

Northern Rivers Contaminated Land Program - Contamination Report Summary Table



Property description and address	Page no.
e.g. Lot and DP, map of entire site as well as the investigation area(s)	4
Conceptual Site Model	
e.g. Contamination sources, receptors and exposure pathways between sources and receptors	15
Sampling and Analysis Quality Plan (SAQP)	
Justification for the sampling design (how will the data be representative and relevant)	n/a
Frequency and pattern of sampling	n/a
Justification for analytical plan (especially if the project uses composite samples)	n/a
Data quality objectives	n/a
Sampling Methodology	
Description of sample methodology	n/a
Description of media sampled and sample depth interval (e.g. borehole logs, or soil description)	n/a
Notable contaminant concentrations e.g. maximum specific concentrations and validation results	
Soil and groundwater concentrations and comparison against appropriate EIL, HIL, HSL and GILs etc.	n/a
Discussion on QA/QC	n/a
Statistical analysis	n/a
Nature of works carried out	
e.g. soil investigation, ground water investigation, excavation, on-site remediation, removal of soil, validation sampling, backfilled with imported soil with ENM classification	1
Nature and extent of residual contamination	
Contamination identified in investigation, contamination unable to be remediated within the scope of the work, or areas not assessed	n/a
Waste removed	
During remediation (details of classification and disposal)	n/a
Remediation Summary	
What was removed or treated? Was it successful, is residual contamination remaining? Is there a need for an ongoing Environmental Management Plan?	n/a
Appropriately experienced and qualified practitioners	
Practitioner is appropriately experienced and qualified with adequate professional indemnity (PI) insurance for the work undertaken	36
Statement of suitability	
The land is considered suitable for [residential, residential with limited soil access, open space, industrial/commercial] land use, other (describe).	18
Report details	
Report title: 2310-16 PCLA	
Produced by: NCWS	ABN: 32512302802
Provided to Richmond Valley Council	
I Samuel Curran of NCWS state that I have undertaken this assessment in accordance with the guidelines made and approved by the NSW Environment Protection Authority.	
Name: Samuel Curran	Signature:
Contact details: info@ncws.com.au	0490068753

V2 – 3/9/21

This project has been funded by the New South Wales Government through the EPA's Contaminated Land Management Program



Contaminated Land Preliminary Site Investigation

Proposed dual occupancy dwelling at 945 Woodburn Coraki Rd, Bungawalbin (Lot 2 DP809736)



This contaminated site investigation is a Stage 1 – Preliminary Investigation, in accordance with the Managing Land Contamination Planning Guidelines (DUAP & EPA, 1998).

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FOR: Suellen Thompson

REPORT NO: 2310-16.CL
Date: 10 November 2023

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Version Control

Revision	Description	Author	Issue Date
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1. INTRODUCTION

North Coast Wastewater Solutions (NCWS) was commissioned by the property owner to undertake a Stage 1 Preliminary Site Contamination Investigation of 945 Woodburn Coraki Rd, Bungawalbin, Lot 2 DP809736 for a proposed residential dwelling development.

The requirement for this investigation is triggered by the *Northern Rivers Regional Council's policy for the Management of Contaminated Land 2006*, as the land is zoned RU1 primary production and has been used for agricultural purposes.

In accordance with *SEPP (Resilience and Hazards) 2021*, this assessment was conducted to determine if land contamination has occurred from historical and current land use activities occurring on site and if the land is suitable for the proposed change of use from agricultural to residential.

This report has been written in accordance with the *NSW EPA (2022) Guidelines for Consultants Reporting on Contaminated Sites*.

1.1. Objectives

The key objectives of the preliminary site investigation are to:

- Identify any past or present potentially contaminating activities.
- Provide a preliminary assessment of site contamination.
- Identify potential contamination types.
- Assess the risk to human health and need for further detailed investigations.

1.2. Scope of Work

The scope of work for the Stage 1 Preliminary Site Contamination Investigation has been developed in accordance with the *Managing Land Contamination Guidelines (DUA/EPA, 1998)* and *Northern Rivers Regional Council's Regional Policy for the Management of Contaminated Land (2006)*.

