

PHASE 1 (PRELIMINARY) ENVIRONMENTAL SITE ASSESSMENT

181 FOREST WAY, BELROSE

PREPARED FOR: Chiroseph Pty Ltd

REFERENCE: REF-4083-C

DATE: 7 September 2018



CONTROLLED DOCUMENT

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EXECUTIVE SUMMARY

EnviroTech Pty. Ltd. was engaged by Chiroseph Pty Ltd care of Trinity Management Services Pty Ltd. to conduct a Preliminary Site Assessment at 181 Forest Way, Belrose (hereafter referred to as the site). The investigation was conducted in consideration of a proposed Aged Care Facility.

The total area of investigation is approximately 2.1 Ha. A site inspection was carried out on Monday 6 March which involved a visual assessment of the accessible areas of the site and surrounding areas. Details of the findings are presented within the body of this report, as well as an assessment of significance with regards to the findings of the investigation.

This report was completed in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, September 2000*.

Based on the data and evidence collected during the site inspection and site history review, the findings of the Environmental Site Assessment (Phase I) are as follows:

- At the time of inspection, the site was occupied by a large brick residence, semi-detached garage, two detached sheds and a pool. The site was almost entirely vegetated by grass and remnant native forest. The property was maintained and there were no indicators of possible contamination.
- Areas of potential concern included:
 - Buildings on the site of such an age that they may contain hazardous building materials such as asbestos and lead based paints.
- Based on the evidence identified during this assessment, it is recommended that:
 - Prior to any demolition works it is recommended that existing structures are first inspected by licensed building inspectors for the presence of any hazardous building materials (HAZMAT). Recommendations provided within that HAZMAT report must then be implemented.
- Subject to the above items, it is considered that the site is or can be remediated suitable to the proposed land use.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION	5
1.1 Background.....	5
1.2 Objectives.....	5
1.3 Scope of Works.....	5
1.4 Legislative Requirements	6
1.5 Context of report.....	6
2. SITE IDENTIFICATION	7
3. PROPOSED DEVELOPMENT	7
4. SITE DESCRIPTION	9
4.1 Site inspection	9
4.2 Surrounding land use	9
4.3 Topography	9
4.4 Geology and Soils	9
4.5 Surface Water Hydrology	10
4.6 Hydrogeology	10
4.7 Receptors and Sensitive Environments.....	10
5. SITE RECORDS	11
5.1 List of NSW Contaminated Sites - Notified to the EPA.....	11
5.2 List of NSW Contaminated Sites - Record of Notices	11
5.3 Former Gasworks	11
5.4 National Waste Management Site Database	11
5.5 List of Current EPA Licensed Activities	11
5.6 Delicensed Activities still regulated by the EPA	11
5.7 Former Licensed Activities under the POEO Act 1997 now surrendered	11
5.8 Section 149 Certificate	11
6 SITE HISTORY	12
6.1 Aerial Photographs.....	12
6.2 Information Gaps	12
7 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)	13
7.1 Areas and Contaminants of Concern	13
7.2 Receptors and Pathways	13
8 RECOMMENDATIONS	14
9 CONCLUSIONS	14
10 LIMITATIONS STATEMENT	15
11 REFERENCES AND LEGISLATION	16
APPENDIX A: SITE PHOTOS	17
APPENDIX B: DEVELOPMENT PLANS	18
APPENDIX C: LOT SEARCH PTY LTD RESULT	19
APPENDIX D: ALS ANALYSIS	20

1. INTRODUCTION

1.1 Background

EnviroTech Pty. Ltd. was engaged by Chiroseph Pty Ltd care of Trinity Management Services Pty Ltd. to conduct a Preliminary Site Assessment at 181 Forest Way, Belrose (hereafter referred to as the site). The investigation was conducted in consideration of a proposed Aged Care Facility.

The total area of investigation is approximately 2.1 Ha. A site inspection was carried out on Monday 6 March which involved a visual assessment of the accessible areas of the site and surrounding areas. Details of the findings are presented within the body of this report, as well as an assessment of significance with regards to the findings of the investigation.

This report was completed in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, September 2000*.

1.2 Objectives

The objectives of this ESA were to:

- Identify all past and present potentially contaminating activities;
- Identify potential contaminants of concern;
- Provide a preliminary assessment of the condition of the site and potential for contamination; and
- Assess the need for further investigation.

