tim fitzroy & associates
environmental health | environmental education | environmental auditing

28 July 2023
Ref No: 13/2023

Andrew Fitzgibbon
Byron Shire Council
PO Box 219
Mullumbimby NSW 2482

Dear Andrew

Contamination Summary Planning proposal over the former District War Memorial Hospital Site, Azalea Street, Mullumbimby

1. Introduction

Tim Fitzroy & Associates (TFA) have been engaged by Byron Shire Council to prepare a *Contamination Summary* of works undertaken at the former District War Memorial Hospital Site, Azalea Street, Mullumbimby. The aim of this project is to prepare a *Contamination Summary* to support a planning proposal to amend the statutory planning requirements over the former Mullumbimby Hospital Site.

These planning amendments are a critical step to delivering between 100-129 dwellings and supporting community infrastructure.

The planning proposal is likely to seek:

- a change in zoning from SP2 Infrastructure to R1 General Residential; and
- a change in height allowance from 9m to 11.5m.

2. Objectives

The Contamination Assessment Summary:

- summarises contamination assessments to date regarding the potential for widespread contamination on the site based on current and historical site activities;
- consider the suitability of the site for the purpose and/or land use for which the planning proposal envisages will be carried out in the future; and

61 Pine Ave
East Ballina NSW 2478
M | 0448 483837
tim@timfitzroy.com.au

ABN: 94120188829
ACN: 120188829

www.timfitzroy.com.au

- notes and comments on any relevant sections of the Former Mullumbimby Hospital Site Strategy and Urban Design Protocol.

3. The subject site and former Hospital

The site is currently owned by Byron Shire Council. The site is located at 1-3 Azalea Street, Mullumbimby NSW and consists of Lot 138 DP 755722, Lot 1 DP1159861, and Part Lot 188 DP 728535.

The site was the former Mullumbimby Hospital site (Mullumbimby & District War Memorial Hospital). It is understood the Hospital comprised of three main buildings (A – C Blocks). The hospital was constructed in the 1960s with what later became known as A Block, the larger main building, and C Block originally used for staff accommodation. In more recent years, C Block was used for Community Services. In the 1990s, B Block was constructed specifically, as a birthing unit. Smaller buildings to the north were also known to have existed, understood to have been storage or maintenance buildings for the hospital grounds with the most recent building in the location known as a Resource Centre. Historical buildings contained asbestos.

4. Summary of Contamination Assessment

a. Background

Following entering negotiations to purchase the Mullumbimby War Memorial and District Hospital site from the NSW Government Department of Health ("DOH"), representatives from Byron Shire Council invited Tweed Coast Demolition and Excavations TCDE) to submit a proposal to demolish the hospital buildings. BSC's assessment of TCDE's offer was based on the original price and scope that was required by NSW Health.

BSC resolved that the contractor had the expertise and experience to carry out the work and have engaged specialist contractors to carry out additional work where required. TCDE had provided works carried out on several jobs of a similar nature and size. Based on the level of planning to mitigate risk it would be reasonable for BSC to expect that the successful consortium would be capable of identifying and successfully removing the asbestos containing material from the site.

TCDE had engaged Aztech Services as the hazardous materials removal subcontractor. Aztech are class A licensed, fully insured and one of the market leaders in asbestos removal. Once Aztech were engaged, more detailed meetings were held both on and off site to go through every last detail regarding safe removal of hazardous materials and the safe

execution of the demolition in order to achieve the entire groups targeted finished product of a clear site with no safety issues or adverse impacts to the local environment.

ENV Solutions were an integral part in the development of the Hazardous Materials Report for the property. ENV were engaged to prepare a comprehensive destructive audit of hazardous materials in the hospital buildings. ENV were to the independent hygienist and environmental engineers for the project.

Despite significant preplanning, risk assessment, oversight and investigation a portion of the subject site, previously cleared of asbestos containing material, is contaminated due to the presence of previously undiscovered asbestos waste either under buildings additions (circa 1987) or under the adjoining hardstand area.

At present, the site consists primarily of vegetated and cleared vacant land in the vicinity of the former hospital. The St Vincent De Pauls Coolamon Villa is located to the north-west of the site and is not included in the contamination assessments. Investigations, remediation and validation have culminated in the segregation of the site into a management area where asbestos contamination has been capped, and the remainder of the site. This is shown on **Figure 1**. The management area consists of Lot 138 DP 755722, Lot 1 DP1159861, and Part Lot 188 DP 728535. The resultant segregation requires limitations on development within the management area, as described in the associated Environmental Management Plan (EMP) and the Site Audit Statement (SAS).

b. Contamination Assessments

The following documents were prepared to support the contamination assessment of the subject site. The reports are presented below in chronological order:

- Coffey (2012) Register of Asbestos Materials Report, Mullumbimby & District War Memorial Hospital.
- Coffey (2016) Interim Test Pit Investigation Report for Mullumbimby Hospital Development, Mullumbimby, NSW.
- ENV Solutions (2017) Hazmat Report Mullumbimby & District War Memorial Hospital 1 -3 Azalea Street Mullumbimby NSW 2482 (November 2016 – March 2017).
- ENV Solutions (2019a) Asbestos assessment at depth of soil under existing A Block building Mullumbimby Hospital (July 2019).
- ENV Solutions (2019b) Limited Underground Storage Tank (UST) Removal Validation Report, Tweed Coast Demolition and Excavation Former Mullumbimby Hospital, 1 -3 Azalea Street Mullumbimby NSW 2482 (September 2019).
- ENV Solutions (2019c) Asbestos in soil identification following validation sampling – A Block Mullumbimby Hospital (September 2019).