- Undertake a detailed desktop investigation of current and past land uses and potentially contaminating activities.
- Undertake a site assessment of the investigation area and surrounding property to assess current site condition and contamination indicators.
- Develop a conceptual site model to assess the potential exposure risk for the proposed residential land use.

2. SITE IDENTIFICATION

The subject property is registered as Lot 2 DP809736 with street address of 945 Woodburn Coraki Rd, Bungawalbin. The property is an irregular shaped 67.5ha, RU1 primary production zoned property located in the Richmond Valley Council local government area.

The property is located on the southern side of Woodburn Coraki Rd approximately 5km south of Coraki and 6km west of Woodburn Village.

Figure 1 shows a location map of the subject property and Figure 2 shows the location of the proposed dwelling on the property.

Details of the subject property are presented in Table 1 below.

Table 1 – Site Identification

Address	945 Woodburn Coraki Rd, Bungawalbin
Title	Lot 2 DP809736
Coordinates of Investigation Area	29°02'23.4"S 153°16'51.4"E
Local Government Area	Richmond Valley Council
Current land zoning	RU1 – Primary Production (LEP 2012).
Property size	Approx 67.5ha

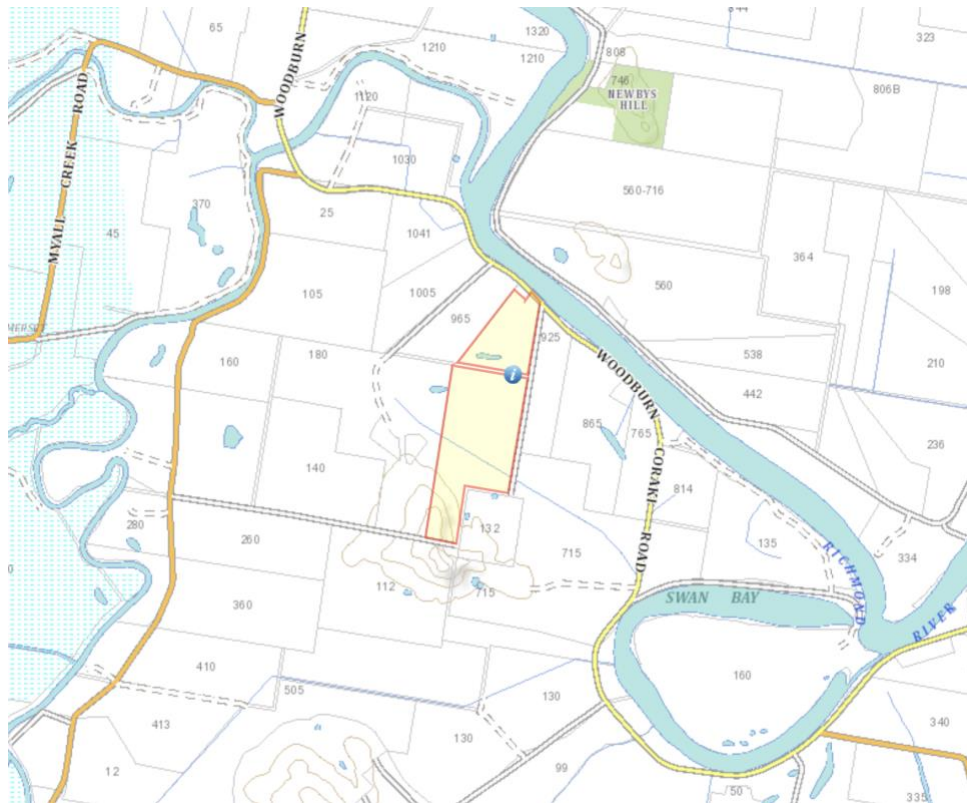


Figure 1 – Location map (source: SIX MAPS)

