

Northern Rivers Contaminated Land Program - Contamination Report Summary Table

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Statement of suitability	
The land is considered suitable for residential	
Report details	
Report title: 19270-CL	
Produced by: Greg Alderson & Associates	ABN: 58 594 160 789
Provided to Byron Shire Council on: April 2022	
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PRELIMINARY CONTAMINATED LAND ASSESSMENT

**Proposed Subdivision at
180 Flowers Rd, Binna Burra**

For: M. & J, Douglas
Report no: 19270- SEPP55.docx
Date: March 2022



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Revision
Summary

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EXECUTIVE SUMMARY

Greg Alderson and Associates have been commissioned by M. & J, Douglas to undertake a preliminary contaminated land assessment at Lot 3 DP 1259194, 180 Flowers Road, Binna Burra. As required under SEPP (RESILIENCE AND HAZARDS) 2021, this assessment was conducted to determine if the area around the proposed building envelope for Proposed Lot 2 of the subdivision has been contaminated from past or present land uses. Soil testing was undertaken around the potential building envelope and its curtilage (being the investigation area for this assessment) to determine if it is suitable for the proposed use. Staff of this office inspected the site as part of the assessment of any potential contamination.

To determine if any contamination was present on the site, a preliminary soil contamination assessment (Tier 1) was undertaken in accordance with NEPM 1999 (2013), DUAP and EPA (1998) and NSW EPA (1995) at the proposed development location. As the objective was to determine whether the proposed development area is contaminated, it was considered that a systematic sampling pattern be undertaken to determine the presence of possible chemical contamination in this area, in accordance with NSW EPA (1995) and Council's Contaminated Land Policy.

Two composite soil samples were collected in the investigation area. Samples were analysed for heavy metals (including arsenic, lead, zinc and copper), organochlorines (including DDT and aldrin/dieldrin) and organophosphorus, which were considered to be the most likely chemicals used on an agricultural/horticultural property or associated with past buildings, cattle dips or chemical storage. The sampling results were compared to adjusted Health Investigation Limits (HIL) from NEPM 1999 (2013) and concentrations of all tested contaminants were below the relevant HILs.

Based on the known history of the site, inspection of the site and sampling regime, it is concluded that further soil contamination assessment is not required in the investigation area. NSW EPA (1995) & NEPM 1999 (2013) state that if the contaminant concentration of the site is below a threshold limit and there is no indication that further investigation is required, the site can be considered as uncontaminated. This is considered to be the case on this site.

1. INTRODUCTION

Greg Alderson and Associates have been commissioned by M. & J, Douglas to undertake a preliminary contaminated land assessment at Lot 3 DP 1259194, 180 Flowers Road, Binna Burra. This assessment is required to determine that the subject site is suitable for approval of a building envelope as part of the proposed two (2) lot subdivision. As required under of SEPP (RESILIENCE AND HAZARDS) 2021, this assessment was conducted to determine if the investigation area was contaminated from past or present land uses. The site was assessed for contamination in accordance with the requirements of the National Environmental Protection Measure 1999 (2013) (NEPM).

The proposed building and its curtilage were classed as the investigation area for this assessment and is shown in **Exhibit No. 2**.

2. SCOPE OF WORK

This investigation is Tier 1 - preliminary site investigation, which is required to determine if contamination of the site's soil has occurred from past land usage in accordance with NEPM 1999 (2013), DUAP and EPA (1998). The investigation includes obtaining a history of land usage on the site and a preliminary soil-sampling regime. The results of the soil sample analysis are compared with the Health Investigation Levels (HIL's) outlined in NEPM 1999 (2013) and have been adjusted for composite soil sampling. If the sample results are above the relevant HIL a detailed investigation will be required in accordance with NEPM 1999 (2013) & NSW EPA (2000) which would include the ecological investigation levels and Groundwater investigation levels.

The relevant guidelines used for the investigation are as follows:

- Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (1992);
- NSW EPA (1995) Contaminated Sites - Sampling Design Guidelines;
- National Environmental Protection Measure 1999 (2013);
- Northern Rivers Regional Councils *Regional Policy for the Management of Contaminated Land* (2006);
- NSW EPA (2020) Consultants reporting on contaminated land - Contaminated land guidelines
- NSW DEC (2017). *Contaminated Sites - Guidelines for the NSW Site Auditor Scheme*. NSW EPA Sydney South

Soil sampling methodology used in this investigation included:

- Soil analysis tests were undertaken to determine the presence of heavy metals, organochlorines and organophosphorus;
- All soil sampling was undertaken by Wendy Attrill (BAppSc) and Jasmin van der Heijde (BRUP) of this office, using composite soil sampling of the sites topsoil at intervals of a maximum 20m;
- All samples were collected using a hand auger, placed in a plastic bag and delivered to Richmond Water Laboratories (RWL) who undertook analysis for the investigation for heavy metals and subcontracted to Envirolab for analysis of OrganoChlorines(OCs) and OrganoPhosphorus (OPs);
- All results from RWL were sent to this office for the completion of this report;
- Results were compared with NEPM 1999 (2013) HIL's according to 'residential A' sensitivity;
- The site was assessed in accordance with the Tier 1 requirements of NEPM 1999 (2013);

- The report is written in accordance with the relevant chapters of NSW DEC (2017). *Contaminated Sites - Guidelines for the NSW Site Auditor Scheme*. NSW EPA Sydney South

3. SITE IDENTIFICATION

The site is identified as Lot 3 DP 1259194, 180 Flowers Road, Binna Burra. The centre of the investigation area is Latitude - 28.725455 S and the Longitude is 153.485256 E.

The subject site in its locality is presented in Exhibit No. 1.

4. HISTORY OF SITE

It is understood that the site has been used as farming land since the late 1800's, including for dairy, pigs and modest agriculture. Currently, the property is mainly used for cattle grazing and some small agricultural enterprises, with a large portion of the site being planted under a forestry agreement. The former dairy bails and other sheds are located to the north of the potential dwelling site.

A desktop assessment of parish maps, topographical maps and aerial photos was undertaken.

4.1. Parish maps

An excerpt of the 1933 edition 'Teven' parish map of the subject area (NSW LPI Six Viewer) was studied (Figure 1). The subject investigation area was contained within the then existing portions 97 which is seen to be part of a 607-acre. The maps indicate that the land was owned by throughout this time. A portion of this size was most likely cleared of native vegetation and used for dairy farming or other agricultural pursuit.