- ENV Solutions (2019d) Detailed Site Investigation, Tweed Coast Demolition and Excavation Mullumbimby & District and War Memorial Hospital A Block (December 2019).
- ENV Solutions (2020a) Final asbestos in soil validation – existing C Block footprint Mullumbimby Hospital (18th February 2020).
- Tim Fitzroy & Associates (2020a) RE: Stage 1 Independent Environmental Investigation and Advisory services to Council regarding the additional asbestos contamination found at the former Mullumbimby & District War Memorial Hospital Site Azalea Street Mullumbimby.
- Tim Fitzroy & Associates (2020b) RE: Revised Feasibility Assessment of Options to Manage Asbestos Contamination of Soil beneath Block A at the former Mullumbimby & District War Memorial Hospital Site Azalea Street Mullumbimby.
- Melaleuca Group (2020) Preliminary Site Investigation for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 3 September 2020).
- Melaleuca Group (2021a) Detailed Site Investigation for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 3 September 2020).
- Melaleuca Group (2021b) Detailed Site Investigation for Asbestos at 2 Left Bank Rd (Lot 1 DP43806 and Lot 2 DP552246).
- Melaleuca Group (2021c) Remedial Action Plan for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482.
- Melaleuca Group (2022a) Groundwater Investigations for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 1 February 2022).
- Melaleuca Group (2022b) Groundwater Investigations, for Former Mullumbimby Hospital, Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 28 March 2022).
- Melaleuca Group (2022c) Review of demolition documentation for former Mullumbimby Hospital (letter to Byron Shire Council dated 9th December 2022).
- Melaleuca Group (2023a) Validation Report for Former Mullumbimby Hospital, Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 14 February 2023).
- Melaleuca Group (2023b) Environmental Management Plan for Former Mullumbimby Hospital, Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea
- Street, Mullumbimby NSW 2482 (dated 1 March 2023).
- Boyds Bay Environmental (2023) Mullumbimby Hospital Area 1 Waste Classification Report (dated 30 March 2023).
- (Ben Wackett) Cavvanba Consulting (April 2023, Ref. 20016) Site Audit Report for SAS 1508-2002 Former Mullumbimby Hospital, 1-3 Azalea Street, Mullumbimby NSW 2482

- (Ben Wackett) Cavvanba Consulting (April 2023 Site Audit Statement 1508-2002-1 Management Area Former Mullumbimby Hospital, 1-3 Azalea Street, Mullumbimby NSW 2482
- (Ben Wackett) Cavvanba Consulting (April 2023 Site Audit Statement 1508-2002-2 Non- Management Area Former Mullumbimby Hospital, 1-3 Azalea Street, Mullumbimby NSW 2482

c. Site History

From 1900 until 1966 the site was vacant and most likely cleared of treed vegetation for this entire period (generic clearing in locality occurred in the 1800s). The site being Crown Land was leased for grazing purposes. The topography of the site is not conducive to the lands use for other purposes. The small structures observed in the eastern portion of the site are likely to be farm structures such as a shed for hay or tractor storage (and chemicals) and/or stables/shelter for livestock.

From 1966 until 2019, the dominate use of the site was the Mullumbimby & District War Memorial Hospital. In addition, the Coolamon Villa Aged Care Nursing Home was constructed in the mid-1980s and is still present today. During this period a range of buildings were constructed and removed. From 1966 to date, a range of gardens including orchard trees have been established on the site. The western section of the site remains 'vacant' with apparent long-term use being for grazing purposes only.

The available history for the site does not allow for specific information to be obtained. For example, the exact commencement date for the construction of the hospital is unknown.

d. Chemical Use and Storage

As outlined by Melaleuca Group (2020), an inventory of chemicals and/or wastes being historically stored at the site was not able to be provided by Byron Shire Council. A NSW Workcover Hazardous Goods search was undertaken for the site. The hazardous goods search identified a single aboveground LPG cylinder as outlined by Melaleuca Group (2020):

The Hazardous Goods Record search identified a single above ground LPG cylinder associated with the site. This 2,200L LPG cylinder was associated with (sic) hospital and was located to the west of A Block. It is noted that another LPG Cylinder (size unknown) is associated with Coolamon Villa Aged Care Nursing Home. However, this is not identified by the Hazardous Good Record search, but from site observations.

A 5,400 L underground storage tank (UST) was identified to the west of A Block during the

site demolition works. As outlined above, this was not included on the hazardous goods search for the site. This UST was understood to be used to provide diesel fuel to the hospital generator. This tank was removed, and the surrounding material validated in 2019 (ENV Solutions, 2019a).

e. Pre Remediation Site Condition

The site condition, following the initial demolition activities and prior to commencement of 2022 remediation works is summarised below, taken from Melaleuca Group (2020):

Prior to the development of a Sampling and Analysis Plan (SAP), the Subject Site was investigated on foot in order to identify any signs of contamination. Generally, no obvious signs of contamination (such as plant stress, surface spills, waste materials, odours etc.) were evident during the site investigation. The exceptions are areas in the immediate vicinity of the hospital.

In general, the majority of soils observed during site walk overs were considered to be Red Krasnozems (Ferrosols). Some variation did occur at the site. Of note is soils within the B Block footprint which are not considered naturally occurring at the site. During sampling, variations in soils were noted. With the exception of disturbed areas from the demolition works of buildings, the site appeared well vegetated. The majority of the site was considered grassland with areas of gardens and trees. Some vegetated areas were considered weed dominated due partly to a lack of site maintenance since the closure of the Hospital.

A visual inspection of adjacent land from the Investigation Area indicated that there were no clearly visible signs of contamination adjoining the study area or across the subject site. Due to the land reformation requirements for the construction of the buildings at the site, services, access roads, carparks and the like, it is surmised that fill materials were imported to the site. That is, while the majority of the hospital buildings (i.e., A and C Blocks) are likely to be a result of a standard cut and fill process using natural soils of the site, importation of materials for geotechnical and engineering purposes would have occurred. This was particularly evident within the footprint of B Block where surface soils were not considered derived for natural soils of the site. Imported materials such as road base is also likely under roads, carparks, footpaths and the Helipad. The source of any imported materials is unknown as historical information is not available.

To assist the reader with interpretation of the site, the Consultant divided the site into the following areas:

- Area 1A: A Block building footprint;
- Area 1B: B Block;
- Area 1B: C Block;
- Area 1B: Remaining area surrounding Hospital buildings;
- Area 1C: Resource Centre Area;

− Area 1D: Former underground storage tank area (adjacent to A Block footprint);
− Area 1E: South-eastern portion of site including former Helipad
− Area 2: Western section of Lot 188 DP 728535, former vacant land;
− Area 3: Coolamon Villa Orchard area.
The areas of the site are shown on Melaleuca Group 2020 (see **Figure 2**).