1.3 Scope of Works

The scope of works included the following:

- Acquisition and review of;
 - Cadastre & Topography
 - Historical Aerial Imagery
 - EPA Contaminated Land
 - EPA Records of Notice
 - Groundwater Bores
 - Driller Logs
 - Geology & Soils
 - Planning Zones
 - Ecology / Wetlands
 - Acid Sulfate Soils
 - Local & State Heritage
- A review of past and current site uses;
- A review of past and current adjacent site uses;
- An integrity assessment;
- A site inspection; and
- Reporting in accordance with the associated legislations and guidelines.

1.4 Legislative Requirements

The legislative framework for the report is based on guidelines that have been set out by the NSW Environmental Protection Agency (EPA) formerly the Office of Environment and Heritage (OEH) in the form of the following Acts/Regulations:

- *Protection of the Environment Operations Act (1997);*
- *Protection of the Environment Operations Regulation (2008);*
- *Contaminated Land Management Act (1998).*

In addition, the following guidelines and technical documents have been reviewed and applied where applicable:

- *Guidelines for the NSW Site Auditor Scheme (NSW DEC, 2006).*
- *Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2000).*
- *Guidelines on the Investigation Levels for Soil and Groundwater, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).*
- *Australian Standard AS 4482.1 Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
- *Australian Standard AS 4482.2 Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
- *Sampling Design Guidelines (NSW EPA, 1995).*
- *Waste Classification Guidelines Part 1: Classifying Waste (NSW DECCW, 2014).*
- *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008 (NSW DECCW, 2009).*
- *Guidelines for the Assessment and Management of Groundwater Contamination (NSW DEC, 2007).*

1.5 Context of report

This report is to be read in its entirety and should not be review in individual section to provide any level of information independently. Each section of the report relates to the rest of the document and as such is to be read in conjunction, including its appendices and attachments.

2. SITE IDENTIFICATION

The study site is 181 Forest Way, Belrose (Lot 3 of DP 805710). It is located on the eastern side of the road and occupied approximately 2.1 Ha (Figure 1).

3. PROPOSED DEVELOPMENT

It is proposed to demolish all existing infrastructure and build a new 138 bed residential aged care facility (Appendix A).