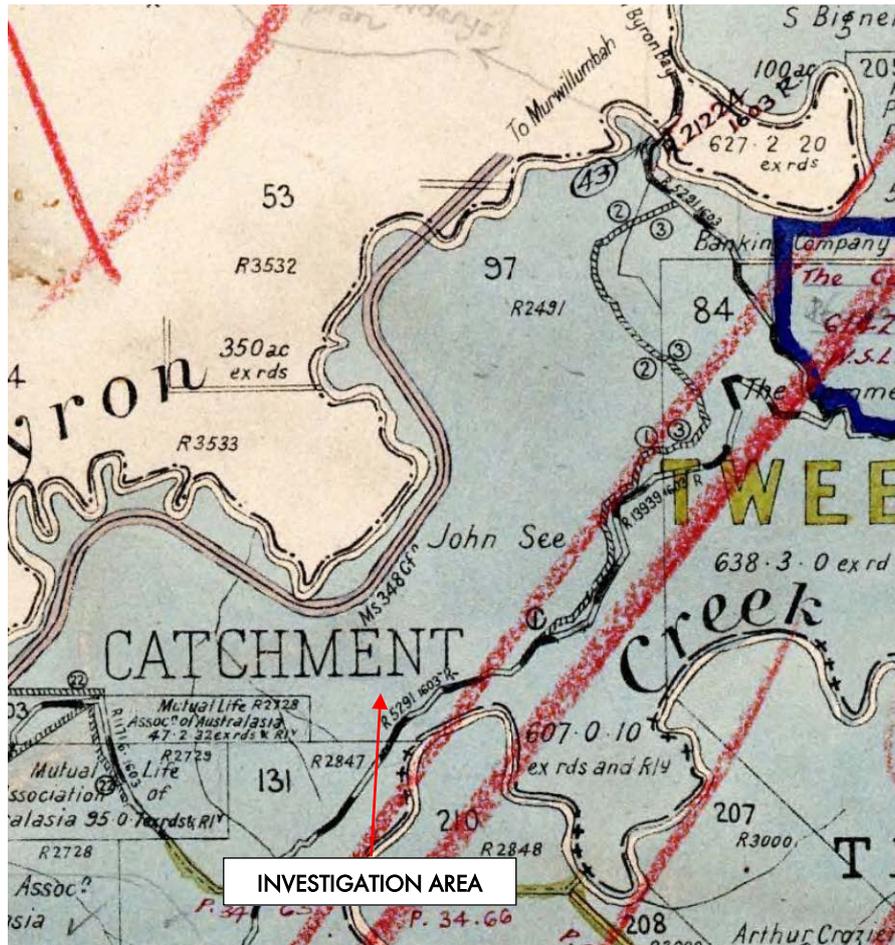


Figure 1 - 1933 Teven Parish map (Sourced: NSW LPI Six Viewer, 2022)

4.2. Aerial Photographs

Historical images were sourced from the NSW Historical Imagery Viewer found within the Spatial Collaboration Portal. Aerial images sourced for the years 1958 (Figure 3), 1971 (Figure 4), 1987 (Figure 5), 1991 (Figure 6) and 1997 (Figure 7). These images were viewed for evidence of land uses and potentially contaminating activities. The images indicate that the site is clear and there is no evidence of buildings or agricultural plantations in the investigation area.

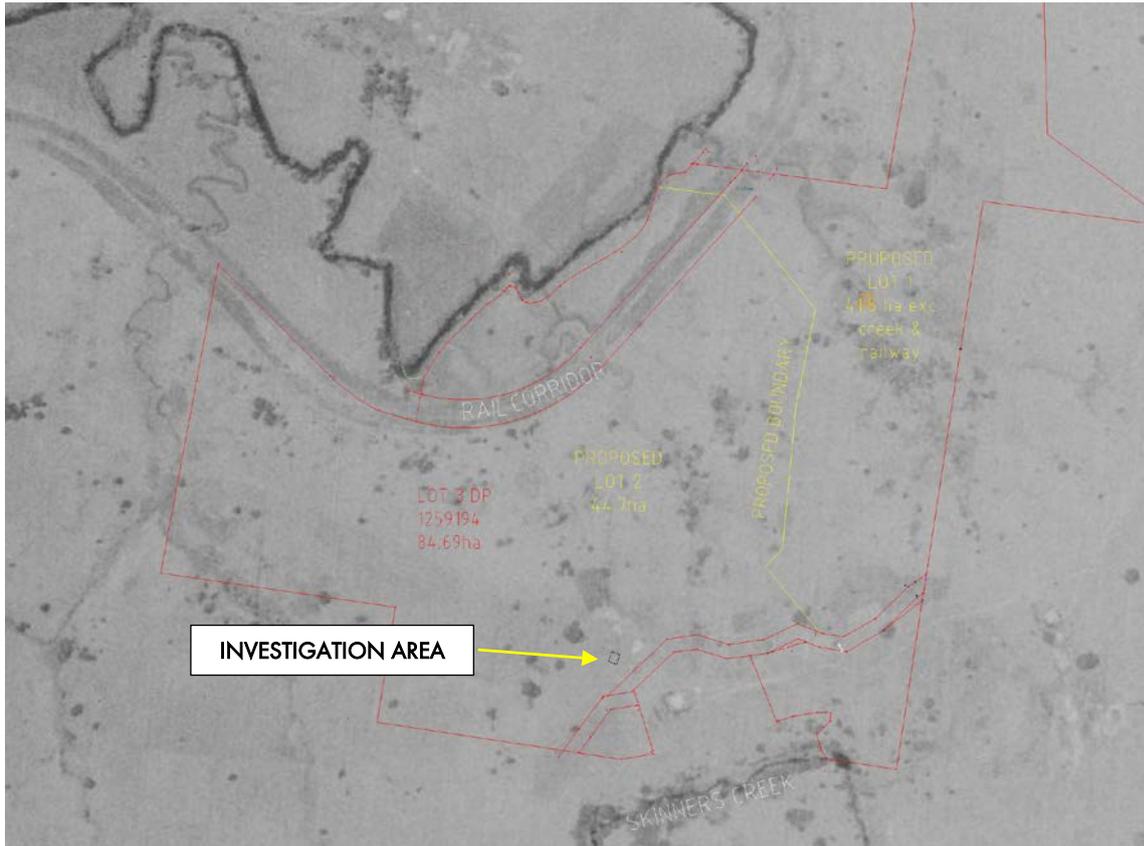


Figure 3. 1958 Historical aerial image (Source: NSW Spatial Collaboration Portal, 2021). *Boundaries are approximate

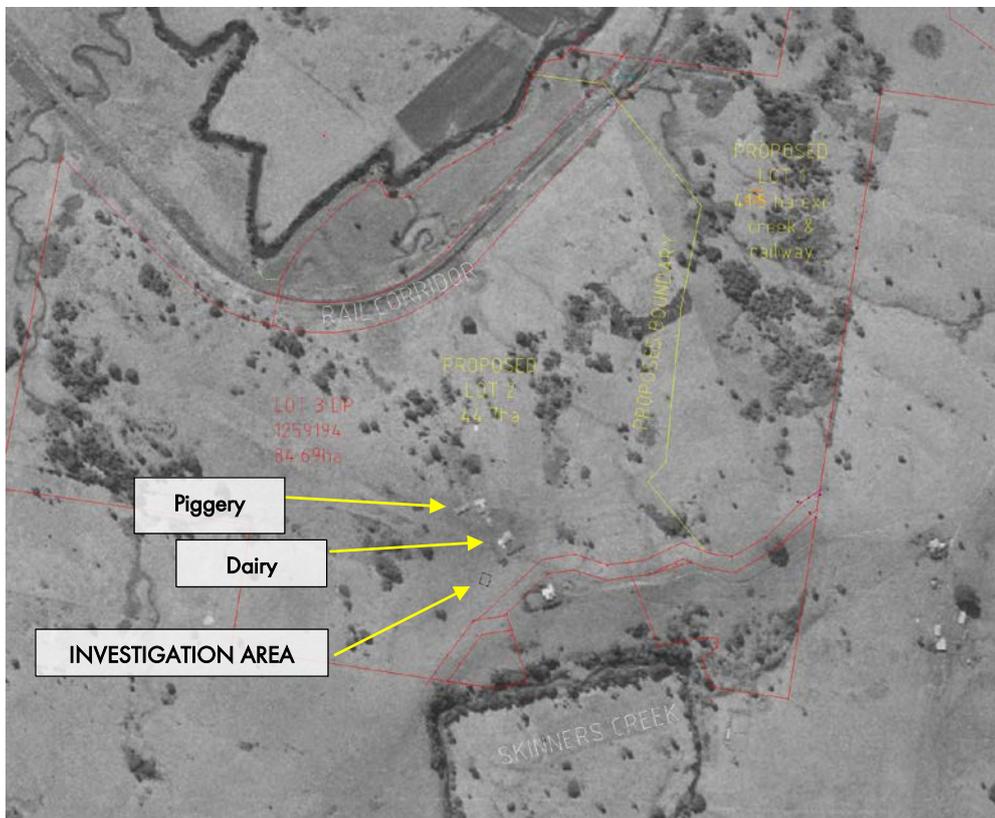


Figure 4. 1971 Historical aerial image (Source: NSW Spatial Collaboration Portal, 2021). Approximate boundaries