The potential contaminants of concern (PCOC) associated with current and historical land use activities are detailed Table 8.1 of the Site Audit Report (Cavvanba 2022). The Table also refers to the areas of the site where the contaminants require investigation.

Table 8.1: Contaminants of concern and potential sources

PCOCs	Description and common relationship
TRHs	Total recoverable hydrocarbons including volatile fractions (C_6 – C_9 TRHs) and semi-volatile fractions (C_{10} – C_{36} TRHs). Fuels, oils and grease, fill material, solvents. Associated with leaking fuels or imported fill materials.
BTEXN	Benzene, toluene, ethyl benzene, xylenes and naphthalene. Volatile hydrocarbons. Fuel constituents, fill materials, solvents. Associated with leaking fuels or imported fill materials.
PAHs	Polycyclic aromatic hydrocarbons. Semi-volatile hydrocarbons. Constituents in bitumen, tar, asphalt, fuel constituents, oil, grease, ash. Associated with leaking fuels or imported fill materials.
Heavy metals	Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn). Fill, fuels/oils, pest control, fertilisers, metal working, buildings, fences, urban runoff, electrical components, etc. Associated with lead from lead-based paints, arsenic from pesticides.
OCPs & OPPs	Organochlorine and organophosphate pesticides. Associated with pest and weed control, fertilisers, etc. OPPs degrade in an oxygenated environment, while OCPs are persistent in the environment. Aldrin, dieldrin used in under-slab termite control, broad range of OC and OP based products historically used in farming.
Asbestos	Asbestos in the form of free fibres and asbestos containing materials (ACMs). Commonly used in pipework, buildings (fibro), etc. Hazardous building materials (asbestos).

The intrusive site investigations conducted on-site are detailed in the following reports. Based on the different objectives of assessment, the investigations have been divided into two stages as follows:

- Stage 1: Demolition of site buildings, asbestos removal, limited scope investigation of friable asbestos contamination in soil, and temporary capping.
- Stage 2: Contamination investigation, including soil and groundwater assessments.

Stage 1

• Coffey (2016) *Interim Test Pit Investigation Report for Mullumbimby Hospital Development, Mullumbimby, NSW*.
• ENV Solutions (2019a) *Asbestos assessment at depth of soil under existing A Block building Mullumbimby Hospital (July 2019).*
• ENV Solutions (2019b) *Limited Underground Storage Tank (UST) Removal Validation Report, Tweed Coast Demolition and Excavation Former Mullumbimby Hospital, 1 -3 Azalea Street Mullumbimby NSW 2482 (September 2019).*
• ENV Solutions (2019c) *Asbestos in soil identification following validation sampling – A Block Mullumbimby Hospital (September 2019*).
• ENV Solutions (2019d) *Detailed Site Investigation, Tweed Coast Demolition and Excavation Mullumbimby & District and War Memorial Hospital A Block (December 2019).*
• ENV Solutions (2020a) *Final asbestos in soil validation – existing C Block footprint Mullumbimby Hospital (18th February 2020).*

Stage 2

• Melaleuca Group (2020) *Preliminary Site Investigation for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 3rd September 2020).*
• Melaleuca Group (2021a) *Detailed Site Investigation for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 3rd September 2020).*
• Melaleuca Group (2021b) *Detailed Site Investigation for Asbestos at 2 Left Bank Rd (Lot 1 DP43806 and Lot 2 DP552246)*.
• Melaleuca Group (2021c) *Remedial Action Plan for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482*.
• Melaleuca Group (2022a) *Groundwater Investigations for Former Mullumbimby Hospital Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 1st February 2022).*
Melaleuca Group (2022b) *Groundwater Investigations, for Former Mullumbimby Hospital, Part of Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea St, Mullumbimby NSW 2482 (dated 28th March 2022)*.
The RAP (Melaleuca Group, 2021c) has also been listed as an assessment document as it documents the outcome of further investigation which was designed to address data gaps identified following the DSI.

f. Soil contamination

The following summary of soil impacts pre remediation was included in the RAP – Melaleuca Group (2021c):

Investigation works at the site have identified two (2) key Chemicals of Concern, namely Asbestos and Organochlorine Pesticides. Asbestos is considered to be located in the vicinity of the former Hospital buildings (Blocks A, B and C) and immediate surrounds with no off-site migration. Proposed remediation is detailed by this report.

The Organochlorine Pesticides were located in the vicinity of two (2) of the former buildings (Block A and the Resource Centre). For Block A, as the area is already capped and will continue to be managed due to the presence of Asbestos, this COC is considered to have been addressed in this area. That is, the existing cap covering the A Block area (i.e., installed in April 2020) provides a 500mm thick physical barrier of CBR15 (Crushed rock material
from Brunswick Valley Quarries) which was track-rolled (i.e., compacted). As the Organochlorine Pesticides detected (Aldrin and Dieldrin) have been shown to bind tightly with soils and have a low leachability potential, only if the cap is removed and soil disturbance is completed would further remedial actions need to be determined. For the Resource Centre buildings, remediation is required and is detailed by this report.

A third COC (i.e., BTEX and TRH) does not appear to be of concern based on investigations to date. That is, levels of BTEX and TRHs detected at the site are below threshold limits and thereby no additional investigations nor remediation has been triggered for this COC. Further, as the known and likely location of BTEX and TRHs at the site (in soils or groundwater) are located within the same area as the Asbestos, the proposed remediation will address any (undetected, if present) residual BTEX and/or TRHs at the site. Despite this, the proposed monitoring of groundwater for this COC (particularly Toluene) will assist in determining if these COCs will require remediation in the future.

g. Groundwater contamination

The following discussion of groundwater impacts pre remediation was included in the RAP - Melaleuca Group (2021c):

A third COC (i.e., BTEX and TRH) does not appear to be of concern based on investigations to date. That is, levels of BTEX and TRHs detected at the site are below threshold limits and thereby no additional investigations nor remediation has been triggered for this COC. Further, as the known and likely location of BTEX and TRHs at the site (in soils or groundwater) are located within the same area as the Asbestos, the proposed remediation will address any (undetected, if present) residual BTEX and/or TRHs at the site. Despite

this, the proposed monitoring of groundwater for this COC (particularly Toluene) will assist in determining if these COCs will require remediation in the future.