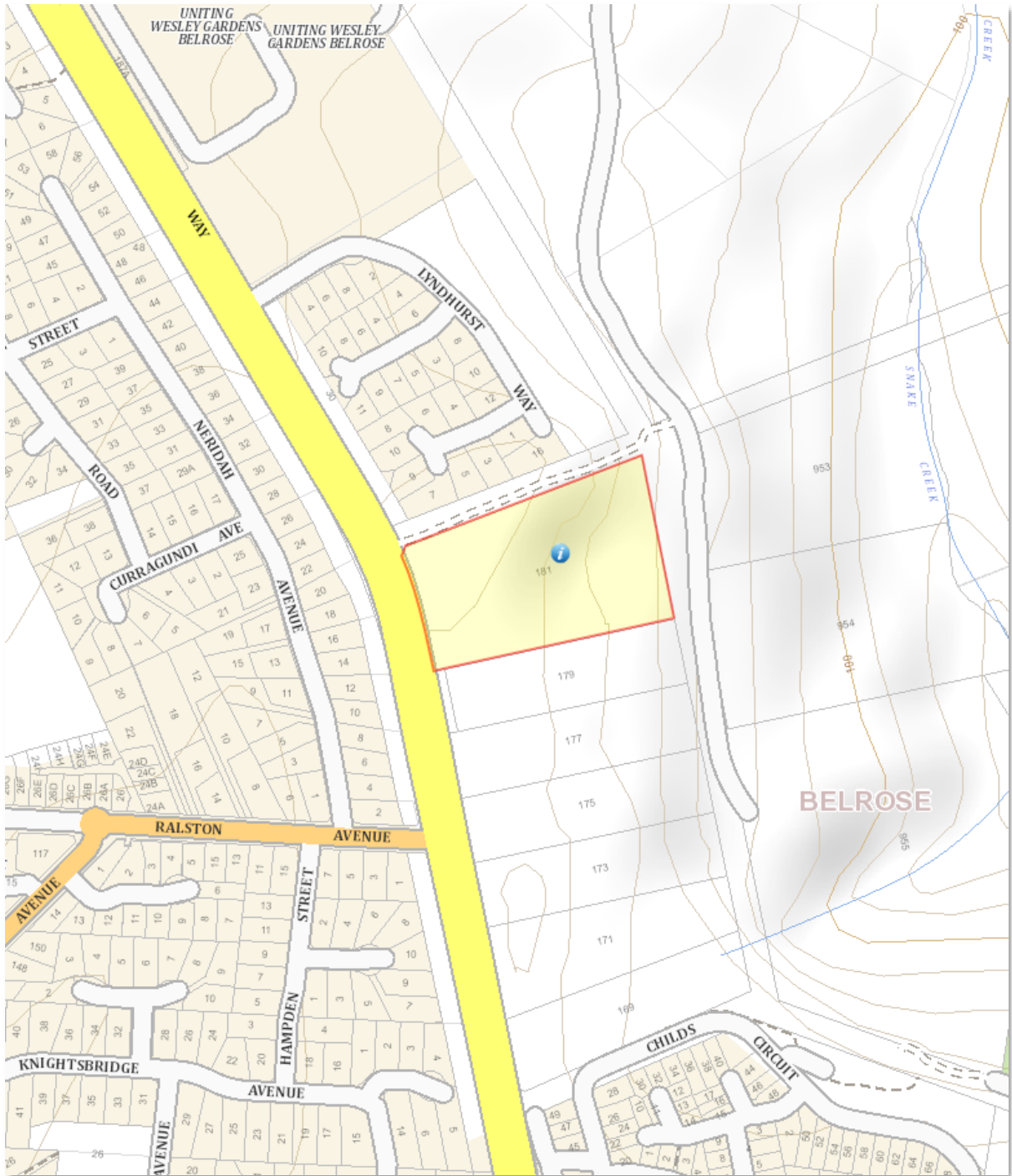


Figure 1: Site Location (NSW Spatial Information Exchange)

4. SITE DESCRIPTION

4.1 Site inspection

On 6 March 2017, a site inspection was conducted by Envirotech consultant Cheyne Hudson. Field work was carried out in accordance with the methodology described in AS 4482.1 – 2005 and the NEPM (2013).

At the time of inspection, the site was occupied by a large brick residence, semi-detached garage, two detached sheds and a pool. The site was almost entirely vegetated by grass and remnant native forest. The property was maintained and there were no indicators of possible contamination. Site photos are provided in Appendix B.

4.2 Surrounding land use

The site is bordered by:

- Medium density residences to the north;
- Similar low density residences to the south;
- Native vegetation to the east; and
- Forest Way and further medium density residences to the west.

4.3 Topography

The site occupies an east facing side slope of approximately 5% - 25% gradient (Figure 1). A review of Soil Landscape Mapping for the area (Appendix C) indicates the site occurs on the Somersby and Gynea Soil Landscapes.

4.4 Geology and Soils

Soil landscape mapping indicates the site occurs on the Somersby and Gynea Soil Landscapes (Appendix C).

The Somersby soil landscape consists of gently undulating to rolling rises in deeply weathered Hawkesbury Sandstone plateau. Local relief to 40 m with slopes < 15% and rock outcrop is absent. Crests are broad and convex, valleys are narrow and concave. Extensively cleared, low eucalypt open-woodland and scrubland. Soils typically consist of loose dark brown sandy-loams, over earthy, bright yellowish brown sandy-clay-loams. Total soil depth usually ranges between 1,000 – 3,000 mm.

The Gynea soil landscape consists of undulating to rolling rises and low hills on Hawkesbury Sandstone. Local relief 20–80 m with slopes 10–25% and rock outcrop <25%. Broad convex crests, moderately inclined side slopes with wide benches, localized rock outcrop on low broken scarps. Extensively cleared open forest (dry sclerophyll forest) and eucalypt woodland. Soils typically consist of loose dark brown coarse sandy-loams, over earthy, yellowish-brown clayey-sands. Sub-soils are usually moderately pedal, yellowish-brown sandy-clays. Total soil depth ranges between 300 – 1,000 mm.

4.5 Surface Water Hydrology

The site consists largely of vegetated pervious surfaces. It is anticipated that stormwater will either slowly infiltrate the site's soil or sheet east across the site. Stormwater from rooftops and other impermeable surfaces is expected to be discharged onto stabilized areas.

4.6 Hydrogeology

A search for groundwater bores within 1 km of the site was undertaken (Appendix C). The results indicate there are multiple bores within the region. Based on topography groundwater depth is likely to be deep (>10 m)

4.7 Receptors and Sensitive Environments

The closest sensitive receiving environment is Snake Creek approximately 200 m east (down slope) of the site.

5. SITE RECORDS

A search for the site on the following data bases was undertaken. A map of sites within a 1 km radius is available in Appendix C.