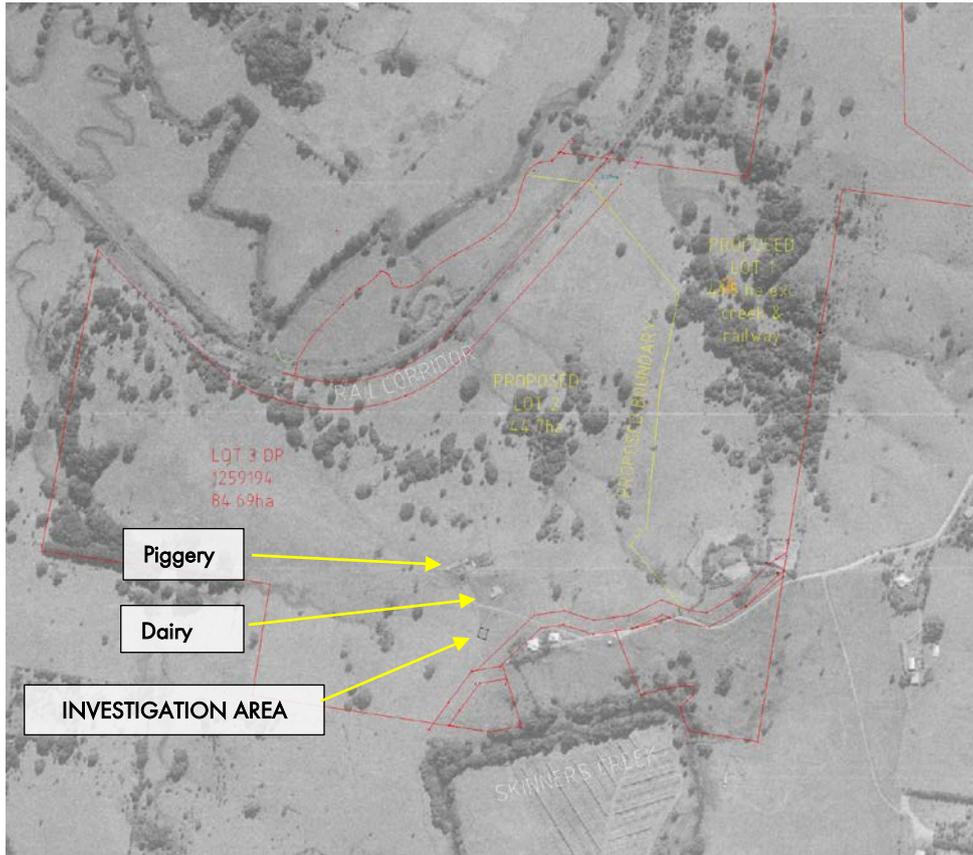


Figure 5. 1987 Historical aerial image (Source: NSW Spatial Collaboration Portal, 2021).

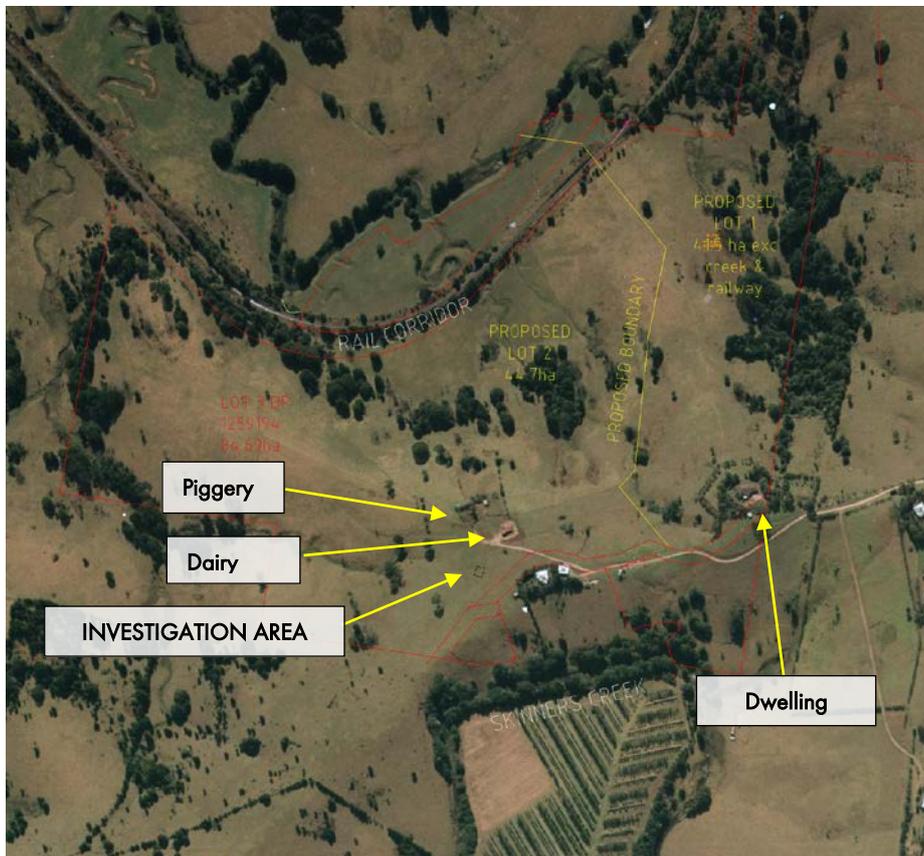


Figure 7. 1991 Historical aerial image (Source: NSW Spatial Collaboration Portal, 2021).

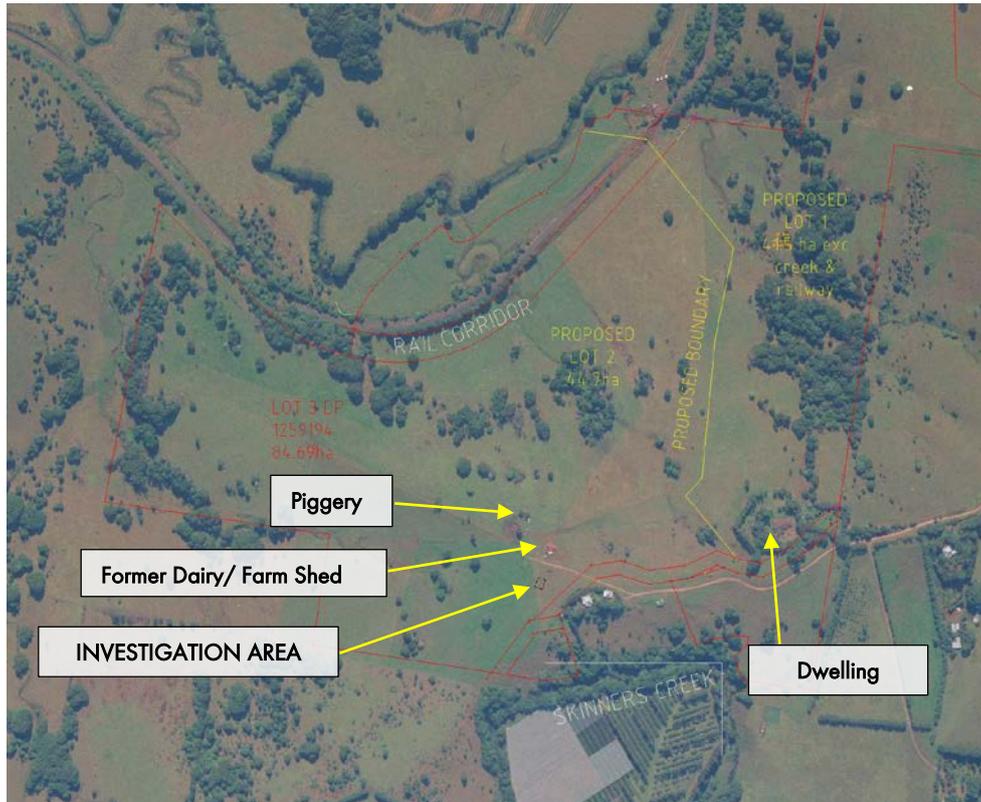


Figure 8. 1998 Historical aerial image (Source: NSW Spatial Collaboration Portal, 2021). Approximate boundaries

The aerial photographs present that there was a dairy bales to the north of the investigation area, and piggery building further north. The site is generally clear, with some scattered vegetation. A dwelling can be seen on the neighbouring property to the south-east of the investigation area. The site remains relatively the same, with some vegetation regrowth evident.

