Side Tipper (ACC) Water Truck (ACC) Hook Truck (ACC) Excavator (21 tonne ACC)	nil	nil
24/11/2018	Sunday	26-36	low/moderate	nil	No Site Works	No Site Works	No Site Works	No Site Works	nil	No site works		nil	nil
25/11/2018	Monday	26-36	low/moderate	nil	**Demobilisation from site**								

Field Work Records
4 to 7 February 2019

Date	Day	Temp Range (min-max)	Wind conditions (low-high)	Rainfall (mm)	Agon staff onsite + Removalist on site + Assessor Numbers	Work Times (start - finish)	Plant equipment inside the work zone	Daily activities	Observations during days activities (if applicable)	AFM results	ACC/ETR/Smoke Test Reports	Relocation of waste details	Additional comments from works
4/02/2019	Monday		low - high		Mark Kondakov NT-WS-456703 Peter Younger CPCCBC4051A - DADS Jim Younger CPCCDE3015A - DADS Manu Thuch CPCCDE3015A - DADS Ivan Toohey (Asbestos Awareness Trained) - DADS Shane Bosel (Asbestos Awareness Trained) - GCC Tim Tornaros (Asbestos Awareness Trained) - GCC Brett Bell (Asbestos Awareness Trained) - GCC	06:30-17:00	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (Smoke tested) Side Tipper (Smoke tested) Water Truck (Smoke tested) Hook Truck (Smoke tested) Excavator (21 tonne smoke tested)	Project start-up meeting. Excation of containment cell. Marking out of work zones within the homestead.	Nil	N/A	Excavator (5 tonne open cab) Excavator (29 tonne smoke tested) Ute (ACC) Side Tipper (ACC) Water Truck (ACC) Hook Truck (ACC) Excavator (21 tonne ACC)	nil	Nil Asbestos works undertaken. Excavation of cell and prepatory works only.
5/02/2019	Tuesday		low - high					Construction of decon areas finalised. Soil excavation and relocation from homestead work areas.	Nil	All 6 samples below detectable limit (<0.01 fibres/ml)		nil	nil
6/02/2019	Wednesday		low - high					Capping of containment cell. Soil excavation and relocation from homestead work areas. Emi pick, raking and sieving of completed work areas.	Nil	All 6 samples below detectable limit (<0.01 fibres/ml)		nil	nil
7/02/2019	Thursday		low - high			06:30 - 13:00		Capping of containment cell complete. Emu pick of homestead work areas complete. Vehicle decontamination complete. Sampling of work areas complete.	Nil	All 6 samples below detectable limit (<0.01 fibres/ml)		nil	nil
7/02/2019	Thursday		low - high		**Demobilisation from site at 16:05 - Landed in Darwin at 17:30**								

APPENDIX E: ASBESTOS CLEARANCE CERTIFICATES

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336

INSPECTION DATE:	Tuesday, 20 November 2018
REPORT DATE:	Wednesday, 21 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Recreation Centre Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Removal of asbestos materials and associated contaminated items from the Recreation Centre enclosure.
LIMITATIONS / COMMENTS	This clearance certificate applies to the removal of asbestos materials and associated contaminated items from the Recreation Centre enclosure at the Bartalumba Bay Homestead, prior to demolition. Agon recommends vigilance is taken during the demolition phase of the building as to appropriately manage new finds of potential asbestos materials.
INSPECTION NOTES	Asbestos residue / debris in the asbestos removal work area, in the immediate vicinity of the work area (in accessible areas) or in the waste transit route was not visible. Airborne Fibre Monitoring was conducted, and the airborne fibre level was less than 0.01 fibres per ml.

Airborne Fibre Monitoring together with this visual inspection confirms that the area described above is fit for re-occupation

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.1

INSPECTION DATE:	Wednesday, 21 November 2018
REPORT DATE:	Wednesday, 21 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Duplex Dormitory Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Removal of asbestos containing eave linings from the externals, removal of vinyl sheeting from throughout the south unit and removal of cement sheet debris from around the footprint of the Duplex Dormitory.
LIMITATIONS / COMMENTS	This clearance certificate applies to the removal of asbestos containing eave linings from the externals, removal of vinyl sheeting from throughout the south unit and removal of cement sheet debris from around the footprint of the Duplex Dormitory. Agon recommends vigilance is taken during the demolition phase of the building as to appropriately manage new finds of potential asbestos materials.
INSPECTION NOTES	Asbestos residue / debris in the asbestos removal work area, in the immediate vicinity of the work area (in accessible areas) or in the waste transit route was not visible. Airborne Fibre Monitoring was conducted, and the airborne fibre level was less than 0.01 fibres per ml.

Airborne Fibre Monitoring together with this visual inspection confirms that the area described above is fit for re-occupation

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.2

INSPECTION DATE:	Tuesday, 20 November 2018
REPORT DATE:	Wednesday, 21 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Jetty Gaskets Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Removal of asbestos containing flange gaskets from along the jetty Rockwall at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance certificate applies to the removal of asbestos containing flange gaskets from along the jetty Rockwall at the Bartalumba Bay Homestead. Tidal influences may have obstructed further flange gaskets from being observed.
INSPECTION NOTES	Asbestos residue / debris in the asbestos removal work area, in the immediate vicinity of the work area (in accessible areas) or in the waste transit route was not visible. Airborne Fibre Monitoring was conducted, and the airborne fibre level was less than 0.01 fibres per ml.

Airborne Fibre Monitoring together with this visual inspection confirms that the area described above is fit for re-occupation

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.3

INSPECTION DATE:	Wednesday, 21 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the HITACHI Zaxis (Serial No HCDDA20F000405400) decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the HITACHI Zaxis (Serial No HCDDA20F000405400). All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.4

INSPECTION DATE:	Thursday, 22 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the HITACHI Zaxis 21OLC (Serial No HCMDCK21J00307765) decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the HITACHI Zaxis 21OLC (Serial No HCMDCK21J00307765). All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.5

INSPECTION DATE:	Friday, 23 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the Toyota Hilux Ute licence No CB66FJ decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the Toyota Hilux Ute licence No CB66FJ. All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.6

INSPECTION DATE:	Friday, 23 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the Nino Hook Truck licence No CB66FJ decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the Nino Hook Truck licence No CB66FJ. All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.7

INSPECTION DATE:	Friday, 23 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the Side Tipper Truck Licence No CB51MY decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the Side Tipper Truck Licence No CB51MY. All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

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Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
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Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.8

INSPECTION DATE:	Thursday, 22 November 2018
REPORT DATE:	Tuesday, 27 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	This ACC is specifically for the Water Truck Vehicle No GCCTR13 decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the Water Truck Vehicle No GCCTR13. All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.9

INSPECTION DATE:	Wednesday, 6 February 2019
REPORT DATE:	Wednesday, 6 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703
WORKS UNDERTAKEN	This ACC is specifically for the HITACHI Zaxis 21OLC (Serial No HCMDCK21J00307765) decontaminated after asbestos containment works at the Bartalumba Bay containment cell.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the HITACHI Zaxis 21OLC (Serial No HCMDCK21J00307765) bucket and arm of the excavator were visually inspected and there was no visible asbestos contamination. As such, the plant was fit to resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to resume normal activities.

This visual inspection confirms that the vehicle is fit to resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0400 260 483 or mark.kondakov@agonenviro.com.au

Yours Sincerely

Mark Kondakov
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.10

INSPECTION DATE:	Wednesday, 6 February 2019
REPORT DATE:	Wednesday, 6 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703
WORKS UNDERTAKEN	This ACC is specifically for the HITACHI Zaxis (Serial No HCDDA20F000405400) decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the HITACHI Zaxis (Serial No HCDDA20F000405400). The bucket and arm of the excavator were visually inspected and there was no visible asbestos contamination. As such, the plant was fit to resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to resume normal activities.

This visual inspection confirms that the vehicle is fit to resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0400 260 483 or mark.kondakov@agonenviro.com.au

Yours Sincerely

Mark Kondakov
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.11

INSPECTION DATE:	Wednesday, 6 February 2019
REPORT DATE:	Wednesday, 6 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Asbestos Removal Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703
WORKS UNDERTAKEN	This ACC is specifically for the Side Tipper Truck Licence No CB51MY decontaminated after asbestos removal works at the Bartalumba Bay Homestead.
LIMITATIONS / COMMENTS	This clearance only applies to the cleaning of the Side Tipper Truck Licence No CB51MY. All accessible areas of the plant were visually inspected and there was no visible asbestos contamination. The existing air filter was replaced with a new filter. As such, the plant was fit to exit the asbestos work zone and resume normal activities.
INSPECTION NOTES	Asbestos residue / debris from asbestos related work on the vehicle was not visible and the plant is fit to exit the asbestos work zone and resume normal activities.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0400 260 483 or mark.kondakov@agonenviro.com.au

Yours Sincerely

Mark Kondakov
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ASBESTOS CLEARANCE CERTIFICATE JA0336.12

INSPECTION DATE:	Thursday, 7 February 2019
REPORT DATE:	Wednesday, 13 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703
WORKS UNDERTAKEN	Removal of visible asbestos containing debris and associated asbestos in soils from the Grounds of the Bartalumba Bay Homestead (as referenced by *JA0336.1 Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt, NT)*.
LIMITATIONS / COMMENTS	This clearance certificate applies to the removal of visible asbestos containing debris and associated asbestos in soils from the Grounds of the Bartalumba Bay Homestead (as referenced by *JA0336.1 Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt, NT).* The inspection was for visible surface debris in areas where the grounds were cleared by emu picking, and areas identified for removal of asbestos in soils. Following asbestos removal works, Agon conduct visual inspections, and for areas where asbestos in soils had been removed, soil verification sampling was also conducted. At completion of works on 7th February, soil samples were collected and analysed by a NATA accredited laboratory. All samples were found to be below detectable limits (<0.001% w/w). Agon understands that soil surfaces excavated across the site are to be further encapsulated with clean fill soil. It should be noted that as this inspection was for visible surface debris, further subsurface ACM debris may become exposed from vegetation ground cover dieback or fire, soil erosion pathways (i.e. rain, wind and water erosion), or physical or mechanical disturbance of the soil surface. An asbestos management plan (AMP) will be developed for the site, whereby future practices on the site are to be conducted under the auspices of the AMP.

INSPECTION NOTES	Asbestos residue / debris in the asbestos removal work area, in the immediate vicinity of the work area (in accessible areas) or in the waste transit route was not visible. Airborne Fibre Monitoring was conducted, and the airborne fibre level was less than 0.01 fibres per ml.

This visual inspection confirms that the vehicle is fit to exit the asbestos work zone and resume normal activities.

For any further information, please do not hesitate to contact the undersigned on 0400 260 483 or mark.kondakov@agonenviro.com.au

Yours Sincerely

Mark Kondakov
Licensed Asbestos Assessor
Agon Environmental

APPENDIX F: SMOKE TEST REPORTS

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336

TEST DATE:	Thursday, 8 November 2018	
REPORT DATE:	Thursday, 8 November 2018	
CLIENT:	Anindilyakwa Land Council	
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services	
ORDER / PROJECT NO.	N/A	
NOTIFICATION NO.	N/A	
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt	
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514	
WORKS UNDERTAKEN:	Significant smoke was generated within the CATERPILLAR Multi-Terrain Loader (Serial No. A417AMP20016), and no leaks were visible on inspection. The plant is allowed access into the asbestos contaminated work area.	
RESULT:	PASS	
NOTES:	Prior to successfully passing a smoke test the window seals were taped, to improve the integrity of the seal.	

This smoke test certificate indicates the inspected plant equipment was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.1

TEST DATE:	Thursday, 8 November 2018
REPORT DATE:	Thursday, 8 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the UD Truck (License No. CB51MY), and no leaks were visible on inspection. The vehicle is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	Prior to successfully passing a smoke test the window seals were taped, to improve the integrity of the seal.

This smoke test certificate indicates the inspected vehicle was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

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Berrimah, NT 0828
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Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.2

TEST DATE:	Thursday, 8 November 2018
REPORT DATE:	Thursday, 8 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the HINO 500 Water Truck (Vehicle No. GCCTR13), and no leaks were visible on inspection. The vehicle is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	Prior to successfully passing a smoke test the window seals were taped, to improve the integrity of the seal.

This smoke test certificate indicates the inspected vehicle was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.3

TEST DATE:	Monday, 12 November 2018
REPORT DATE:	Monday, 12 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the TOYOTA Hilux Ute (License No. CB66FJ), and no leaks were visible on inspection. The vehicle is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	Prior to successfully passing a smoke test the window seals were taped, to improve the integrity of the seal.

This smoke test certificate indicates the inspected vehicle was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

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Yours Sincerely

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Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.4

TEST DATE:	Tuesday, 13 November 2018
REPORT DATE:	Tuesday, 13 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the HITACHI Zaxis 290LC Excavator (Serial No. HCDDA20F000405400), and no leaks were visible on inspection. The plant is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	N/A

This smoke test certificate indicates the inspected plant equipment was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

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Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.5

TEST DATE:	Wednesday, 14 November 2018
REPORT DATE:	Wednesday, 14 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the HINO Hook Truck (License No. CC71AE), and no leaks were visible on inspection. The vehicle is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	Prior to successfully passing a smoke test the window seals were taped, to improve the integrity of the seal.

This smoke test certificate indicates the inspected vehicle was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

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Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
PO Box 38845
Winnellie NT 0821
Ph: +61 8 7918 7807
enquiries@agonenviro.com.a

SMOKE TEST REPORT JA0336.6

TEST DATE:	Saturday, 17 November 2018
REPORT DATE:	Saturday, 17 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN:	Significant smoke was generated within the HITACHI Zaxis 210LC Excavator (Serial No. HCMDCK21J00307765), and no leaks were visible on inspection. The plant is allowed access into the asbestos contaminated work area.
RESULT:	PASS
NOTES:	N/A

This smoke test certificate indicates the inspected plant equipment was free from leaks at the time of inspection and can enter the asbestos contaminated work zones.

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Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

APPENDIX G: ENCLOSURE TEST REPORT

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

ENCLOSURE TEST REPORT JA0336

TEST DATE:	Thursday, 15 November 2018
REPORT DATE:	Thursday, 15 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
LOCATION:	Recreation Club, Bartalumba Bay Homestead, Groote Eylandt
ASBESTOS REMOVAL:	Removal of asbestos containing debris and associated contaminated items from the Recreation Club prior to demolition.
SMOKE TEST:	Significant smoke was generated within the enclosure and no leaks were visible on inspection of the enclosure.
DE-CON UNIT DRAW:	A substantial draw of air through the decontamination unit was visible.
NEGATIVE AIR PRESSURE:	A pressure differential of 19 pascals was achieved.
RESULT:	PASS
NOTES:	

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Yours Sincerely

Jack Pilkington
Licensed Asbestos Assessor
Agon Environmental

APPENDIX H: AIRBORNE FIBRE MONITORING REPORTS

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a

MONITORING DATE:	Sunday, 11 November 2018
REPORT DATE:	Sunday, 11 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Emu pick of surface ACM debris from roadways and foreshore areas, and removal of ACM eave linings and vinyl sheeting from the Duplex Dormitory at the Bartalumba Bay Homestead, Groote Eylandt.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_1	Ext	SE side of work zone – adjacent site entry/duplex dormitory	043	07:08	16:03	1300	0/100	<0.01
JA0336_2	Ext	S side of work zone – adjacent decon	044	07:13	16:05	1300	0/100	<0.01
JA0336_3	Ext	NW side of work zone – foreshore	075	11:00	16:00	1500	0/100	<0.01
JA0336_4	Ext	NE side of work zone – adjacent duplex dormitory	037	10:40	15:57	1500	0/100	<0.01

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Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.1

MONITORING DATE:	Monday, 12 November 2018
REPORT DATE:	Monday, 12 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Emu pick of surface ACM debris from the foreshore areas, installation of temporary fence screening around houses, cleaning of pad surfaces, and removal of ACM eave linings from the Duplex Dormitory at the Bartalumba Bay Homestead, Groote Eylandt.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_5	Ext	SE side of work zone – adjacent site entry/duplex dormitory	037	06:50	16:40	1300	1/100	<0.01
JA0336_6	Ext	S side of work zone – adjacent decon/truckwash	044	06:53	16:38	1300	0/100	<0.01
JA0336_7	Ext	NE side of work zone	066	06:58	16:34	1300	2/100	<0.01
JA0336_8	Ext	NW side of work zone – foreshore	043	06:59	16:35	1300	0/100	<0.01

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Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.2

MONITORING DATE:	Tuesday, 13 November 2018
REPORT DATE:	Tuesday, 13 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Clearing of footprint to Recreation Club, cleaning of pad surfaces, and decontamination and relocation of boulders and concrete rubble at the Bartalumba Bay Homestead, Groote Eylandt.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_9	Ext	SE side of work zone – adjacent site entry/duplex dormitory	075	06:40	16:46	1300	0/100	<0.01
JA0336_10	Ext	SW side of work zone – adjacent decon/truckwash	044	06:43	16:40	1300	1.5/100	<0.01
JA0336_11	Ext	S side of work zone – adjacent laydown area	043	06:45	16:43	1300	0/100	<0.01
JA0336_12	Ext	NW side of work zone – foreshore	037	06:52	16:34	1300	0/100	<0.01
JA0336_13	Ext	NE side of work zone – foreshore, adjacent Recreation Club	066	06:53	16:36	1300	1/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

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Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.3

MONITORING DATE:	Wednesday, 14 November 2018
REPORT DATE:	Wednesday, 14 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Setup of enclosure for the Recreation Club, and decontamination and relocation of concrete rubble at the Bartalumba Bay Homestead, Groote Eylandt.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_14	Ext	SE side of work zone – adjacent site entry/duplex dormitory	075	06:35	17:17	1300	1/100	<0.01
JA0336_15	Ext	S side of work zone – adjacent laydown area	037	06:37	17:20	1300	2/100	<0.01
JA0336_16	Ext	SW side of work zone – adjacent decon/truckwash	066	06:39	13:41	*Note 1		
JA0336_17	Ext	NW side of work zone – foreshore	043	06:44	17:08	1300	0/100	<0.01
JA0336_18	Ext	NE side of work zone – foreshore, adjacent Recreation Club	044	06:47	17:10	1300	0/100	<0.01
JA0336_19	Ext	SW side of work zone – adjacent decon/truckwash	066	13:43	17:15	3500	0/100	<0.01

*Note 1 – Sample voided due to water damage of filter

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

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Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.4

MONITORING DATE:	Thursday, 15 November 2018
REPORT DATE:	Thursday, 15 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Setup of enclosure for the Recreation Club, and decontamination and relocation of concrete rubble at the Bartalumba Bay Homestead, Groote Eylandt.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_20	Ext	SE side of work zone – adjacent site entry/duplex dormitory	043	06:34	16:39	1300	0/100	<0.01
JA0336_21	Ext	S side of work zone – adjacent laydown area	066	06:38	16:38	1300	0/100	<0.01
JA0336_22	Ext	SW side of work zone – adjacent decon/truckwash	044	06:36	16:41	1300	1/100	<0.01
JA0336_23	Ext	NW side of work zone – foreshore	037	06:45	16:32	1300	0.5/100	<0.01
JA0336_24	Ext	NE side of work zone – foreshore, adjacent Recreation Club	075	06:46	16:33	1300	0/100	<0.01

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Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.5

MONITORING DATE:	Friday, 16 November 2018
REPORT DATE:	Friday, 16 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Club enclosure, and relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 25-33	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 34	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_25	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	041	06:28	16:43	1300	1/100	<0.01
JA0336_26	Ext	Homestead: S side of work zone – adjacent laydown area	043	06:30	16:44	1300	1/100	<0.01
JA0336_27	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	044	06:31	16:47	1300	0/100	<0.01
JA0336_28	Ext	Homestead: E side of work zone – adjacent Recreation Club negative air unit	075	06:44	16:36	1300	1.5/100	<0.01
JA0336_29	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club negative air unit	066	06:46	16:33	1300	0/100	<0.01
JA0336_30	Ext	Homestead: NW side of work zone – foreshore	037	06:48	16:30	1300	0/100	<0.01
JA0336_31	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	020	06:08	16:56	1300	0/100	<0.01
JA0336_32	Ext	Containment Cell: NW side of work zone	063	06:11	16:58	1300	1/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_33	Ext	Containment Cell: SW side of work zone	077	06:14	16:55	1300	0/100	<0.01
JA0336_34	Ext	Haul Road: Roadway between Homestead and Containment Cell	070	06:25	16:53	*Note 1		

**Note 1 – Sample voided due to pump being moved from original location*

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.6

MONITORING DATE:	Saturday, 17 November 2018
REPORT DATE:	Saturday, 17 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Club enclosure, and relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 35-43	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 44	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_35	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	044	06:18	16:03	1100	0/100	<0.01
JA0336_36	Ext	Homestead: S side of work zone – adjacent laydown area	075	06:19	16:04	1100	0/100	<0.01
JA0336_37	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	063	06:21	16:02	1100	2/100	<0.01
JA0336_38	Ext	Homestead: E side of work zone – adjacent Recreation Club negative air unit	037	06:40	15:57	1100	1/100	<0.01
JA0336_39	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club negative air unit	066	06:43	15:58	1100	3/100	<0.01
JA0336_40	Ext	Homestead: NW side of work zone – foreshore	020	06:46	16:00	1100	0/100	<0.01
JA0336_41	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	070	06:05	16:25	1100	0/100	<0.01
JA0336_42	Ext	Containment Cell: NW side of work zone	077	06:06	16:22	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_43	Ext	Containment Cell: SW side of work zone	041	06:09	16:21	1100	0/100	<0.01
JA0336_44	Ext	Haul Road: Roadway between Homestead and Containment Cell	043	06:15	16:12	1100	0/100	<0.01

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Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.7

MONITORING DATE:	Sunday, 18 November 2018
REPORT DATE:	Sunday, 18 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Club enclosure, and relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 45-53	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 54	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_45	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	020	06:33	16:18	1100	0/100	<0.01
JA0336_46	Ext	Homestead: S side of work zone – adjacent laydown area	077	06:34	16:19	1100	0/100	<0.01
JA0336_47	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	041	06:35	16:32	1100	0/100	<0.01
JA0336_48	Ext	Homestead: E side of work zone – adjacent Recreation Club negative air unit	044	06:55	16:25	1100	0/100	<0.01
JA0336_49	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club negative air unit	063	06:57	16:20	1100	0/100	<0.01
JA0336_50	Ext	Homestead: NW side of work zone – foreshore	070	07:03	16:27	1100	0/100	<0.01
JA0336_51	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	043	06:11	16:44	1100	0/100	<0.01
JA0336_52	Ext	Containment Cell: NW side of work zone	075	06:15	16:41	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_53	Ext	Containment Cell: SW side of work zone	066	06:13	16:42	1100	1/100	<0.01
JA0336_54	Ext	Haul Road: Roadway between Homestead and Containment Cell	037	06:18	16:36	1100	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.8

MONITORING DATE:	Monday, 19 November 2018
REPORT DATE:	Monday, 19 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Club enclosure, and relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 55-63	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 64	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_55	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	020	06:24	15:59	1100	1/100	<0.01
JA0336_56	Ext	Homestead: S side of work zone – adjacent laydown area	070	06:26	15:58	1100	0/100	<0.01
JA0336_57	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	075	06:27	15:57	1100	0/100	<0.01
JA0336_58	Ext	Homestead: E side of work zone – adjacent Recreation Club negative air unit	043	06:47	15:46	1100	0/100	<0.01
JA0336_59	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club negative air unit	077	06:48	15:45	1100	0/100	<0.01
JA0336_60	Ext	Homestead: NW side of work zone – foreshore	066	06:43	15:48	1100	0/100	<0.01
JA0336_61	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	044	06:14	16:32	1100	0/100	<0.01
JA0336_62	Ext	Containment Cell: NW side of work zone	041	06:15	16:30	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_63	Ext	Containment Cell: SW side of work zone	037	06:16	16:33	1100	0/100	<0.01
JA0336_64	Ext	Haul Road: Roadway between Homestead and Containment Cell	063	06:20	16:05	1100	0/100	<0.01

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Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.9

MONITORING DATE:	Tuesday, 20 November 2018
REPORT DATE:	Tuesday, 20 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Club enclosure, and relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 65-73	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 74	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_65	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	070	06:25	16:03	1100	0/100	<0.01
JA0336_66	Ext	Homestead: S side of work zone – adjacent laydown area	020	06:26	16:05	1100	0/100	<0.01
JA0336_67	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	037	06:28	16:10	1100	0/100	<0.01
JA0336_68	Ext	Homestead: E side of work zone – adjacent Recreation Club negative air unit	041	09:01	15:51	1100	0/100	<0.01
JA0336_69	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club negative air unit	043	09:02	15:52	1100	0/100	<0.01
JA0336_70	Ext	Homestead: NW side of work zone – foreshore	077	06:35	15:55	1100	0/100	<0.01
JA0336_71	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	063	06:17	16:33	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_72	Ext	Containment Cell: NW side of work zone	075	06:15	16:34	1100	0/100	<0.01
JA0336_73	Ext	Containment Cell: SW side of work zone	066	06:14	16:35	1100	0/100	<0.01
JA0336_74	Ext	Haul Road: Roadway between Homestead and Containment Cell	044	06:20	16:23	1100	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0487 985 312 or jack.pilkington@agonenviro.com.au

Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.10

MONITORING DATE:	Tuesday, 20 November 2018
REPORT DATE:	Tuesday, 20 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Recreation Centre Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Removal of asbestos materials and contaminated items from the Recreation Centre enclosure.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Clearance Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_75	Int	Central main bar	041	06:40	08:55	3500	0/100	<0.01
JA0336_76	Int	East room corridor	043	06:41	08:56	3500	0/100	<0.01

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Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.11