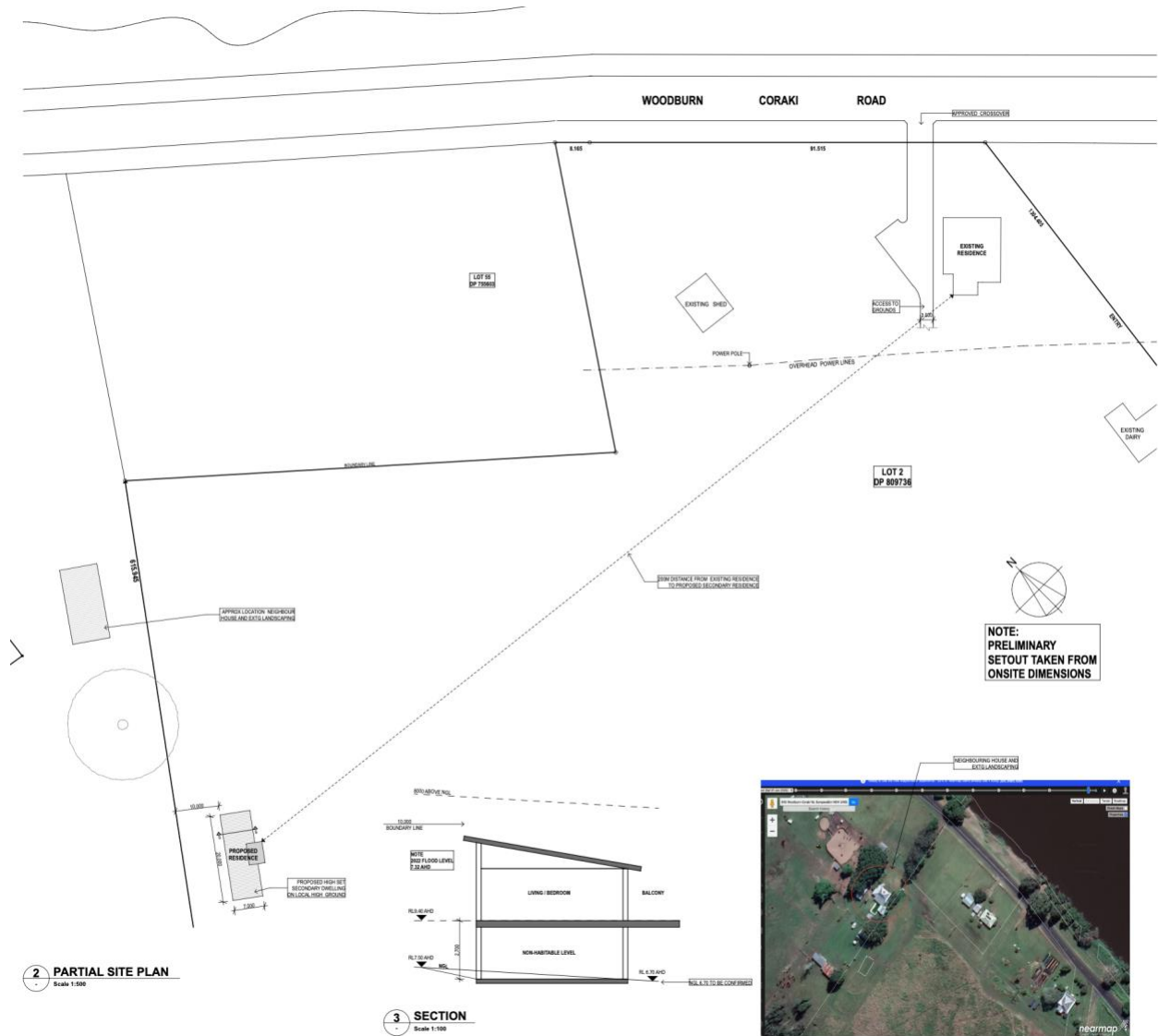


Figure 2 – Site plan of proposed dwelling (source: RSA Architects SK-0001-C)

3. SITE CONDITION AND SURROUNDING ENVIRONMENT

3.1. Topography and Geology

The subject property has elevations ranging from 1mAHD in the drainage gully through the center of the property up to 6mAHD at the highest point on the riverbank and the proposed location of the dual occupancy dwelling. The southern end of the property includes a hill with elevations up to 70mAHD.

The topography in the area of the proposed dwelling is a localised small hill. The land slopes away in all directions from the location of the dwelling.

The property is characterised by relatively flat slopes ranging from around 1-5% in the location of the proposed dwelling.

There is very low chance for upslope run-on due to the slope and topography of the land.

The geological formation is the Lamington Volcanics: Lismore Basalts. The geology is characterised by tertiary basalt with bole and minor aggregate. Soil types are deep red krasnozems with clay loam layers overlying light clays.