The existing brick dwelling can be seen in the 1991 and 1997 images.

5. SITE CONDITION AND SURROUNDING ENVIRONMENT

5.1. Site Investigation

Staff of this office investigated the subject site, which is accessed from Flowers Road. The investigation occurred on the 13th February, 2019. The investigation area consisted of the area around the proposed dwelling site, which is located to the south of the existing shed/ former dairy bales. A general inspection of the surrounding area and land uses was also made. Another inspection was undertaken 2 February, 2022 and it was noted that there was no change in the potential dwelling location, however a rural shed was under construction to the north of the area.

5.2. General Site Condition

The location of the proposed dwelling is in the south-western part of the site, which contains maintained paddock grass. Extensive rainforest planting has been undertaken to the west of the investigation area, as well as on other parts of the site.

5.3. Signs of Contamination

The site was investigated in order to determine any physical signs of contamination, such as drums, waste, fill material, odours, plant stress or soil staining or bare patches. There was no visual evidence of any contaminating activities having had or currently occurring in the investigation area.

6. GEOLOGY AND SOIL.

The soil consists of natural, red clay loam overlying light clays. There are occasional rock floaters observed.

Morand (1994) shows that the soil type of the investigation area is in the 'Ewingsdale soil landscape'. It is considered that the soil and landscape characteristics match the Ewingsdale Soil Landscape description. The soils are generally described as deep (100 - 300cm) well drained Krasnozems. The soils are derived from the Lamington volcanics: Lismore basalts-tertiary basalt with bole and minor agglomerate (Morand, 1994).

If chemicals were used on the site, due to the soil texture and structure, the contaminants would be remaining in the upper layers, typically 0-150 mm for arsenic and 0-75 mm for dieldrin.

As stated in Schedule B1 of NEPM 1999 (2013), HIL's are generic to all soil types and so will not require a textural classification for determining investigation Levels. It is understood soil texture is applicable for determining Environmental Investigation Levels (EIL's) and Environmental Screening Levels (ESL's), however EIL's and ESL's are not calculated for the subject site as there are no environmentally sensitive locations at risk in or adjacent to the investigation area. If contamination is found above the HILs, EILs will be assessed within a detailed investigation.

7. CONCEPTUAL SITE MODEL

From the known land use of the site, obtained from the desk top assessment, a preliminary conceptual site model (CSM) was developed to identify the potential contamination sources, the exposure pathways of these sources and the likely receptors of contamination associated with the land uses activities in the investigation area. The following provides a summary of the CSM and is also presented diagrammatically in Exhibit No. 3.

7.1. Potential Contamination Sources

The most likely contamination source at the site is from agricultural use, specifically chemicals used on property for any previous agricultural use.

7.2. Potential Chemicals of Concern

The aerial photographs did not indicate that there were no plantations at the site, but there was a dairy bails and piggery structure.

It appears that the site was not used for plantations previously, and it is not expected that the general suite of chemicals that are often used on agricultural properties such as heavy metals (lead, arsenic and copper) and pesticide or herbicide (OCs/Ops) would be found.

7.3. Potential Receptors

The most likely potential receptors to the areas are:

- Current workers at the site – maintaining through mowing and general use of the area
- Construction workers during site redevelopment – lower risk
- Future occupants – greatest risk

7.4. Potential Exposure Pathways

The potential exposure pathways to the potential contamination are from contact with the soil, through either ingestion of dirt, dust and dermal contact.

The recommended management action is as follows:

- If contaminants are found in soil – reduce risk through remediation of the site to deem it suitable for future occupants

As stated in Schedule B1 of NEPM 1999 (2013), HIL's are generic to all soil types and so will not require a textural classification for determining investigation Levels.

8. DATA QUALITY OBJECTIVES

In accordance with the requirements of NEPM 1999 (2013) the Data Quality Objectives is a seven step iterative planning approach that is used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of a site.

8.1. Step 1: State the problem

The objective of the investigation is to ensure that the site will be suitable for the proposed use for a private dwelling, and therefore is for residential use.

8.2. Step 2: Identify the decision/goal of the study

A conceptual site model was prepared which has determined the potential contamination at the site and identified risk pathways, which is attached as a diagrammatic interpretation.

The goal of the assessment is to determine:

- Is there residue contamination from agricultural activities at the site within the soil that may prevent the residential use or
- If contamination is present that will require remediation or
- If the site is suitable without further investigation

Based on the contaminants of concern, the most likely receptor will be the occupants of the dwelling. There is a low risk of groundwater, surface water contamination and low risk of contamination in service trenches.

8.3. Step 3: Identify the information inputs

It is determined that soil sampling is required as a preliminary assessment to determine if contamination is present. Sampling of groundwater is considered not to be required.

It is proposed that sampling be undertaken in the investigation area, using Table A of NSW EPA (1995) as an initial assessment.

8.4. Step 4: Define the boundaries of the study

The investigation area involves only the change of use area of the subject allotment, to be considered only for the dwelling. This involves sampling of the readily accessible soil, which presents the greatest risk to the future occupants of the site, being in direct contact

8.5. Step 5: Develop the analytical approach

Although the development is on a larger parcel of land, only the investigation area was assessed and in accordance with the Regional Contaminated Land Policy a minimum area of 2500 m² was assessed, which requires 8-point samples to be taken in accordance with NSW EPA (1995). A total of 8 samples were collected from the site. The samples were collected in systematic pattern and samples were not collected more than 20 m apart.

Due to the sites soil type and geology, it was considered that only the topsoils of the soil profile require sampling due to arsenic and aldrin/dieldrin being commonly found within the first 150mm of soil (NSW EPA, 1997).

The samples were then taken to the laboratory who derived composite samples from 4 samples within each set. The composite samples were then analysed.

In the event of there being high levels of contaminants found in a composite sample, further soil testing will be carried out to pin point contaminant locations and levels by analysing the sub samples forming the composite sample.

8.6. Step 6: Specify performance or acceptance criteria

Due to the site history and the agricultural land use, soil sampling was undertaken for heavy metals and chemicals that were commonly used in fertilisers, pesticides, herbicides, dip formulas and with old building materials. These include pesticides and herbicides that were commonly used in agriculture, such as organochlorines (OCs) and organophosphates (OPs), and heavy metals such as lead, arsenic and copper. The suite of contaminants were also commonly associated with building materials in the case that they have contaminated the investigation area, that may have been present in the years before or between aerial photographs.

It was considered that if any of these contaminants were found, further analysis may be triggered for these contaminants and other suites.

Due to the use of a composite sampling technique, the acceptable limit outlined in Table 1A(1) of NEPM 1999 (2013) had to be adjusted by dividing the acceptable limit by the number of subsoil samples per composite (Table 2), which in this case is four. The adjustable acceptable limit, which is a very conservative approach, was used to determine the presence of hotspots, based on the worst-case scenario of presuming one sample has a high concentration while the remaining sub-samples all have zero concentration. If results

from the composites taken from the site were above the adjusted acceptable limit, then all subsoils of the failed composite will be analysed individually.

Table 1 - NEPM 1999 (2013) HIL Acceptable Limits for Residential A.