MONITORING DATE:	Wednesday, 21 November 2018
REPORT DATE:	Wednesday, 21 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE Samples 77-85	Combined Control and Clearance monitoring during asbestos removal
MONITORING TYPE Sample 86	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_77	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	020	06:20	16:09	1100	0/100	<0.01
JA0336_78	Ext	Homestead: S side of work zone – adjacent laydown area	044	06:19	16:08	1100	0/100	<0.01
JA0336_79	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	037	06:18	16:06	1100	0/100	<0.01
JA0336_80	Ext	Homestead: E side of work zone – adjacent Recreation Club	041	06:40	15:59	1100	0/100	<0.01
JA0336_81	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club	077	06:42	15:57	1100	0/100	<0.01
JA0336_82	Ext	Homestead: NW side of work zone – foreshore	075	06:44	16:02	1100	0/100	<0.01
JA0336_83	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	070	06:08	16:31	1100	0/100	<0.01
JA0336_84	Ext	Containment Cell: NW side of work zone	043	06:09	16:29	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_85	Ext	Containment Cell: SW side of work zone	066	06:10	16:27	1100	0/100	<0.01
JA0336_86	Ext	Haul Road: Roadway between Homestead and Containment Cell	063	06:13	16:35	1100	0/100	<0.01

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Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.12

MONITORING DATE:	Thursday, 22 November 2018
REPORT DATE:	Thursday, 22 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Relocation of asbestos contaminated soil from the Bartalumba Bay Homestead to the Containment Cell, and emu pick across the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_87	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	044	06:28	16:21	1100	0/100	<0.01
JA0336_88	Ext	Homestead: S side of work zone – adjacent laydown area	070	06:29	16:19	1100	0/100	<0.01
JA0336_89	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	066	06:30	16:17	1100	1/100	<0.01
JA0336_90	Ext	Homestead: E side of work zone – adjacent Recreation Club	020	06:38	16:11	1100	0/100	<0.01
JA0336_91	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club	063	06:39	16:18	1100	0/100	<0.01
JA0336_92	Ext	Homestead: NW side of work zone – foreshore	037	06:41	16:13	1100	0/100	<0.01
JA0336_93	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	077	06:00	16:58	1100	0/100	<0.01
JA0336_94	Ext	Containment Cell: NW side of work zone	075	06:02	16:56	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_95	Ext	Containment Cell: SW side of work zone	041	06:01	16:54	1100	0/100	<0.01
JA0336_96	Ext	North of Homestead Duplex	043	06:35	17:02	1100	0/100	<0.01

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Yours Sincerely

Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.13

MONITORING DATE:	Friday, 23 November 2018
REPORT DATE:	Friday, 23 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Emu pick for surface ACM debris across the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_97	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	041	06:20	1700	1100	0/100	<0.01
JA0336_98	Ext	Homestead: S side of work zone – adjacent laydown area	075	06:21	1702	1100	0/100	<0.01
JA0336_99	Ext	Homestead: SW side of work zone – adjacent decon/truckwash	044	06:30	1704	1100	0/100	<0.01
JA0336_100	Ext	Homestead: E side of work zone – adjacent Recreation Club	070	06:32	1707	1100	0/100	<0.01
JA0336_101	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club	066	06:33	1709	1100	0/100	<0.01
JA0336_102	Ext	Homestead: NW side of work zone – foreshore	077	06:35	1712	1100	0/100	<0.01
JA0336_103	Ext	Containment Cell: W side of work zone – adjacent decon/truckwash	020	06:12	15:00	1100	0/100	<0.01
JA0336_104	Ext	Containment Cell: NW side of work zone	037	06:13	15:01	1100	0/100	<0.01
JA0336_105	Ext	Containment Cell: SW side of work zone	063	06:14	15:05	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

JA0336_106	Ext	North of Homestead Duplex	043	06:38	17:11	1100	0/100	<0.01

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Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.14

MONITORING DATE:	Saturday, 24 November 2018
REPORT DATE:	Saturday, 24 November 2018
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Jack Pilkington Licence No.: NTWS-AA-463514 Richard Bowden Licence No.: NTWS-AA-458684
WORKS UNDERTAKEN	Emu pick for surface ACM debris across the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_107	Ext	Homestead: SE side of work zone – adjacent site entry/duplex dormitory	041	06:12	1640	1100	0/100	<0.01
JA0336_108	Ext	Homestead: S side of work zone – adjacent laydown area	043	06:14	1642	1100	0/100	<0.01
JA0336_109	Ext	North of Homestead Duplex	075	06:20	1645	1100	0/100	<0.01
JA0336_110	Ext	Homestead: E side of work zone – adjacent Recreation Club	044	06:05	1647	1100	0/100	<0.01
JA0336_111	Ext	Homestead: NE side of work zone – foreshore, adjacent Recreation Club	077	06:07	1649	1100	0/100	<0.01
JA0336_112	Ext	Homestead: NW side of work zone – foreshore	066	06:09	1652	1100	0/100	<0.01

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

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Jack Pilkington
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.15

MONITORING DATE:	Tuesday, 5 February 2019
REPORT DATE:	Tuesday, 5 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Removal of surface ACM debris from the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_113	Ext	Homestead: Area 1 north east of work zone	043	09:11	12:33	2500	7/100	<0.01
JA0336_114	Ext	Homestead: Area 1 south west of work zone	063	09:12	12:34	2500	2/100	<0.01
JA0336_115	Ext	Homestead: Area 2 south east of work zone	071	09:18	12:37	2500	0/100	<0.01
JA0336_116	Ext	Homestead: Area 2 north east of work zone	044	09:20	12:38	2500	4/100	<0.01
JA0336_117	Ext	Homestead: Area 3 north of work zone	075	09:23	12:46	2500	3/100	<0.01
JA0336_118	Ext	Homestead: Area 3 south west of work zone	067	09:25	12:48	2500	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0419 360 782 or hank.schinkel@agonenviro.com.au

Yours Sincerely

Hank Schinkel
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.16

MONITORING DATE:	Tuesday, 5 February 2019
REPORT DATE:	Tuesday, 5 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Containment Cell Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Containment cell for surface ACM debris from the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_119	Ext	Containment Cell: adjacent decon	062	09:52	16:20	1500	1/100	<0.01
JA0336_120	Ext	Containment Cell: north west of work zone	069	09:57	16:22	1500	0/100	<0.01
JA0336_121	Ext	Containment Cell: south west of work zone	078	09:59	16:23	1500	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0419 360 782 or hank.schinkel@agonenviro.com.au

Yours Sincerely

Hank Schinkel
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.17

MONITORING DATE:	Tuesday, 5 February 2019
REPORT DATE:	Tuesday, 5 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Removal of surface ACM debris from the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_122	Ext	Homestead: south adjacent decon	043	13:02	16:36	2500	1/100	<0.01
JA0336_123	Ext	Homestead: north west of work zone	044	13:05	16:38	2500	1/100	<0.01
JA0336_124	Ext	Homestead: north of work zone	063	13:07	16:40	2500	0/100	<0.01
JA0336_125	Ext	Homestead: east of work zone	071	13:11	16:43	2500	1/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0419 360 782 or hank.schinkel@agonenviro.com.au

Yours Sincerely

Hank Schinkel
Approved Counter and Signatory
Agon Environmental

1/41 Jessop Crescent
Berrimah, NT 0828
+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.18

MONITORING DATE:	Wednesday, 6 February 2019
REPORT DATE:	Wednesday, 6 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Homestead Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Removal of surface ACM debris from the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_126	Ext	Homestead: south adjacent decon	043	06:41	15:40	1000	0/100	<0.01
JA0336_127	Ext	Homestead: north west of work zone	044	06:43	15:44	1000	1/100	<0.01
JA0336_128	Ext	Homestead: north of work zone	063	06:45	15:46	1000	0/100	<0.01
JA0336_129	Ext	Homestead: east of work zone	071	06:47	15:49	1000	0/100	<0.01

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enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.19

MONITORING DATE:	Wednesday, 6 February 2019
REPORT DATE:	Wednesday, 6 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Containment Cell Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Containment cell for surface ACM debris from the grounds of the Bartalumba Bay Homestead.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Combined Control and Clearance monitoring during asbestos removal

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_130	Ext	Containment Cell: adjacent decon	062	06:15	16:10	1500	0/100	<0.01
JA0336_131	Ext	Containment Cell: north west of work zone	069	06:16	16:11	1500	0/100	<0.01
JA0336_132	Ext	Containment Cell: south west of work zone	078	06:17	16:12	1500	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0419 360 782 or hank.schinkel@agonenviro.com.au

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1/41 Jessop Crescent
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+61 8 7918 7807
enquiries@agonenviro.com.au
ABN 29 167 746 063

AIRBORNE FIBRE MONITORING REPORT JA0336.a.20

MONITORING DATE:	Thursday, 7 February 2019
REPORT DATE:	Thursday, 7 February 2019
CLIENT:	Anindilyakwa Land Council
REMOVAL CONTRACTOR	Darwin Asbestos and Demolition Services
ORDER / PROJECT NO.	N/A
NOTIFICATION NO.	N/A
SITE NAME: **SITE ADDRESS:** **SUBURB:**	Bartalumba Bay Containment Cell Asbestos Remediation Project Bartalumba Bay Groote Eylandt
ASBESTOS ASSESSOR:	Mark Kondakov Licence No.: NTWS-AA-456703 Hank Schinkel Licence No.: NTWS-AA-467672
WORKS UNDERTAKEN	Background monitoring during finalisation of works at the containment cell area. Note that the asbestos contaminated materials were covered with clean fill on Wednesday 6th February, and Thursday's works were site remediation works.
TEST METHOD:	Guidance Note on the Membrane Filter Method for Estimating of Airborne Asbestos Fibres [NOHSC:3003(2005)] and supplementary work instruction in-house method LP-002 Asbestos Fibre Counting
FILTER SIZE	25mm
MONITORING TYPE	Background Monitoring

Sample ID	Int Ext	Sample Location	Pump No.	Start Time	Finish Time	Average Flow Rate (ml/min)	Fibres/ Field	Fibre Conc. (per ml)
JA0336_133	Ext	Containment Cell: adjacent decon	069	08:00	12:15	2500	0/100	<0.01
JA0336_134	Ext	Containment Cell: north west of work zone	062	08:02	12:16	2500	0/100	<0.01
JA0336_135	Ext	Containment Cell: south west of work zone	078	08:03	12:17	2500	0/100	<0.01

For any further information, please do not hesitate to contact the undersigned on 0419 360 782 or hank.schinkel@agonenviro.com.au

Yours Sincerely

Hank Schinkel
Approved Counter and Signatory
Agon Environmental

APPENDIX I: SOIL VALIDATION ANALYSIS RESULTS

Soil Validation Analytical Results
Remediation Phase 1

							Identification of Asbestos in Soils				Asbestos Quantification			
							Asbestos Detected	Asbestos Trace	Asbestos Type	Sample Weight (dry)	Asbestos (Fines and Fibrous <7mm)	Asbestos (Fines and Fibrous FA+AF)	Weight Used for % Claculation	Fibrous Asbestos >7 mm
							g/kg	Fibres	-	g	g	% (w/w)	kg	g
EQL							0.1	5	-	0.01	0.0004	0.001	0.0001	0.0004
NEPM 2013 Health Screening Levels (HSLs) forFA and AF (friable asbestos) (all land uses)														
Field ID	Depth	Date	Lab Report Number	Lab Name	Sample Type	Parent Sample								
GPS2-146	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	991	<0.0004	<0.001	0.991	<0.0004
GPS2-147	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	808	<0.0004	<0.001	0.808	<0.0004
D1	0	21/11/2018	EN1808033	ALS	Duplicate	GPS2-147	No	No	-	914	<0.0004	<0.001	0.914	<0.0004
GPS2-149	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	1030	<0.0004	<0.001	1.03	<0.0004
GPS2-150	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	1000	<0.0004	<0.001	1	<0.0004
GPS2-151	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	842	<0.0004	<0.001	0.842	<0.0004
GPS2-153	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	1020	<0.0004	<0.001	1.02	<0.0004
GPS2-155	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	732	<0.0004	<0.001	0.732	<0.0004
GPS2-156	0	21/11/2018	EN1808033	ALS	Normal		No	No	-	961	<0.0004	<0.001	0.961	<0.0004
GPS2-157	0	21/11/2018	EN1808033	ALS	Normal		No*	No	Ch	851	0.0004	<0.001	0.851	<0.0004
GPS2-158	0	21/11/2018	EN1808033	ALS	Normal		No*	No	Ch	857	0.0039	<0.001	0.857	<0.0004
GPS2-160	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	989	<0.0004	<0.001	0.989	<0.0004
D2	0	22/11/2018	EN1808033	ALS	Duplicate	GPS2-160	No*	No	Ch	703	0.0092	0.001	0.703	<0.0004
GPS2-161	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	852	<0.0004	<0.001	0.852	<0.0004
GPS2-162	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	837	<0.0004	<0.001	0.837	<0.0004
GPS2-163	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	872	<0.0004	<0.001	0.872	<0.0004
GPS2-164	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	899	<0.0004	<0.001	0.899	<0.0004
GPS2-165	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	817	<0.0004	<0.001	0.817	<0.0004
GPS2-166	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	976	<0.0004	<0.001	0.976	<0.0004
GPS2-167	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	939	<0.0004	<0.001	0.939	<0.0004
GPS2-168	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	917	<0.0004	<0.001	0.917	<0.0004
GPS2-169	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	979	<0.0004	<0.001	0.979	<0.0004
GPS2-170	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	925	<0.0004	<0.001	0.925	<0.0004
D3	0	22/11/2018	EN1808033	ALS	Duplicate	GPS2-170	No	No	-	919	<0.0004	<0.001	0.919	<0.0004
GPS2-171	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	998	<0.0004	<0.001	0.998	<0.0004
GPS2-172	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	978	<0.0004	<0.001	0.978	<0.0004
GPS2-173	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	934	<0.0004	<0.001	0.934	<0.0004
GPS2-174	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	983	<0.0004	<0.001	0.983	<0.0004
GPS2-175	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	885	<0.0004	<0.001	0.885	<0.0004
GPS2-176	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	835	<0.0004	<0.001	0.835	<0.0004
GPS2-177	0	22/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	763	0.0137	0.002	0.763	<0.0004
GPS2-178	0	22/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	752	0.0571	0.008	0.752	<0.0004
GPS2-179	0	22/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	888	0.0567	0.006	0.888	<0.0004
GPS2-180	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	897	<0.0004	<0.001	0.897	<0.0004
D4	0	22/11/2018	EN1808033	ALS	Duplicate	GPS2-180	No*	No	Ch	686	0.0119	0.002	0.686	<0.0004
GPS2-181	0	22/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	906	0.0353	0.004	0.906	<0.0004
GPS2-182	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	944	<0.0004	<0.001	0.944	<0.0004
GPS2-183	0	22/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	926	0.0136	0.001	0.926	<0.0004
GPS2-184	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	779	<0.0004	<0.001	0.779	<0.0004
GPS2-185	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	781	<0.0004	<0.001	0.781	<0.0004
GPS2-186	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	931	<0.0004	<0.001	0.931	<0.0004

Soil Validation Analytical Results
Remediation Phase 1

							Identification of Asbestos in Soils				Asbestos Quantification			
							Asbestos Detected	Asbestos Trace	Asbestos Type	Sample Weight (dry)	Asbestos (Fines and Fibrous <7mm)	Asbestos (Fines and Fibrous FA+AF)	Weight Used for % Clacultion	Fibrous Asbestos >7 mm
							g/kg	Fibres	-	g	g	% (w/w)	kg	g
EQL							0.1	5	-	0.01	0.0004	0.001	0.0001	0.0004
NEPM 2013 Health Screening Levels (HSLs) forFA and AF (friable asbestos) (all land uses)														
Field ID	Depth	Date	Lab Report Number	Lab Name	Sample Type	Parent Sample								
GPS2-187	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	575	<0.0004	<0.001	0.575	<0.0004
GPS2-188	0	22/11/2018	EN1808033	ALS	Normal		No	No	-	577	<0.0004	<0.001	0.577	<0.0004
GPS2-189	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	583	<0.0004	<0.001	0.583	<0.0004
GPS2-190	0	23/11/2018	EN1808033	ALS	Normal		No*	No	Ch	661	0.0085	0.001	0.661	<0.0004
D5	0	23/11/2018	EN1808033	ALS	Duplicate	GPS2-190	No	No	-	524	<0.0004	<0.001	0.524	<0.0004
GPS2-191	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	665	<0.0004	<0.001	0.665	<0.0004
GPS2-192	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	817	<0.0004	<0.001	0.817	<0.0004
GPS2-193	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	808	<0.0004	<0.001	0.808	<0.0004
GPS2-194	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	836	<0.0004	<0.001	0.836	<0.0004
GPS2-195	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	545	<0.0004	<0.001	0.545	<0.0004
GPS2-196	0	23/11/2018	EN1808033	ALS	Normal		No*	No	Ch + Am	839	0.0049	<0.001	0.839	<0.0004
GPS2-197	0	23/11/2018	EN1808033	ALS	Normal		No*	No	Ch	780	0.022	0.003	0.78	<0.0004
GPS2-198	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	850	<0.0004	<0.001	0.85	<0.0004
GPS2-199	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	780	<0.0004	<0.001	0.78	<0.0004
GPS2-200	0	23/11/2018	EN1808033	ALS	Normal		No	No	-	792	<0.0004	<0.001	0.792	<0.0004
D6	0	23/11/2018	EN1808033	ALS	Duplicate	GPS2-200	No	No	-	730	<0.0004	<0.001	0.73	<0.0004

Soil Validation Analytical Results
Remediation Phase 2

							Identification of Asbestos in Soils				Asbestos Quantification
							Asbestos Detected	Asbestos Trace	Asbestos Type	Sample Weight (dry)	Asbestos (Fines and Fibrous FA+AF)
							g/kg	Fibres	-	g	% (w/w)
EQL							0.1	5	-	0.01	0.001
NEPM 2013 Health Screening Levels (HSLs) forFA and AF (friable asbestos) (all land uses)											
Field ID	Depth	Date	Lab Report Number	Lab Name	Sample Type	Parent Sample					
1	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	584	<0.001
2	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	441	<0.001
3	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	479	<0.001
4	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	458	<0.001
5	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	565	<0.001
6	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	478	<0.001
7	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	510	<0.001
8	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	524	<0.001
9	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	413	<0.001
10	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	671	<0.001
11	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	747	<0.001
12	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	670	<0.001
13	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	692	<0.001
14	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	812	<0.001
15	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	853	<0.001
20	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	775	<0.001
21	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	700	<0.001
22	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	702	<0.001
23	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	749	<0.001
24	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	734	<0.001
25	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	818	<0.001
26	0	7/02/2019	639627-AID	Eurofins	Normal		No	No	-	806	<0.001

Site Auditor (13 July 2023)
Asbestos Lab Test Data

CERTIFICATE OF ANALYSIS

Work Order	: **EN2305275**	Page	: 1 of 8
Amendment	: **1**		
Client	: **ANINDILYAKWA LAND COUNCIL (ALC)**	Laboratory	: Environmental Division Newcastle
Contact	: IAN HOLLINGSWORTH	Contact	:
Address	: 30 BOUGAINVILLEA DRIVE, ALYANGULA	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: Bartalumba Bay Asbestos Remediation Project	Date Samples Received	: 31-May-2023 12:00
Order number	: ----	Date Analysis Commenced	: 01-Jun-2023
C-O-C number	: ----	Issue Date	: 13-Jul-2023 09:32
Sampler	: Dr Ian Swane		
Site	: ----		
Quote number	: ----		
No. of samples received	: 20		
No. of samples analysed	: 20		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Analysis of asbestos from swabs and tapes is not covered under the current scope of NATA accreditation.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	1- Containment cell cap	2- Containment cell cap	3- Containment cell cap	4- Containment cell cap	5- Containment cell cap
			Sampling date / time	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00	22-May-2023 00:00
Compound	CAS Number	LOR	Unit	EN2305275-001	EN2305275-002	EN2305275-003	EN2305275-004	EN2305275-005
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos (Trace)	1332-21-4	-	-	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Synthetic Mineral Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**820**	**836**	**1050**	**940**	**1270**
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	7- Duplex building Area	8- Duplex building Area	9- Recreation club area	10-Recreation club area	13- Process factory area
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EN2305275-007	EN2305275-008	EN2305275-009	EN2305275-010	EN2305275-013
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos (Trace)	1332-21-4	-	-	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Synthetic Mineral Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**711**	**1300**	**495**	**878**	**611**
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	14- Beach west of process factory area	16- Generator area	17- General walkover	18- General walkover	19- General walkover
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00
Compound	CAS Number	LOR	Unit	EN2305275-014	EN2305275-016	EN2305275-017	EN2305275-018	EN2305275-019
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos (Trace)	1332-21-4	-	-	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Synthetic Mineral Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	-	--	**No**	**No**	**No**	**No**	**No**
Sample weight (dry)	----	0.01	g	**760**	**693**	**540**	**731**	**768**
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**	**A. SMYLIE**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	20- General walkover	----	----	----	----
				Sampling date / time	23-May-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EN2305275-020	--------	--------	--------	--------
					Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	-	-		**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--		**-**	----	----	----	----
Synthetic Mineral Fibre	----	-	--		**No**	----	----	----	----
Organic Fibre	----	-	--		**No**	----	----	----	----
Sample weight (dry)	----	0.01	g		**999**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		**A. SMYLIE**	----	----	----	----

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)			Sample ID	6- Duplex building Area	11- Jetty	12- Process factory area	15- Generator area	----
			Sampling date / time	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	23-May-2023 00:00	----
Compound	CAS Number	LOR	Unit	EN2305275-006	EN2305275-011	EN2305275-012	EN2305275-015	--------
				Result	Result	Result	Result	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	**No**	**Yes**	**Yes**	**----**
Asbestos Type	1332-21-4	-	--	**Ch**	**-**	**Ch**	**Ch**	**----**
Asbestos (Trace)	1332-21-4	-	-	**No (cement sheeting)**	**No**	**N/A**	**N/A**	**----**
Sample weight (dry)	----	0.01	g	**194**	**57.8**	**68.0**	**3.21**	**----**
Synthetic Mineral Fibre	----	-	-	**No**	**No**	**Yes**	**No**	**----**
Organic Fibre	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**----**
APPROVED IDENTIFIER:	----	-	--	**J. WILLIAMS**	**J. WILLIAMS**	**J. WILLIAMS**	**J. WILLIAMS**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	1- Containment cell cap - 22-May-2023 00:00	Soil sample.
EA200: Description	2- Containment cell cap - 22-May-2023 00:00	Soil sample.
EA200: Description	3- Containment cell cap - 22-May-2023 00:00	Soil sample.
EA200: Description	4- Containment cell cap - 22-May-2023 00:00	Soil sample.
EA200: Description	5- Containment cell cap - 22-May-2023 00:00	Soil sample.
EA200: Description	7- Duplex building Area - 23-May-2023 00:00	Soil sample.
EA200: Description	8- Duplex building Area - 23-May-2023 00:00	Soil sample.
EA200: Description	9- Recreation club area - 23-May-2023 00:00	Soil sample.
EA200: Description	10-Recreation club area - 23-May-2023 00:00	Soil sample.
EA200: Description	13- Process factory area - 23-May-2023 00:00	Soil sample.
EA200: Description	14- Beach west of process factory area - 23-May-2023 00:00	Soil sample.
EA200: Description	16- Generator area - 23-May-2023 00:00	Soil sample.
EA200: Description	17- General walkover - 23-May-2023 00:00	Soil sample.
EA200: Description	18- General walkover - 23-May-2023 00:00	Soil sample.
EA200: Description	19- General walkover - 23-May-2023 00:00	Soil sample.
EA200: Description	20- General walkover - 23-May-2023 00:00	Soil sample.

Sub-Matrix: **SOLID**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	6- Duplex building Area - 23-May-2023 00:00	Several pieces of asbestos cement sheeting approximately 40 x 30 x 5mm with a collection of cement sheeting.
EA200: Description	11- Jetty - 23-May-2023 00:00	A collection of organic fibre matting with several pieces containing paint like material backing.
EA200: Description	12- Process factory area - 23-May-2023 00:00	A collection of asbestos cement sheeting approximately 40 x 40 x 5mm with two pieces of synthetic mineral fibre board.
EA200: Description	15- Generator area - 23-May-2023 00:00	One piece of asbestos cement sheeting approximately 10 x 5 x 5mm.