The ground surface at the investigation area was well vegetated with pasture grass species.

If chemicals were used on the site, due to the soil texture and structure, the contaminants are most likely to remain in the upper layer.

3.2. Buildings and Structures

An existing dwelling and dairy bales are present on the subject property approximately 180m east of the proposed dwelling site. The dwelling is approximately 100 years old and is of timber construction with metal roofing. A metal barn style shed was constructed in approximately 2021 about 130m from the proposed dwelling. There is no opportunity for run-on from this existing building area over the proposed dwelling site due to the topography.

An existing dwelling and outbuildings are present on the same small local hill on the neighbouring property to the west. The dwelling was present in aerial images from 1964 and appears to be approximately 100 years old.

There was no evidence of historical buildings or structures in the area of the proposed dwelling.

3.3. Services

The property is serviced by electricity through overhead powerlines. Existing water supply is from rainwater tanks. The existing dwelling is serviced by an existing on-site sewage management system (OSSM).

3.4. Groundwater

A search of the Bureau of Meteorology (BOM) Australian Groundwater Explorer identified there are no recorded bores or wells on the subject property or within 250m of the site investigation area. No groundwater has been used on the property so there is no opportunity for potential contaminants from groundwater use.

3.5. Surface Water

The proposed dwelling will be located on a small hill and stormwater runoff flows in all directions with no upslope run-on potential.

The Richmond River is approximately 150m to the north of the dwelling. The land is flood prone with the 1 in 20 year (5%AEP) flood level at 5.0mRL and the 1 in 100 year (1% AEP) flood level at 5.9mRL.

3.6. Surrounding Land Use

The surrounding land uses are presented below in Table 2.

Table 2 – Surrounding land use

Site Boundary	Land Use
North	Cattle grazing, Rural residential, Woodburn Coraki Road
East	Cattle grazing, Rural residential
South	Cattle grazing
West	Cattle grazing, Rural residential

3.7. Site Condition

The site was inspected on 30 October 2023. Table 3 below presents the findings from the site condition assessment. Site photographs are presented in Appendix A.

Table 3 – Site Condition Assessment

Site Feature	Description
Topography	The proposed dwelling site is located on small local hill with fall in all directions. The slope and ground elevation in the investigation area is approximately 5% and 6mAHD respectively.
Conditions at site boundary	The subject property is accessed from Woodburn Coraki Rd. The proposed dwelling site is fully fenced with barb wire livestock fencing. There is very low opportunity and no signs of unauthorised access into the property.
Visible signs of contamination	No bare patches, staining or discolouration of surface observed.
Visible signs of plant stress	None observed in investigation area. Vegetation is healthy pasture grass species.
Presence of drums, wastes and	No drums, waste or fill material observed

fill material	
Odours	No odours detected.
Condition of buildings and roads	The driveway and existing dwelling and shed were in reasonable condition for age and generally well maintained.
Quality of surface water	No surface water within 100m of investigation area.
Flood potential	The subject property is flood prone and was inundated during the 2022 major flood event.
Sensitive local environment	There are no sensitive local environments within 500m of the investigation area.

4. SITE HISTORY

4.1. Current and Historic Land Use

The property was cleared prior to 1964 and has been used for cattle grazing (dairy or beef) since that time.

The current owner has owned the property since 2019 and has only used the investigation area for livestock grazing. Prior to that the property has been owned by a single family since 1914. The current owner advised there was no cropping undertaken in the location of the proposed dwelling, which was confirmed by review of historical aerial images.

The existing dwelling and other outbuildings located approximately 180m from the proposed dwelling may contain asbestos containing materials or lead paint. However, this potential contamination source would only impact on the land under of immediately surrounding the dwelling and is not of concern to the investigation area. There was no evidence (site inspection or historic aerial image review) of previous dwellings or buildings being constructed in or near the investigation area.

4.2. Historical Land Use Investigations

Potentially contaminating prior land uses have been determined from review of records from the following sources.

- NSW Department of Primary Industries: Cattle dip site locator
- NSW EPA: POEO Licenses Public Register
- NSW EPA: Contaminated Land Record of Notices
- Review of historic aerial photographs

4.2.1. Cattle Tick Dip Sites

A review of NSW Department of Primary Industries: Cattle dip site locator and RVC Intramaps identified no dip sites within 1000m of the subject property as shown in Figure 3 below.