Site audit comment
With respect to hydrocarbon contamination of groundwater, review of the historical data set identified that detections of toluene were also accompanied with raised laboratory limits of reporting (LORs) of other BTEXN compounds for those samples, which had been reported by the consultant as 'non-detect'. These raised LORs are of similar magnitude to the concentrations of BTEXN in MW11, and therefore it is likely that detectable concentrations of BTEXN were present in historical samples, rather than being interpreted as an isolated toluene detection. This indicates that there is likely to be a consistent mixture of BTEXN compounds typical of petroleum fuel rather than an isolated toluene source, as was initially thought. Petroleum fuel is known to readily degrade in the environment, and the detected concentrations and plume geometry do not indicate that there is an ongoing source.
The data trends indicated a stable or decreasing plume, with additional lines of evidence being:
− there is no known specific on-site source of petrol identified onsite;
− all above ground structures have been removed and significant disturbance of the site has occurred, which would limit the potential for other unknown sources to be present;
− the site has remained unpaved for a period of 2 years, which also increases atmospheric exchange with the subsurface and encourages attenuation of the plume; and
− no soil contamination has been identified which could be contributing to the groundwater contamination.
It was the Auditor's opinion that continued groundwater monitoring would not be beneficial to the overall characterisation of the site, and therefore is not required

h. Site Suitability

Melaleuca, 2021c made the following statement regarding site suitability:
While the final proposed landuse is not known at the time of writing, remediation is required to render the site in a safe to a condition that is considered optimal for ongoing management and for a range of final landuse options (e.g., residential, public open space, commercial). For conservative purposes, the RAP aims to allow for the landuse of residential with garden/accessible soils. Any future landuse will require approval whereby the outcomes of this RAP will require consideration to ensure the future landuse will not impact on existing and proposed capping.

Site Audit Comment
The auditor agrees that remediation was required based on the results of the investigations.

The site auditor states that investigations undertaken are adequate to determine the following:
− asbestos contaminated soil is present in the vicinity of the former hospital building blocks A, B and C and immediate surrounds. This includes the location of the former UPSS;
− no off-site migration of asbestos has been identified;
− organochlorine pesticides contamination is present in the vicinity of two of the former buildings Block A and the Resource Centre.; and
− the remainder of the site is suitable for residential land use.

i. Summary of Asbestos Remediation Works

The following summary of asbestos remediation works is described in Melaleuca Group, 2022d: The remediation of the Asbestos area as described in the RAP (Melaleuca Group 2021c) by way of encapsulation and can be summarised by the following Stages:
1. Development of all appropriate documentation (e.g., approvals, licences, Management Plans) was completed;
2. Delineation of the Remediation Area was completed;
3. All Site Preparation works were completed;
4. All existing Stormwater and Site Infrastructure (e.g., garden beds, stairs and the like) were identified and removal or decommissioning occurred. Works were completed by a Class A licensed Asbestos Contractor in accordance with the Asbestos Management Plan;
5. Vegetation was removed to allow for the installation of the cap. Removal of all above ground vegetative matter was completed by a suitably qualified contractor. Care was taken not to disturb the ground surface during works. Works were completed under the supervision of a Class A licensed Asbestos Contractor in accordance with the Asbestos Management Plan;
6. Monitoring Bores were located and a suitably qualified driller was engaged to raise the boreholes as per guidelines;
7. Surface water management devices were installed and managed as required;
8. Capping materials were installed as per the design by GreenTec Consulting (including all requirements as specified in Technical Specification regarding installation of a geotextile (marker) layer, stockpiling, subgrade preparation, placement and compaction);
9. Topsoil and grass was installed as specified by GreenTec Consulting specifications;
10. A final survey of the area was completed and information provided to GreenTec Consulting as the Construction Quality Assurance (CQA) Consultant;
11. A final site clean-up and demobilisation was completed.

The following additional information was included in Melaleuca Group 2023b:

The installation process for the encapsulation of asbestos fibres in completed in 2022 (June to October) can be summarised as follows:
− The decommissioning of services was undertaken prior to the construction works with the exception of the stormwater drainage pits which were decommissioned with a 20MPA 20mm 80 slump concrete. A total of 20m3 of concrete was used to fill service pits, stormwater pits and manholes structures.
− The monitoring bores were extended in height to above the capping and topsoil height of some 0.6m. These bores were extended by a registered driller and gatic covers were installed to enable future access.

All trees/shrubs within the capping extent were removed at ground level via Summerland tree services with all vegetation removed offsite. Tree root balls and topsoil was removed offsite to a licenced facility capable of handling asbestos related material.
− Installation of a geotextile barrier to provide a barrier between the contaminated subsoil and clean fill, while acting as a visual warning for potential future excavation.
− Installation of capping material (approximately 2,950m3) over the design extent meeting or exceeding the minimum requirements of the Technical Specification of 0.5m in thickness (or 0.3m thickness in concrete area to the south) (Greentec 2022b);
− Verification by Greentec (2022c) of interim capping integrity (materials and thickness) installed over former Block A in 2020;
− Installation of 1,312 tonnes of topsoil and grassing;
− Validation of the capping installation is provided in the Validation Report (Melaleuca Group 2022d).

The final encapsulation area is approximately 6,300m2 (including all batters). Within this, the capping encapsulating Block A (i.e., installed in 2020) covers approximately 2,400m2. Hard stand surfaces (e.g., roads) covers an estimated 1,700m2. Thereby leaving approximately 2,200m2 encapsulating the footprints of former buildings (Block C and part of Block B) and surrounds (i.e., including UPSS) as per the design.

j. Summary of OCPs remediation works

The following summary of OCP remediation works is included in Melaleuca Group, 2023a:
The remediation of the Asbestos area as described in the RAP (Melaleuca Group 2021c) by way of encapsulation and can be summarised by the following Stages:
1. Development of all appropriate documentation (e.g., approvals, licences, Management Plans) was completed;
2. Delineation of the Remediation Area was completed;
3. All Site Preparation works were completed;
4. All existing Stormwater and Site Infrastructure (e.g., garden beds, stairs and the like) were identified and removal or decommissioning occurred.