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EN2305275**	Page	: 1 of 4
Amendment	: **1**		
Client	: **ANINDILYAKWA LAND COUNCIL (ALC)**	Laboratory	: Environmental Division Newcastle
Contact	: IAN HOLLINGSWORTH	Telephone	: +61 2 4014 2500
Project	: Bartalumba Bay Asbestos Remediation Project	Date Samples Received	: 31-May-2023
Site	: ----	Issue Date	: 13-Jul-2023
Sampler	: Dr Ian Swane	No. of samples received	: 20
Order number	: ----	No. of samples analysed	: 20

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200) 1- Containment cell cap, 2- Containment cell cap, 3- Containment cell cap, 4- Containment cell cap, 5- Containment cell cap	**22-May-2023**	**----**	----	----	**01-Jun-2023**	18-Nov-2023	✓
Snap Lock Bag (EA200) 7- Duplex building Area, 8- Duplex building Area, 9- Recreation club area, 10-Recreation club area, 13- Process factory area, 14- Beach west of process factory area, 16- Generator area, 17- General walkover, 18- General walkover, 19- General walkover, 20- General walkover	**23-May-2023**	**----**	----	----	**01-Jun-2023**	19-Nov-2023	✓

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag (EA200) 6- Duplex building Area, 11- Jetty, 12- Process factory area, 15- Generator area	**23-May-2023**	**----**	----	----	**01-Jun-2023**	19-Nov-2023	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

QUALITY CONTROL REPORT

Work Order	: **EN2305275**	Page	: 1 of 3
Amendment	: **1**		
Client	: **ANINDILYAKWA LAND COUNCIL (ALC)**	Laboratory	: Environmental Division Newcastle
Contact	: IAN HOLLINGSWORTH	Contact	:
Address	: 30 BOUGAINVILLEA DRIVE, ALYANGULA	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: Bartalumba Bay Asbestos Remediation Project	Date Samples Received	: 31-May-2023
Order number	: ----	Date Analysis Commenced	: 01-Jun-2023
C-O-C number	: ----	Issue Date	: 13-Jul-2023
Sampler	: Dr Ian Swane		
Site	: ----		
Quote number	: ----		
No. of samples received	: 20		
No. of samples analysed	: 20		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

parcel post R545326803119820

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT: Anindilyakwa Land Council (ALC)	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE: 30 Bougainvillea Drive, Alyangula, Groote Eylandt, NT 0885		
PROJECT: Bartalumba Bay Asbestos Remediation Project	ALS QUOTE NO.:	
ORDER NUMBER:		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
PROJECT MANAGER: Dr Ian Hollingsworth	CONTACT PH: 0460 022 247	
SAMPLER: Dr Ian Swane	SAMPLER MOBILE: 0418 867 112	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	iholingsworth@alcnt.com.au	
Email Invoice to (will default to PM if no other addresses are listed):	iholingsworth@alcnt.com.au	

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 20.1 °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Dr Ian Swane	JN 1200		
DATE/TIME: 4:00PM 24 MAY 2023	DATE/TIME: 31-5-23	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	EA200	EA200B							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	1 - Containment cell cap	22/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	2- Containment cell cap	22/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	3- Containment cell cap	22/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	4- Containment cell cap	22/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	5- Containment cell cap	22/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	6 - Duplex building area	23/05/2023	Solid	Sealed double zip lock plastic bag	1		X							
	7- Duplex building area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	8- Duplex building area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	9 - Recreation club area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	10 - Recreation club area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	11 - Jetty	23/05/2023	Solid	Sealed double zip lock plastic bag	1		X							Sample consists of cloth-type wrapping around old cast-iron wastewater pipe
	12 - Process factory area	23/05/2023	Solid	Sealed double zip lock plastic bag	1		X							
	13 - Process factory area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	14 - Beach west of process factory area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	15 - Generator area	23/05/2023	Solid	Sealed double zip lock plastic bag	1		X							
	16 - Generator area	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	17 - General walkover	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	18 - General walkover	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	19 - General walkover	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
	20 - General walkover	23/05/2023	Soil	Sealed double zip lock plastic bag	1	X								
				TOTAL	20	16	4							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyd
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Newcastle
Work Order Reference
EN2305275

Telephone : +61 2 4014 2500

Appendix C. Site Audit Correspondence

IAN SWANE & ASSOCIATES P/L
PO Box 359, MORTDALE NSW 2223

Mob: +61 0418 867 112
Email: iswane@bigpond.com

Anindilyakwa Land Council
PO Box 172
30 Bougainvillea Drive
ALYANGULA NT 0885

Attention: Wesley van Zanden – Mining and Environment Officer

19 September 2018

Asbestos_180919_Interim Advice
Site Audit ALC_01

Dear Sir

INTERIM ADVICE #01, VOLUNTARY SITE AUDIT FOR BARTALUMBA BAY HOMESTEAD ASBESTOS REMEDIATION PROJECT, GROOTE EYLANDT (5 pages)

1. Introduction

This letter provides the Anindilyakwa Land Council ('ALC') and Agon Environmental ('Agon') with interim advice as part of a voluntary site audit being undertaken by Dr Ian Swane, a NT EPA Environmental Auditor ('Auditor') accredited in accordance with Part 6 of the Northern Territory (NT) Waste Management and Pollution Control Act.

The site audit is for the Bartalumba Bay Homestead Asbestos Remediation Project ('Project') that has been commenced by the ALC. The Project is understood to consist of four main stages:

1. Preliminary work involving planning, design, NT EPA approvals / licensing;
2. Remediation of asbestos containing material (ACM) and asbestos contaminated soil ('asbestos material') from the Bartalumba Bay Homestead site and validation of the work;
3. Temporary stockpiling of the asbestos material at a proposed containment cell site; and
4. Construction of a containment cell, burial of the asbestos material, closure of the containment cell and validation of the work.

The purpose of this letter is to summarise the Auditor's understanding of the Project and provide initial guidance to the ALC and Agon to facilitate completion of the Stage 1 work.

The Auditor's understanding of the Project is based on information provided by:

- A project kick-off meeting held earlier today via teleconference with environmental professionals from the ALC, Agon and the Auditor;
- Agon (14 August 2018) '*Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt NT*';
- ALC (15 August 2018) '*Proposed Containment Cell, Bartalumba Bay Road*'. Figure No: LP-0012-01; and
- Background information provided in ALC emails.

This report discusses:

- Project drivers (**Section 2**);
- Project timing (**Section 3**);
- Siting of the containment cell (**Section 4**);
- Stage 1 Preliminary work (**Section 5**); and
- Recommendations (**Section 6**).

2. Project Drivers

The Auditor understands the project drivers to be:

a) To protect the health of the local community by removing health risks posed by asbestos contamination at the Bartalumba Bay Homestead site;

b) To restore the land to a safe condition and make it suitable for ongoing residential use for the local community;

c) To undertake the work in a manner that protects the workforce, protects the environment and avoids any impacts to environmental and indigenous values;

d) To rehabilitate the proposed temporary stockpile and containment cell site to restore the natural environmental values of the land;

e) Minimise waste generation and the unnecessary use of resources;

f) To comply with regulatory requirements;

g) To adopt a remediation strategy that is practical and feasible; and

h) Minimise costs to the local community.

If there are additional drivers required by the ALC or NT EPA, the Auditor needs to be advised of them so they can be considered by the audit process. The Auditor notes that the project drivers do not include remediating the site to support a property redevelopment.

3. Project Timing

The Auditor understands that the project drivers (**Section 2**) require the ALC to have the Stage 1 to 3 work completed before the 2018 - 2019 wet season commences, which is typically in December. The Stage 4 containment cell work will then follow soon after the 2018 – 2019 wet season is over. It is further understood that the asbestos contractor engaged for the Stage 2 work will take about 2 weeks to mobilise and the site work to then take about 4 weeks to complete.

It is understood that the main reasons for this timing are:

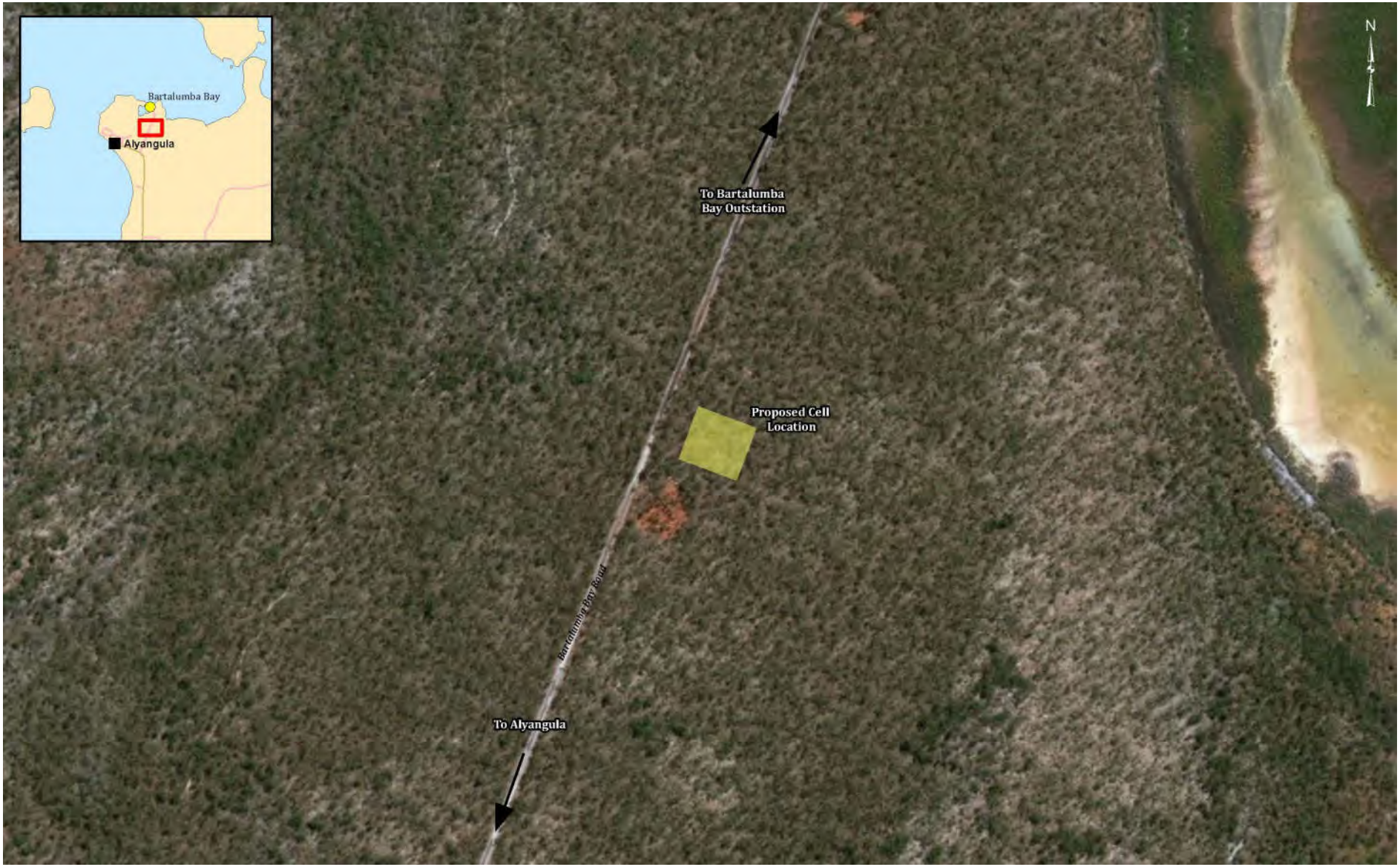
- To ensure the Bartalumba Bay Homestead site is remediated prior to the commencement of the 2018 – 2019 wet season in order that health risks posed by the asbestos contamination are addressed without further delay;
- To give the NT EPA additional time to review and approve a license application for the proposed asbestos containment cell; and
- To avoid environmental and practical hazards that would occur if the Stage 4 containment cell work was undertaken during the 2018 – 2019 wet season.

If changes need to be made to this project timing by the ALC or NT EPA, the Auditor needs to be advised of them so they can be considered by the audit process.

4. Siting of the Containment Cell

The Auditor understands that the preferred location for the containment cell is off Bartalumba Bay Road (NT Portion 1632), approximately 1.5 km south of the Bartalumba Bay homestead and 4.5 km east of Alyangula (**Figure 1**).

- **Figure 1 Proposed Containment Cell Location**



Historic drilling data indicates that the water table in this area is approximately 20 m or below with very low hydraulic connectivity. Geotechnically, the site is covered by a sandy topsoil of approximately 0.2 m with an intermittently banded substrate of clays and sandstones to twenty meters. The vegetation is an open eucalypt woodland with no significant vegetation communities (eg no monsoon vine thicket, rainforest, mangroves etc). There are not believed to be any ecological or cultural concerns for this site and the clearing is planned to be less than 1 ha in area.

It is understood that the main reasons for the selection of this location are:

- The preferred location is close to Bartalumba Bay homestead where the asbestos contamination exists;
- The preferred location would minimise health risks to the local community since the Bartalumba Bay Homestead site could be remediated prior to the commencement of the 2018 – 2019 wet season;
- A containment cell at the preferred location is a technically feasible and practical solution since the cell can be managed by a long-term management plan;
- An alternate landfill is located 40 – 50 km from the site, is presently used as a community landfill and its use for the Project is unlikely to be accepted by the local community; and
- Shipping asbestos waste from Groote Eylandt to a licensed Darwin landfill would be prohibitively expensive and not realise any environmental benefits compared to the preferred solution.

The Auditor considers that the proposed location is reasonable and capable of meeting NT EPA requirements provided a containment cell siting, design and management plan is prepared in accordance with NT EPA guidance and an EPL license application made in accordance with the Waste Management and Pollution Control (WMPC) Act.

5. Stage 1 Preliminary Work

In my opinion, the Stage 1 preliminary work should involve :

a) Preparation of a temporary stockpiling plan and submission of the plan to the NT EPA;

b) Preparation of Remedial Action Plan (RAP) / Asbestos Management Plan (AMP) for the remediation/ validation work at the homestead;

c) Preparation of a containment cell siting, design and management plan;

d) Submission of an application to obtain an Environmental Protection Licence (EPL) from the NT EPA for the proposed asbestos containment cell; and

e) Any other work required by the ALC or NT EPA.

All Stage 1 plans need to be prepared in accordance with NT EPA-endorsed guidance. These include, but may not be limited to:

- NT EPA (2018) '*Asbestos Disposal in the Northern Territory, Information on the requirements for the disposal of Asbestos in the Northern Territory'* together with other guidance referenced by this document;
- NT EPA (June 2017) '*Northern Territory Contaminated Land Guideline'*;
- NT EPA (January 2013) '*Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory'*;
- NEPM (2013) guidance; and
- Relevant NSW EPA guidelines.

All Stage 1 plans need to be submitted to the Auditor for review and approval prior to being sent to the NT EPA. The Auditor's endorsement of the containment cell siting, design and management plan is a requirement of the NT EPA[1] prior to the submission of a EPL application.

I suggest that Agon prepare the temporary stockpiling plan first so it can be sent to the NT EPA for their consideration and confirmation that an EPL is not required for this work because:

- Temporary stockpiling will occur within the same lot (NT Portion 1632) as the Bartalumba Bay Homestead site;
- The temporary stockpile and containment cell do not represent a commercial or fee for service operation; and
- The temporary stockpiling work is an important part of the remediation work required by the Bartalumba Bay Homestead site.

Early confirmation of the acceptability of the temporary stockpiling plan by the NT EPA is required since it effects all subsequent stages of work.

6. Recommendations

The Auditor recommends that:

- The ALC and Agon review this interim advice letter and provide feedback on its acceptability or advise where amendments are required;
- The ALC contact the NT EPA without delay and provide them with a status report on the project and a copy of this letter;
- Agon commence the Stage 1 work without delay and provide the required plans to the Auditor within the next two weeks; and
- The ALC provide the Auditor with a copy of all feedback provided by the NT EPA so it can be considered as part of the environmental audit.

Yours sincerely

Dr Ian C Swane (CPEng & CEnvP)

EPA Site Auditor NT, NSW & WA
Certified Environmental Practitioner
Ian Swane & Associates
Phone: 0418 867 112
Email: iswane@bigpond.com

[1] Refer NT EPA email dated 24/08/18

IAN SWANE & ASSOCIATES P/L
PO Box 359, MORTDALE NSW 2223

Mob: +61 0418 867 112
Email: iswane@bigpond.com

Anindilyakwa Land Council
PO Box 172
30 Bougainvillea Drive
ALYANGULA NT 0885

Attention: Wesley van Zanden – Mining and Environment Officer

25 October 2018

Asbestos_181025_Interim Advice#02
Site Audit ALC_01

Dear Sir

INTERIM ADVICE #02, REVIEW OF AGON DRAFT EMP FOR BARTALUMBA BAY HOMESTEAD ASBESTOS REMEDIATION PROJECT, GROOTE EYLANDT (9 pages)

1. Introduction

This report provides the Anindilyakwa Land Council ('ALC') and Agon Environmental ('Agon') with interim advice as part of a site audit being undertaken by Dr Ian Swane, a NT EPA Environmental Auditor ('Auditor') accredited in accordance with Part 6 of the Northern Territory (NT) Waste Management and Pollution Control Act. The site audit is for the Bartalumba Bay Homestead Asbestos Remediation Project ('Project') that has been commenced by the ALC. The site audit is a requirement of the NT EPA.

The purpose of this letter is to:

a) Provide a status report on the Project's compliance with recommendations made by the Site Auditor in Interim Advice #01 issued on 19/09/18; and

b) Provide review comments on a draft Environmental Management Plan (EMP) prepared by Agon[1] that was provided to the Auditor on 19/10/18.

This interim advice is considered to be consistent with NT EPA guidelines and policy and does not pre-empt conclusions to be drawn at the end of the site audit process. This interim advice does not represent a site audit statement (SAS) or a site audit report (SAR). It is intended that a SAS / SAR will be prepared for the Bartalumba Bay Homestead site (the 'Site') towards the end of the Project.

2. Status of Compliance with Auditor's Recommendations

The Auditor Interim Advice #01 report made four recommendations, these being:

- **Recommendation 1** - The ALC and Agon review the interim advice letter and provide feedback on its acceptability or advise where amendments are required
- **Recommendation 2** - The ALC contact the NT EPA without delay and provide them with a status report on the project and a copy of this letter
- **Recommendation 3** - Agon commence the Stage 1 work without delay and provide the required plans to the Auditor within the next two weeks. These plans were to comprise:
  - A temporary stockpiling plan;
  - A Remedial Action Plan (RAP) / Asbestos Management Plan (AMP) for the remediation / validation work at the Site; and
  - Containment cell siting, design and management plan.

[1] Agon (17 October 2018) '*Environmental Management Plan, Bartalumba Bay Groote Eylandt, NT*' (Draft). Document JA0336 EMP/01 prepared for the Anindilyakwa Land Council

- **Recommendation 4** - The ALC provide the Auditor with a copy of all feedback provided by the NT EPA so it can be considered as part of the environmental audit.

The status of work associated with these four recommendation at the time of this report is:

- **Recommendation 1** –
  - On 5/10/18, the ALC advised that this work had been completed and no amendments were provided;
  - On 15/10/18, the ALC advised that they had scheduled a meeting with the Traditional Owners to go over the Site and confirm there are no sacred sites and they approve the siting of the containment cell near the 'illegally' dumped asbestos site. The ALC will also meet with the residents to advise them of the proposed work and try to find a place for them to stay while the works are carried out;
  - On 15/10/18, the ALC advised that Pete Younger from Darwin Asbestos and Demolition Services had advised that he can be mobilized and be ready within 2-3 weeks of getting the go ahead.
- **Recommendation 2** - On 5/10/18, the ALC advised that they had contacted the NT EPA and provided them with a status report on the project and a copy of the Interim Advice #01 report
- **Recommendation 3** - On 5/10/18, the ALC advised that Agon had commenced the Stage 1 work and would provide the required plans to the Auditor. A draft EMP was then provided by Agon on 19/10/18 that included a temporary stockpiling plan and a RAP / AMP for the remediation / validation work. The draft EMP did not include a containment cell siting, design and management plan.
- **Recommendation 4** - On 15/10/18, the ALC sent an email to the Site Auditor and Agon advising that the NT EPA had visited Groote Eylandt and met with the ALC last week. At this time the Project was discussed and the NT EPA advised that:
  - The ALC would not require an Environmental Protection Licence (EPL) to be issued by the NT EPA for the proposed asbestos containment cell but that a Pollution Abatement Notice (PAN) would be required;
  - The NT EPA accepted the Site Auditor's Interim Advice #1 and plan for the works and for the ALC to proceed with the Project immediately;
  - The NT EPA approved the temporary stockpiling of asbestos material or direct dump into a containment cell if it was available at the time of the remediation work;
  - The NT EPA advised that they wanted the ALC to include the 'illegally' dumped asbestos site into the Project and to include the plan for its remediation in the PAN that the ALC needed to submit to the NT EPA so that both the remediation of both sites is captured within the one notice;
  - The ALC advised that the proposed location of the containment cell will be next to the 'illegally' dumped asbestos site;
  - The NT EPA wanted to review the asbestos cell design; and
  - The NT EPA will provide feedback to the ALC and the Auditor with any other requirements for the Project and the information and any other relevant info/guidelines needed for the PAN;

  On 24/10/18, the NT EPA sent an email to the ALC advising that the regulatory approach will involve a PAN. A draft PAN has been prepared for internal approval and the ALC should receive it early next week. In the interim, the ALC needed to provide the NT EPA with a map to show the approximate location of the containment cell and any related infrastructure. This map would become an attachment to the PAN.

The Auditor considers that the work required by the four recommendations made in Interim Advice #1 had been undertaken. Follow-up actions that remained to be completed prior to the commencement of the remediation work are:

- The Auditor to complete a review of the Agon EMP;
- Agon to address the Auditor's review comments in a final version of the EMP;
- The NT EPA to issue a PAN for the Project; and
- A containment cell siting, design and management plan to be prepared and approved by the Auditor if the asbestos waste was to be placed directly into the cell rather than in a temporary stockpile.

3. Review of Draft Agon EMP

The Auditor has reviewed the draft Agon EMP based on the assumption that it needs to represent a RAP prepared in accordance with:

- NT EPA (June 2017) '*Northern Territory Contaminated Land Guideline'* and the NEPM (2013) guidance;
- NEPM (2013) guidelines;
- WA Department of Health (May 2009) '*Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia May 2009'*;
- NT EPA (2018) '*Asbestos Disposal in the Northern Territory, Information on the requirements for the disposal of Asbestos in the Northern Territory'*;
- NT WorkSafe (January 2012) '*How to Safely Remove Asbestos, Code of Practice'*; and
- NOHSC: 2018 (2005)].

This is because of directions issued by the NT EPA[2] and the appointment of a Site Auditor by the ALC.

The Auditor considers the Agon draft EMP needs much more work in order for it to meet NT EPA guidance and requirements for a RAP and to provide a basis for remediating the Site to a condition that meets NT EPA requirements for residential land use. Presently, the report seems largely to be a cut-and-paste document that provides little meaningful information on how the Site will be remediated and validated.

The following review comments need to be addressed by a revised version of the document:

1. **General**:
   a) The basic approach adopted by the EMP is wrong in that it says it was prepared to address the requirements of the Auditor as described in Interim Advice #1 and repeats everything provided in Interim Advice #1. The EMP must be entirely the work of Agon and no reference to the advice provided by the Auditor should be made since the Auditor cannot audit their own work.
   b) The report should change all references to an EMP to a RAP;
   c) The report should assume that the NT EPA will require the Auditor to prepare a site audit report (SAR) for the remediated Site. This means that the documentation provided to the Auditor for review must be prepared in accordance with NT EPA approved-guidance; and
   d) My name is spelt 'Swane' not 'Swaine'.
2. **Report Title**: The title of the report should be changed from EMP to RAP.

[2] Refer NT EPA email 24/08/18 and ALC email 15/10/18

3. **Executive Summary**: This new section needs to be included[3].
4. **Section 1 Introduction**:
   a) The report should advise that the Project is limited to the remediation of asbestos at the Site to levels that meet criteria acceptable to the NT EPA for residential land use:
   b) The report should advise that the Project does not deal with any other type of contamination that may be present at the Site (Note: If Agon considers there is a low risk of any other type of contamination at the Site, then the RAP needs to justify this conclusion in the report);
   c) Site identification data needs to be provided that includes the Lot and DP number, area, survey plan, geographic coordinates, current zoning and land use, site layout plan showing existing features / local environmentally significant features[4];
   d) Describe the extent of remediation/management required – provide a summary of the risks to be mitigated, stakeholder views and time frame available to achieve the desired outcomes[5]; and
   e) The report should explain the level of uncertainty that exists in the location and quantity of asbestos contamination at the Site and why remediation work should be undertaken without conducting further investigations.
5. **Section 1.2 Previous Asbestos Assessment Work**: The last paragraph of this section should be removed together with a copy of Interim Advice #01 provided in Appendix A. This is because:
   a) The Auditor has not undertaken a formal review of the Agon (August 2018) report and provided feedback in an Interim Advice Report; and
   b) The EMP must be entirely the work of Agon and no reference to the advice provided by the Auditor should be made since the Auditor cannot audit their own work
6. **Section 1.3 Interim Audit Advice**: This entire section should be removed for the reasons given above.
7. **Section 1.4 Objectives**: The objectives of the EMP need to be expanded to include those typically required by a RAP[6], which are to:
   a) Identify the key stakeholders and responsibilities;
   b) Develop remediation goals and clean-up acceptance criteria;
   c) Assess the remediation options and determination of the preferred remediation option;
   d) Document the remediation methodology including any regulatory permit/licensing requirements;
   e) Develop an Environmental Management Plan, and
   f) Define the validation program to demonstrate the successful completion of the remediation, including monitoring.
8. **Section 1.4 Objectives**:
   a) I don't mind if Agon adopts the 8 key project drivers I listed in Interim Advice #01 but only if Agon considers them appropriate. The RAP must also remove any reference to the Auditor; and

[3] Appendix F, NT EPA (June 2017)
[4] Appendix F, NT EPA (June 2017)
[5] Appendix F, NT EPA (June 2017)
[6] Section 10.1.3, NT EPA (June 2017)

b) The RAP needs to include a table of remedial targets and derivation details (reference to site-specific risk assessment report or other document(s) detailing their derivation), as required by the NT EPA[7].