There is no opportunity for run-on from the dip sites.



Figure 3 – Dip sites in relation to investigation area

4.2.2. POEO Licenses Public Register

The suburb of 'Bungawalbin' returned 0 results in the public POEO Licenses, application and notices register.

4.2.3. Contaminated Land Record of Notices

A search of the NSW EPA Contaminated Land Records was undertaken for all notice types, which include:

- Preliminary Investigation Order
- Declaration of Significant Contaminated Land
- Approved Voluntary Management Proposal
- Management Order
- On-going Maintenance Order
- Repeal, Revocation and Variation Notice

- Site Audit Statement
- Notice of Completion or Withdrawal of Approved VMP

The suburb of 'Bungawalbin' returned 0 results in the Contaminated Land Records register.

4.2.4. Review of historical aerial photographs

Table 4 contains a summary review of historic aerial photographs for the subject property and surrounding land. Aerial imagery was sourced from NSW Spatial Services. Copies of aerial photographs are presented below.

Table 4 – Summary of review of historic aerial photographs

Year	Description
1964	Land cleared prior to 1958 and used for extensive livestock grazing. The existing dwelling is present on the subject property. Residential dwelling and outbuildings present on neighbouring property. No buildings in the proposed investigation area.
1980	No significant change
1988	No significant change
1997	Residential dwelling constructed on small acreage neighbouring block to north east of proposed dwelling site.



Figure 4 – Aerial image – 1964



Figure 5 – Aerial image – 1980



Figure 6 – Aerial image – 1988



Figure 7 – Aerial image – 1997

4.3. Summary of Site History

Below is a summary and findings from the site history search:

- No cattle tick dip sites within 1000m of subject property. No possibility of run-on from dip sites to subject property.
- The POEO Licenses, application and notices register search returned no sites of concern
- The NSW Contaminated Land Register search returned no sites of concern
- The review of historical aerial photographs indicates that the site has been used for livestock grazing since at least 1964 to current day. There were no buildings, cropping, market gardens or other potential contaminant sources within or adjacent to the proposed dwelling investigation area.

5. CONCEPTUAL SITE MODEL

5.1. Regional and local geology, hydrogeology and hydrology

Table 5 below summarises the local geology, soil and physical parameters of the site.

Table 5 – Site Condition Assessment

Site Feature	Description
Local geology records	The geological formation is the Kangaroo Creek Sandstones. The geology is characterised by sands overlying weathered sandstone with adjoining areas of clay soils. Soils are highly permeable. Soil types were confirmed as sandy soils in test boreholes drilled adjacent to the proposed dwelling site.
Surface water (storage, flow paths, quality)	The proposed dwelling site is on a small local hill with fall in all directions. There is no opportunity for upslope stormwater run-on. The closest water body is the Richmond River approximately 150m north of the proposed dwelling site and water quality is good with no signs of contamination. The property is flood prone with the proposed dwelling site partially subject to a 1 in 100 years flood event.
Groundwater information (depths, recharge, aquifer type, flow, storage, quality)	The investigation area overlies the Clarence Moreton Basin groundwater system. Groundwater is expected to be relatively shallow given the low elevation and nearby water systems. There are no registered groundwater bores within 500m of the investigation area and no potential for groundwater use.

5.2. Potential Contaminants of Concern (COCs)

No major sources or indicators of potential contamination were identified on the subject property. The property has previously been used for livestock grazing and residential purposes. Livestock grazing typically includes low volume spot application of herbicides and pesticides.

There are no cattle tick dip sites within 1000m of the proposed dwelling site. Due to the topography, there is no opportunity for transport of contaminants from the dip site to the subject property through natural drainage paths.

There are no historical records or evidence of any buildings or structures (including unknown structures) in the investigation area.

If contaminating activities occurred in the investigation area these would have occurred by top-down spills or broadcast spreading over the surface. The potentially affected media would be the top 0-150mm of soil.

Table 6 below presents the potential contaminants associated with agricultural activities (Schedule 1, NRRC, 2007) and building works.