Works were completed by a Class A licensed Asbestos Contractor in accordance with the Asbestos Management Plan;
5. Vegetation was removed to allow for the installation of the cap. Removal of all above ground vegetative matter was completed by a suitably qualified contractor. Care was taken not to disturb the ground surface during works. Works were completed under the supervision of a Class A licensed Asbestos Contractor in accordance with the Asbestos Management Plan;
6. Monitoring Bores were located and a suitably qualified driller was engaged to raise the boreholes as per guidelines;
7. Surface water management devices were installed and managed as required;
Capping materials were installed as per the design by GreenTec Consulting (including all requirements as specified in Technical Specification regarding installation of a geotextile (marker) layer, stockpiling, subgrade preparation, placement and compaction);
9. Topsoil and grass was installed as specified by GreenTec Consulting specifications;
10. A final survey of the area was completed and information provided to GreenTec Consulting as the Construction Quality Assurance (CQA) Consultant;
11. A final site clean-up and demobilisation was completed.

k. Off-site disposal of waste

Off-site disposal of waste from the site is summarised in the following subsections. The auditor has checked that the consultant has provided the following:
− the estimated volume of waste taken off-site;
− receipts verifying the facility has received that volume and class of waste from the waste generator (or its representative), which may include a valid consignment authorisation; and
− reconciliation documents demonstrating the total volume of waste taken off-site is consistent with the total volume of waste generated from the site.

l. Remediation capping

The volume of imported VENM used for capping was detailed in the GreenTec report: Some 2,946.12 m3 of capping material was compacted to a dry density of not less than 98% of standard maximum dry density (AS 1289.5.1.1).

Site audit comment
Further information was obtained from the consultant and contractors to clarify the detail

regarding the capping material. Based on a review of the transport contractor tracking information, a total of 6,481.46 tonnes of soil were imported to the site for use for the capping, consisting of topsoil and capping material.

m. Validation

Site audit discussion

- **Management Area**
  - To summarise, the auditor agrees with the consultant that the management area of the site is suitable for the following landuses with the implementation of an EMP which limits particular development aspects so that freehold residential land use cannot occur. The landuses which are consistent with this are:
    - Day care centre, preschool, primary school;
    - Secondary school;
    - Residential land use with minimal opportunities for soil access (HILs B);
    - Public open spaces (HILs C); and/or
    - Commercial land use (HILs D).

These landuses are in accordance with the EMP prepared for the site.

- **Non-Management Area**
  - The remainder of the site outside of the management area is suitable for the following landuses:
    - Day care centre, preschool, primary school;
    - Secondary school;
    - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake and no poultry; includes childcare centres, preschools, primary schools (HILs A);
    - Residential with minimal opportunities for soil access (HILs B);
    - Public open spaces (HILs C); and/or
    - Commercial land use (HILs D).

n. Environmental Management Plan

An environmental management plan was prepared by Melaleuca Group for a portion of the site: Melaleuca Group (2023b) E*nvironmental Management Plan for Former Mullumbimby Hospital, Lot 188 DP728535, Lot 138 DP755722 and Lot 1 DP1159861, 1-3 Azalea Street, Mullumbimby NSW 2482 (dated 1 March 2023).* The management area detailed in the EMP consists of a portion of the site and is shown in Site Audit Report (see **Figure 1**).

Site Audit Advice:

EMP Checklist

According to Cavvanba (2022) the content of the EMP has been reviewed, based on the checklist included in NSW EPA, 2020 which was provided as part of ISAA14. The final EMP was considered to meet the necessary requirements.

EMP legal enforceability and public notification

- **Site audit comment**

Council provided the following commentary regarding the implementation of the EMP. Matter b) is in relation to legal enforceability, and matter c) is in relation to public notification. The letter is included in **Appendix A:**

Regarding matter b) please regard this letter as Council's view – in its capacity as a consent authority for any future development on the site – that the EMP produced by Melaleuca Pty Ltd for the site (dated 1 March 2023) could be made legally enforceable via a future development consent condition applying to the site (assuming such a consent is applied for and granted). This is because a lawful evaluation of any proposed development at the site will likely need to consider the proposed development's likely impact on the contamination. Given this, a consent condition requiring compliance with the EMP would likely have the required relationship to the development the subject of the consent.

Regarding condition c), the Contaminated Land Management Act 1997 (CLM Act) requires that where land is subject to a site audit statement, a planning certificate for that land issued by Council under the Environmental Planning and Assessment Act 1979 must include notice of the site audit statement. Therefore, the public notification in condition c) will be achieved by force of the CLM Act.

Council was provided with a copy of the EMP for comment and acceptance once the report was finalised. The letter described above is considered to form their acceptance of the document.

In accordance with Section 3.4.6 of the NSW EPA Site Auditor Guidelines, the auditor confirms that the following has been conducted:

- The EMP has been reviewed by the auditor and is considered to be acceptable.
- The EMP can reasonably be made legally enforceable by way of a condition in a future Development Application consent under the Environmental Planning and Assessment Act 1979. The Consent Condition will stipulate the requirement for the involvement of a Site Auditor accredited under the Contaminated Land Management Act.

- There will be appropriate public notification of any restrictions applying to the land to ensure that potential purchasers or other interested individuals are aware of the restrictions. Appropriate notations on a planning certificate issued under 10.7 of the Environmental Planning and Assessment Act and a covenant registered on the title to land under s.88B of the Conveyancing Act 1919 is a requirement of the EMP.
- Off-site migration of contamination from the site does not present an unacceptable risk to either the on-site or off-site environments.

o. Site Audit Statements

SAS 1508-2002-1 Section A2 is based on the following:
The SAS 1508-2002-1 has been prepared with the intention to exclude freehold residential landuse as a permissible use. The auditor agrees that the management area of the site is suitable for the following landuses with the implementation of the EMP attached to the SAS:
− Day care centre, preschool, primary school;
− Secondary school;
− Residential land use with minimal opportunities for soil access (HILs B);
− Public open spaces (HILs C); and/or
− Commercial land use (HILs D).
These landuses are described in the environmental management plan prepared for the site by Melaleuca Group, which is attached to the SAS.