9. **New Sub-section: Remediation criteria**: The RAP needs to adopt and specify the asbestos criteria included in the NEPM (2013) Schedule B1 guidelines.
10. **New Sub-section: Quantity estimates**: The RAP needs to define:
    a) The location, extent and depth of known ACM at the Site;
    b) The location, extent and depth of suspect ACM at the Site;
    c) The level of uncertainty with current quantity estimates and how the remediation work will be undertaken to address this uncertainty.
11. **Section 1.5 Legal and Other Obligations:**
    a) Remove reference to an EPL and update the regulatory requirements as described in ALC 15/10/18 email;
    b) Identify all regulatory requirements that will need to be met by the Project (e.g. licences, approvals). In particular, specify the NT WorkSafe licences that the contractor and asbestos consultant need to have;
    c) The following additional guidelines need to be included:
        - NT EPA (June 2017) '*Northern Territory Contaminated Land Guideline'* and the NEPM (2013) guidance;
        - WA Department of Health (May 2009) '*Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia May 2009'*;
        - NT EPA (2018) '*Asbestos Disposal in the Northern Territory, Information on the requirements for the disposal of Asbestos in the Northern Territory'*;
        - NOHSC: 2018 (2005)]; and
        - NT EPA (January 2013) '*Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory'*
12. **Section 1.6 Structure of EMP**: Update this section to address changes made to the RAP.
13. **New Section: Conceptual Site Model**:
    a) Provide a Conceptual Site Model (CSM) for contamination at the Site that meets the requirement of Section 4, NEPM (2013) Schedule B2 guideline;
    b) Provide data that shows whether the asbestos contamination is all surficial or that some may be buried;
    c) Provide data on the type of asbestos contamination at the Site – is it all bonded or is some friable; and
    d) Provide data on the potential for other types of contamination to be present at the Site.
14. **New Section: Remedial Options**: Include this new Section as required by the NT EPA[8]. The section should:
    a) Identify potential remedial options that could achieve the remediation objectives within the available time frame;

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[7] Appendix F, NT EPA (June 2017)
[8] Appendix F, NT EPA (June 2017)

b) Discuss the results of case studies or pilot studies/trials undertaken that support or do not support particular remedial options;

c) Evaluate viable remedial options with reference to the preferred remediation hierarchy; and

d) Summarise the rationale for the selected remediation approach.

Some of the information provided in Section 2 'Project Overview' could be included in this new section.

15. **New Section: Procedures for Remediating the Site and Temporary Stockpiling**: Describe the procedures that will be used to remediate the Site in more detail than provided in Section 2.1. These should include, but not be limited to, those measures described in the NT EPA (June 2017) guideline (Appendix F), such as:

    a) Description of remedial method including design and construction details/plans as appropriate. Note that all removal of ACM must be undertaken in compliance with NOHSC: 2018 (2005);

    b) Discussion of limitations associated with the proposed remedial approach and the potential for additional clean-up and/or long-term site management;

    c) Identification of regulatory compliance requirements such as licences and approvals (local and state government);

    d) Documentation of discussions with stakeholders and copies of relevant agreements(e.g. regarding remediation objectives/remedial targets);

    e) Site preparation requirements (fencing, erection of warning signs, stormwater diversion);

    f) Site management plan (operational phase), including management of stormwater, stockpiles, waste soil, sediment and water, excavations, noise, dust, odour, decontamination procedures, site security, incidents, chemical/equipment storage;

    g) Detailed SAQP for any sampling required during or after remediation;

    h) Key personnel and contact details as applicable (HSEP should be prepared but is not required in the report);

    i) Remediation schedule and hours of operation;

    j) Location/source of any clean fill material to be used, validation requirements;

    k) Details of decommissioning and infrastructure removal when remediation objectives/remedial targets are achieved (as applicable); and

    l) Progress reporting format and recipients (as applicable).

    Some of the information provided in Section 2 'Project Overview' could be included in this new section.

16. **New Section: Procedures for Remediating the Site and Temporary Stockpiling**: The remediation procedures must meet the standards described in Section 5.2, WA DOH (2009) guidelines.

17. **New Section: Procedures for Remediating the Site and Temporary Stockpiling**: The RAP also needs to include:

    a) Require all excavated and ACM material to be tracked from cradle-to-grave;

    b) Include a set of material tracking protocols and documentation requirements;

    c) Copies of the material tracking documentation need to be included in the validation report. The material tracking documentation must be sufficient to allow the Auditor to conclude that all excavated and ACM material was tracked from cradle-to-grave; and

d) Work procedures that will minimise the risk of cross contamination while minimising the amount of waste generated at the Site.

18. **Temporary storage**: The EMP must include the temporary storage requirements specified in the NT EPA (2018) guideline relevant to the Project. These include but may not be limited to:

    a) Temporary storage is to be for the short term (<1 year);

    b) The RAP/EMP must include consideration of access to and egress from the storage facility, timelines and intended landfill destination;

    c) The temporary storage facility must be within a secure compound with a perimeter fence of at least 1.8m high wire mesh, a lockable entrance with signage detailing the following: Approval/ Licence holder and number; hours of operation; type of waste accepted; 24 hour contact details; and access is prohibited to unauthorised users; and

    d) ACM is to be handled in accordance with Australian Standards and Codes of Practice for the management, control and removal of asbestos.

19. **New Section: Procedures for Off-site Containment**: Relocate the information provided in Section 2.2 in this new section. Advise that LSDP plan will be prepared in accordance with NT EPA guidance such as given by the January 2013, June 2017 and 2018 guidelines.

20. **New Section: Safe Work Procedures**: Describe how the remediation work will be safely conducted in accordance with NT WorkSafe requirements.

21. **New Section: Site Management Plan**: Describe how the Site will be managed during the remediation work. These should include, but not be limited to, those measures described in the NT EPA (June 2017) guideline (Section 12, Appendices F & H), such as:

    a) Procedures for managing air quality, dust (particulate emissions), dust (stockpile management), dust (asbestos management), noise, surface water, soil quality (including acid sulphate soils), groundwater, flora and fauna, heritage;

    b) Time frame for site management e.g. 1 year, 5 years, in perpetuity;

    c) Identification of the relevant stakeholders who have specific interests, roles and responsibilities in relation to the ongoing management of the site;

    d) Documentation of stakeholder agreement to management roles and responsibilities;

    e) Details of maintenance and/or monitoring requirements including trigger levels and an SAQP if applicable;

    f) Contingency actions (e.g. repeat sampling, increased monitoring frequency, revision of the SMP, risk assessment) that will be carried out if trigger levels are exceeded. The contingency plan must meet Appendix D, WA DOH (2009) guidelines;

    g) Notification procedures if trigger levels are exceeded;

    h) Format and frequency of reporting, and who will be provided with copies of the reports.

    Some of the information provided in Section 8 ‘Environmental Risk Control Plans’ could be included in this new section

22. **New Section : Validation Plan**: The RAP needs to provide details of the strategy to validate the Site to a standard that meets NT EPA requirements for Residential A land use. The strategy must meet the requirements of the NEPM (2013) Schedule B2 and Section 4.3, WA DOH (2009) guidelines. These should include, but not be limited to:

    a) Data quality objectives (DQOs);

    b) Rationale for the selection of: sampling pattern, sampling density including an estimated size of the residual hot spots that may remain undetected, sampling locations including locations

shown on a site map, sampling depths, samples for analysis and samples not analysed, analytical methods, analytes for samples;

c) Detailed description of the sampling methods including: sample containers and type of seal used, sampling devices and equipment, equipment contamination procedures, sample handling procedures, sample preservation methods and reference to recognised protocols;

d) Detailed description of field screening protocols; and

e) Production of a validation report in accordance with NT EPA guidance.

23. **New Section: Community Engagement**: Describe the community engagement actions that will need to be undertaken by the Project.

24. **Section 4.0 Roles and Responsibilities**: This section of the report should specify the party responsible for, among other things:

a) Preparing a RAP in accordance with regulatory requirements;

b) Obtaining all relevant regulatory approvals required by the project;

c) Community engagement;

d) Conducting and directing remediation work at the Site;

e) Protecting human health and the environment during the remediation work;

f) Remediating the Site in accordance with regulatory requirements to a standard suitable for residential land use; to a standard suitable for residential land use;

g) Supervising the remediation work;

h) Environmental and WorkSafe monitoring during remediation work in accordance with regulatory requirements;

i) Validating the Site in accordance with regulatory requirements to a standard suitable for residential land use; and

j) Removing asbestos contaminated material from the Site and placing it in a temporary stockpile in accordance with regulatory requirements.

25. **Section 4.1 The Principal**: I recommend that the ALC review this section and confirm whether it is acceptable or needs to be amended. I note that the report requires the ALC to maintain responsibility for the site and all hazardous material at the Site and that contractors meet their obligations under contracts with the Principal. In my opinion, work undertaken at the Site by Contractors should remain the responsibility of these Contractors.

26. **Section 4.2 The Auditor**: Agon should assume that the NT EPA will require the Auditor to prepare a SAR for the remediated Site. This means that the documentation provided to the Auditor for review must be prepared in accordance with NT EPA approved-guidance.

27. **Section 4.3 The Contractor**: I recommend that the ALC review this section and confirm whether it is acceptable or needs to be amended. In my opinion, work undertaken at the Site by Contractors should remain the responsibility of these Contractors.

28. **Section 8.4 Air Quality**: A comprehensive asbestos fibre air monitoring program needs to be undertaken across the Site through the remediation work period. Visual inspection of the work as proposed by the Agon draft EMP is unacceptable. The monitoring program should be designed in accordance with Section 4.2, WA DOH (2009) guidelines.

IAN SWANE & ASSOCIATES P/L

The Site Auditor trust the review comments made herein are self-explanatory. Should additional information be required, please don't hesitate to contact me.

The Site Auditor recommends that a RAP meeting NT EPA guidance be prepared prior to the commencement of remediation work at the Site and a copy be provided to the Auditor for review and approval.

Yours sincerely

Dr Ian C Swane (CPEng & CEnvP)

EPA Site Auditor NT, NSW & WA
Certified Environmental Practitioner
Ian Swane & Associates

Phone: 0418 867 112
Email: iswane@bigpond.com

Ian Swane

From: Ian Swane <iswane@bigpond.com>
Sent: Friday, 9 November 2018 10:08 PM
To: 'John Iddles'
Cc: 'Jack Pilkington'; Wesley van Zanden
Subject: Site Auditor Interim Advice #3 for Bartalumba Bay Homestead Asbestos Remediation Project

John

I have reviewed the Agon (5/11/18) RAP, the Agon (5/11/18) Asbestos Management Plan (AMP) and the Agon (17/10/18) SAQP. They are structured documents that address most of the review comments I made in my 25/10/18 Interim Advice #02. Typographic errors exist in the documents but they are considered to be of a minor nature and do not affect the effectiveness of the documents. No changes need to be made to these documents at this time, although some data gaps exist that are identified by the following Site Auditor interim advice and which need to be addressed by Agon.

Matters that Agon needs to address prior to the commencement of the remediation work are documented below:

1. **Additional environmental plans**: The RAP (Section 2.1) advises that all work is to be conducted under erosion, dust and asbestos management / environmental control plans. Agon needs to ensure that these plans are prepared in accordance with NT EPA requirements and recommendations made by the Site Auditor in Interim Advice #02 prior to the commencement of work
2. **Temporary stockpiling**: The RAP (Section 2.1) and AMP (Section 2.5) describes the Task1 asbestos removal and temporary stockpiling work. The temporary stockpiling work needs to address Comment 18 in Interim Advice #02 dated 25/10/18.
3. **Documentation of site work**: It is critical that Agon ensures all site works undertaken by the Contractor and Asbestos Consultant (Agon) are documented in detail on a daily basis, since this documentation will form an important set of data that the Site Auditor will need to review. Daily site operations should be documented in daily field records, which are designed to capture all key remediation and environmental data. The documentation should include daily site records that use a standardised form, checklists, material tracking forms, photographic records, plans and figures
4. **Covering of temporary stockpile**: The AMP (Section 2.8) correctly advises that the temporary stockpile will be covered by 200 µm plastic sheeting. Agon needs to ensure that the plastic sheeting is well secured to stop it from being blown off or torn. This may involve placing tyres or other types of weights over the plastic sheeting sufficient to ensure the sheeting is not damaged
5. **Unexpected Finds**: The AMP (Section 3.9) provides an Unexpected Finds procedure. In my opinion, a legitimate Unexpected Find is "*contamination whose presence at a site is unlikely and cannot reasonably be found by investigations undertaken in accordance with regulatory requirements*". Consequently, finding additional asbestos contamination at the site should not constitute an Unexpected Find but be termed an Expected Find whose presence had not been previously discovered. The Unexpected Finds procedure should not be relied upon to justify finding additional contamination at a site simply because poor standards were used by earlier investigation or remediation work
6. **Asbestos Remediation Criteria**: The asbestos remediation criteria adopted by the AMP (Section 5.1) were based on NT Worksafe requirements, which are no visible asbestos present within the Asbestos Work Area. This criteria maybe appropriate for an occupational environment but additional criteria needs to be applied to make the site suitable for residential land use and meet NT EPA requirements. These additional criteria are specified in Table 7 of the NEPM (2013) Schedule B1 guidelines, which are reproduced in the table below

Table 7. Health screening levels for asbestos contamination in soil

	Health Screening Level (w/w)			
Form of asbestos	Residential A[1]	Residential B[2]	Recreational C[3]	Commercial/ Industrial D[4]
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF[5] (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1. Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
2. Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved y space such as high-rise buildings and apartments.
3. Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools unpaved footpaths.
4. Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5. The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) c applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). T screening level is not applicable to free fibres.

7. **Validation assessment process:** In Section 5.2 of the AMP, the validation work will require the collection of soil samples in accordance with the sampling procedures specified in Schedule B2, NEPM (2013), and their testing by a NATA-accredited lab for bonded and friable asbestos. Soil samples should be collected on a square grid at a spacing of 10 m. The validation work should also address the requirements of Condition 22 in Interim Advice letter #02
8. **Validation report:** In Section 5.3 of the AMP, the validation report must document all remediation and validation work undertaken at the Site in accordance with Schedule B2, NEPM (2013)
9. **Testing of Temporary Stockpile**: Section 3 of the SAQP advises that asbestos contaminated soils placed in the temporary stockpile will be tested for the NSW EPA screen, tin and TBT. No information was provided explain why these contaminants were selected for lab analysis while others were not. Agon needs to provide the Site Auditor with a separate document that explains the Conceptual Site Model (CSM) that Agon adopted for contamination at the site. The CSM should be prepared in accordance with recommendation provided in NEPM (2013) Schedule B2 guidelines. Data should be provided that addresses Comment 13 in Interim Advice #02 dated 25/10/18. Any additional contaminants of concern identified by the CSM should also be tested. All soil samples must be collected and tested in accordance with NEPM (2013) guidelines.

Other feedback of a less urgent nature that needs to be addressed includes:

10. Provide me with a complete copy of the RAP that includes the documentation required by Appendices A – C;
11. Provide me with a copy of the final PAN 2018/6 issued by the NT EPA;
12. Provide me with copies of the erosion, dust and asbestos management / environmental control plans, the asbestos removalist's Asbestos Removal Control Plan and Safe Work Methodology Statements if not included as part of the RAP;
13. Include copies of all documentation generated by the remediation and validation work in the Remediation and Validation Report;

Please send me weekly up-dates on how the work is progressing and don't hesitate to contact me should there be any matter you wish to discuss.

Regards
Ian

Dr Ian C Swane (CPEng, CEnvP)
EPA Accredited Site Auditor in NSW, WA & NT
Ian Swane & Associates (mob: 0418 867 112)

IAN SWANE & ASSOCIATES P/L
PO Box 359, MORTDALE NSW 2223

Mob: +61 0418 867 112
Email: iswane@bigpond.com

Anindilyakwa Land Council
PO Box 172
30 Bougainvillea Drive
ALYANGULA NT 0885

Attention: Wesley van Zanden – Mining and Environment Officer

13 November 2018

Asbestos_181113_Interim Advice#04
Site Audit ALC_01

Dear Sir

INTERIM ADVICE #04, REVIEW OF AGON PLANS FOR BARTALUMBA BAY HOMESTEAD ASBESTOS REMEDIATION PROJECT, GROOTE EYLANDT (7 pages)

1. Introduction

This report provides the Anindilyakwa Land Council ('ALC') and Agon Environmental ('Agon') with interim advice as part of a site audit being undertaken by Dr Ian Swane, a NT EPA Environmental Auditor ('Auditor') accredited in accordance with Part 6 of the Northern Territory (NT) Waste Management and Pollution Control Act. The site audit is for the Bartalumba Bay Homestead Asbestos Remediation Project ('Project') that has been commenced by the ALC. The site audit is a requirement of the NT EPA.

The purpose of this letter is to:

a) Assess the suitability of three plans prepared for the remediation of asbestos contamination at the Bartalumba Bay Homestead (the 'Site'). These plans are:
   - Agon Environmental (17 October 2018) *'Sampling Analysis and Quality Plan, Bartalumba Bay Groote Eylandt, NT*'. Document No: JA0336-SAQP/01 prepared for the ALC
   - Agon Environmental (5 November 2018) *'Remediation Action Plan, Bartalumba Bay Groote Eylandt, NT*'. Document No: JA0336_RAP/02 prepared for the ALC
   - Agon Environmental (5 November 2018) *'Asbestos Management Plan, Bartalumba Bay Groote Eylandt, NT*'. Document No: JA0336_AMP/02 prepared for the ALC

b) Assess the suitability of the plan titled '*Containment Cell Siting Design & Management Plan Bartalumba Bay Groote Eylandt, NT*' prepared by Agon Enviromental (5 November 2018) for the ALC ('Cell Plan')

This interim advice is considered to be consistent with NT EPA guidelines and policy and does not pre-empt conclusions to be drawn at the end of the site audit process. This interim advice does not represent a site audit statement (SAS) or a site audit report (SAR). It is intended that a SAS / SAR will be prepared for the Bartalumba Bay Homestead site (the 'Site') towards the end of the Project.

2. Review of Plans for Remediation of Bartalumba Bay Homestead

The Site Auditor considers the remediation action plan (RAP) and the asbestos management plan (AMP) prepared for the remediation of asbestos contamination at the Bartalumba Bay Homestead provide a strategy capable of remediating the Site to a condition suitable for Residential A land use provided the review comments made by the Site Auditor on 9/11/18 and Agon on 10/11/18 are implemented. A copy of these review comments is provided in **Attachment A** (4 pages).

The Agon sampling analysis and quality plan (SAQP) needs to be revised as mentioned in Comment 9 of the review comments in **Attachment A**.

Complete copies of the three finalised plans need to be provided to the Site Auditor.

3. Review of Containment Cell Plan for Bartalumba Bay Homestead Site

The Site Auditor considers the containment strategy described by the Cell Plan is suitable for the containment of asbestos contaminated material removed from the Site provided the Cell Plan is revised to address the following review comments:

1. Before commencing construction of the containment cell, the following documents must be provided to the NT EPA[1]:
    a) A report with detailed plans, technical specifications and a construction quality assurance plan ("design documents") for the design and construction of the containment cell and any associated infrastructure; and
    b) The Environment Management Plan (EMP) for the construction and operation of the containment cell. The EMP must include but not be limited to information on:
        i. dust control and monitoring;
        ii. measures to ensure staff and contractor awareness of pollution abatement notice requirements;
        iii. signage and security to prevent unauthorised access;
        iv. waste to be accepted within the landfill containment cell;
        v. waste prohibited from disposal within the landfill containment cell;
        vi. dust control and monitoring;
        vii. measures to ensure staff and contractor awareness of pollution abatement notice requirements; and
        viii. reporting requirements e.g. contraventions of the pollution abatement notice, requirements of section 14 of the Act.
2. Procedures and assessments are provided that address all other requirements of PAN 2018/6.
3. The thickness of the compacted cap is to be a minimum 1,000 mm[2] and overlain by a minimum 200mm thick topsoil. Procedures for measuring and validating the cap thickness must be provided.
4. The containment cell is designed to be capable of being expanded in order to hold asbestos contaminated material in addition to the 650 m^3 estimated by Agon. This is because there is a risk that more asbestos contaminated material will need to be removed from the Site.
5. The clay cap is to be track-rolled to achieve a compaction density not less than 95% standard compaction.
6. The location and boundaries of the containment cell are to be accurately surveyed prior to the commencement of filling and shown on a survey plan.
7. All features of the excavated cell are to be measured and recorded for inclusion in the containment cell completion report. These features are to include, but not be limited to, subsurface conditions and soil profile, cell depth and cap thickness.

---

[1] A requirement of Conditions 4 & 5 of the NT EPA Pollution Abatement Notice (PAN) 2018 / 6
[2] The minimum 1,000 mm thick cap is recommended in Section 5.2.1 of the WA DOH (2009) asbestos guideline for open space areas, which is considered to be the relevant land use at the proposed containment cell location. It is also recommended to minimise the risk of future disturbance from subsurface utility excavation work that may occur in the future

8. A plastic or non-woven geotextile orange or otherwise distinctively coloured marker layer is to be placed over the entire top surface of the asbestos waste placed in the cell to underlie the cap[3].
9. A rehabilitation plan is included that addressed the requirements of Section 8.1 in the Victorian EPA Publication 788.3, dated August 2015: "*Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills*" (landfill BPEM).
10. The ground surface across the completed containment cell and surrounding area disturbed by the work is to be validated to demonstrate the final land condition meets NT EPA requirements for open space and residential land use.
11. All works associated with the construction, filling and capping of the containment cell need to be supervised and documented by a suitability qualified and experienced environmental professional from Agon ('Site Supervisor'). The Site Supervisor must ensure the work is undertaken in accordance with the revised Cell Plan, PAN 2018 /6, NT EPA requirements and interim advice provided by the Site Auditor. Should deviations from the revised Cell Plan be required, these should be discussed and approved in writing by the Site Auditor before the work proceeding.
12. Agon must prepare a report documenting the construction, filling and capping of the containment cell. The objectives of the report should include, but not be limited to:
    a) Provide data that demonstrates the work was undertaken in accordance with Point (9) sufficient to allow the Site Auditor to assess compliance with this requirement; and
    b) Provide data that supports the conclusion that the contamination placed in the containment cell can be managed by a long-term EMP. Such a conclusion needs to be made by Agon in the report, without qualification.

A complete copy of the finalised Cell Plan needs to be provided to the Site Auditor.

Yours sincerely

Dr Ian C Swane (CPEng & CEnvP)

EPA Site Auditor NT, NSW & WA
Certified Environmental Practitioner
Ian Swane & Associates

Phone: 0418 867 112
Email: iswane@bigpond.com

Attachment A: Review Comments on Agon Plans (4 pages)

[3] Recommended in Section 5.2.1, WA DOH (2009) asbestos guideline

Ian Swane

From: John Iddles <John.Iddles@agonenviro.com.au>
Sent: Saturday, 10 November 2018 9:34 AM
To: Ian Swane
Cc: Jack Pilkington; Wesley van Zanden
Subject: RE: Site Auditor Interim Advice #3 for Bartalumba Bay Homestead Asbestos Remediation Project

Hi Ian

Please find responses in red below. Can we use this as a means to confirm what is required so we can proceed with works. We can then update and finalise documents next week. Otherwise we will need to stand down the Contractor immediately until this is completed. Given the size and nature of the project (completed in five weeks) I do not see a risk with this approach. Also we have a full time environmental and licenced asbestos assessor on site to observe and manage all works.

If you could let me know ASAP that would be good

Cheers

John

From: Ian Swane <iswane@bigpond.com>
Sent: Friday, November 9, 2018 9:38 PM
To: John Iddles <John.Iddles@agonenviro.com.au>
Cc: Jack Pilkington <Jack.Pilkington@agonenviro.com.au>; Wesley van Zanden <wvanzanden@alcnt.com.au>
Subject: Site Auditor Interim Advice #3 for Bartalumba Bay Homestead Asbestos Remediation Project

John

I have reviewed the Agon (5/11/18) RAP, the Agon (5/11/18) Asbestos Management Plan (AMP) and the Agon (17/10/18) SAQP. They are structured documents that address most of the review comments I made in my 25/10/18 Interim Advice #02. Typographic errors exist in the documents but they are considered to be of a minor nature and do not affect the effectiveness of the documents. No changes need to be made to these documents at this time, although some data gaps exist that are identified by the following Site Auditor interim advice and which need to be addressed by Agon.

Matters that Agon needs to address prior to the commencement of the remediation work are documented below:

1. **Additional environmental plans**: The RAP (Section 2.1) advises that all work is to be conducted under erosion, dust and asbestos management / environmental control plans. Agon needs to ensure that these plans are prepared in accordance with NT EPA requirements and recommendations made by the Site Auditor in Interim Advice #02 prior to the commencement of work. In our opinion and experience on other projects completed involving the NT EPA Table 11 of the RAP fulfils this requirement.
2. **Temporary stockpiling**: The RAP (Section 2.1) and AMP (Section 2.5) describes the Task1 asbestos removal and temporary stockpiling work. The temporary stockpiling work needs to address Comment 18 in Interim Advice #02 dated 25/10/18. Access to the temporary stockpile area is very restricted the area is within private land, all residents have been relocated and there is no access permitted by the public. As such no further controls are considered necessary. The timeframes for whole of project completion is five weeks. The construction of a temporary compound with secure fencing is considered unnecessary given the five week time frame, private nature of the site and the small volume being managed (650m3). The site is not going to be a licenced landfill as such the requirement to have "*signage detailing the following: Approval/ Licence holder and number; hours of operation; type of waste accepted; 24 hour contact details;*

and access is prohibited to unauthorised users" is considered unnecessary. All ACM will be managed in accordance with legislative requirements.