Table 6 – Potential Contaminants of Concern (COCs)

Potential Contaminants	Potential Contaminants
Agricultural activities	<p>Fertiliser (Calcium phosphate, calcium sulfate, nitrates, ammonium sulfate, carbonates, potassium, copper, magnesium, molybdenum, boron, cadmium)</p> <p>Fungicides (Carbamates, copper sulphate, copper chloride, sulfur, chromium, zinc)</p> <p>Herbicides (Ammonium thiocyanate, carbamates, arsenic, organochlorines, organophosphates, mercury, triazines)</p> <p>Pesticides (Arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids Xylene, kerosene, methyl isobutyl ketone, amyl acetate, chlorinated solvents)</p>
Building works	Lead-based paints, asbestos, termite treatments

There is no current or historical evidence to suggest any of the above listed chemicals were used at the proposed dwelling site in the last 50 years.

Overall, the likelihood of land contamination within the Investigation Area from agricultural land use or buildings is **very low**.

5.3. Sensitive Receptors

The future land use at the site is Class A Residential in accordance with the National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM) 2013 (No.1), Schedule B1. This land use presents the highest opportunities for soil contact. Sensitive receptors have been identified within the vicinity of the site and include future residents, workers, visitors and wildlife.

5.4. Potential exposure pathways

The site of the proposed dwelling has been historically used for livestock grazing. There were no odours, bare patches or other visible contamination indicators. Historical land use indicates a very low potential for contamination by metals, organo-chlorines or organo-phosphates.

Potential exposure pathways for future residents include:

- Incidental ingestion of soil particles
- Inhalation of dust particles
- Consumption of home-grown fruit and vegetables
- Consumption of soil adhering to home-grown fruit and vegetables
- Dermal contact with soil and dust.

Figure 8 below presents a conceptual site model of the potential exposure pathways.