Contaminant	NEPM HIL Acceptable Limit (mg/kg)	Adjusted NEPM HIL Acceptable Limit for 4 subsamples (mg/kg)
Arsenic	100	25
Lead	300	75
Cadmium	20	5
Copper	6000	1500
Zinc	7400	1850
DDT-DDE-DDD	240	60
Aldrin/Dieldrin	6	1.5

Metals can be naturally occurring within a soil profile; these background levels are shown below (Table3).

Table 2 - Background Ranges for Potential Contaminants

Pollutant	Background Range (mg/kg)
Arsenic	<15
Lead	<25
Cadmium	<1
Copper	10-30
Zinc	50-200

NSW EPA (1995) & NEPM 1999 (2013) state that if the contaminant concentration of the site is below a threshold limit, the site can be considered as uncontaminated.

The results of the soil sample analysis are compared with the Health Investigation Levels (HILs) set out in Table 1A(1) of NEPM 1999 (2013) under Residential A.

The Ecological Investigation Levels (EILs) are compared with the National Environment Protection (Assessment of Site Contamination) Measure when assessing a contaminated site. NEPM 1999 (2013) states that the EILs are numerical limits that are designed to protect soil and terrestrial flora and fauna (including pets and wildlife) and soil microbial processes from experiencing substantial deleterious effects caused by contaminants. Ecological Investigation Levels are the ecological equivalents of the investigation levels that aim to protect human health (HILs) and groundwater (GILs). Measured concentrations of contaminants in the soil at a site are compared to the appropriate EILs and if they exceed the EILs then further investigation in the form of an ecological risk assessment that conforms to Schedule B5a (NEPC, 2011) should be conducted.

The EILs in Table 3 are based on the limit for 'aged' contaminant given that the contaminants of interest would have been present for two years or more. The default values for each contaminant were used in the NEPC 2011 EIL calculation spreadsheet, the figures are conservative allowing for total concentration for all contaminants.

Table 3 - NEPM 1999 (2013) EIL Urban Residential

Contaminant	NEPM EIL Aged (mg/kg)
Arsenic	100
Lead	1100
Cadmium	20
Copper	230
Zinc	770
DDT	180

8.7. Step 7: Develop the plan for obtaining data

The plan for obtaining data was developed through knowledge of past history, gaps in past history, knowledge of nearby contaminating sources and development of a surface soil sampling plan which meets the minimum requirements of NSW EPA (1995) using a systematic sampling pattern.

9. SAMPLING METHODOLOGY

9.1. Sampling and Analysis Quality Plan (SAQP)

The sample location was chosen for the 'change of use area' being the proposed dwelling envelope and its curtilage, and therefore this area was chosen by 'judgemental' sampling. Furthermore, the regional contaminated land policy requires that an area of 2500 m² be assessed, which requires 8 point samples to be taken in accordance with NSW EPA (1995). Eight samples were collected in the investigation area. These samples were collected over the area with a separation of up to 20m using a partially judgemental sampling pattern (Table A, NSW EPA 1995). Composite samples collection was in accordance with NSW EPA (1995) being no samples greater than 20m apart and laboratory to mix samples to obtain a thoroughly mixed sample for analysis.

Due to the sites soil type and geology, it was considered that only the topsoils of the soil profile require sampling due to arsenic and aldrin/dieldrin being commonly found within the first 150mm of soil (NSW EPA, 1997). The location of the samples is given in **Exhibit No.2**.

In the event of there being high levels of contaminants found in a composite sample, further soil testing will be carried out to pin point contaminant locations and levels by analysing the sub samples forming the composite sample.

Sampling was undertaken in the top soil at the site in order to provide a more conservative assessment (due to if contaminants are present, they would be in the upper soil profile, bound to clay and organic particles).

A total of 2 composite soil samples were collected and analysed over the proposed development site, as described below.

Composite 1 –Consisting of samples 1A, 1B, 1C and 1D. These samples were located within the area of the proposed dwelling envelope in a transect linearly at 20m intervals.

Composite 2 – Consisting of sample points 2A, 2B, 2C and 2D. These samples were located within the area of the proposed dwelling envelope in a transect linearly at 20m intervals.

Exhibit No.2 presents the soil sample locations.

The use of composite sampling is considered appropriate for this site given the following:

- Known history indicated contamination was unlikely no indication of former structures or plantations in the investigation area;
- Laboratory mixes and forms the composite samples (not done in field); and
- Although NEP 1999 (2013) section 6.2.6 states that composite samples is not suitable for the assessment of semi volatile substances such as OC/OP pesticides, however it is considered that the use of composite samples is a cost effective measure to determine if OC/OP are on the site, and if so, individual samples that the laboratory retains would then be analysed for OC/OPs

9.2. Data Control

Due to the small sampling size and the proposed development, no duplicates were collected as part of the assessment. However, a direct chain of custody was kept (see attached) and Laboratory quality assurance/quality checking was obtained.

Samples collected by this office were collected using a hand auger, placed in plastic bags and sealed prior to placing in an esky. All samples were transported by staff of this office to the Richmond Water Laboratories (RWL) the same day of collection. The RWL made the composite samples from the sub-samples provided and subcontracted organochlorines and organophosphorus analysis to Envirolab. The RWL analysed the soil samples for heavy metals. Laboratory QA/QC are attached to this report, with the chain of custody from this office.

10. RESULTS

A site plan is provided in **Exhibit No. 2**, presenting soil test locations. Table 5 presents a summary of the soil analysis results from the composite soil samples collected by this office. The full copies of the analysis results are also attached to this report in Appendix B.

Table 5 - Summary of composite soil sample analysis results.

Parameter	Composite 1 (mg/kg)	Composite 2 (mg/kg)
OC/OP in soil	ND	ND
Arsenic	<5	<5
Cadmium	<1	<1
Copper	18	21
Lead	8	7
Zinc	67	85

*ND - not detected

10.1. Interpretation of Results

The results of the soil analysis are compared with the HILs set out in Table 1A(1) of NEPM 1999 (2013) under Residential A, using 'adjusted acceptable levels'. OP's or OC's were not detected in recordable concentrations within the soil samples, while all heavy metals were found lower than the adjusted HIL's.

Cadmium and arsenic were not detected in the testable range in both composite samples. Lead, zinc and copper were also in low concentrations and within the background ranges.

The results of the sampling regime and the known history of the site indicate that further investigation is not warranted in the investigation area. The contaminants found at the site are in low levels and are well below the current adjusted health-based and ecological investigation levels. Further assessment of the individual samples was not warranted, nor was the use of statistical analysis to determine the 95%UCL required for the site, and no further investigation is warranted.

11. CONCLUSION

A preliminary contaminated soil investigation was undertaken in the proposed development area of Lot 3 DP 1259194, 180 Flowers Road, Binna Burra. The purpose of this assessment was to determine if the location of the proposed dwelling envelope on Proposed Lot 2 of the subdivision is suitable for residential use and whether it has been contaminated from past land use. As part of the assessment under SEPP55, to ensure that the investigation area has not been contaminated, soil testing was undertaken around the proposed dwelling envelope and its curtilage.

Samples were analysed for heavy metals (including arsenic and lead), organochlorines and organophosphorus, which were considered to be the potential chemicals to cause contamination at the site due to past agricultural use, albeit no uses were observed in the aerial photographs. The sampling results were compared with the HILs and EILs set out in Table 1A(1) of NEPM (1999) under Residential A, using 'adjusted acceptable levels'. All soil contaminant concentration results were below the relevant HILs.

Based on the known history of the site, inspection of the site and sampling regime, it is concluded that further soil contamination assessment is not required in the proposed development area. NSW EPA (1995) and NEPM 1999 (2013) state that if the contaminant concentration of the site is below a threshold limit, the investigation area can be considered as uncontaminated, and this is considered to be the case on this site. The site is suitable for the proposed development.

Greg Alderson Associates

This assessment has been undertaken in accordance with NEPM 1999 (2013). If rubbish or other indicators of contamination are found on the site that has not been addressed under this assessment, further assessment may be warranted.