3. **Documentation of site work**: It is critical that Agon ensures all site works undertaken by the Contractor and Asbestos Consultant (Agon) are documented in detail on a daily basis, since this documentation will form an important set of data that the Site Auditor will need to review. Daily site operations should be documented in daily field records, which are designed to capture all key remediation and environmental data. The documentation should include daily site records that use a standardised form, checklists, material tracking forms, photographic records, plans and figures. Noted and this will be completed during the works.
4. **Covering of temporary stockpile**: The AMP (Section 2.8) correctly advises that the temporary stockpile will be covered by 200 µm plastic sheeting. Agon needs to ensure that the plastic sheeting is well secured to stop it from being blown off or torn. This may involve placing tyres or other types of weights over the plastic sheeting sufficient to ensure the sheeting is not damaged. Noted and this will be completed during the works.
5. **Unexpected Finds**: The AMP (Section 3.9) provides an Unexpected Finds procedure. In my opinion, a legitimate Unexpected Find is "*contamination whose presence at a site is unlikely and cannot reasonably be found by investigations undertaken in accordance with regulatory requirements*". Consequently, finding additional asbestos contamination at the site should not constitute an Unexpected Find but be termed an Expected Find whose presence had not been previously discovered. The Unexpected Finds procedure should not be relied upon to justify finding additional contamination at a site simply because poor standards were used by earlier investigation or remediation work. Agreed and that is our intention it is agreed that asbestos is a known contaminant the unexpected finds protocol is relates more to where it is found. In addition to other issues which may be present, we can reword this to be more reflective of what will be done.
6. **Asbestos Remediation Criteria**: The asbestos remediation criteria adopted by the AMP (Section 5.1) were based on NT Worksafe requirements, which are no visible asbestos present within the Asbestos Work Area. This criteria maybe appropriate for an occupational environment but additional criteria needs to be applied to make the site suitable for residential land use and meet NT EPA requirements. These additional criteria are specified in Table 7 of the NEPM (2013) Schedule B1 guidelines, which are reproduced in the table below

Table 7. Health screening levels for asbestos contamination in soil

	Health Screening Level (w/w)			
Form of asbestos	Residential A[1]	Residential B[2]	Recreational C[3]	Commercial/ Industrial D[4]
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF[5] (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1. Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
2. Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved y space such as high-rise buildings and apartments.
3. Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools unpaved footpaths.
4. Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5. The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) c applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). T screening level is not applicable to free fibres.

We are very familiar with these and these can be done as part of the validation process.

7. **Validation assessment process:** In Section 5.2 of the AMP, the validation work will require the collection of soil samples in accordance with the sampling procedures specified in Schedule B2, NEPM (2013), and their testing by a NATA-accredited lab for bonded and friable asbestos. Soil samples should be collected on a square grid at a spacing of 10 m. The validation work should also address the requirements of Condition 22 in Interim Advice letter #02. Noted and this will be completed during the works.
8. **Validation report:** In Section 5.3 of the AMP, the validation report must document all remediation and validation work undertaken at the Site in accordance with Schedule B2, NEPM (2013). Noted and this will be completed during the works.
9. **Testing of Temporary Stockpile**: Section 3 of the SAQP advises that asbestos contaminated soils placed in the temporary stockpile will be tested for the NSW EPA screen, tin and TBT. No information was provided explain why these contaminants were selected for lab analysis while others were not. Agon needs to provide the Site Auditor with a separate document that explains the Conceptual Site Model (CSM) that Agon adopted for contamination at the site. The CSM should be prepared in accordance with recommendation provided in NEPM (2013) Schedule B2 guidelines. Data should be provided that addresses Comment 13 in Interim Advice #02 dated 25/10/18. Any additional contaminants of concern identified by the CSM should also be tested. All soil samples must be collected and tested in accordance with NEPM (2013) guidelines. Noted and this was incorrectly reported. The SAQP will be amended accordingly and submitted later next week.

Other feedback of a less urgent nature that needs to be addressed includes:

10. Provide me with a complete copy of the RAP that includes the documentation required by Appendices A – C; Noted
11. Provide me with a copy of the final PAN 2018/6 issued by the NT EPA; We will contact the EPA to get a final version
12. Provide me with copies of the erosion, dust and asbestos management / environmental control plans, the asbestos removalist's Asbestos Removal Control Plan and Safe Work Methodology Statements if not included as part of the RAP; Noted

13. Include copies of all documentation generated by the remediation and validation work in the Remediation and Validation Report; Noted

Please send me weekly up-dates on how the work is progressing and don't hesitate to contact me should there be any matter you wish to discuss. Noted

Regards
Ian

Dr Ian C Swane (CPEng, CEnvP)
EPA Accredited Site Auditor in NSW, WA & NT
Ian Swane & Associates (mob: 0418 867 112)

Ian Swane

From: Ian Swane <iswane@bigpond.com>
Sent: Tuesday, 20 November 2018 3:16 PM
To: 'John Iddles'
Cc: 'Wesley van Zanden'; 'Mark Kondakov'; 'Jack Pilkington'
Subject: Interim Site Auditor Advice #05 - Bartalumba Bay Validation Testing, Groote Eylandt

John

I confirm acceptance of your validation testing strategy.

Also, in Point 7 in my 9/11/18 email and Interim Advice #04 dated 13/11/18, my suggestion was for validation samples to be collected on a 10x10m grid, which equates to 1 sample per 100m2. Consequently, I will accept Agon reducing the sampling frequency from 1 per 50 m2 to 1 per 100m2 provided a thorough and detailed walkover clearance is conducted and documented by your asbestos assessor. There may be areas where validation samples may need to be collected at a one per 50m2 frequency, which I will leave to your discretion.

Regards
Ian

Dr Ian C Swane (CPEng, CEnvP)
EPA Accredited Site Auditor in NSW, WA & NT
Ian Swane & Associates (mob: 0418 867 112)

From: John Iddles <John.Iddles@agonenviro.com.au>
Sent: Tuesday, 20 November 2018 11:18 AM
To: Ian Swane <iswane@bigpond.com>; Jack Pilkington <Jack.Pilkington@agonenviro.com.au>
Cc: Wesley van Zanden <wvanzanden@alcnt.com.au>; Mark Kondakov <Mark.Kondakov@agonenviro.com.au>
Subject: Bartalumba Bay - Validation Testing

Hi Ian

Good to talk just now and as discussed we suggest the following be undertaken for the validation program

- Establish 10m spaced grid lines across the site;
- NT Licenced Asbestos Assessors to walk the length of the transect (in each direction) and record observations
- Every 50m2 (reducing from every 10m2) collect a sample for asbestos in soil determination
- 10% QA samples will also be collected
- Records to include photographs, GPS coordinates and a field log.

Any asbestos fragments identified during the transect walkover to be remediated at the time of the find.

Wes Can you please confirm the Contractor is aware of the capping requirements as per Ian's previous note.

I trust this covers our discussion. The outcomes of the above will be reported in detail in the close out report.

Cheers
John

John Iddles
Managing Director
Agon Environmental Pty Ltd
E: john.iddles@agonenviro.com.au
M: 0414 454 578

ADELAIDE (Head Office): Unit 3, 224 Glen Osmond Road, Fullarton SA 5063, **T: 08 8338 1009**
DARWIN: 1/41 Jessop Crescent, Berrimah NT 0828, PO Box 38845, Winnellie NT 0821, **T: 08 7918 7807**
CANBERRA: 4/10 Kennedy Street, Kingston ACT 2604, **T: 02 5104 2177**

www.agonenviro.com.au

POLLUTION ABATEMENT NOTICE
No. 2018/6

(Issued pursuant to section 82 of the *Waste Management and Pollution Control Act*)

Issued to:	Anindilyakwa Land Trust
Address:	PO Box 172, Alyangula NT 0885
Postal Address	PO Box 172, Alyangula NT 0885
In relation to premises:	N.T. Portion 01199 plan(s) B 000517 N.T. Portion 1632, Survey Plan CP 004201

Reasons

I, Paul Vogel, Chairman of the Northern Territory Environment Protection Authority (NT EPA) pursuant to the *Waste Management and Pollution Control Act* ("the Act"), believe on reasonable grounds that:

1. The Anindilyakwa Land Trust is the owner and occupier of the premises at Bartalumba Bay [N.T. Portion 01199 plan(s) B 000517] that is polluted;
2. Anindilyakwa Land Council (ALC) on behalf of Anindilyakwa Land Trust engaged an environmental auditor accredited under the NSW environmental auditor schemes (accredited environmental auditor) who prepared a site assessment of N.T. Portion 01199 plan(s) B 000517 and developed an Asbestos Management Plan and Asbestos Register for the premises;
3. The premises at N.T. Portion 01199 plan(s) B 000517 has been subject to environmental assessment(s) consistent with the requirements of the *National Environment Protection (Assessment of Site Contamination) Measure;*
4. An assessment identified several derelict buildings at the premises that contain asbestos and/or asbestos containing material (ACM);
5. The assessment also identified the presence of soil materials across the premises that are contaminated with ACM;
6. Prior to removal of any asbestos-impacted waste from the premises ALC will engage a suitably qualified environmental consultant with experience in contaminated land assessment to prepare a Remedial Action Plan (RAP) that will be reviewed and endorsed by an accredited environmental auditor. The ALC will also update the Asbestos Register for the site;
7. Action is required in line with s79(1) (a), (c) and (d) of the Act to render the premises suitable for its ongoing land use;
8. An assessment of asbestos management options was undertaken in consultation with the NT EPA. The preferred option is the appropriate burial of the impacted material excavated from the premises that is contaminated with ACM within an engineered containment cell located within N.T. Portion 1632, Survey Plan CP 004201 (the "disposal site") at the location adjacent to the Bartalumba Bay Road shown in Attachments A and B;
9. Action is also required at the disposal site in line with s79(1) (a) and (d) of the Act;

10. Anindilyakwa Land Trust is also the owner and occupier of N.T. Portion 1632, Survey Plan CP 004201, known as the disposal site;
11. Only the ACM impacted building and soil materials contaminated with ACM from the premises will be disposed within the containment cell on the disposal site;
12. This Pollution Abatement Notice satisfies the requirement that the location and design of the containment cell at the disposal site is fit for its intended purpose.

Requirements

1. The impacted building demolition waste and soil material contaminated with ACM currently located at the premises must be disposed of in an appropriately constructed containment cell within the disposal site;

A. Waste Removal

2. Prior to removal of any ACM-impacted waste from the premises you must provide a Remedial Action Plan for the premises to the NT EPA endorsed by an accredited environmental auditor;
3. Within 3 months after the completion of waste removal from the premises you must provide to the NT EPA an environmental audit statement and environmental audit report and updated Asbestos Register endorsed by an accredited environmental auditor;

B. Construction of Containment Cell Requirements

4. Before commencing construction of the containment cell on the disposal site you must provide to the NT EPA:
    a) a report with detailed plans, technical specifications and a construction quality assurance plan (“design documents”) for the design and construction of the containment cell and any associated infrastructure; and
    b) the Environment Management Plan (EMP) for the construction and operation of the containment cell;
5. The EMP for the construction and operation of the containment cell must include but not be limited to information on:
    c) dust control and monitoring;
    d) measures to ensure staff and contractor awareness of pollution abatement notice requirements;
    e) signage and security to prevent unauthorised access;
    f) waste to be accepted within the landfill containment cell;
    g) waste prohibited from disposal within the landfill containment cell; and

h) reporting requirements e.g. contraventions of the pollution abatement notice, requirements of section 14 of the Act;

6. The containment cell must be designed and constructed to be consistent with the intent of the Victorian EPA Publication 788.3, dated August 2015: "*Best Practice Environmental Management: Siting, Design, Operation and Rehabilitation of Landfills*" (landfill BPEM);

7. The report referred to in requirement 4 must also include an assessment and endorsement by an accredited environmental auditor that the design of the containment cell is appropriate for the purpose;

8. During construction of the containment cell, you must ensure dust is not emitted beyond the immediate containment cell area;

9. During construction of the containment cell, you must undertake a documented environmental monitoring program that determines compliance with the requirements of this notice;

10. You must notify the NT EPA within five business days following the commencement of construction of the containment cell;

11. You must notify the NT EPA within five business days following the completion of construction of the containment cell;

C. Disposal Requirements

12. Prior to the placement of impacted demolition waste and soil material impacted with ACM within the containment cell you must provide to the NT EPA written endorsement by an accredited environmental auditor on the level of compliance of the constructed cell in accordance with the landfill BEPM requirements;

13. the EMP must include the placement of impacted demolition waste and soil material impacted with ACM within the containment cell;

D. Post Closure Requirements- Ongoing Monitoring of Containment Cell

14. Within 1 month following the commencement of waste disposal at the disposal site you must provide the NT EPA an Aftercare Management Plan for the containment cell and associated infrastructure and equipment; prepared by an accredited environmental auditor to be consistent with Aftercare Management in Section 8.2 of the landfill BPEM.

15. The Aftercare Management Plan referred to in requirement 14 must, as a minimum, contain measures to ensure appropriate:

    a) inspection and maintenance of the cell capping to prevent, control and remediate/ restore depressions and seal cracks and maintain vegetation;

    b) inspection, maintenance and operation of any other related equipment and infrastructure associated with the cell; and

    c) inspection and maintenance of surface water control and collection infrastructure;

16. Within 3 months following the completion of waste disposal in the containment cell, you must provide the exact boundary coordinates of the containment cell and any associated infrastructure to the NT EPA together with the final quantities for each type of waste material contained in the cell- for the purpose of registering the cell as an area of contaminated land on the NT EPA Contaminated Land and Environmental Audit Results register and the land title.

Notice Issued By:

_____ 18 / 12 / 18 _____

Paul Vogel **Date** **Time**

Chairman

NT Environment Protection Authority

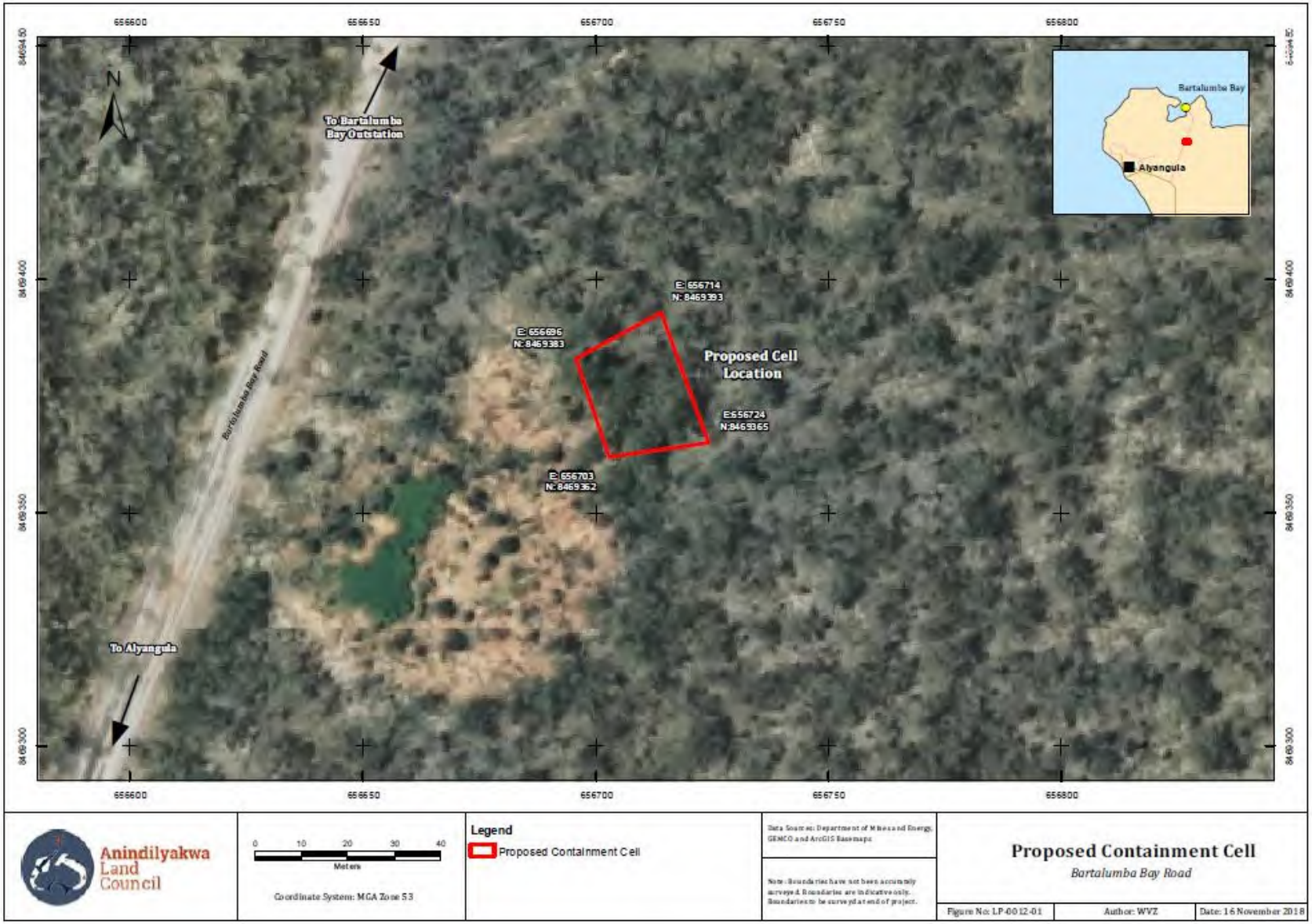
Important Notice

Failure to comply with this notice is an offence under section 80 of the *Waste Management and Pollution Control Act* and may incur significant penalties and/or other statutory action.

This notice takes effect on the date on which it is served upon you. Pursuant to section 108 of the *Waste Management and Pollution Control Act*, **you have the right to apply for a review of the decision to issue you with this Pollution Abatement Notice. If you intend to apply for a review, YOU MUST MAKE AN APPLICATION NOT LATER THAN 7 DAYS after the date you were served with this notice.** For information on how to lodge an application for review, contact the Northern Territory Environment Protection Authority, telephone 8924 4041.

Pursuant to section 112 of the *Waste Management and Pollution Control Act* the person issued with this notice must fulfil certain obligations before selling, leasing, sub-leasing, giving or exchanging land, premises, a vehicle or business which is the subject of this Notice.

ATTACHMENT A- location of asbestos containment cell on the disposal site/ N.T. Portion 1632, Survey Plan CP 004201 (GDA94 / MGA Zone 53)



ATTACHMENT B- coordinates of asbestos containment cell on the disposal site/ N.T. Portion 1632, Survey Plan CP 004201 (GDA94 / MGA Zone 53)

IAN SWANE & ASSOCIATES P/L
PO Box 359, MORTDALE NSW 2223

Mob: +61 0418 867 112
Email: iswane@bigpond.com

Anindilyakwa Land Council
PO Box 172
30 Bougainvillea Drive
ALYANGULA NT 0885

Attention: Wesley van Zanden – Mining and Environment Officer

3 September 2019

Asbestos_190903_Interim Advice#06
Site Audit ALC_01

Dear Sir

INTERIM ADVICE #06, REVIEW OF AGON VALIDATION REPORTS FOR BARTALUMBA BAY HOMESTEAD ASBESTOS REMEDIATION PROJECT, GROOTE EYLANDT (11 pages)

This report provides the Anindilyakwa Land Council ('ALC') and Agon Environmental ('Agon') with interim advice as part of a site audit being undertaken by Dr Ian Swane, a NT EPA Environmental Auditor ('Auditor') accredited in accordance with Part 6 of the Northern Territory (NT) Waste Management and Pollution Control Act. The site audit is for the Bartalumba Bay Homestead Asbestos Remediation Project ('Project') undertaken by the ALC. The site audit is a requirement of the NT EPA.

The purpose of this letter is to review remediation and validation reports prepared by Agon for the Project. These reports comprise:

- Agon (7 December 2018) '*Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project*'. Document No: JA0336 prepared for the Anindilyakwa Land Council
- Agon (22 March 2019) '*Close Out Report, Bartalumba Bay Homestead, Groote Eylandt*'. Document No: JA0336 Close Out Report – final prepared for the Anindilyakwa Land Council

This interim advice is considered to be consistent with NT EPA guidelines and policy and does not pre-empt conclusions to be drawn at the end of the site audit process. This interim advice does not represent a site audit statement (SAS) or a site audit report (SAR). It is intended that a SAS / SAR will be prepared for the Bartalumba Bay Homestead site (the 'Site') towards the end of the Project.

I have completed my review of the Agon 7/12/18 validation report and the 22/03/19 close out report and provide the following comments.

General

1. Describe the condition of the ground surface at the time when asbestos-contaminated soil was removed from the site. Was the ground surface covered by vegetation to the extent that it made the identification of visible asbestos difficult? Was the vegetation cleared, and if so, how?
2. Describe what measures were taken to protect the health and safety of residents who were living in the area at the time investigations were done in May – July 2018. Were the residents removed from the area prior to the commencement of remediation or demolition work? Was an Exclusion Zone created around the area while remediation and demolition work was being undertaken? Does the Exclusion Zone remain or do people now have access to the area and do people live in the area?
3. Paragraph 6 of my Interim Advice Report 03 advised that it was critical that Agon ensured all site works undertaken by the Contractor and Asbestos Consultant (Agon) were documented in detail on a daily basis, since this documentation would form an important set of data that the Site Auditor will need to review. Daily site operations needed to be documented in daily field records designed to capture all key remediation and environmental data. The documentation needed to include daily site records that used a standardised form, checklists, material tracking forms, photographic records, plans and figures. The Agon validation / close out reports need to provide this data.

4. The Agon 7/12/18 report stated that more than 100mm of asbestos-contaminated soil was removed by DADS from heavily contaminated areas:
   a) These areas should be shown on the drawing in Appendix C together with the excavation depth in each remediated area;
   b) Advise whether the areas where contaminated soils were removed correspond to the areas identified in the Agon (August 2018) report[1]. Describe any discrepancies in the areas remediated and explain why these discrepancies occurred; and
   c) Based on the depth and extent of each remediated area, calculate the volume of asbestos contaminated soil removed from the Site.
5. The Agon 7/12/18 report stated that emu picks of bonded asbestos fragments occurred across the site.
   a) Provide another drawing that shows the extent of the area where emu picks of bonded asbestos contamination occurred at the site;
   b) What was the lane width used for the emu pick?
   c) Was the emu pick undertaken in accordance with Section 4.1.1 of the WA DOH (May 2009) guidelines? Was a rake used and were the rake teeth < 7 mm spaced apart and > 10 cm long? What was the lane width? Provide a copy of field records that documented the locations and weights of asbestos material that was picked. should be recorded.
6. The Agon 7/12/18 report stated that emu picks of bonded asbestos fragments occurred across the containment cell cap. Provide another drawing that shows the extent of the area where emu picks of bonded asbestos contamination occurred across the containment cell.
7. Agon 7/12/18 Appendix C Sample location plan:
   a) Label the structures shown in the plan;
   b) The report stated that more than 100mm of asbestos-contaminated soil was removed by DADS from heavily contaminated areas. These areas should be shown on the drawing together with the excavation depth in each remediated area;
   c) Sample locations 166, 169 and 170 need to be shown and/or labelled;
   d) Show the estimated extent of asbestos contaminated soil that remained at the site;
8. Agon 7/12/18 Appendix C: Provide another drawing that shows the extent of the area where emu picks of bonded asbestos contamination occurred.
9. Correct the page numbering in the Agon (22/03/19) closure report from Section 1 and following.
10. The statement of limitations in both the Agon (7/12/18) and (22/03/19) reports should state that the Site Auditor can also use and rely on the reports.
11. Provide copies of tip dockets for the 16.18 tonnes of asbestos waste that the Agon[2] reported to have been removed from buildings and disposed at the Shoal Bay waste facility in Darwin.
12. Section 1.1 in Agon (22/03/19) needs to also refer to Ian Swane's accreditation as a NT EPA-accredited site auditor.
13. Section 2.2 in Agon (22/03/19) – correct the typographic error

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[1] Agon (14 August 2018) '*Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336/01 prepared for Anindilyakwa Land Council

[2] Executive summary, Agon (22/03/19) closure report

14. The Agon (22/03/19) report needs to provide figures showing the extent of additional asbestos contaminated soil excavation work across the homestead site, the extent of areas where additional emu picks were undertaken, and the 22 validation sample locations collected in February 2019.
15. Section 7.0 of the Agon (22/03/19) report advised that an Asbestos Register and AMP (assumed to be the EMP) have been developed for both the homestead and the containment cell sites. The Agon closure report needs to provide copies of the new Asbestos Registers and AMP / EMPs.
16. Section 7.2 of the Agon (22/03/19) closure report recommended *'ongoing monitoring of site conditions around the homestead area occurs. This is to allow for the potential future exposure of asbestos in soils that may be buried within the Site, not visible during initial Site surveys, particularly where wind and water erosion occurs to the soil surface*'.
    a) Explain how the homestead area can be considered suitable for residents if there is an ongoing risk of asbestos exposure.
    b) Is this recommendation acceptable to the NT EPA and follow their guidance for residential land use?
    c) Does the long-term EMP include details of an asbestos monitoring program? How is responsible for undertaking this program?
    d) Does the long-term EMP include procedures to be followed if asbestos contamination is found at the homestead site in the future?
    e) Does the NT EPA need to approve the long-term EMP prepared for the homestead area?
17. Section 7.2 of the Agon (22/03/19) closure report advised that asbestos warning signs needed to be erected at the containment cell site. Has this work been done? Provide a photo if it has.

Duplex Dormitory

18. Section 2.1 of the Agon (August 2018) report advised that asbestos contamination at the Duplex Dormitory and surrounding area posed a very high-risk. The building was occupied by a young family and contained asbestos, with asbestos containing debris present in the vicinity of the building extending to the rocky outcrop. Some material exhibited signs of extensive burning, was in poor condition and deemed by the licensed asbestos assessor to be of a friable nature. Vegetation/leaf litter (particularly on the western elevation) obstructed ACM being observed. Removal of this dense vegetative layer during future works may uncover further surface asbestos debris.

    The Agon (August 2018) report recommended that:

    - As a minimum short-term mitigation strategy, asbestos removal works be conducted to remove the debris from areas around the footprint of the building, as identified within the asbestos register;
    - The top 100mm of soil encompassing any debris deemed to be friable also be removed, in conjunction with an emu pick for surface asbestos debris (note the soil removal is only recommended where the debris is deemed friable, where the debris is deemed bonded there is no need for soil removal);
    - As per the code of practice, these works should be conducted by a licensed asbestos removalist, and air monitoring and visual inspection verified by an independent licensed asbestos assessor; and
    - Prior to any demolition works for the building, the vegetation around the building be cleared (i.e. through poisoning and/or mechanical means) and the area be emu picked to remove any uncovered asbestos debris. The area should also be verified by the independent licensed asbestos assessor to be free from visually evident asbestos contamination, prior to civil works commencing.