SAS 1508-2002-2 Section A1 is based on the following:
The remainder of the site outside of the management area is suitable for the following landuses:

Day care centre, preschool, primary school;
− Secondary school;
− Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake and no poultry; includes childcare centres, preschools, primary schools (HILs A);
− Residential with minimal opportunities for soil access (HILs B);
− Public open spaces (HILs C); and/or
− Commercial land use (HILs D).

5. Consider the suitability of the site for the purpose and/or land use for which the planning proposal envisages will be carried out in the future

The contamination assessments, remedial action plan and validation report have been assessed by the Contaminated Site Auditor resulting in the preparation of two Site Audit

Statements described in section 3(o) above.

A Site Suitability within the Management Area

Procedures to manage and mitigate risks associated with future use of the site are documented in the EMP. While the final proposed landuse is unknown, the Validation Report (Melaleuca Group 2022d) concluded the capping (*within the Management Area*) is considered to have been designed and installed to allow for future landuses including:

- Residential with minimal opportunities for soil access;
- Commercial; and/or
- Public open spaces.

The encapsulation of Asbestos-impacted soils is considered a passive management system. With reference to NSW EPA Practice note: *Preparing environmental management plans for contaminated land (2022)*, such systems are generally not considered appropriate for residential developments particularly if intrusive works at the site may create an unacceptable risk from the residual contamination.

Given the residual *Contaminant of Concern* (friable Asbestos) and the landform of the site whereby intrusive works are considered likely, development such as individual freehold residential lots for 'dwelling house' or 'dual occupancy' (as defined under the Byron Local Environmental Plan 2014) should not be permitted within this area of the site.

It is envisaged future proposals will be developed in close consultation with BSC to ensure they:

- are complementary to the passive management of the site;
- will not impact on the integrity of the capping (i.e. Asbestos Encapsulated Area); and
- will not conflict with the validation statement.

The purpose of the EMP is to manage the residual risks relating to the presence of fibrous asbestos in soil beneath capping material located on the site.

The EMP is considered a dynamic document that requires regular review so that it remains consistent with legislation, regulations, policies and best practice and with site changes over time.

Council's intention is to rezone the land to allow for a broader range of landuses for consideration. However, at this time, Council will also amend their Development Control Plan (DCP) to include site specific controls that will ensure all development proposals are submitted to Council for review whereby Council will verify that either:

- the proposal will result in remediation of the site (and thereby the EMP would no longer be required)
- Or
    - the future landuse will:

- not impact on the integrity of the capping (i.e. Asbestos Encapsulated Area);
- enforce the EMP; and
- not be in conflict with the validation statement.

Given the COC (Asbestos) it is considered this EMP is required to be implemented into perpetuity. That is, while site remediation is a possible scenario at the time of writing this is considered unlikely due to the financial viability of this option. If remediation was to occur, the EMP would become invalid.

Changes in site uses is considered likely and any proposed development needs to consider the residual contamination at the site and be designed in accordance with the Remedial Action Plan (RAP) (Melaleuca Group 2021c). Future development needs to consider, and where necessary, revise and modify this EMP as required.
Changes as a result of:

- Change in Site use(s); or
- Redevelopment of the Site is proposed; or
- A major non-conforming event occurs,

must be completed by a suitably qualified and experienced environmental consultant and requires reassessment to ensure consideration has been given to the encapsulated Asbestos and that any changes to the site will not increase the risk of exposure to site users. In these circumstances it is also required a Site Auditor accredited under the CLM Act is to be involved.

B Site Suitability outside the Management Area

Development of the remainder of the site outside of the management area is suitable for the following landuses:

Day care centre, preschool, primary school;
− Secondary school;
− Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake and no poultry; includes childcare centres, preschools, primary schools (HILs A);
− Residential with minimal opportunities for soil access (HILs B);
− Public open spaces (HILs C); and/or
− Commercial land use (HILs D).

6. Former Mullumbimby Hospital Site Strategy and Urban Design Protocol.

We have conducted a review the Former Mullumbimby Hospital Site Strategy and Urban Design Protocol and have provided a series of comments with respect to contamination and future use of the site in Table 5.1 below. We recommended that the information provided in

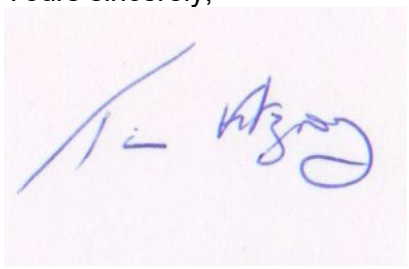
this letter report is used to fill the gaps and better inform readers and users of the Site Strategy and Urban Design Protocol. The key issues to be included in the Strategy are highlighted below.

Table 5.1 Comments on Former Mullumbimby Hospital Site Strategy and Urban Design Protocol

Issue	TFA Comment
Validation Report	Reference should be made to the completed Validation Report in the Contamination section (pg. 8) with hyperlink
Future Use Management and Non-Management Areas	A description of the permissible use/s as provided in **section 5a and 5b** and **Figure 1** (attached) of this letter report is to be included
Long Term Management Plan	A brief explanation of the LTEMP (based on section *n Environmental Management Plan* and *section 5a and 5b* of this letter report is to be included in the Contamination section (pg. 8) with hyperlink to the LTEMP
Site Audit Report	Reference to the Site Audit Report is to be included in the Contamination section (pg8)
Site Audit Statement: SAS 1508-2002-1 for Management Area	Reference to Site Audit Statement: SAS 1508-2002-1 is to be included
Site Audit Statement: SAS 1508-2002-2 for Non-Management Area	Reference to Site Audit Statement: SAS 1508-2002-2 is to be included
Legal Provisions	Within the legal provisions section in both pg. 13 and Appendix B reference should be made to LTEMP and legal enforceability section of this letter report, the Site Audit report, Site Audit Statements and council's letter (see **Appendix A**)
Figure 6 Concept Structure Plan	Figure 6 Concept Structure Plan should be amended to include the management and non-management areas
Desired Outcomes Land use	Desired Outcomes Land use should include the suitable land uses within the management and non-management areas
Governance	The governance section should recognise the LTEMP for the management (capped) area into perpetuity and the need for the capped area to be under the management

	of council into the future

Yours sincerely,



Tim Fitzroy
Director
Tim Fitzroy & Associates
ABN 94 120 188 829
Environmental Health Scientist
Environmental Educator
Environmental Auditor