12. REFERENCES

Australian and New Zealand Environment and Conservation Council and National Health and Medical Research Council (1992). *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*.

Department of Urban Affairs and Planning and the Environment Protection Authority(1998). *Managing Land Contamination, Planning Guidelines SEPP (RESILIENCE AND HAZARDS) 2021 - Remediation of Land*.

Morand, D.T. (1994). *Soil Landscapes of the Lismore-Ballina 1:100,000 Sheet* Report, Soil Conservation Service of NSW, Sydney.

National Environment Protection (Assessment of Site Contamination) Measure 1999 (revised 2013).

NSW EPA (2020). *Consultants reporting on contaminated land. Contaminated land guidelines*. NSW EPA Sydney South

NSW DEC (2017). *Contaminated Sites - Guidelines for the NSW Site Auditor Scheme*. NSW EPA Sydney South

NSW EPA (1995). *Contaminated Sites - Sampling Design Guidelines*. NSW EPA Chatswood.

Summary of Experience and Qualifications.

Greg Alderson & Associates have been reporting on contaminated land since 1998 and are experienced in Tiers 1-4 assessments as described in NEPM 1999 (2013).

Greg Alderson and Associates have the following qualifications relevant to reporting on contaminated land:

- Bachelor of Applied Science - Conservation Technology
- Bachelor of Environmental Science - Natural Resource Management
- Bachelor of Engineering - Civil
- Bachelor of Engineering - Environmental.

Further qualifications & training our staff have include:

- Contaminated land training courses hosted by Environmental Health Australia,
- Competencies in RTC2701A Follow OHS procedures, RTC3705A Transport, handle and store chemicals,
- White card.

Greg Alderson and Associates have a wide range of experience and worked on a number of varied projects, which include:

- Petrochemical rehabilitation;
- Analysis and Rehabilitation of dipsites;
- Assessment & remediation of former banana plantations;
- Review of remediation plan for gas works site;
- Assessment & remediation of contamination caused from lead-based paints in residential settings;
- Assessment of general agricultural sites.

Greg Alderson and Associates has the following Public Liability Insurance:

Agent: CGU Insurance Ltd
Policy Number: 15T2402648
Expiry Date: 23/2/2023

Greg Alderson and Associates has the following Professional Indemnity Insurance:

Agent: Solution Underwriting Agency Pty Ltd
Policy Number: 9009711PIN
Expiry Date: 4/03/2023

CHAIN OF CUSTODY

CHAIN OF CUSTODY FORM

Sheet 1 of 1

INVESTIGATOR:
GREG ALDERSON AND ASSOCIATES
 ABN 58 594 160 789
 43 Main Street, Clunes NSW 2480
 Ph: 02 6629 1552
 E-mail:
 office@aldersonassociates.com.au
Contact:
 Wendy Attrill

Container			Sample Matrix				Sample Preservation			
Plastic Bag	Plastic Bottle	Glass Bottle	Soil	Soil Composite	Water	Other	Esky	Esky & Ice	Other	

SITE:
19270

COURIER:
 Greg Alderson & Associates

LABORATORIES: RICHMOND WATER LABORATORY
Contact: Allison Hawthorne

Sample ID	Date of Collection	Plastic Bag	Plastic Bottle	Glass Bottle	Soil	Soil Composite	Water	Other	Esky	Esky & Ice	Other
1a	12/2/19	/			/				/		
1b	/	/			/				/		
1c	/	/			/				/		
1d	/	/			/				/		
2a	/	/			/				/		
2b	/	/			/				/		
2c	/	/			/				/		
2d	/	/			/				/		

Laboratory Analysis Required

} heavy metals, OCS, OPS
 mix to form composite 1

} heavy metals, OCS, OPS
 mix to form COMPOSITE 2

Investigator: I attest that the proper field sampling procedures were used during the collection of these sample/s.
Signed: *Wendy Attrill*

Sampler Name (print): Wendy Attrill
Date: 12/2/19

Hazardous: Y N
Comment:

Relinquished by: *Wendy Attrill*
 Date: 13/2/19

Time: 8:50am

Received by: *[Signature]*
 Date: 13/2/19

Time: 8:50am -

LABORATORY ANALYSIS RESULTS



Certificate Of Analysis

Client: Greg Alderson & Associates
Address: 43 Main St
Clunes NSW 2480
Contact: Greg Alderson
Sampled by: Wendy Attrill
Subcontract Laboratory: Envirolab (NATA2901)
Subcontract Reference: 211603

Final report

Report no: 19/0247
Date received: 13/02/2019
Testing commenced: 13/02/2019
Date reported: 1/03/2019
No. of samples: 2
Revision no: 00

Analysis results apply to samples as received.

GAA Soil - 19270

Sample No.: Sample description: Date sampled: Time sampled:	Unit	Method	LOR	19/0247-1 Composite 1 - 19270 12/02/2019	19/0247-2 Composite 2 - 19270 12/02/2019
OC/OP in soil*	mg/kg	Envirolab	0.1	[ND]	[ND]
OC/OP QC Recovery	%	Envirolab	0.1	110	110
Arsenic - soil	mg/kg	APHA3120B	5	<5	<5
Cadmium - soil	mg/kg	APHA3120B	1	<1	<1
Copper - soil	mg/kg	APHA3120B	1	18	21
Lead - soil	mg/kg	APHA3120B	1	8	7
Zinc - soil	mg/kg	APHA3120B	1	67	85
Arsenic -QC Recovery	%	APHA3120B	1	100	[NT]
Cadmium - QC Recovery	%	APHA3120B	1	99	[NT]
Copper - QC recovery	%	APHA3120B	1	104	[NT]
Lead - QC recovery	%	APHA3120B	1	91	[NT]
Zinc -QC recovery	%	APHA3120B	1	90	[NT]