In the validation report, Agon needs to:

a) Describe the remediation and demolition work undertaken for the Duplex Dormitory and provide data supporting the description of this work. Provide a drawing that shows the main features of this area and the extent of work undertaken;

b) Sections 2.8 and 2.9 of the Agon (August 2018) report discussed investigations undertaken at the north west foreshore house and the south elevated house. Explain whether these structures are part of the Duplex Dormitory and show the locations of these structures on a plan;

c) Advise whether all asbestos contamination has been removed from this area. Identify whether any asbestos contamination may remain and the need for such contamination to be specified on an Asbestos Register;

d) Advise whether an asbestos management plan is required for this area and provide a copy; and

e) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Recreation Club

19. Section 2.2 of the Agon (August 2018) report advised that asbestos contamination at the Recreation Club and surrounding area posed a very high-risk. Significant surface asbestos contamination was present in the Recreation Club and surrounding area, some of which was in a poor and friable condition. Agon assumed that friable asbestos contamination was present throughout all internals of the recreation club, and the scope to conduct any asbestos removal works of the building should be based on these findings. Significant surface cement sheeting debris, including asbestos brake pads from old car parts, were spread across the northern foreshore north of the recreation.

    The Agon (August 2018) report recommended that:

    - Prior to A-Class removal works commencing within the building, the external footprint of the building (3 m) and the north foreshore (25 m) be cleared of remaining vegetation and any visible surface asbestos debris. This may be accomplished through a combination of strategic poisoning/mechanical removal of vegetation and an emu pick of surface debris/mechanical removal of the soil surface layer. This work would provide a clear and safe work zone for workers;
    - Prior to demolition of the building, an A-Class asbestos removal be undertaken to remove all internal asbestos debris and associated contamination from the recreation club. This could be achieved by turning the recreation club into a friable enclosure, requiring a significant negative air pressure, thus ensuring the encapsulation of airborne materials within the enclosure during removal;
    - For the demolition work, a cost-effective strategy would be to decontaminate non-porous internal structures of the building so they could be disposed as general waste on Groote Eylandt as opposed to having to be returned to Darwin as asbestos contaminated waste. Furthermore, building structures such as masonry walls and concrete flooring would need to be cleaned, and verified by the licensed asbestos assessor to be free from visually evident asbestos contamination prior to an asbestos clearance being given to the building so that they could be demolished and disposed on Groote Eylandt as non-contaminated waste; and
    - Following the removal of all contaminated items within the enclosure, the internals would need to be verified by the independent licensed asbestos assessor to be free from asbestos contamination, through visual inspection and clearance airborne fibre monitoring. Once a clearance had been issued for the A Class works, and a PVA glue solution had been applied to the internal structures of the building, any remaining removal of bonded asbestos materials from the recreation club may be done under B-Class asbestos removal conditions. An asbestos

clearance certificate for the entire recreation club should be issued prior to demolition works commencing.

In the validation report, Agon needs to:

a) Describe the remediation and demolition work undertaken for the Recreation Club and provide data supporting the description of this work. Provide a drawing that shows the main features of this area and the extent of work undertaken;

b) Advise whether all asbestos contamination has been removed from this area. Identify whether any asbestos contamination may remain and the need for such contamination to be specified on an Asbestos Register;

c) Advise whether an asbestos management plan is required for this area and provide a copy; and

d) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Jetty

20. Section 2.3 of the Agon (August 2018) report was unable to determine whether the jetty structure was free from asbestos. The report recommended that if works are to be undertaken on the jetty that may disturb the presumed pipe gasket joints (as referred to in the asbestos register), then these gaskets needed to be removed.

    In the validation report, Agon needs to:

    a) Advise whether any work was undertaken on the jetty that may have disturbed pipe gasket joints. If there was, then describe the nature and extent of the work completed;

    b) If such work was not undertaken, then confirm there is a risk that the pipe gaskets may contain asbestos and needs to be listed in an Asbestos Register; and

    c) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Foreshore

21. Section 2.4 of the Agon (August 2018) report advised that the July 2018 inspection found significant surface asbestos cement sheet debris that was in poor condition, including some friable material. Old car parts exposed in the foreshore area contained asbestos brake pads. The surface layer of the soil in this area was covered by a significant quantity of ash. Much of the inspected foreshore area from the beginning of the jetty to the west point of the foreshore contained sparsely concentrated surface ACM debris (see **Figure 1**). Fibrous asbestos above acceptable limits was also measured in the soils.

    The Agon (August 2018) report recommended that:

    - The foreshore area to the north of the recreation club be cleared of surface asbestos debris to a depth of 100mm by mechanical means;
    - For any soil removal works in the foreshore area, thorough dust suppression through the application of fine water mists be maintained by the licensed removalist;
    - Validation asbestos in soil samples then needed to be taken across the remediated area, in accordance with the NEPM guidelines, to ensure AF/FA (<7mm) concentrations were below detectable limit (<0.001% w/w). If the validation sampling returned results above the detectable limit, then further soil would need to be removed and further validation testing undertaken;

Figure 1: Asbestos contamination across the Foreshore of the Bartalumba Bay Homestead

- The foreshore area from the beginning of the jetty to the north-west point of the foreshore had minimal grass cover and native shrubs covering the dunes above the highwater mark to the road. Pending the intended land use for this area, and the effect of removing erosion-preventing vegetation from the sand dunes, one of two asbestos remediation methods were recommended:
  - i. The vegetation may be reduced through poisoning/mechanical means, and an emu pick conducted of the area, although this could lead to erosion of the foreshore without the vegetation to hold the sand together; or
  - ii. A limited emu pick may be conducted without removing the vegetative layer prior, noting the likelihood that surface asbestos debris may still be concealed by the vegetation. The concealment of asbestos debris underneath vegetation would form a layer of encapsulation, thus lowering the risk of exposure from the asbestos. If this approach was undertaken, an asbestos management plan should be adopted that restricted burning practices to the foreshore area and incorporated annual asbestos emu picks of the area.
- Asbestos removal works needed to be prioritised to areas identified to be very-high risk, with removal works conducted by the appropriately licensed asbestos removalist, and air monitoring and visual inspections verified by an independent licensed asbestos assessor.

In the validation report, Agon needs to:

a) Describe the remediation and demolition work undertaken for the foreshore area and provide data supporting the description of this work. Provide a drawing that shows the main features of this area and the extent of work undertaken;

b) Explain why only 7 soil validation samples (146 – 155) were collected from the foreshore area in front of the recreation club and why no samples were collected from most of the area;

c) Advise whether all asbestos contamination has been removed from this area. Identify whether any asbestos contamination may remain and the need for such contamination to be specified on an Asbestos Register;

d) Advise whether an asbestos management plan is required for this area and provide a copy; and

e) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Grounds

22. Section 2.5 of the Agon (August 2018) report advised that asbestos contamination at the grounds posed a very high risk. ACM was present on the various concrete pads plotted around the homestead. A total of 12 pads and an ablution block were observed to be heavily contaminated, with the surface area surrounding the pads originally being covered by moderate to dense vegetation. In July 2018 much of the vegetation that was once present had been burnt, and exposed debris in poor, and in some cases, friable condition. The concentration of surface asbestos debris was generally higher at areas nearer to the boundary of the pads.

    A depression in the centre of the site was an area that contained a significant amount of surface asbestos debris. This area was noted to be covered by moderate to dense vegetation in May 2018, but the area was then burnt. The surface layer of the soil across burnt areas of the grounds was covered by a significant quantity of ash.

    The area encompassing the rock wall to the north side of the duplex dormitory was found to be heavily contaminated with asbestos debris (same material as found across pads). The debris was in poor condition, and in some cases of friable nature, and included both surface debris and debris incorporated in the soil of the rock wall.

    Laboratory tests confirmed soils from heavily contaminated areas were contaminated by fibrous asbestos above acceptable limits. The areas of the grounds identified as containing significant quantities of surface asbestos debris are shown in **Figure 2**.

Figure 2: Areas of significant asbestos contamination across the Grounds of the Bartalumba Bay Homestead

The Agon (August 2018) report recommended that:

- Immediate risk-mitigation activities be undertaken at the earliest opportunity. Such asbestos remediation activities would involve the engagement of a licensed asbestos removalist to attend and remediate the very-high risk areas of the site;
- As a short-term mitigation strategy, asbestos removal works needed to be conducted to remove the exposed, poor condition debris from pads, as identified within the asbestos register. This removal would include an emu pick, and then vacuum/wash down of the pads (noting soil around the pads is asbestos contaminated and should be remediated);
- The top 100mm of soil from areas immediately surrounding the pads, from the central depression, from the fire pit west of the duplex dormitory, and from the area encompassing the rock wall north of the duplex dormitory needed to be removed and relocated to a designated temporary stockpile storage location within the central depression. The soil proposed to be removed from the area of the foreshore, north of the recreation club, could also be relocated to the temporary storage location within the central depression. These works needed to be conducted under asbestos removal conditions;
- Thorough dust suppression needed to be maintained through the application of fine water mist by the licensed asbestos removalist for soil removal works;
- The stockpiled contaminated soil then needed to be sufficiently encapsulated with 200-micron plastic and could be further encapsulated with clean fill soil;
- The stockpile be bunded and signed off, restricting unauthorised access to prevent unwarranted disturbance of the material. As AF/FA in soil had been detected in the central depression area, the top 100mm of soil in this area needed to be removed as asbestos containing waste through mechanical means;
- Validation asbestos in soil samples then needed to be taken across the remediated area in the central depression, in accordance with the NEPM guidelines, to ensure AF/FA (<7mm) concentrations were below detectable limit (<0.001% w/w); and
- The concrete pads and some boulders (particularly in the rock wall north of the duplex dormitory) were identified to be asbestos contaminated and a level of decontamination needed to occur under asbestos work conditions prior to these materials being harvested for recycling.

In the validation report, Agon needs to:

a) Describe the remediation and demolition work undertaken for the grounds and provide data supporting the description of this work. Provide a drawing that shows the main features of this area and the extent of work undertaken;

b) Advise whether all asbestos contamination has been removed from this area. Identify whether any asbestos contamination may remain and the need for such contamination to be specified on an Asbestos Register;

c) Advise whether an asbestos management plan is required for this area and provide a copy; and

d) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Roadways

23. Section 2.6 of the Agon (August 2018) report advised that seven hotspots of ACM debris were encountered on the roadways that represented a very-high risk to residents and maintenance workers. The condition of the ACM debris varied from being dispersed sporadically to frequently in each hotspot (see **Figure 3**). Some hotspots had asbestos debris similar to that found on the pads.

Figure 3: Areas of asbestos contamination on the Roadways of the Bartalumba Bay Homestead

The Agon (August 2018) report recommended that:

- Immediate risk-mitigation activities needed to be undertaken at the earliest opportunity. Such asbestos remediation activities needed to involve the engagement of a licensed asbestos removalist to attend to very-high risk areas of the site; and
- As a short-term mitigation strategy, asbestos removal works needed to be conducted to remove the exposed, poor condition debris from roadways, as identified within the asbestos register. This removal needed to include an emu pick for surface asbestos debris. For hotspots where asbestos debris was highly concentrated, it may be preferred to remove the surface debris through mechanical means, noting the requirement to suppress dust.

In the validation report, Agon needs to:

a) Describe the remediation and demolition work undertaken for the roadways and provide data supporting the description of this work. Provide a drawing that shows the main features of this area and the extent of work undertaken;

b) Advise whether all asbestos contamination has been removed from this area. Identify whether any asbestos contamination may remain and the need for such contamination to be specified on an Asbestos Register;

c) Advise whether an asbestos management plan is required for this area and provide a copy; and

d) Assess the significance of any deviations from the recommendations made in the Agon (August 2018 report.

Temporary stockpiling at proposed containment cell site

24. Section 1.3 of the Agon (22/03/19) close out report advised that temporary stockpiling of the asbestos material occurred at the proposed containment cell site. Section 2.8 of the AMP advised that the temporary stockpile would be covered by 200 µm plastic sheeting. In paragraph 4 of Interim Advice Report 03 dated 10/11/18, the Site Auditor advised that the plastic sheeting needed to be well secured to stop it from being blown off or torn.

    a) Section 1.3 of the Agon (22/03/19) report mentioned that the temporary stockpiling of asbestos contaminated soil represented stage 3 of the remediation work. However, no reference to temporary stockpiling of contaminated soil was mentioned in Section 3.1. Advise whether temporary stockpiling of contaminated soil occurred. If it didn't explain why such work was not required.

    b) If temporary stockpiling of asbestos contaminated soil did occur, describe the temporary stockpile work that was undertaken and provide data supporting the description of this work; and

    c) Assess the significance of any deviations from the AMP.

Cap and containment cell and area

25. Include a copy of PAN 2018/6.

26. In paragraph 3(1) of my Interim Advice Report 03 dated 13/11/18, I advised that before commencing construction of the containment cell, the following documents must be provided to the NT EPA[3]:

    a) A report with detailed plans, technical specifications and a construction quality assurance plan ("design documents") for the design and construction of the containment cell and any associated infrastructure; and

    b) The Environment Management Plan (EMP) for the construction and operation of the containment cell. The EMP must include but not be limited to information on:

        i. dust control and monitoring;

        ii. measures to ensure staff and contractor awareness of pollution abatement notice requirements;

        iii. signage and security to prevent unauthorised access;

        iv. waste to be accepted within the landfill containment cell;

        v. waste prohibited from disposal within the landfill containment cell;

        vi. dust control and monitoring;

        vii. measures to ensure staff and contractor awareness of pollution abatement notice requirements; and

        viii. reporting requirements e.g. contraventions of the pollution abatement notice, requirements of section 14 of the Act.

    The Agon validation report needs to confirm what documents were provided to the NT EPA. If some documents were not provided to the NT EPA, identify them and explain why they were not provided.

27. Confirm that procedures and assessments for the containment cell plan addressed all requirements of PAN 2018/6, as mentioned in paragraph 3(2) of my Interim Advice Report 03 dated 13/11/18.

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[3] A requirement of Conditions 4 & 5 of the NT EPA Pollution Abatement Notice (PAN) 2018 / 6

28. Explain how the containment cell constructed in late 2018 was expanded to accept the additional asbestos contaminated soil that was removed from the homestead area in February 2019.
29. How much asbestos waste was placed in the cell in late 2018 and then how much additional contaminated soil was placed in February 2019.
30. Paragraph 3(3) of my Interim Advice Report 03 dated 13/11/18 mentioned that the thickness of the compacted cap was to be a minimum 1,000 mm and overlain by a minimum 200mm thick topsoil. Provide data showing whether these requirements were met and describe the procedures that were used for measuring and validating the cap thickness. Assess the significance of any non-compliances.
31. Paragraph 3(5) of my Interim Advice Report 03 dated 13/11/18 mentioned that the clay cap was to be track-rolled to achieve a compaction density not less than 95% standard compaction. Provide data showing whether these requirements were met. Assess the significance of any non-compliances.
32. Paragraph 3(10) of my Interim Advice Report 03 dated 13/11/18 mentioned that the ground surface across the completed containment cell and surrounding area disturbed by the work was to be validated to demonstrate the final land condition met NT EPA requirements for open space and residential land use. Provide an assessment as to whether the final land condition across the containment cell is suitable for open space and residential land use.
33. Paragraph 3(11) of my Interim Advice Report 03 dated 13/11/18 mentioned that all works associated with the construction, filling and capping of the containment cell need to be supervised and documented by a suitability qualified and experienced environmental professional from Agon ('Site Supervisor'). The Site Supervisor must ensure the work is undertaken in accordance with the revised Cell Plan, PAN 2018 /6, NT EPA requirements and interim advice provided by the Site Auditor. Provide data showing whether these requirements were met. Assess the significance of any non-compliances.

O – o – O

Given the large number of review comments, the Site Auditor recommends that the Agon (7/12/18) and (22/03/19) reports be combined into one remediation and validation report that addresses the review comments mentioned in this interim advice report. Please advise me when this report is likely to be issued so I can plan its review and the completion of the site audit report.

Yours sincerely

Dr Ian C Swane (CPEng & CEnvP)

EPA Site Auditor NT, NSW & WA
Certified Environmental Practitioner
Ian Swane & Associates

Phone: 0418 867 112
Email: iswane@bigpond.com

iswane@bigpond.com

From: iswane@bigpond.com
Sent: Tuesday, 2 February 2021 2:28 PM
To: 'Wesley Van Zanden'
Subject: RE: Bartalumba Bay Remediation and Validation Work
Attachments: Asbestos_190903_Interim Advice#06.pdf; Proposal ALC 180911.pdf; ALC_180920 _Consultancy agreement.pdf

Hi Wesley

Many thanks for your email. I trust you are keeping well and the community will be spared any major cyclones this wet season.

I have reviewed the information from Agon provided in your 8/10/20 email. The information was meant to address the 33 queries I raised in my Interim Advice #6 report dated 3/09/19 (copy attached). The documentation provided in your email comprised:

* A spreadsheet containing summary answers to my interim advice #6 report dated 3/09/19;
* Site dashboard field records for the Agon site work for week ending 16/11/18, 23/11/18 and 30/11/18;
* Truck tracking sheets for 16/11/18 - 21/11/18;
* Truck decon records for 12/11/18 - 21/11/18 and 5/02/19 - 7/02/19; and
* Three tip disposal dockets for the Shoal Bay landfill for 16.18 tonnes of asbestos waste disposed on 4/12/18.

The Agon spreadsheet indicated that their remediation and validation report for the cap and containment cell area would be revised to include additional data as mentioned in their spreadsheet. Please request Agon to proceed with producing their revised report that addresses my review comments 25 to 33 relating to the cap and containment cell area.

The Agon spreadsheet also advised that they did not provide information addressing my review comments 1 to 24, since they related to the Bartalumba Bay Homestead site and they considered that I do not need to produce a site audit report (SAR) for this area. In my opinion, this view held by Agon is INCORRECT since I am contracted by the ALC to produce two site audit reports, one for the Bartalumba Bay Homestead site and another for the asbestos containment cell. This is shown in my 11/09/18 proposal (copy attached) that was incorporated into the ANL Consultancy Services Agreement dated 19/09/18 (copy attached). The need for two SARs was based on my understanding of NT EPA requirements.

In order to address the data gaps that remain with the remediation and validation work undertaken by Agon for the homestead site, I recommend the following approach:

1. I contact the NT EPA and confirm whether they still require a SAR for the Homestead site. If they do or the ALC consider they do, then steps 2 and 3 need to be undertaken
2. ALC instructs Agon to prepare a revised remediation and validation report for the Homestead site that addresses my comments 1 to 24 as given in my 3/09/19 Interim Advice #6 report
3. the ALC needs to advise me when I can undertake Task 4 in my proposal, which involves an on-site meeting with ALC and a site inspection of the remediated areas at the Homestead site and the containment cell site.

In the interim , please direct Agon to issue a revised remediation and validation report for the containment cell area that addresses my comments 25 to 33 and includes the documentation provided in your 8/10/20 email.

Many thanks
Ian
Dr Ian C Swane (CPEng, CEnvP)
EPA Site Auditor NSW & NT
Ian Swane & Associates (mob: 0418 867 112)

-----Original Message-----
From: Wesley Van Zanden <wvanzanden@alcnt.com.au>
Sent: Monday, 1 February 2021 5:20 PM
To: iswane@bigpond.com
Subject: RE: Bartalumba Bay Containment Cell Agon Data

Hi Ian,

Just thought I'd check in to see where everything was at with the Bartalumba report/audit?

Thanks,
Wesley van Zanden
MINING AND ENVIRONMENT OFFICER
30 Bougainvillea Drive, Alyangula NT | PO Box 172, Alyangula NT 0885
T: (08) 8987 4020 | M: 0459 991 402 | E: wvanzandent@alcnt.com.au

anindilyakwa.com.au

-----Original Message-----
From: iswane@bigpond.com <iswane@bigpond.com>
Sent: Thursday, 8 October 2020 5:15 PM
To: Wesley Van Zanden <wvanzanden@alcnt.com.au>
Cc: 'John Iddles' <John.Iddles@agonenviro.com.au>
Subject: RE: Bartalumba Bay Containment Cell Agon Data

Wes

Email received. Many thanks, Ian

-----Original Message-----
From: Wesley Van Zanden <wvanzanden@alcnt.com.au>
Sent: Thursday, 8 October 2020 6:04 PM
To: Ian Swane (iswane@bigpond.com) <iswane@bigpond.com>
Cc: John Iddles (John.Iddles@agonenviro.com.au) <John.Iddles@agonenviro.com.au>
Subject: FW: Bartalumba Bay Containment Cell Agon Data

Hi Ian,

How's it going? Please find attached additional requested information and data from Agon regarding the Bartalumba Bay Containment Cell Project. Agon suggested that you review the comments on the attached excel sheet and once it meets your requirements they will update the report for a final review.

[cid:image002.png@01D69D90.E0DCDA70]

iswane@bigpond.com

From: iswane@bigpond.com
Sent: Wednesday, 3 February 2021 10:12 AM
To: 'Christopher.Coombes@nt.gov.au'
Cc: 'Christinej.Plewinski@nt.gov.au'; 'Sally-anne.Orchard@nt.gov.au'; 'Wesley Van Zanden'; 'peter.vasel@nt.gov.au'
Subject: Bartalumba Bay Asbestos Remediation and Validation Work, Groote Eylandt
Attachments: Asbestos_190903_Interim Advice#06.pdf

Christopher

Since 2018 I have been the EPA-accredited site auditor responsible for the review and audit of asbestos investigation and remediation work for the site at Bartalumba Bay, Groote Eylandt. The remediation strategy involved the demolition of homestead buildings and removal of asbestos waste to the Shoal Bay landfill Darwin, followed by the removal of asbestos contaminated soil and its placement in a containment cell located a few kilometres away. The investigation and remediation work were done in 2018 - 2019.

I understand from Wesley at the ALC that the NT EPA requires the scope of my audit to cover:

1. Confirmation that the clean-up works have been completed to render the site suitable for continued residential use (note a formal Audit statement is not required, but a review of the works completed is necessary);
2. Input into stakeholder meetings to ensure that all necessary EPA approvals have been met (refer email correspondence below). It is likely that several meetings maybe required; and
3. An Audit statement for the containment cell (noting the area most likely for the containment cell has not been assessed).

I am currently waiting on the environmental consultant Agon to address review comments I made in an interim advice report I issued on 3/09/2019 (copy attached).

Given the length of time the project has taken, could the NT EPA please confirm that:

- The scope of audit work listed above remains correct
- Whether the environmental consultant needs to provide comprehensive remediation and validation reports providing documentation showing the remediation action plan (RAP) and EPA guidance were followed and the available data supports the conclusion that all parts of the Bartalumba Bay Homestead site are suitable for residential land use and the containment cell was properly constructed
- That a site audit report needs to be prepared that covers both the Bartalumba Bay Homestead site and the containment cell area
- A site audit statement only needs to be prepared for the containment cell area
- Any changes that may be required.

Should the NT EPA require any further information regarding my audit work, please don't hesitate to contact me.

Many thanks
Ian

Dr Ian C Swane (CPEng, CEnvP)
EPA Site Auditor NSW & NT
Ian Swane & Associates (mob: 0418 867 112)

IAN SWANE & ASSOCIATES P/L
PO Box 359, MORTDALE NSW 2223

Mob: +61 0418 867 112
Email: iswane@bigpond.com

Anindilyakwa Land Council
PO Box 172
30 Bougainvillea Drive
ALYANGULA NT 0885

Attention: Dr Ian Hollingsworth - Mining & Sustainability Manager

12 May 2023

Groote_230512_Interim Advice08
Site Audit ALC_01

Dear Ian

INTERIM ADVICE 08, PROPOSED SITE AUDITOR SITE INSPECTION METHODOLOGY FOR BARTALUMBA BAY HOMESTEAD ASBESTOS REMEDIATION PROJECT, GROOTE EYLANDT (6 pages)

1. Purpose

The purpose of this letter is to document the methodology that the site auditor proposes to follow during site inspections for the Bartalumba Bay Homestead Asbestos Remediation Project, Groote Eylandt. These inspections are proposed to take place over 3 days between Monday 22nd May and Thursday 25th May.

Inspections are intended to occur at the Bartalumba Bay Homestead ("**Homestead site**") and the Containment Cell site ("**Disposal Site**") at the locations shown in **Figure 1**. The Homestead Site covers an area of 31 ha and forms part of NT Portion 1199 plan(s) B000517. The Disposal Site is located 1.5 km south of the Homestead Site, covers an area of 0.4 ha and forms part of NT Portion 1632, Survey Plan CP 004201. An aerial view of the Homestead Site is provided in **Figure 2**, with the reported location of the Disposal Site shown in **Figure 3**.