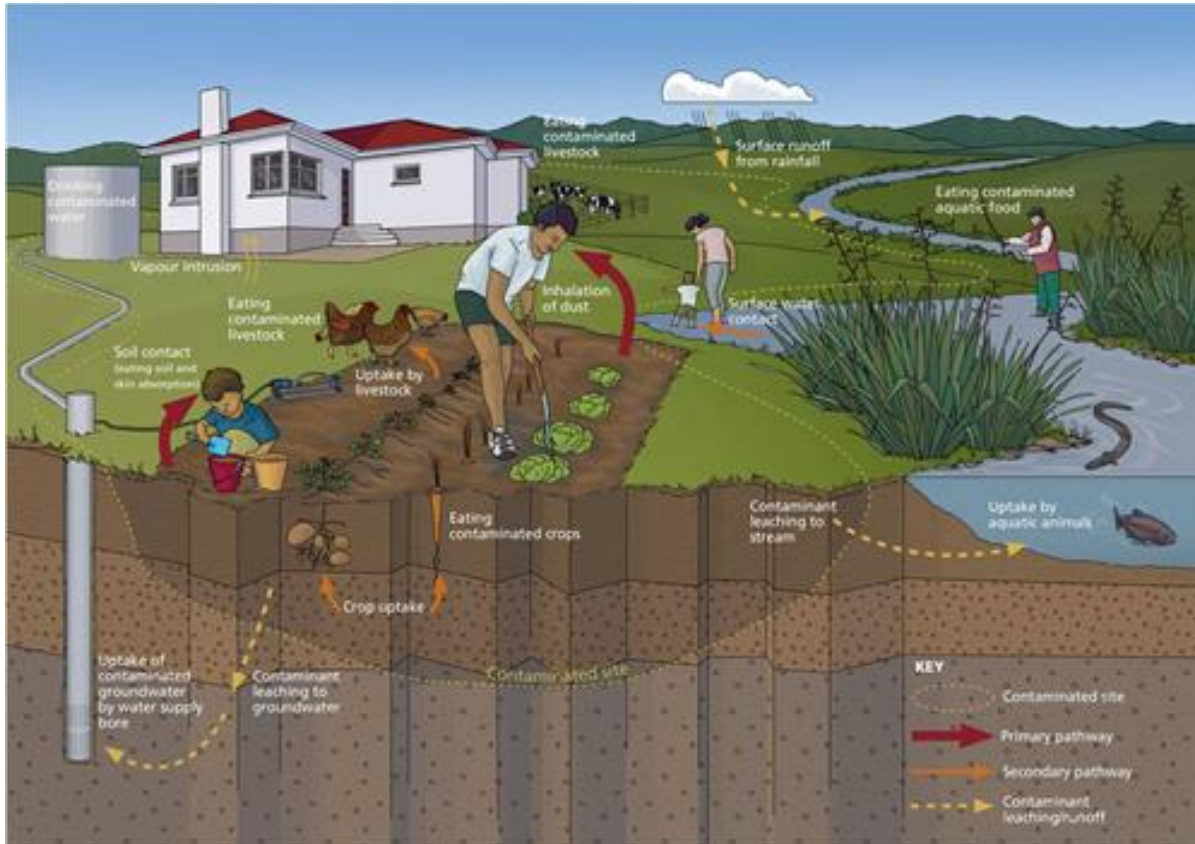


Figure 8 – Conceptual site model example (source: NZ Community and Public Health)

6. CONCLUSION AND RECOMMENDATIONS

This report comprises a Stage 1 Preliminary Site Contamination Investigation for a proposed dual occupancy dwelling at 945 Woodburn Coraki Rd, Bungawalbin, Lot 2 DP809736.

The objective of this preliminary contaminated land assessment was to assess if current or past land uses had resulted in contamination of the Investigation Area which may impact on the proposed residential use of the land. The investigations consisted of a site history review and site condition assessment to assess historical and current land uses.

The site history review identified the site had previously been used for agricultural activities (extensive livestock grazing) since at least 1964. Chemical usage for extensive grazing operations is most likely to have only occurred sporadically in small amounts (e.g. weed control, pest control) for general property maintenance. The current owner advised there has been no known cropping or significant chemical use in the proposed dwelling site.

Due to the topography, there is no potential for stormwater run-on from other contamination sources.

No visible contamination indicators were identified within or surrounding the Investigation Area at the time of site inspection. There were no cattle dip sites within 1000m of the proposed dwelling.

The likelihood of contamination and risk of harm to end users in terms of land contamination within the Investigation Area is **very low**. The site history is relatively complete with no potential contaminants of concern identified.

The site identified for the proposed dwelling is considered to be suitable for the proposed future residential development and no further soil investigations or remediation activities for contamination are recommended within the Investigation Area.

7. REFERENCES

Australian Standard AS4482.1, (2005). Guide to the investigation and sampling of sites with potentially contaminated soil (Part 1).

Bureau of Meteorology, *Australian Groundwater Explorer*,
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Northern Rivers Regional Council's (NRRC), (2007). Regional Policy for the Management of Contaminated Land.

NSW Office of Environment and Heritage, eSPADE v2.0, *Soil Landscapes*,
<http://www.environment.nsw.gov.au/eSpade2Webapp>

The NSW Department of Environment and Conservation, (2005). Guidelines for Assessing Former Orchards and Market Gardens.

8. APPENDICES

8.1. Appendix A – Site Photos



Proposed dwelling site – looking north



Proposed dwelling site – looking south



Proposed dwelling site – looking west



Proposed dwelling site – looking east



Aerial drone photo – NCWS 30.10.23

8.2. Appendix B – Consultant Qualifications and Insurance

Project consultant	Samuel Curran
Qualifications	Bachelor of Civil Engineering (First Class Honours) – USQ, 2015
Relevant experience	<ul style="list-style-type: none"> • Over 10 years' experience in water, wastewater and environmental engineering, development and environmental assessment and reporting. • Project management, field assessment and preparation of reports for contaminated land assessments, on-site wastewater feasibility assessments, water quality sampling programs and acid sulfate soil management plans. • Development of site inspection plans, soil sampling programs and collection of soil samples for varied residential and commercial projects and interpretation of analysis results in accordance with NSW EPA and DPUA Guidelines
Insurance – Public Liability	Insurer: QBE Insurance (Australia) Limited Sum insured: \$10,000,000 Policy number: 118U748243BPK Period: 10 March 2023 to 10 March 2024
Insurance – Professional Indemnity	Insurer: DUAL Australia Pty Ltd Limit of indemnity: \$1,000,000 Policy number: S0B/30961/000/22/N Period: 10 March 2023 to 10 March 2024