Figure 1 Environmental Management Area

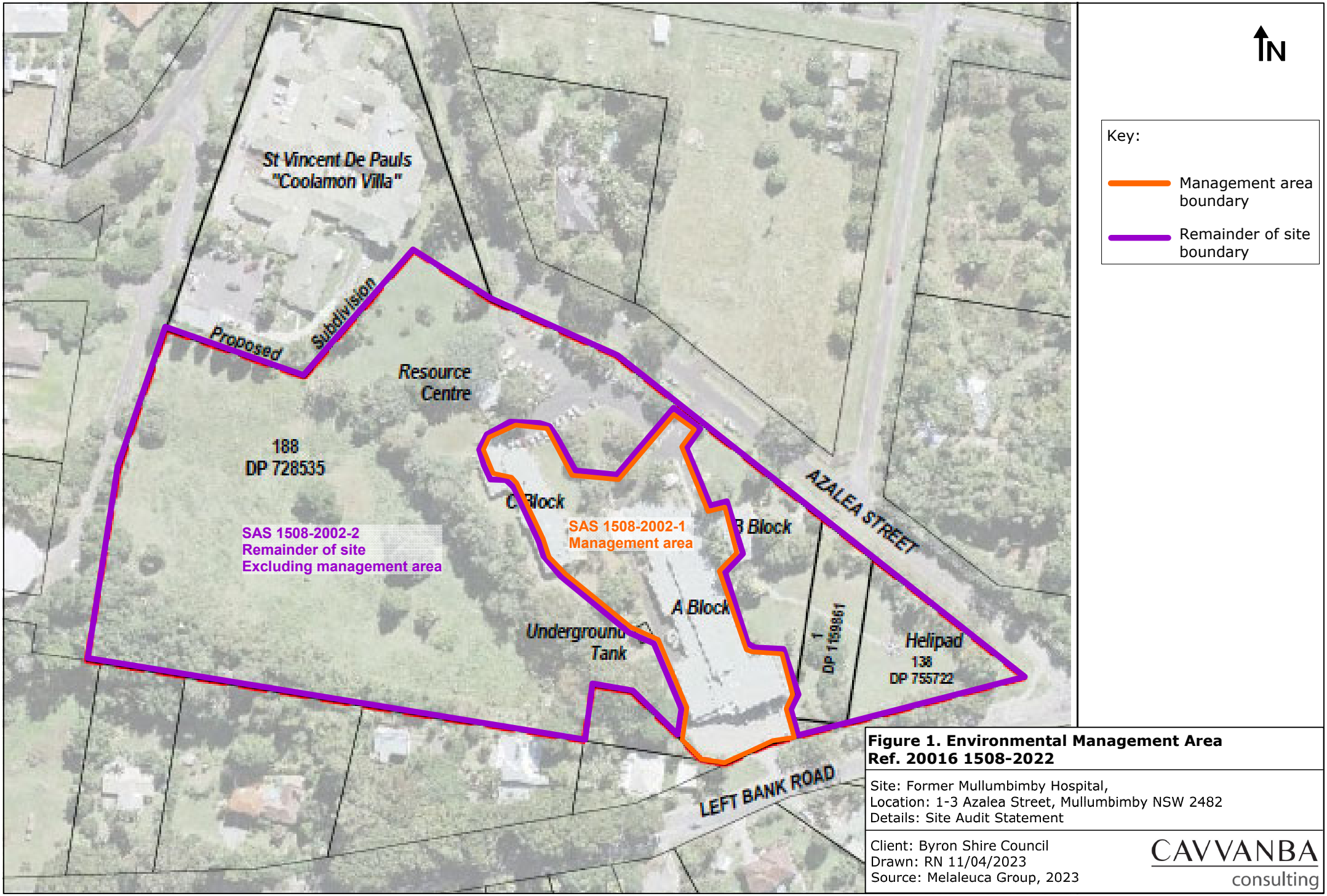


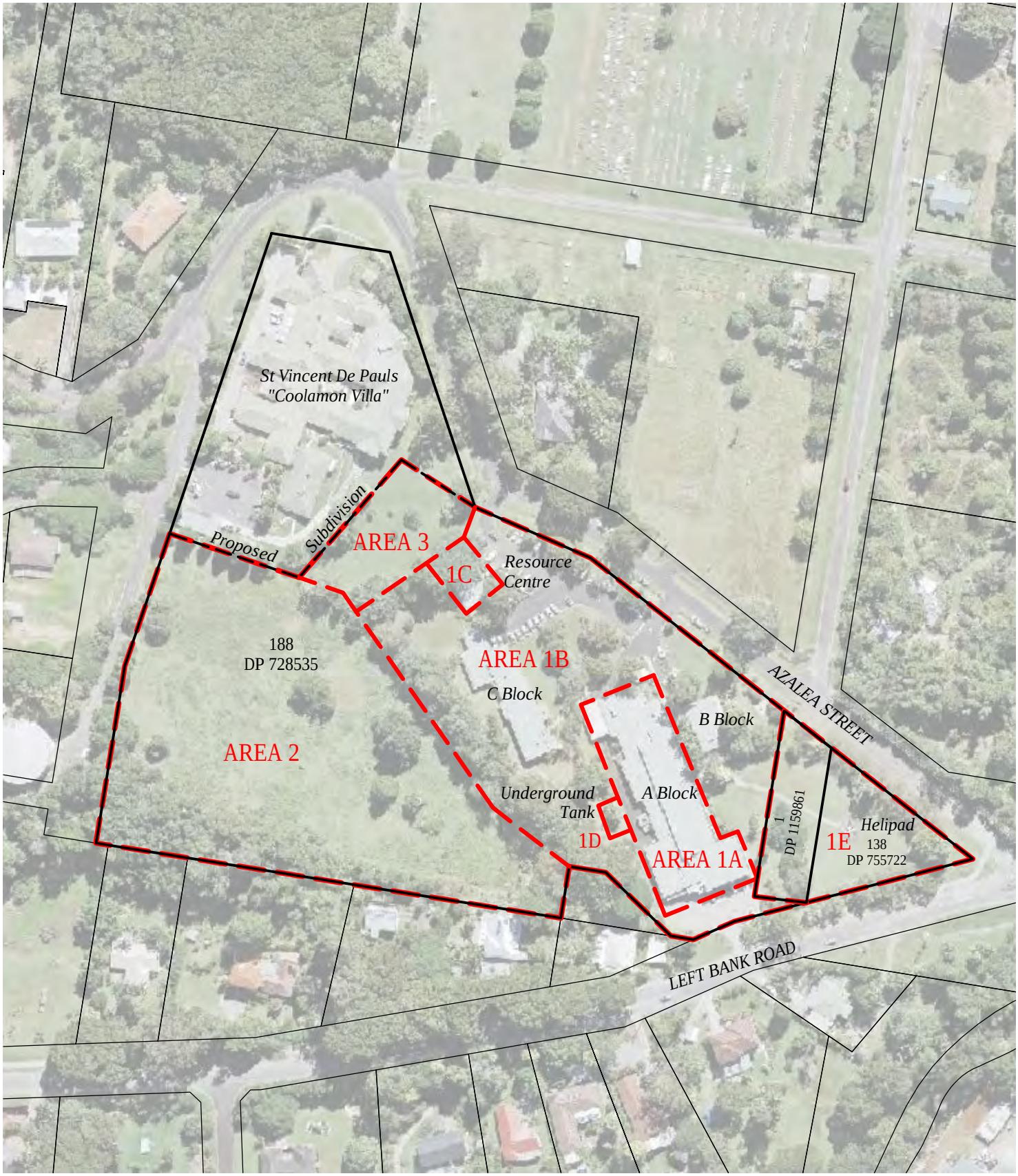
Figure 1. Environmental Management Area
Ref. 20016 1508-2022

Site: Former Mullumbimby Hospital,
Location: 1-3 Azalea Street, Mullumbimby NSW 2482
Details: Site Audit Statement

Client: Byron Shire Council
Drawn: RN 11/04/2023
Source: Melaleuca Group, 2023

CAVVANBA consulting

Figure 2 Investigation Areas (Melaleuca 2020)



N

40 20 0 50 100

SCALE 1:2000 AT A4

INVESTIGATION AREAS

NOTE: The Position of Aerial Image is in an approximate location only. For an accurate location of existing features a detailed survey by a Registered Surveyor should be carried out.

SOURCE:
Image: *-2015, https://maps.six.nsw.gov.au*

Scale at A4	1:2000
Drawn	GC
Date	21.08.2020
Checked	MV
Dwg. No.	MG20002-2015 AOC

Melaleuca Group Pty Ltd
Dr Melissa Van Zwieten
Senior Environmental Scientist
Mobile: 0427 628 847
melissa.vanzwieten@exemail.com.au

Project: MULLUMBIMBY HOSPITAL SITE
AZALEA ST & LEFT BANK RD
MULLUMBIMBY NSW

Title: AREAS OF CONCERN

Figure A3

Appendix A Byron Shire Council Advice on Legal Enforceability of Long-Term Environmental Management Plan

#E2023/32960
Contact: Phillip Warner

Ben Wackett

BYRON SHIRE COUNCIL

30 March 2023

By email only to inbox@cavvanba.com

Dear Ben,

FORMER MULLUMBIMBY HOSPITAL SITE

Council refers to the proposed site audit statement under the *Contaminated Land Management Act 1997* (CLM Act) regarding the land comprising the former Mullumbimby & District War Memorial Hospital site (1-3 Azalea St, Mullumbimby NSW 2482).

Council has seen the correspondence from the site auditor to Cavvanba Consulting regarding section 3.4.6 of the *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.*

Council notes that under the section, implementation of an environmental management plan (EMP) must not be included by a site auditor as a condition on a site audit statement, nor accepted by the auditor as a means of managing contamination of a site, unless various conditions have been met. These conditions include:

b) The EMP can reasonably be made to be legally enforceable, for example because compliance with it is a requirement of a notice under the CLM Act or of development consent conditions issued by the relevant consent authority. The relevant authority (the EPA or the local authority in these cases, respectively) should be asked their view on the legality of the draft EMP. How implementation of an EMP can reasonably be made to be legally enforceable should take into account exempt and complying development which may occur at the site.

c) There will be appropriate public notification of any restrictions applying to the land to ensure that potential purchasers or other interested individuals are aware of the restrictions, for example appropriate notations on a planning certificate issued under s.149(2) of the Environmental Planning and Assessment Act or a covenant registered on the title to land under s.88B of the *Conveyancing Act 1919*.

Regarding matter b) please regard this letter as Council's view – in its capacity as a consent authority for any future development on the site – that the EMP produced by Melaleuca Pty Ltd for the site (dated 1 March 2023) could be made legally enforceable via a future development consent condition applying to the site (assuming such a consent is applied for and granted).

This is because a lawful evaluation of any proposed development at the site will likely need to consider the proposed development's likely impact on the contamination. Given this, a consent condition requiring compliance with the EMP would likely have the required relationship to the development the subject of the consent.

Regarding condition c), as you know, the *Contaminated Land Management Act 1997* (CLM Act) requires that where land is subject to a site audit statement, a planning certificate for that land issued by Council under the *Environmental Planning and Assessment Act 1979* must include notice of the site audit statement.

Therefore, the public notification in condition c) will be achieved by force of the CLM Act.

Please contact Council if it can assist further.

Your sincerely

Phillip Warner
Major Assets & Major Projects

Encl.