5.1 List of NSW Contaminated Sites - Notified to the EPA

- No record

5.2 List of NSW Contaminated Sites - Record of Notices

- No record

5.3 Former Gasworks

- No record

5.4 National Waste Management Site Database

- No record

5.5 List of Current EPA Licensed Activities

- No record

5.6 Delicensed Activities still regulated by the EPA

- No record

5.7 Former Licensed Activities under the POEO Act 1997 now surrendered

- No record

5.8 Section 149 Certificate

A search of the section 149 certificate has not been undertaken. A review of the certificate with regards to Matters arising under the Contaminated Land Management Act 1997 and the Contaminated Land Management Amendment Act 2008 should be undertaken concurrently with the review of this report.

6 SITE HISTORY

6.1 Aerial Photographs

A review of historical aerial photographs (Appendix C) was undertaken. The results of which are summarized in Table 1.

Table 1: Findings of the historical photograph review

Year	Description
1956	<ul style="list-style-type: none">• Moderate resolution black and white photo• House in west of site surrounded by grass and gardens• Remainder of site largely native forest• Surrounding lands primarily remnant forest and low density residential
1965	<ul style="list-style-type: none">• Moderate resolution black and white photo• No significant changes on site since 1956
1975	<ul style="list-style-type: none">• Low resolution black and white photo• Semi-detached garage extended to the north• No significant changes on site since 1965
1986	<ul style="list-style-type: none">• Moderate resolution colour photo• Semi-detached garage extended to the north• No significant changes on site since 1975• Surrounding lands becoming increasingly urban
1994	<ul style="list-style-type: none">• Moderate resolution colour photo• Additional shed visible in north of site• No significant changes on site since 1986
2015	<ul style="list-style-type: none">• High resolution colour photo• Significant clearing and thinning of native forest across the site• Dirt access track to rear of site

6.2 Information Gaps

A site history has been established using the various sources as outlined above. However, the following information gaps have been identified:

- Inferences have been drawn based on 'point in time' aerial photographs;
- No information pertaining to the site pre-1956 was available;

In regards to the information available, it is considered that the quality of the information is consistent the industry standard and that the information is of high integrity with respect to the historical use of the site overall.

7 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)

7.1 Areas and Contaminants of Concern

The following areas of environmental concern were identified:

- Buildings on the site of such an age that they may contain hazardous building materials such as asbestos and lead based paints.

Table 2 identifies the main Areas of Environmental Concern (AECs), and their associated Contaminants of Concern (COCs), using information gathered through this assessment and qualitative judgment based on consultant experience.

Table 2: Areas of environmental concern (**Derived from AS 4482.1-2005 and consultant experience*).

AEC	Contaminants of Concern	Likelihood of Contamination**
Buildings on site of such an age that they may contain hazardous building materials	Hazardous building materials	Possible ⁽¹⁾

7.2 Receptors and Pathways

7.2.1 Human Health

Human exposure to the potential contaminants identified is currently considered *Low - Moderate* as:

- Buildings of concern were structurally sound; and
- Buildings of concern were no longer inhabited.

However, this risk would increase too *High* for any personnel involved in demolition works without appropriate Safe Work Methods and Personal Protective Equipment.

7.2.2 Environmental Receptors

The closest sensitive receiving environment is Snake Creek approximately 200 m east (down slope).

7.2.4 Potential for Migration of Contaminants

The potential for contaminants to migrate is currently considered *Low* as:

- Buildings of concern were structurally sound; and
- The site is well vegetated.

⁽¹⁾ ALS analysis of (Appendix D) samples collected on site confirmed the presence of both lead based paint and asbestos containing materials within a small shed south of the home (Appendix A). No sampling of the main residence was undertaken.

8 RECOMMENDATIONS

Based on the evidence identified during this assessment, it is recommended that:

- Prior to any demolition works it is recommended that existing structures are first inspected by licensed building inspectors for the presence of any hazardous building materials (HAZMAT). Recommendations provided within that HAZMAT report must then be implemented.

9 CONCLUSIONS

Based on the data and evidence collected in the course of the site inspection and site history review, the findings of the Environmental Site Assessment (Phase I) are as follows:

- At the time of inspection, the site was occupied by a large brick residence, semi-detached garage, two detached sheds and a pool. The site was almost entirely vegetated by grass and remnant native forest. The property was maintained and there were no indicators of possible contamination.
- Areas of potential concern included:
 - Buildings on the site of such an age that they may contain hazardous building materials such as asbestos and lead based paints.
- Based on the evidence identified during this assessment, it is recommended that:
 - Prior to any demolition works it is recommended that existing structures are first inspected by licensed building inspectors for the presence of any hazardous building materials (HAZMAT). Recommendations provided within that HAZMAT report must then be implemented.
- Subject to the above items, it is considered that the site is or can be remediated suitable to the proposed land use.