Figure 1 Site and Cell Area Locations (Source: Figure 2, Ref [9])

- **Figure 2 Aerial View of Bartalumba Homestead Site 2018** (Source: Figure 3, Ref [5])

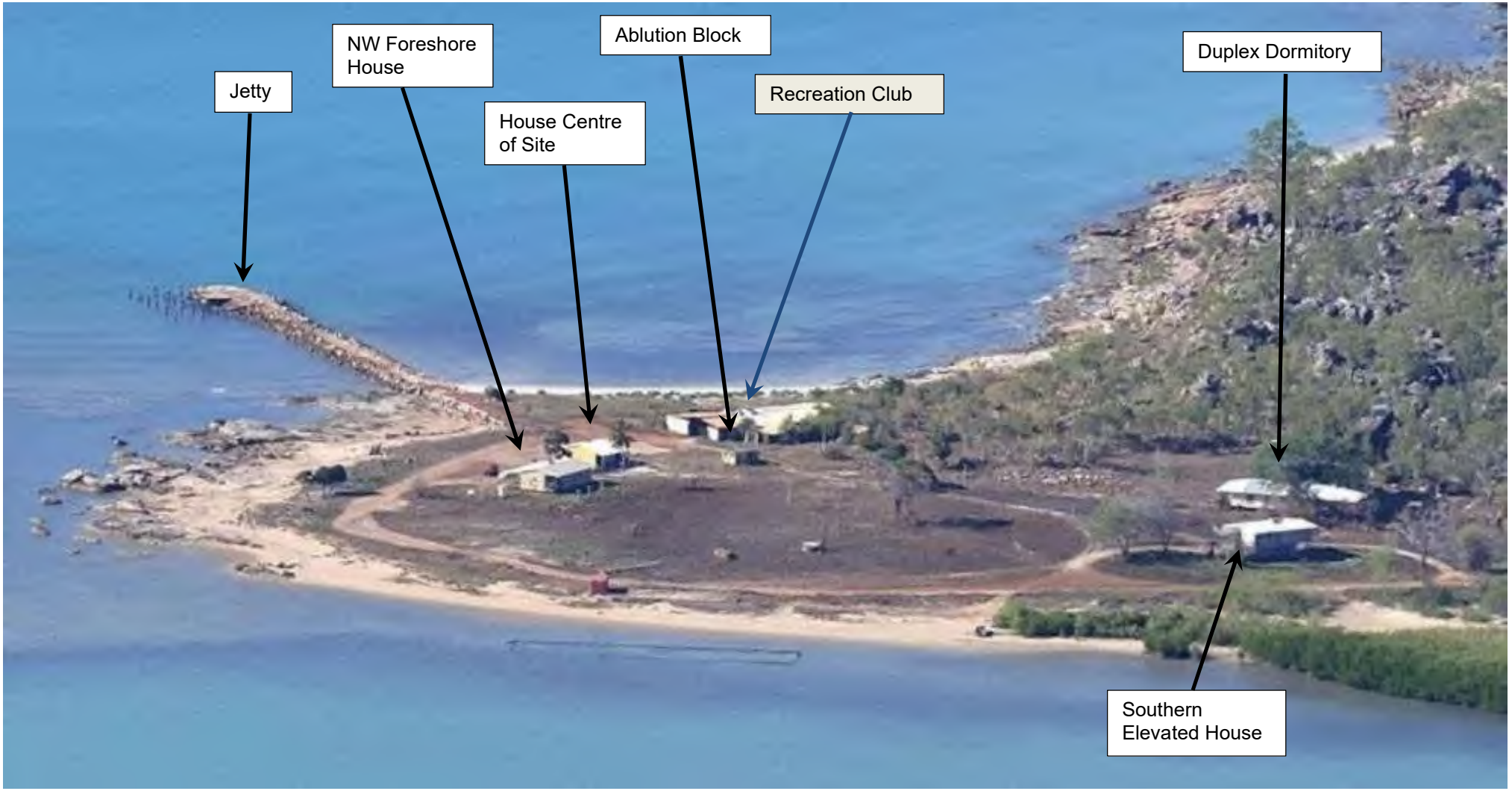


Figure 3 Coordinates of Proposed Cell Location as Specified in the PAN (Source: Attachment B, Ref [21])

The purpose of the inspections is to collect additional data to address data gaps in the remediation and validation work undertaken by Agon between November 2018 and February 2019. These data gaps were documented by the site auditor in a draft site audit report (**SAR**) issued to ALC and the NT EPA on 24/04/23.

2. Inspection at Homestead Site

A summary of data gaps at the Homestead Site identified by the draft SAR[1] and how the site inspection to be undertaken by the Site Auditor proposes to address them is provided in **Table 1**.

Table 1 Proposed Audit Methodology to Address Data Gaps at Homestead Site

No.	Data Gap	Proposed Mitigation Approach by Site Auditor
1	Community engagement by ALC	ALC to complete all community engagement work associated with the site auditor's site inspection prior to the commencement of work
2	Provide NT EPA with detailed plans, technical specs & construction QA plan for design/construction of containment cell & infrastructure (PAN condition 3)	Issue final SAR and site audit statement (**SAS**)
3	Erosion & sediment risk control plan by Asbestos Contractor	Site auditor to verify acceptable site condition by inspection & photographic record
4	Approval of containment cell design report from Site Auditor	Issue final SAR and SAS
5	Absence of material tracking document	Results of site inspection & issue final SAR and SAS
6	Risk of asbestos remaining in buildings	• Remaining buildings & surrounding areas to be inspected by the site auditor; and • Review the ALC asbestos register
7	Risk of visible asbestos remaining on ground surface at Homestead Site	Grid-based survey across site in accordance with NEPM (2013) Schedule B(2) to check for any visible asbestos. Raking and/or use of mattock/spade to remove vegetation
8	Risk of fibrous asbestos remaining at the Homestead Site	Collect soil samples at 50 locations[2] using judgemental sampling methodology given in NEPM (2013) Schedule B(2)
9	Homestead Site subject to ongoing monitoring, with future exposure of asbestos in soils that were not visible during site surveys remaining a possibility, particularly in areas of dense vegetation and where wind and water erosion occurs to the soil surface	Results of site inspection by Site Auditor & additional soil sampling
10	Existing asbestos register for Homestead Site to be updated to reflect site conditions post remediation works	ALC to update asbestos register for Homestead Site prior to completion of site audit

[1] Sections 4.2, 4.3, 4.7 & 4.8, draft SRVR
[2] The number of locations to be sampled based on a time constraint of one sample per 20 minutes

3. Inspection at Disposal Site

A summary of data gaps at the Disposal Site identified by the draft SAR[3] and how the site inspection to be undertaken by the Site Auditor proposes to address them is provided in **Table 2**.

Table 2 Proposed Audit Methodology to Address Data Gaps at Disposal Site

No.	Data Gap	Proposed Mitigation Approach by Site Auditor
1	The site remediation & validation report (**SRVR**) did not indicate the accuracy of the cell coordinates or whether the survey data was provided by a licensed surveyor	ALC to peg out the four corners of the containment cell to the locations specified in **Figure 3** and compare them with the as-built cell location
2	Data showing that the cap had a minimum thickness of 1.0 m	Site auditor to excavate 5 test pits across the cell, confirm the presence of the marker layer & measure cap thickness (**Figure 3)**
3	A rehabilitation plan meeting the landfill BPEM	Site Auditor to verify acceptable site condition by inspection & photographic record
4	Data showing that a 200 mm minimum thickness of topsoil covers the cell cap	Site auditor to excavate 5 test pits across the cell, confirm the presence of the topsoil layer
5	Validation data showing that no visible asbestos is present across the final surface of the completed cell and the cap soils met Recreational C NEPM criteria	• Grid-based survey across cell in accordance with NEPM (2013) Schedule B(2) to check for any visible asbestos. Raking and/or use of mattock/spade to remove vegetation. • Collect soil samples at 11 locations[4] using sampling methodology given in NEPM (2013) Schedule B(2)
6	• A long-term EMP for ongoing management of Disposal Site; and • Aftercare Management Plan for cell be prepared consistent with Section 8.2 of Landfill BEMP	LTEMP to be prepared by ALC or their appointed environmental consultant
7	Existing asbestos register for Homestead Site be updated to reflect site conditions post remediation	ALC to update asbestos register for Homestead Site to include Disposal Site for issue prior to completion of site audit
8	A review be conducted of the containment cell construction with regard to the level of compliance with the Landfill BEMP guidance.	Results of site inspection & the final SAR and SAS

4. Preparatory Work by ALC

Prior to the Site Auditor arriving at Groote Eylandt on Monday 22nd May, the ALC will need to complete the following work:

1. All community engagement work with relevant community members so that the Site Auditor can have access to the Homestead and Disposal Sites and undertake all site inspection and soil sampling work as described herein;

[3] Sections 4.4 & 4.8, draft SRVR
[4] As per Table 2, NSW EPA (2022) Sampling Design Guideline

2. Setout and locate the four corners of the containment cell using the coordinates specified in the PAN and as known to be constructed by Agon during 2018 – 2019. Survey pegs showing the locations of the cell need to be installed;
3. Supply the site auditor with transportation to and from ALC offices;
4. Supply the site auditor with site inspection equipment to include a spade, rake, mattock and tape measure;
5. Supply the site auditor with soil sampling equipment to include metal trowel and metal tray;
6. Supply the site auditor with 50 mL soil sample jars and labels for 80 samples; and
7. Supply the site auditor with the means to transport and carrying the site inspection materials and equipment.

Following the completion of the site inspection by the site auditor, the ALC will need to send the soil samples under chain-of-custody controls to a NATA-accredited lab in Darwin for asbestos testing. The test results will then need to be forwarded to the site auditor within 14 days of the completion of the site inspection.

****

Ian, please don't hesitate to provide me with feedback should you identify any potential improvements to the methodology or if there are issues that need to be discussed.

Yours sincerely

Dr Ian C Swane (CPEng & CEnvP)

EPA Site Auditor NT & NSW
Certified Environmental Practitioner
Ian Swane & Associates

Phone: 0418 867 112
Email: iswane@bigpond.com

Appendix D. Site Auditor Photographs

Site inspection 22/05/2023 at Disposal Site

Photo 1 Warning sign attached to western boundary fence surrounding Disposal Site

Photo 2 Star picket used to designate NW corner of containment cell prior to erection of boundary fence surrounding Disposal Site

Photo 3 View of Disposal Site from western side looking east

Photo 4 Centre of Disposal Site from western side looking east

Photo 5 Hand auger and sample location 1 at centre of Disposal Site

Photo 6 Hand auger and sample location 2 in SE part of Disposal Site

Photo 7 Hand auger and sample location 3 in NE part of Disposal Site

Photo 8 Hand auger and sample location 4 in SW part of Disposal Site

Photo 9 Hand auger and sample location 5 in NW part of Disposal Site

Photo 10 Hand auger and sample location 5 in NW part of Disposal Site

Photo 11 Condition of natural bushland to north of Disposal Site

Site inspection 23/05/2023 at Homestead Site

Photo 12 Former Duplex Building area looking north

Photo 13 Former Duplex Building area looking east

Photo 14 Former Recreation Club area looking north

Photo 15 Former Recreation Club area looking south

Photo 16 Foreshore adjacent to northern side of Former Recreation Club area

Photo 17 Foreshore picnic area adjacent to northern side of Former Recreation Club area

Photo 18 Newly constructed houses located just south of Former Recreation Club area

Photo 19 Jetty looking north

Photo 20 View from far end of Jetty looking south

Photo 21 View of broken up cast-iron wastewater pipeline located along western side of Jetty

Photo 22 View of former process building area looking south to west

Photo 23 Views of concrete ground slab of former process building area

Photo 24 Panorama view from housing in NW corner of Homestead Site, then the Former Process Building area to western foreshore area

Photo 25 View of western beach sample location 14

Photo 25 View of generator area

Photo 26 Sample location 17 south of generator area towards centre of Homestead Site

Photo 27 Sample location 18 south north of former duplex building area

Photo 28 Sample location 19 on western side of main road

Photo 29 Sample location 20 at northern area of Homestead Site beside road

Appendix E. Site Audit Statement and LTEMP for Homestead Site

NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017. For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. **ALC_1**

This site audit is a:

☑ **statutory audit**

~~☐ non-statutory audit~~

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name **Dr Ian C Swane**

Company **Ian Swane & Associates Pty Ltd**

Address **PO Box 359, Mortdale NSW** Postcode **2223**

Phone **0418 867 112** Email **iswane@bigpond.com**

Site details

Address **Former Bartalumba Bay Homestead, Bartalumba Bay Road near Anindilyakwa, Groote Eylandt, Northern Territory – refer Figures 1 – 3, LTEMP (attached)** Postcode **0822**

Property description

(Attach a separate list if several properties are included in the site audit.)

NT Portion 01199 plan(s) B 000517 described as Certificate of Title Volume 863 Folio 533

Local government area **Northern Territory (NT) Government**

Area of site (include units, e.g. hectares) **31.11 ha (311,100 m^2), which covers the Homestead Site, jetty and foreshore area**

Current zoning **Residential and open space**

Regulation and notification

To the best of my knowledge:

☑ **the site is the subject of a** ~~declaration, order, agreement, proposal or~~ **notice under the NT Waste Management and Pollution Control** (**WMPC**) **Act 1998** ~~*Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*~~, **as follows:** (provide the no. if applicable)

- ~~☐ Declaration no~~.
- ~~☐ Order no.~~
- ~~☐ Proposal no.~~
- ☑ **Pollution Abatement Notice (PAN) No. 2018/8 issued by the NT Environment Protection Authority (EPA) dated 18/12/18 (Ref [21])**

☑ **the site is not** the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

☑ **the site has been notified to the NT EPA under the WMPC Act 1998** ~~section 60 of the *Contaminated Land Management Act 1997*~~

☐ ~~the site **has not** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.~~

Site audit commissioned by

Name **Wesley van Zanden - Mining and Environment Officer**

Company **Anindilyakwa Land Council (ALC)**

Address **PO Box 172, 30 Bougainvillea Drive, Alyangula NT**

Postcode **0885**

Phone **0459 991 402** Email wvanzanden@alcnt.com.au

Contact details for contact person (if different from above)

Name **Dr Ian Hollingsworth - Mining & Sustainability Manager, ALC**

Phone **0460 022 247** Email ihollingsworth@alcnt.com.au

Nature of statutory requirements (not applicable for non-statutory audits)

☐ ~~Requirements under the *Contaminated Land Management Act* 1997 (e.g. management order; please specify, including date of issue)~~

☐ Requirements imposed by an environmental planning instrument (please specify, including date of issue)

☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

☑ Requirements under other legislation (please specify, including date of issue): **NT WMPC Act 1998**

Purpose of site audit

☐ **A1** To determine land use suitability

Intended uses of the land:

OR

☐ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan (EMP)

Intended uses of the land:

OR

(Tick all that apply)

☐ **B1** To determine the nature and extent of contamination

☐ **B2** To determine the appropriateness of:

- ☐ an investigation plan
- ☐ a remediation plan
- ☐ a management plan

☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

☑ **B4** To determine the compliance with an approved:

- ☑ **PAN No. 2018/6**
- ☐ **voluntary management proposal** or
- ☐ **management order** under the *Contaminated Land Management Act 1997*

☑ **B5 To determine if the land can be made suitable for a particular use (or uses) if the site is** remediated or **managed in accordance with a specified plan.**

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

Agon Environmental and ALS

Titles of reports reviewed:

1. Agon Environmental (14 August 2018) *'Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336/01 prepared for Anindilyakwa Land Council
2. Agon Environmental (17 October 2018) *'Sample Analysis and Quality Plan, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336-SAQP/01 prepared for Anindilyakwa Land Council
3. Agon Environmental (5 November 2018a) *'Asbestos Management Plan, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336_AMP/02 prepared for Anindilyakwa Land Council
4. Agon Environmental (5 November 2018b) *'Containment Cell Siting Design & Management Plan, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
5. Agon Environmental (5 November 2018c) *'Remediation Action Plan, Bartalumba Bay, Groote Eylandt, NT*'. Document No: JA0336_RAP/02 prepared for Anindilyakwa Land Council
6. Agon Environmental (7 December 2018) *'Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project*'. Document No: JA0336 prepared for Anindilyakwa Land Council
7. Agon Environmental (22 March 2019) *'Close Out Report, Bartalumba Bay Homestead, Groote Eylandt*'. Document No: JA0336 Close Out Report - Final prepared for Anindilyakwa Land Council
8. Agon Environmental (5 September 2022) *'Audit Advice Response - Bartalumba Bay Homestead Asbestos Remediation Project, Groote Eylandt'*. Document No: JA0336_L-01 prepared for Anindilyakwa Land Council
9. Agon Environmental (16 September 2022) *'Remediation and Validation Report, Bartalumba Bay Homestead and Containment Cell, Groote Eylandt NT*'. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
10. ALS (13 July 2023) '*Certificate of Analysis, Work Order EN2305275 for Anindilyakwa Land Council (ALC)*'. 8 pages

Other information reviewed, including previous site audit reports and statements relating to the site:

20. ALC (16 November 2018) '*Proposed Containment Cell, Bartalumba Bay Road'*. Figure No. LP-0012-01
21. NT EPA (18 December 2018) '*Pollution Abatement Notice No. 2018/6, Issued to Anindilyakwa Land Trust*'

Site audit report details

Title **Site Audit Report ALC_1 by Dr Ian Swane, Remediation of Asbestos Contamination at the former Bartalumba Bay Homestead Site, Groote Eylandt, Northern Territory 0822**

Report no. **ALC_1** Date **21 November 2023**

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section. (Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
  - (B1) the nature and extent of contamination, and/or
  - (B2) the appropriateness of an investigation, remediation or management plan[1], and/or
  - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
  - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
  - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

~~Section A1~~

~~I certify that, in my opinion:~~

~~The **site is suitable** for the following uses:~~

~~(Tick all appropriate uses and strike out those not applicable.)~~

~~☐ Residential, including substantial vegetable garden and poultry~~

~~☐ Residential, including substantial vegetable garden, excluding poultry~~

~~☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~

~~☐ Day care centre, preschool, primary school~~

~~☐ Residential with minimal opportunity for soil access, including units~~

~~☐ Secondary school~~

~~☐ Park, recreational open space, playing field~~

~~☐ Commercial/industrial~~

~~☐ Other (please specify):~~

[1] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

OR

☐ I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.

Overall comments:

Section A2

I certify that, in my opinion:

Subject to compliance with the **attached** environmental management plan[2] (EMP), the site is suitable for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

EMP details

Title

Author

Date No. of pages

EMP summary

.....

The EMP: (Tick appropriate box and strike out the other option.)

☐ requires operation and/or maintenance of **active** control systems[3]

☐ requires maintenance of **passive** control systems only[3].

[2] Refer to Part IV for an explanation of an environmental management plan.
[3] Refer to Part IV for definitions of active and passive control systems.

~~Purpose of the EMP: .....~~

~~Description of the nature of the residual contamination: .....~~

~~Summary of the actions required by the EMP: .....~~

~~How the EMP can reasonably be made to be legally enforceable: .....~~

~~How there will be appropriate public notification: .....~~

~~Overall comments:~~

Section B

~~Purpose of the plan[4] which is the subject of this audit:~~

I certify that, in my opinion:

~~(B1)~~

☐ ~~The nature and extent of the contamination **has** been appropriately determined~~

☐ ~~The nature and extent of the contamination **has not** been appropriately determined~~

~~AND/OR (B2)~~

☐ ~~The investigation, remediation or management plan is appropriate for the purpose stated above~~

☐ ~~The investigation, remediation or management plan **is not** appropriate for the purpose stated above~~

~~AND/OR (B3)~~

☐ ~~The site testing plan:~~

- ☐ ~~**is** appropriate to determine~~
- ☐ ~~**is not** appropriate to determine~~

~~if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*~~

~~AND/OR~~ **(B4)**

☑ **The terms of the notice**, ~~approved voluntary management proposal* or management order**~~ (strike out as appropriate):

- ☑ **have** been complied with
- ☐ ~~**have not** been complied with.~~

PAN No. 2018/6

~~*voluntary management proposal no.~~

[4] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

~~**management order no.~~

AND~~/OR (B5)~~

☑ The site **can be made suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

~~☐ Residential, including substantial vegetable garden and poultry~~

~~☐ Residential, including substantial vegetable garden, excluding poultry~~

~~☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~

~~☐ Day care centre, preschool, primary school~~

~~☐ Residential with minimal opportunity for soil access, including units~~

~~☐ Secondary school~~

~~☐ Park, recreational open space, playing field~~

~~☐ Commercial/industrial~~

☑ **Other (please specify): Residential and open space land use with regard to asbestos contamination remediated under PAN No. 2018/6**

IF the site is ~~remediated/~~**managed* in accordance with the following plan (attached):**

*Strike out as appropriate

Plan title	**Long-Term Environmental Management Plan for Contamination Risks at the Former Bartalumba Bay Homestead Site (LTEMP)**
Plan author	**Dr Ian Swane**
Plan date	**21 November 2023** No. of pages **6**

SUBJECT to compliance with the following condition(s):

1. **This Section B SAS numbered ALC_1 only applies to the former Bartalumba Bay Homestead site covering 31.11 ha of land defined as NT Portion 01199 plan(s) B 000517.** ……..…
2. **The Anindilyakwa Land Trust (ALT) is responsible for ensuring that the Homestead Site remains free of contamination and that any new / unexpected contamination found is managed in a safe manner protective of human health and the environment in accordance with the LTEMP attached to this SAS or future amended versions accepted by the NT EPA.** ……
3. **Unknown asbestos contamination at low concentrations may remain at the Homestead Site. However, such contamination should not affect the site's suitability for residential land use provided any new asbestos find is managed in accordance with the LTEMP.** ……..……..…
4. **Unexpected finds of other types of contamination made during maintenance or construction work at the Homestead Site need to be managed in accordance with the LTEMP.** ……..……..…
5. **New contamination caused by future activities at the Homestead Site need to be managed in accordance with the LTEMP.** ……..…

Overall comments:

1. **This site audit statement (SAS) should be read in conjunction with its Site Audit Report (SAR). The SAR provides:** ……
   a) **A detailed review of documentation provided on the investigation, remediation and validation work conducted at the Homestead Site; and** ……
   b) **An assessment of contamination risks that remain at the Homestead Site and its suitability for continued residential / open space land uses.** ……..
2. **The outcomes achieved by the investigation and remediation work for asbestos contamination at the Homestead Site have met the requirements of the PAN No. 2018/6. While the timing of some activities were delayed, the required outcomes were achieved or can be achieved through implementation of the LTEMP.** ……..
3. **At the time this SAS was completed, no further investigation or remediation of asbestos contamination was needed to render the Homestead Site fit for its existing residential / open space uses. All known asbestos contamination exceeding Residential A soil criteria had been removed from the site and disposed off-site in accordance with PAN No. 2018/6.** ……..
4. **A separate SAS numbered ALC_2 has been prepared for the long-term management of asbestos contamination placed in a containment cell located at the Disposal Site legally defined as NT Portion 1632, Survey Plan CP 004201 (Figure 1).** ……

Part III: Auditor's declaration

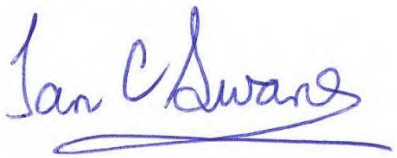
I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997.*

Accreditation no. **9821**

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997,* and
- with due regard to relevant laws and guidelines, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.



Signed Date **21 November 2023**

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of *the Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**:
  nswauditors@epa.nsw.gov.au or as specified by the EPA

  AND
- the **local council** for the land which is the subject of the audit.

IAN SWANE & ASSOCIATES

LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN FOR CONTAMINATION RISKS AT THE FORMER BARTALUMBA BAY HOMESTEAD SITE

by

Dr Ian C Swane

1. Purpose

a) The purpose of this long-term environmental management plan (**LTEMP**) is to provide protocols for managing presently unknown asbestos or other types of contamination that may remain at the former Bartalumba Bay Homestead site (**Homestead Site**), Bartalumba Bay Road, Groote Eylandt, covering 31.11ha of land legally defined as NT Portion 01199 plan(s) B 000517. A location pland for the Homestead Site is provided in **Figure 1**, with layout plans for 2022 and 2023 provided in **Figures 2** and **3**, respectively.

b) At the time site audit statement ALC_01 was completed, no further investigation or remediation of asbestos contamination was needed to render the Homestead Site fit for its existing residential / open space uses. All known asbestos contamination exceeding Residential A soil criteria has been removed from the site and disposed off-site in accordance with PAN No. 2018/6.

c) Normal day to day residential / open space activities that occur at the Homestead Site should not trigger the implementation of this LTEMP. This LTEMP is most likely to be triggered through future maintenance or construction work that uncovers new / unexpected contamination, or future activities that may contaminate the site.

d) New / unexpected contamination that is found at the Homestead Site is to be managed in accordance with the protocols in **Section 5**.

2. Background Information

a) The Homestead Site has a history of maritime use as a prawn/fish processing base up until the late 1970's when parts of the base were demolished and then used for both residential and recreational uses.

b) Structures present in 2018 comprised a rock wall jetty that extended north into Deception Bay from the foreshore, a duplex dormitory, a recreational club, 11 remnant concrete slabs (numbered 1 - 11) from other former structures that had previously been demolished, unsealed roadways, an ablution block, four residential buildings, a rock wall and fire pit. A broken wastewater disposal pipeline ran the full length of the jetty wrapped in fibrous matting, with gaskets at regular intervals.

c) In 2018 an extensive amount of ACM building material was present at the Homestead Site, either in derelict buildings or scattered across the site as broken or degraded ACM fragments.

d) A Pollution Abatement Notice (**PAN**) No. 2018/6 was issued by the NT EPA dated 18/12/2018. The PAN required, among other things, that:

- The impacted building demolition waste and soil material contaminated with asbestos containing material (**ACM**) at the Homestead Site be remediated in accordance with a Remedial Action Plan (**RAP**) endorsed by a Site Auditor;
- The asbestos waste be disposed in an appropriately constructed containment cell located off-site at the nearby Disposal Site;
- The Site Auditor to provide the NT EPA with a site audit statement and site audit report at the end of the remediation and validation work; and
- An updated Asbestos Register be prepared by/for the ALC and endorsed by the Site Auditor.

e) Further information on site conditions, investigations and remediation work undertaken at the Homestead Site between 2018 and 2023 is provided in "*Site Audit Report ALC_1 by Dr Ian Swane, Remediation of Asbestos Contamination at the former Bartalumba Bay Homestead Site, Groote Eylandt, Northern Territory 0822*" dated 20/11/2023.