Certificate Of Analysis

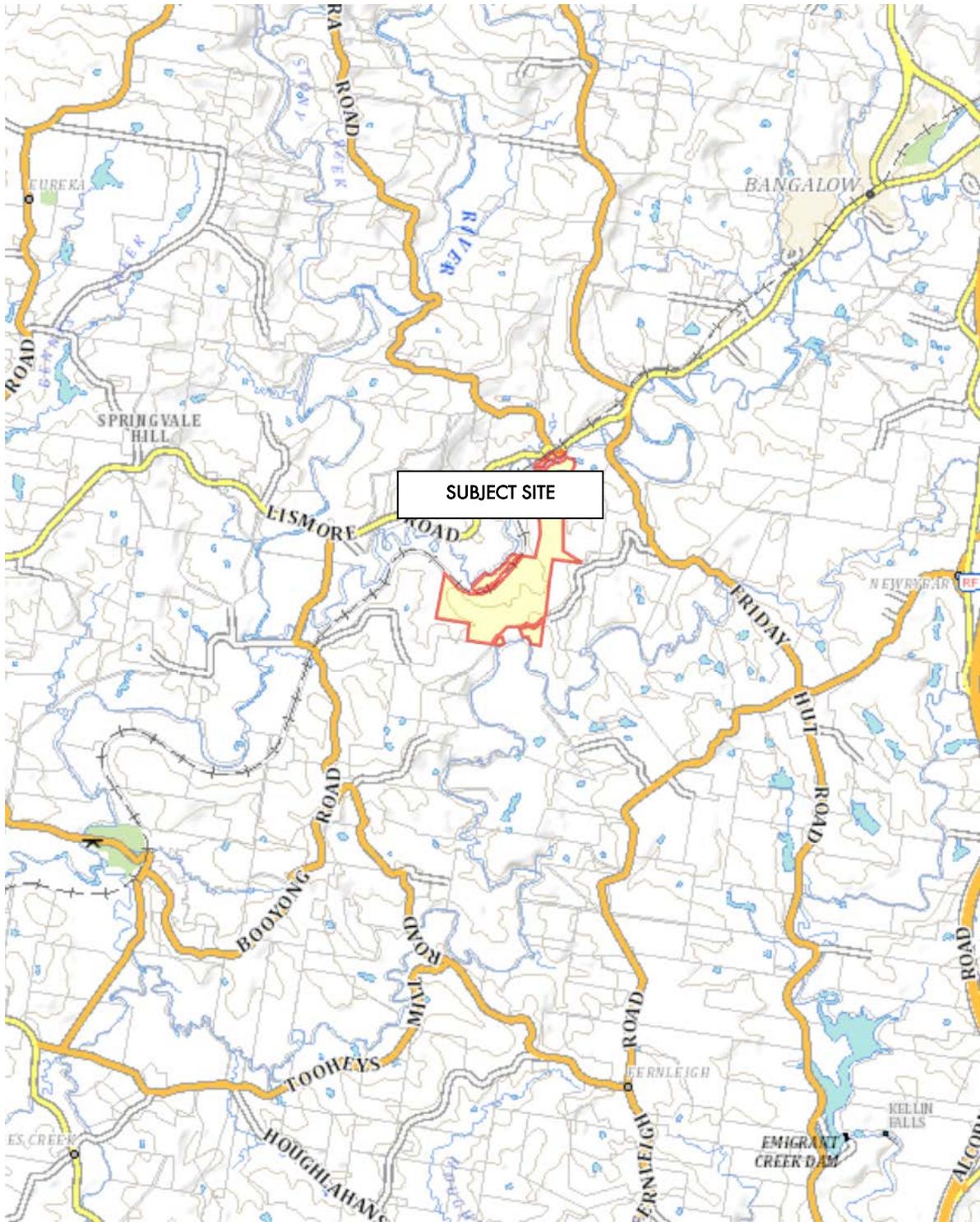
Client: Greg Alderson & Associates

Report no: 19/0247

General comments: This report must not be reproduced except in full. This report relates to items tested as specified herein.
Samples tested between date received and date reported. Accredited for compliance with ISO/IEC 17025.
NATA accreditation does not cover the performance of this service. Tests marked with * are subcontracted.
LOR denotes 'Limit of Reporting'

Specific comments:

V. Barnett
Laboratory Analyst
Approved Authoriser

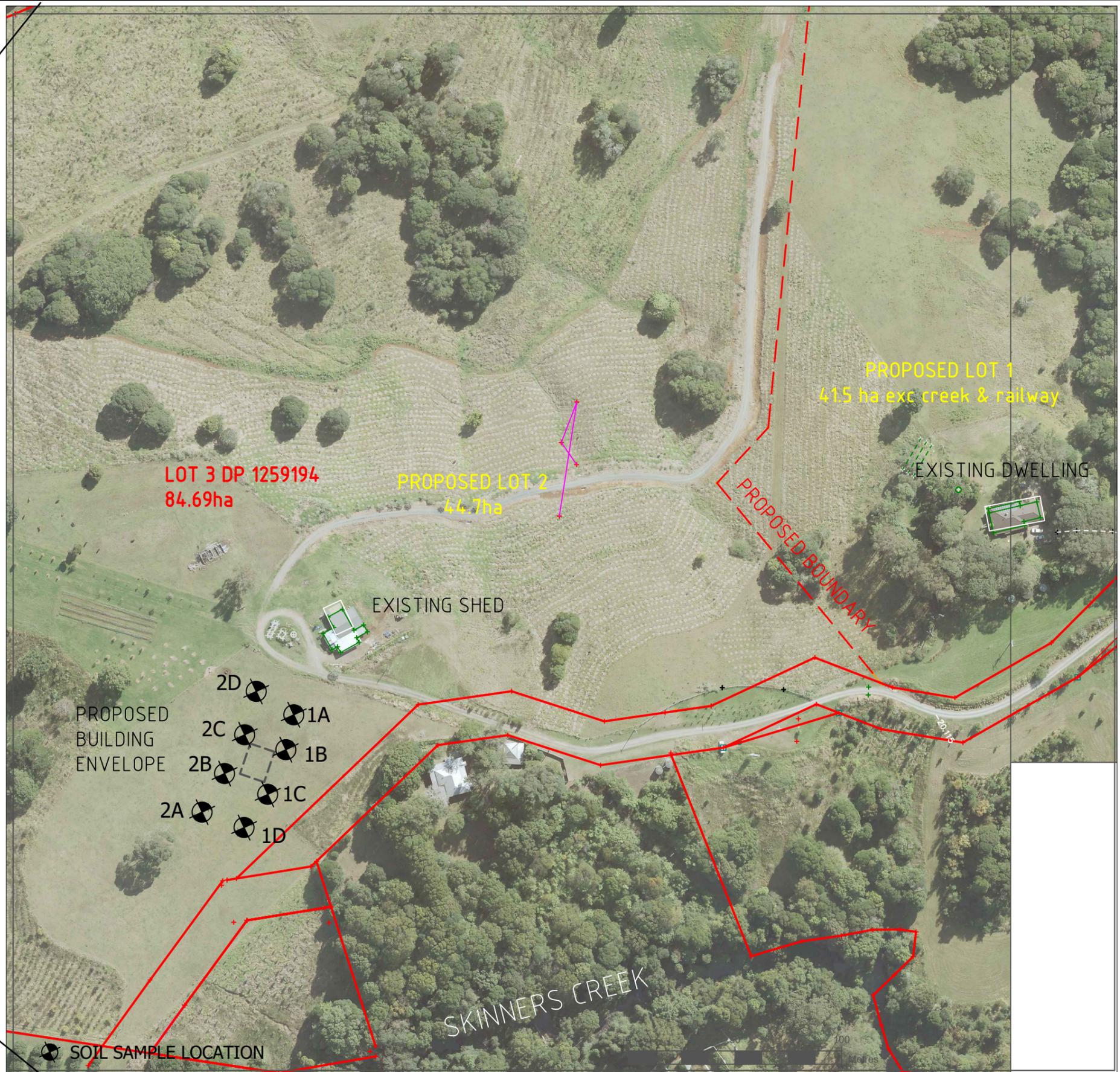
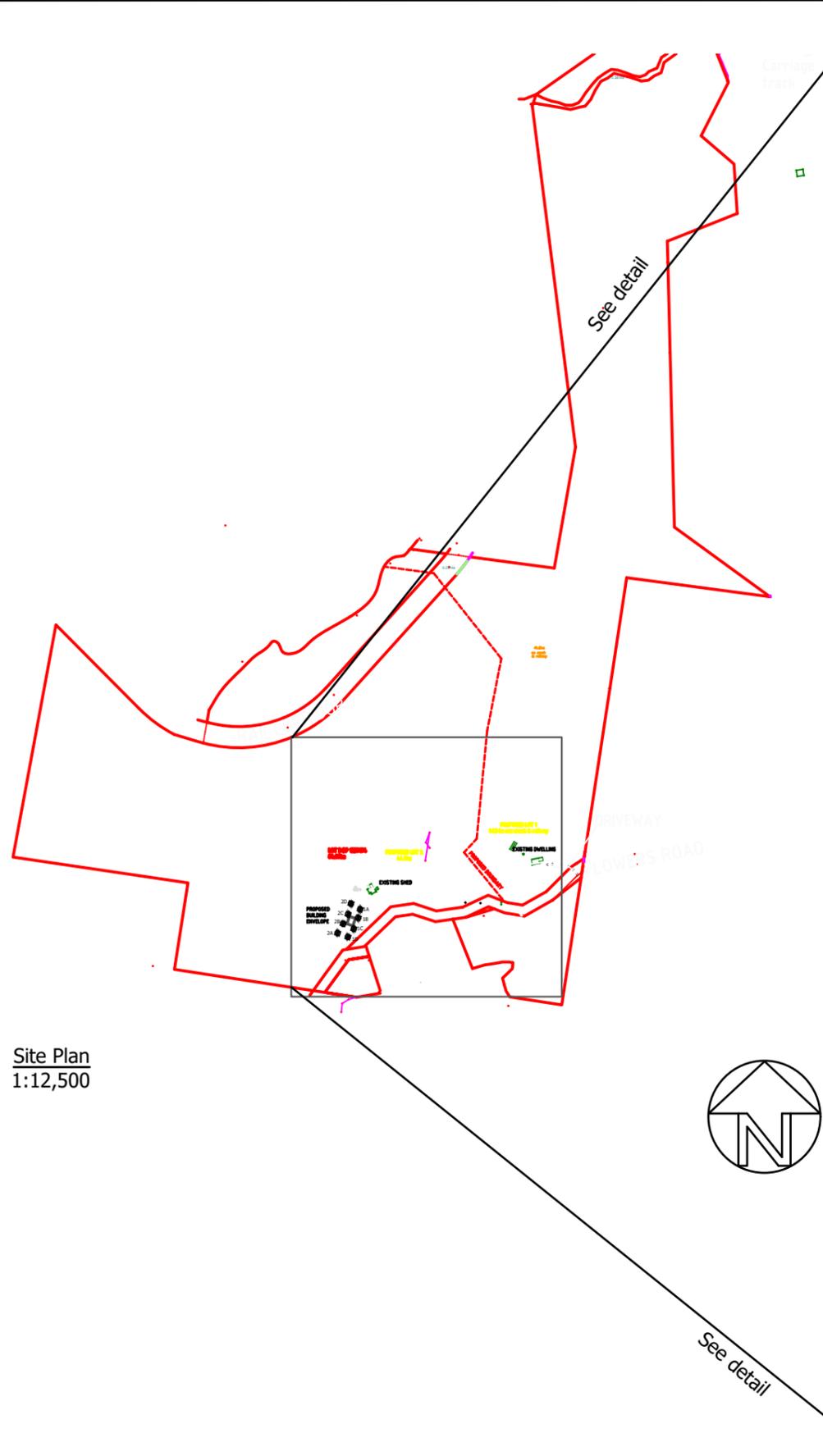


Source: NSW LPI Spatial Information Exchange (2021)
Date: 9/3/2022
Project No. 19270- SEPP55.docx
Scale: NTS

GREG ALDERSON AND ASSOCIATES
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43 Main Street Clunes NSW 2480
Phone: (02) 6629 1552
Email: office@aldersonassociates.com.au

Exhibit No. 1
Subject Site
Lot 3 DP 1259194, 180 Flowers Road, Binna Burra.

Site Plan
1:12,500



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Client:

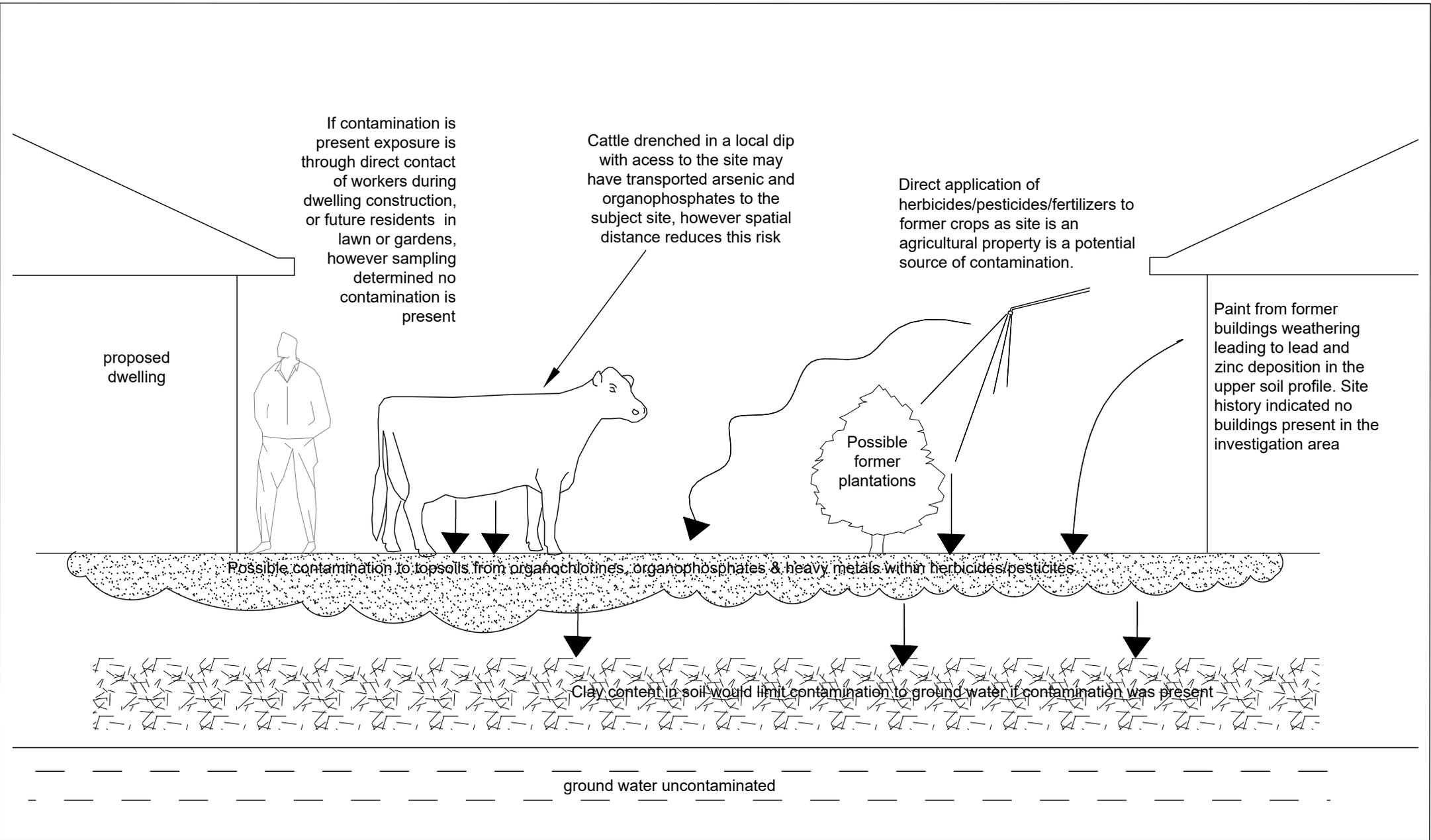
M. & J. Douglas

Site address:
Lot 3 DP 1259194
180 Flowers Rd, Binna Burra

SOIL SAMPLE LOCATIONS

Drawn: JV	Source: Survey by Ken Chelsworth & field measurements	EXHIBIT NO: 2	Date: 9/3/22
Scale: As shown	Original Size: A3	Project: PROPOSED SUBDIVISION	Revision: -
Job Number: 19270			

Z:\JOBS\1919270 - Michael Douglas\ENVIRONMENTAL\SEPP 55\19270 - sepp55-2.dwg



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Z:\JOBS\19\19270 - Michael Douglas\ENVIRONMENTAL\SEPP 55\19270 - sepp55-2.dwg

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Client:
 M. & J. Douglas

Site address:
 Lot 3 DP 1259194
 180 Flowers Road, Binna Burra

CONCEPTUAL SITE MODEL			
Drawn: JV	Source: Greg Alderson & Associates	EXHIBIT NO: 3	Date: 9/3/22
Scale: As shown	Original Size: A4	Project: PROPOSED SUBDIVISION	Revision: -
Job Number: 19270			



Greg Alderson Associates

Greg Alderson and Associates

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Civil Engineering

Roads
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New Structures
Additions and Alterations
Foundations
Wind Bracing & Tie Down
Framing
Retaining Walls

House Plan Drafting
BASIX Certificates



Environmental

Contaminated Land (SEPP
(RESILIENCE AND HAZARDS)
2021)
Acoustics & Noise
Wastewater
Acid Sulfate Soil
Water Quality