3. Roles and Responsibilities

a) The Anindilyakwa Land Trust (**ALT**) is the owner and occupier of the Homestead Site and has overal responsibility for the implementation of this LTEMP. This should include, among other things, the ongoing review of the LTEMP's implementation by the ALC documented in reports prepared by the ALC.

b) The Anindilyakwa Land Council (**ALC**) is the operational arm of the ALT and has day-to-day operational responsibility for the implementation of this LTEMP. This includes:

- Liasing with residents at the Homestead Site on the implementation of this LTEMP on an as-needed basis and when complaints are received from residents regarding possible contamination issues or the implementation of this LTEMP;
- The ALC Mining and Susttainability Manager or their delegated representative undertake a 6-monthly inspection of the Homestead Site that involves, among other things, a detailed walkover survey looking for physical evidence of contamination at the ground surface, taking a photographic record of site conditions, and documenting the inspection results in a report;
- Providing contractors and residents at the Homestead Site with a copy of this LTEMP and advising them of their responsibilites;
- Up-dating the LTEMP on an as-needed basis, with a copy of any amended LTEMP to be sent to the NT EPA without delay;
- Recording all relevant information regarding all new / unexpected contamination that may be found at the Homestead Site for a period of not less than 7 years;
- Preparing an annual report on the implementation of this LTEMP;
- Providing copies of records regarding implementation of this LTEMP to the NT EPA upon request;
- Provide a copy of an updated Asbestos Register for the Homestead Site, endorsed by the Site Auditor, if required following the completion of the asbestos remediation work (as required by the PAN); and
- Any additional requirement of the NT EPA.

c) Contractors who work at the Homestead Site are responsible for ensuring:

- Their workers are made aware of the risk of new, presently unknown asbestos and other types of contamination;
- New / unexpected contamination is managed in accordance with the new / unexpected finds protocol (**Section 5**); and
- Maintenance / construction work does not pollute the site.

d) Residents who live at the Homestead Site have a responsibility not to undertake activities that may pollute the site. Any new / unexpected contamination that may be found by a resident is to be reported to the ALC without delay for action by the ALC.

4. Excavation / Site Clearing Work

a) The ALC is to provide a copy of this LTEMP to all Contractors who are to undertake excavation or site clearing work at the Homestead Site prior to the commencement of site work. The Contractor is to incorporate the requirements of this LTEMP into their Work Health and Safety (**WHS**) Plan.

b) Contractors who are to undertake excavation or site clearing work at the Homestead Site are to adopt work practices that:

i. address the risk of encountering new / unexpected finds of contamination during their work;

ii. address the risk of encountering buried services / structures that may contain a new / unexpected find of contamination;

iii. can isolate any new / unexpected find that may be found, thereby minimising the quantity of contamination and the size of the affected area; and

iv. ensure their work does not affect the safety of residents or pollute the environment.

c) Indicators of potential contamination may include:

i. ACM fragments;

ii. Stained or discoloured fill, soils or seepage water;

iii. Odorous fill, soils or seepage waters;

iv. Construction/demolition wastes such as concrete, bricks, timber, tiles and pipes;

v. General rubbish such as plastic, glass, packaging; and

vi. Buried services / tanks / pits.

d) If no new / unexpected contamination is found by the Contractor during their work at the Homestead Site, the Contractor must advise the ALC of this outcome at the end of site work.

e) The ALC will be responsible for assessing the nature and extent of any new / unexpected contamination found at the site and for organising remediation / validation work that may be required.

f) The appropriate person from the ALC is to inspect all excavation / site clearing work undertaken at the site sufficient to verify whether new / unexpected contamination was encountered during the work.

g) Should new / unexpected contamination be found during excavation / site clearing work at the site, the Contractor shall implement the new / unexpected protocol (**Section 5**).

5. New / Unexpected Finds Protocol

a) If new / unexpected contamination is found at the Homestead Site, the location of the find is to be first recorded and persons (if any) in the vicinity are to vacate the affected area. The presence of the find is then to be reported to the ALC without delay by the person who made the find or their delegated representative.

b) If a Contractor is working in the affected area, the Contractor is to stop work in the affected area, make the affected area safe, barricade off the affected area, and wait until the ALC issues a direction on how such contamination is to be managed.

c) The risks posed by new contamination are to be assessed by the ALC Mining and Sustainability Manager in the first instance, who may need to engage an appropriately qualified and experienced environmental consultant if the risk to human health or the environment is more than trivial.

d) Contamination needing to be remediated is to be remediated without unnecessary delay and the work validated in accordance with the WMPC Act and NT EPA guidance.

e) Records on the identification of new / unexpected finds, their investigation, remediation and validation are to be prepared by / for the ALC in accordance with NT EPA guidance. All records are to be kept by the ALC for a period of not less than 7 years.

f) In the event that the ALC considers there is a risk that new / unexpected contamination at the Homestead Site may affect the suitability of the site for ongoing residential / open space land use, the NT EPA is to be notified without delay and a Site Auditor appointed to review the remediation and validation work and to assess the suitability of the site for residential / open space use.

Figure 1 Location Plan for Former Bartalumba Bay Homestead (Source: Figure 2, Ref [9])

Figure 2 2022 Site Layout (Source Figure 3, Ref [9])

Figure 3 2023 Aerial Photo of Homestead Site

(Source: Google Maps)

Appendix F. Site Audit Statement and LTEMP for Disposal Site

NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017. For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. **ALC_2**

This site audit is a:

☑ **statutory audit**

~~☐ non-statutory audit~~

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name	**Dr Ian C Swane**		
Company	**Ian Swane & Associates Pty Ltd**		
Address	**PO Box 359, Mortdale NSW**	Postcode	**2223**
Phone	**0418 867 112**	Email	**iswane@bigpond.com**

Site details

Address **Asbestos waste Disposal Site located 1.5 km south of the Homestead Site along Bartalumba Bay Road near Anindilyakwa, Groote Eylandt, Northern Territory – refer Figures 1 – 3, LTEMP (attached)** Postcode **0822**

Property description

(Attach a separate list if several properties are included in the site audit.)

NT Portion 1632, Survey Plan CP 004201. The GPS coordinates for the four corners of the galvanised pipe fence surrounding the containment cell are (0656690E, 8469349N); (0656734E, 8469357N); (0656726E, 8469391N); (0656687E, 8469380N). The GPS coordinates of the containment cell constructed within the Disposal Site And measured by Agon are shown in Figure 2, LTEMP (attached).

Local government area **Northern Territory (NT) Government**

Area of site (include units, e.g. hectares) **0.40 ha (4,000 m^2)**

Current zoning **Open space / bushland**

Regulation and notification

To the best of my knowledge:

☑ **the site is the subject of a ~~declaration, order, agreement, proposal or~~ notice under the NT Waste Management and Pollution Control** (**WMPC**) **Act 1998** ~~*Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*~~, **as follows:** (provide the no. if applicable)

~~☐ Declaration no~~.

~~☐ Order no.~~

~~☐ Proposal no.~~

☑ **Pollution Abatement Notice (PAN) No. 2018/8 issued by the NT Environment Protection Authority (EPA) dated 18/12/18 (Ref [21])**

☑ **the site is not** the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

☑ **the site has been notified to the NT EPA under the WMPC Act 1998** ~~section 60 of the *Contaminated Land Management Act 1997*~~

~~☐ the site **has not** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.~~

Site audit commissioned by

Name **Wesley van Zanden - Mining and Environment Officer**

Company **Anindilyakwa Land Council (ALC)**

Address **PO Box 172, 30 Bougainvillea Drive, Alyangula NT**

Postcode **0885**

Phone **0459 991 402** Email wvanzanden@alcnt.com.au

Contact details for contact person (if different from above)

Name **Dr Ian Hollingsworth - Mining & Sustainability Manager, ALC**

Phone **0460 022 247** Email ihollingsworth@alcnt.com.au

Nature of statutory requirements (not applicable for non-statutory audits)

☐ Requirements under the *Contaminated Land Management Act* 1997 (e.g. management order; please specify, including date of issue)

☐ Requirements imposed by an environmental planning instrument (please specify, including date of issue)

☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

☑ Requirements under other legislation (please specify, including date of issue): **NT WMPC Act 1998**

Purpose of site audit

☐ **A1** To determine land use suitability

Intended uses of the land:

OR

☐ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan (EMP)

Intended uses of the land:

OR

(Tick all that apply)

☐ **B1** To determine the nature and extent of contamination

☐ **B2** To determine the appropriateness of:

☐ an investigation plan

☐ a remediation plan

☐ a management plan

☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

☑ **B4** To determine the compliance with an approved:

☑ **PAN No. 2018/6**

☐ **voluntary management proposal** or

☐ **management order** under the *Contaminated Land Management Act 1997*

☑ **B5 To determine if the land can be made suitable for a particular use (or uses) if the site is** remediated or **managed in accordance with a specified plan.**

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

Agon Environmental and ALS

Titles of reports reviewed:

1. Agon Environmental (14 August 2018) *'Asbestos Findings Summary Report, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336/01 prepared for Anindilyakwa Land Council
2. Agon Environmental (17 October 2018) *'Sample Analysis and Quality Plan, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336-SAQP/01 prepared for Anindilyakwa Land Council
3. Agon Environmental (5 November 2018a) *'Asbestos Management Plan, Bartalumba Bay, Groote Eylandt NT*'. Document No: JA0336_AMP/02 prepared for Anindilyakwa Land Council
4. Agon Environmental (5 November 2018b) *'Containment Cell Siting Design & Management Plan, Bartalumba Bay, Groote Eylandt NT'*. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
5. Agon Environmental (5 November 2018c) *'Remediation Action Plan, Bartalumba Bay, Groote Eylandt, NT*'. Document No: JA0336_RAP/02 prepared for Anindilyakwa Land Council
6. Agon Environmental (7 December 2018) *'Bartalumba Bay Homestead, Groote Eylandt Asbestos Remediation Project*'. Document No: JA0336 prepared for Anindilyakwa Land Council
7. Agon Environmental (22 March 2019) *'Close Out Report, Bartalumba Bay Homestead, Groote Eylandt*'. Document No: JA0336 Close Out Report - Final prepared for Anindilyakwa Land Council
8. Agon Environmental (5 September 2022) *'Audit Advice Response - Bartalumba Bay Homestead Asbestos Remediation Project, Groote Eylandt'*. Document No: JA0336_L-01 prepared for Anindilyakwa Land Council
9. Agon Environmental (16 September 2022) *'Remediation and Validation Report, Bartalumba Bay Homestead and Containment Cell, Groote Eylandt NT*'. Document No: JA0336_CCSDMP/01 prepared for Anindilyakwa Land Council
10. ALS (13 July 2023) '*Certificate of Analysis, Work Order EN2305275 for Anindilyakwa Land Council (ALC)*'. 8 pages

Other information reviewed, including previous site audit reports and statements relating to the site:

20. ALC (16 November 2018) '*Proposed Containment Cell, Bartalumba Bay Road'*. Figure No. LP-0012-01
21. NT EPA (18 December 2018) '*Pollution Abatement Notice No. 2018/6, Issued to Anindilyakwa Land Trust*'

Site audit report details

Title **Site Audit Report ALC_1 by Dr Ian Swane, Remediation of Asbestos Contamination at the former Bartalumba Bay Homestead Site, Groote Eylandt, Northern Territory 0822**

Report no. **ALC_1** Date **21 November 2023**

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section. (Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
  - (B1) the nature and extent of contamination, and/or
  - (B2) the appropriateness of an investigation, remediation or management plan[1], and/or
  - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
  - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
  - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

~~Section A1~~

~~I certify that, in my opinion:~~

~~The **site is suitable** for the following uses:~~

~~(Tick all appropriate uses and strike out those not applicable.)~~

~~☐ Residential, including substantial vegetable garden and poultry~~

~~☐ Residential, including substantial vegetable garden, excluding poultry~~

~~☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~

~~☐ Day care centre, preschool, primary school~~

~~☐ Residential with minimal opportunity for soil access, including units~~

~~☐ Secondary school~~

~~☐ Park, recreational open space, playing field~~

~~☐ Commercial/industrial~~

~~☐ Other (please specify):~~

[1] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

OR

☐ I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.

Overall comments:

Section A2

I certify that, in my opinion:

Subject to compliance with the **attached** environmental management plan[2] (EMP), the site is suitable for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

EMP details

Title

Author

Date No. of pages

EMP summary

.....

The EMP: (Tick appropriate box and strike out the other option.)

☐ requires operation and/or maintenance of **active** control systems[3]

☐ requires maintenance of **passive** control systems only[3].

[2] Refer to Part IV for an explanation of an environmental management plan.
[3] Refer to Part IV for definitions of active and passive control systems.

~~Purpose of the EMP: .....~~

~~Description of the nature of the residual contamination: .....~~

~~Summary of the actions required by the EMP: .....~~

~~How the EMP can reasonably be made to be legally enforceable: .....~~

~~How there will be appropriate public notification: .....~~

~~Overall comments:~~

Section B

~~Purpose of the plan[4] which is the subject of this audit:~~

I certify that, in my opinion:

~~(B1)~~

☐ ~~The nature and extent of the contamination **has** been appropriately determined~~

☐ ~~The nature and extent of the contamination **has not** been appropriately determined~~

~~AND/OR (B2)~~

☐ ~~The investigation, remediation or management plan is appropriate for the purpose stated above~~

☐ ~~The investigation, remediation or management plan **is not** appropriate for the purpose stated above~~

~~AND/OR (B3)~~

☐ ~~The site testing plan:~~

- ☐ ~~**is** appropriate to determine~~
- ☐ ~~**is not** appropriate to determine~~

~~if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*~~

~~AND/OR~~ **(B4)**

☑ **The terms of the notice**, ~~approved voluntary management proposal* or management order**~~ (strike out as appropriate):

- ☑ **have** been complied with
- ☐ ~~**have not** been complied with.~~

PAN No. 2018/6

~~*voluntary management proposal no.~~

[4] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

~~**management order no.~~

AND~~/OR (B5)~~

☑ The site **can be made suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

~~☐ Residential, including substantial vegetable garden and poultry~~

~~☐ Residential, including substantial vegetable garden, excluding poultry~~

~~☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~

~~☐ Day care centre, preschool, primary school~~

~~☐ Residential with minimal opportunity for soil access, including units~~

~~☐ Secondary school~~

~~☐ Park, recreational open space, playing field~~

~~☐ Commercial/industrial~~

☑ **Other (please specify): Containment cell for asbestos contaminated soil waste removed from the Homestead Site under PAN No. 2018/6**

IF the site is ~~remediated/~~**managed* in accordance with the following plan (attached):**

*Strike out as appropriate

Plan title	**Long-Term Environmental Management Plan for the Disposal Site along Bartalumba Bay Road, Groote Eylandt (LTEMP)**
Plan author	**Dr Ian Swane**
Plan date	**21 November 2023** No. of pages **5**

SUBJECT to compliance with the following condition(s):

1. **This Section B SAS numbered ALC_2 only applies to the Disposal Site legally defined as NT Portion 1632, Survey Plan CP 004201 where an engineered containment cell for asbestos contaminated soil removed from the Homestead Site in 2018 – 2019 has been constructed.** ……..……..….
2. **The Anindilyakwa Land Trust (ALT) is responsible for ensuring that the Disposal Site is managed in accordance with the LTEMP attached to this SAS or future amended versions accepted by the NT EPA.** ……..……
3. **The area occupied by the Disposal Site and the engineered containment cell are to be registered as an area of contaminated land on the NT EPA Contaminated Land and Environmental Audit Results register and the land title, as required by Condition 16 of PAN No. 2018/6.** ……

Overall comments:

1. **This site audit statement (SAS) should be read in conjunction with its Site Audit Report (SAR). The SAR provides a detailed review of documentation provided on the design, construction and long-term management requirements for the engineered containment cell constructed at the Disposal Site.** ……..….

2. **The outcomes achieved by the design and construction work for the engineered containment cell at the Disposal Site have met the requirements of the PAN No. 2018/6. While the timing of some activities were delayed, the required outcomes were achieved or can be achieved through implementation of the LTEMP.** ……..……..……..

3. **A separate SAS numbered ALC_1 has been prepared for the long-term management of contamination risks at the former Bartalumba Bay Homestead Site legally defined as NT Portion 01199 plan(s) B 000517 (Figure 1, LTEMP).** …

Part III: Auditor's declaration

I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997.*

Accreditation no. **9821**

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997,* and
- with due regard to relevant laws and guidelines, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.

Signed Date **21 November 2023**

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of *the Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**:
  nswauditors@epa.nsw.gov.au or as specified by the EPA

  AND
- the **local council** for the land which is the subject of the audit.

IAN SWANE & ASSOCIATES

LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN FOR THE DISPOSAL SITE ALONG BARTALUMBA BAY ROAD, GROOTE EYLANDT

by

Dr Ian C Swane

1. Purpose

a) The purpose of this long-term environmental management plan (**LTEMP**) is to provide protocols for managing the Disposal Site located along Bartalumba Bay Road, Groote Eylandt, and the engineered containment cell constructed within the Disposal Site that was copnstructed in 2018 – 2019 to store ACM contaminated soil removed from the former Bartalumba Bay Homestead Site. A location plan for the Disposal Site is provided in **Figure 1**.

b) The Disposal Site covers 0.4 ha of land legally defined as NT Portion 1632, Survey Plan CP 004201. The GPS coordinates for the four corners of the galvanised pipe fence surrounding the containment cell are (0656690E, 8469349N); (0656734E, 8469357N); (0656726E, 8469391N); (0656687E, 8469380N). The GPS coordinates of the containment cell constructed within the Disposal Site are shown in **Figure 2**.

2. Background Information

a) The engineered containment cell at the Disposal Site was constructed under the supervision of the environmental consultant Agon in 2018 – 2019. A design schematic of the cell is provided in **Figure 3**.

b) Agon reported that the rectangular cell has dimensions 28 x 20 m and was 3m deep when excavated. The top surface of the asbestos contaminated soil placed in the cell was covered by an orange geotextile. A clay cap was then constructed that was compacted by track-rolling to not less than 95% standard compaction.

c) The clean clay cap has a minimum thickness of 1.0 m, which was verified by hand auger boreholes drilled by the Site Auditor and lab tests on samples of capping soil conducted in May 2023.

d) The cap is covered by topsoil (minimum 200 mm thick) to support vegetation regrowth by natural reseeding and is graded with a 1% fall from the cell centre. These design features were verified by a site inspection conducted by the Site Auditor in May 2023.

e) Natural revegetation of the area is occurring, with native plant and tree species re-establishing across the area. Soil erosion mitigation measures have been established across the area involving the placement of tree trunks to form stormwater barriers and the re-establishment of native vegetation.

f) A galvanised pipe fence defines the boundary of the containment cell. The area is approximately rectangular in shape with lengths of 33 x 47 m. Warning signs are attached to the boundary fence surrounding the cell stating "*Warning, Asbestos Materials Buried in this Area, refer to the site asbestos register and asbestos management plan*".

g) The as-constructed condition of the engineered containment cell, this LTEMP, site audit statement ALC_2 and its associated site audit report are considered to meet the requirements of Pollution Abatement Notice (**PAN**) No. 2018/6 issued by the NT EPA dated 18/12/2018.

h) Further information on the design and construction of the engineered containment cell and site conditions at the Disposal Site are provided in "*Site Audit Report ALC_1 by Dr Ian Swane, Remediation of Asbestos Contamination at the former Bartalumba Bay Homestead Site, Groote Eylandt, Northern Territory 0822*" dated 20/11/2023.

3. Roles and Responsibilities

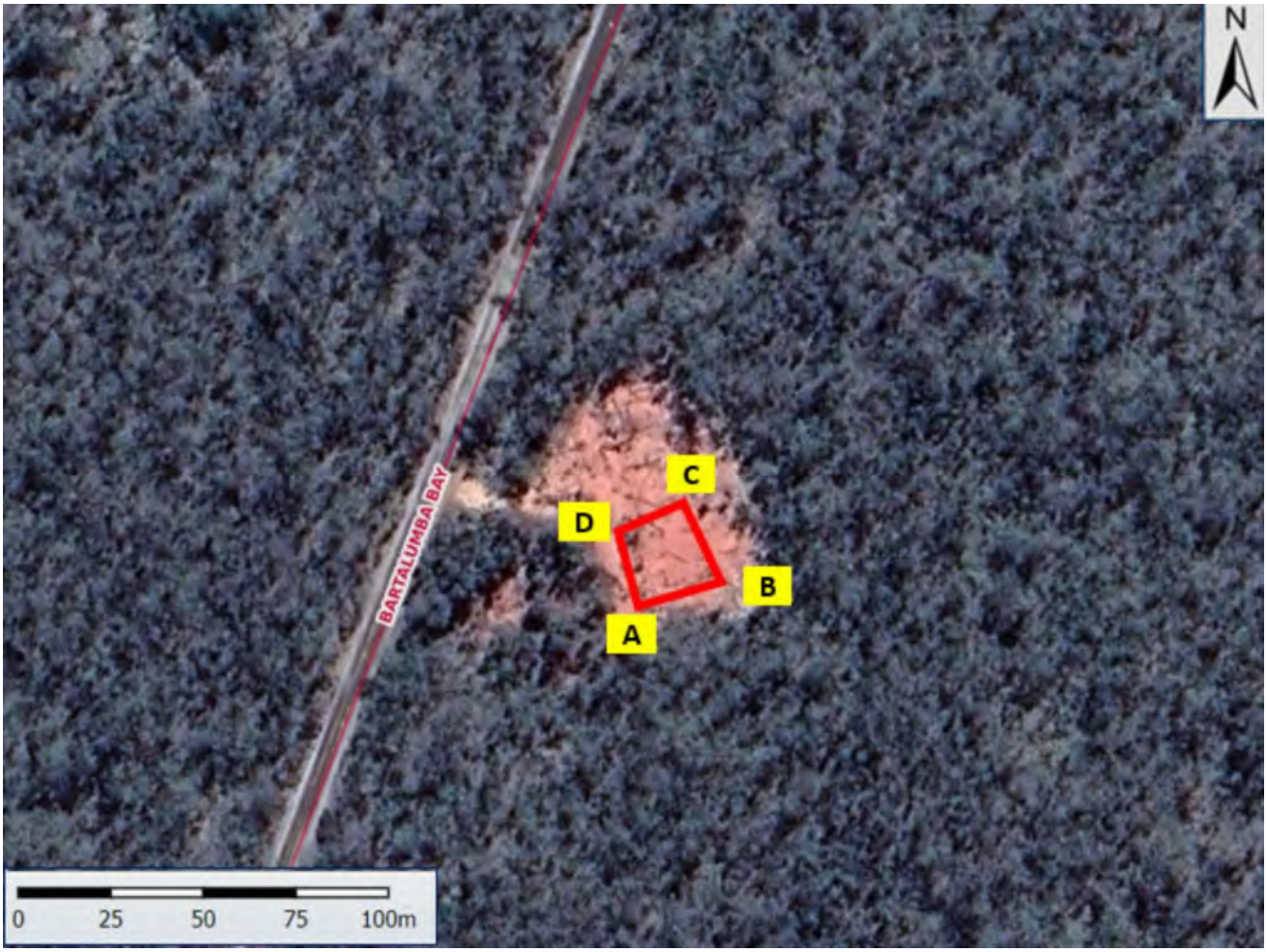
a) The Anindilyakwa Land Trust (**ALT**) is the owner of the Disposal Site and has overal responsibility for the implementation of this LTEMP. This should include, among other things, the ongoing review of the LTEMP's implementation by the ALC documented in annual reports prepared by the ALC.

b) The Anindilyakwa Land Council (**ALC**) is the operational arm of the ALT and has day-to-day operational responsibility for the implementation of this LTEMP. This includes:

- Ensuring the area occupied by the Disposal Site and the engineered containment cell are registered as an area of contaminated land on the NT EPA Contaminated Land and Environmental Audit Results register and the land title, as required by Condition 16 of PAN No. 2018/6;
- The ALC Mining and Susttainability Manager or their delegated representative undertakes a 6-monthly inspection of the Disposal Site that involves, among other things, a detailed walkover survey, taking a photographic record of site conditions, and documenting the inspection results in a report;
- Inspecting the Disposal Site without delay after a bushfire has damaged vegetation at or near the Disposal Site or after a major storm has caused significant damage to other parts of Groote Eylandt;
- Preventing disturbance of the cap covering the engineered containment cell and to surface soils in other parts of the Disposal Site;
- Maintaining a health vegetation cover and other soil erosion protection measures across the Disposal Site and repairing any soil erosion or damage to vegetation that may occur;
- Restoring depressions and seal cracks within surface soils of the Disposal Site;
- Supervising any work that may need to be done at the Disposal Site;
- Up-dating the LTEMP on an as-needed basis, with a copy of any amended LTEMP to be sent to the NT EPA without delay;
- Preparing an annual report on the implementation of this LTEMP;
- Providing copies of records regarding implementation of this LTEMP to the NT EPA upon request;
- Provide a copy of an updated Asbestos Register for the Disposal Site, endorsed by the Site Auditor, without delay (as required by the PAN); and
- Any additional requirement of the NT EPA.

Figure 1 Location Plan for the Disposal Site and Containment Cell (Source: Figure 2, Ref [9])

Figure 2 Containment Cell Location and GPS Coordinates (Source: Fig 4 & Tab 5, Ref [9])



Corner	GPS Coordinates	
	Latitude	Longitude
A	13°50'28.31"S	136°26'59.82"E
B	13°50'28.07"S	136°27'0.62"E
C	13°50'27.25"S	136°27'0.24"E
D	13°50'27.63"S	136°26'59.58"E

Figure 3 Schematic Cross-section of Containment Cell Design (Figure 13, Ref [4])