10 LIMITATIONS STATEMENT

EnviroTech Pty. Ltd. has undertaken the following report in accordance with the scope of works set out between EnviroTech Pty. Ltd. and the client. EnviroTech Pty. Ltd. derived the data in this report primarily from the site and soil assessment conducted on the date of site inspection. The impacts of future events may require future investigation of the site and subsequent data analysis, together with a re-evaluation of the conclusions and recommendations of this report.

In preparing this report, EnviroTech Pty. Ltd has relied upon, and assumed accurate, certain site information provided by the client and other persons. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. EnviroTech Pty. Ltd. accepts no liability or responsibility whatsoever for or in respect to any use or reliance upon this report by any third party.

The information contained within this report have been prepared exclusively for the client. Envirotech have prepared the report to address the risk associated with scale of the works. The report has been prepared with a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. This report is to be read in its entirety including attachments and appendices and should not read in individual sections.

A third party should not rely upon the information prior to making an assessment that the scope of work conducted meets their specific needs. Envirotech cannot be held liable for third party reliance on this document.

Envirotechs professional opinions are based upon its professional judgment, experience, training and results from analytical data. In some cases, further testing and analysis may be required, thus producing different results and/or opinions. Envirotech Pty Ltd has limited its investigation to the scope agreed upon with its client.

11 REFERENCES AND LEGISLATION

- *Guidelines for the NSW Site Auditor Scheme* (NSW DEC, 2006).
- *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2000).
- *Guidelines on the Investigation Levels for Soil and Groundwater*, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).
- Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
- Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
- *Sampling Design Guidelines* (NSW EPA, 1995).
- *Waste Classification Guidelines Part 1: Classifying Waste* (NSW DECCW, 2014).
- *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008* (NSW DECCW, 2009).
- *Guidelines for the Assessment and Management of Groundwater Contamination* (NSW DEC, 2007).
- NSW Spatial Information Exchange (<http://maps.six.nsw.gov.au/>)
- NSW Espade (<http://www.environment.nsw.gov.au/eSpadeWebapp/>)

APPENDIX A: SITE PHOTOS



Figure 2: Building of Concern - Existing Residence



Figure 3: Building of Concern - Existing Shed (*confirmed to contain both asbestos containing materials and lead based paint – Appendix D*).

APPENDIX B: DEVELOPMENT PLANS



Revision	Date	Details	Initials	Checked
A	20170626	DEVELOPMENT APPLICATION	JM/DJ	VC
B	20180331	DEVELOPMENT APPLICATION RE-SUBMISSION		

SURVEY NOTES
 Survey data included in this drawing is based on survey drawing and is provided for preliminary design purposes only. As this drawing is based on information supplied by others, reference must be made to original survey drawings, verified against site conditions.

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C:\Users\jerry\Documents\Forest Way Belrose-building-CENTRAL_V16_jerry.rvt

- NEW TREE REFER TO LANDSCAPE DOCUMENTATION
- EXISTING TREE TO REMAIN REFER TO ARBORIST REPORT
- EXTENT OF PLANTING REFER TO LANDSCAPE DOCUMENTATION
- STORMWATER PIT. REFER TO CIVIL DOCUMENTATION
- JUNCTION PIT. REFER TO CIVIL DOCUMENTATION
- EXISTING SERVICES. REFER TO SURVEY

NOTES:
 APZ ASSESS PROTECTION ZONE. REFER TO BUSH FIRE REPORT FOR DETAILS.
 1. STORMWATER ENGINEERING. REFER TO ENGINEER DESIGN DOCUMENTS FOR DETAILS.

N

DEVELOPMENT APPLICATION

APPLICANT:
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 PO Box 247
 St Leonards NSW 2065

ARCHITECT:
Morrison Design Partnership Pty Ltd
 Suite 302 / 69 Christie St
 St Leonards NSW 2065
 Ph: 02 9946 5566

architecture
interior design
project management

NSW ARCH REG ARCHITECT: G. COLLETTON #7421
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PROJECT:
BELROSE MANOR
 RESIDENTIAL AGED CARE FACILITY
 181 FOREST WAY
 BELROSE NSW 2085

DRAWING:
SITE PLAN

PROJECT NO. 2951	REVISION NO. B
DRAWING NO. DA050	ARCHITECT: YEE CHEN
SCALE: 1:200 @ A1	DATE: APRIL 2017
PROJECT DIRECTOR: MARKAM RALPH	

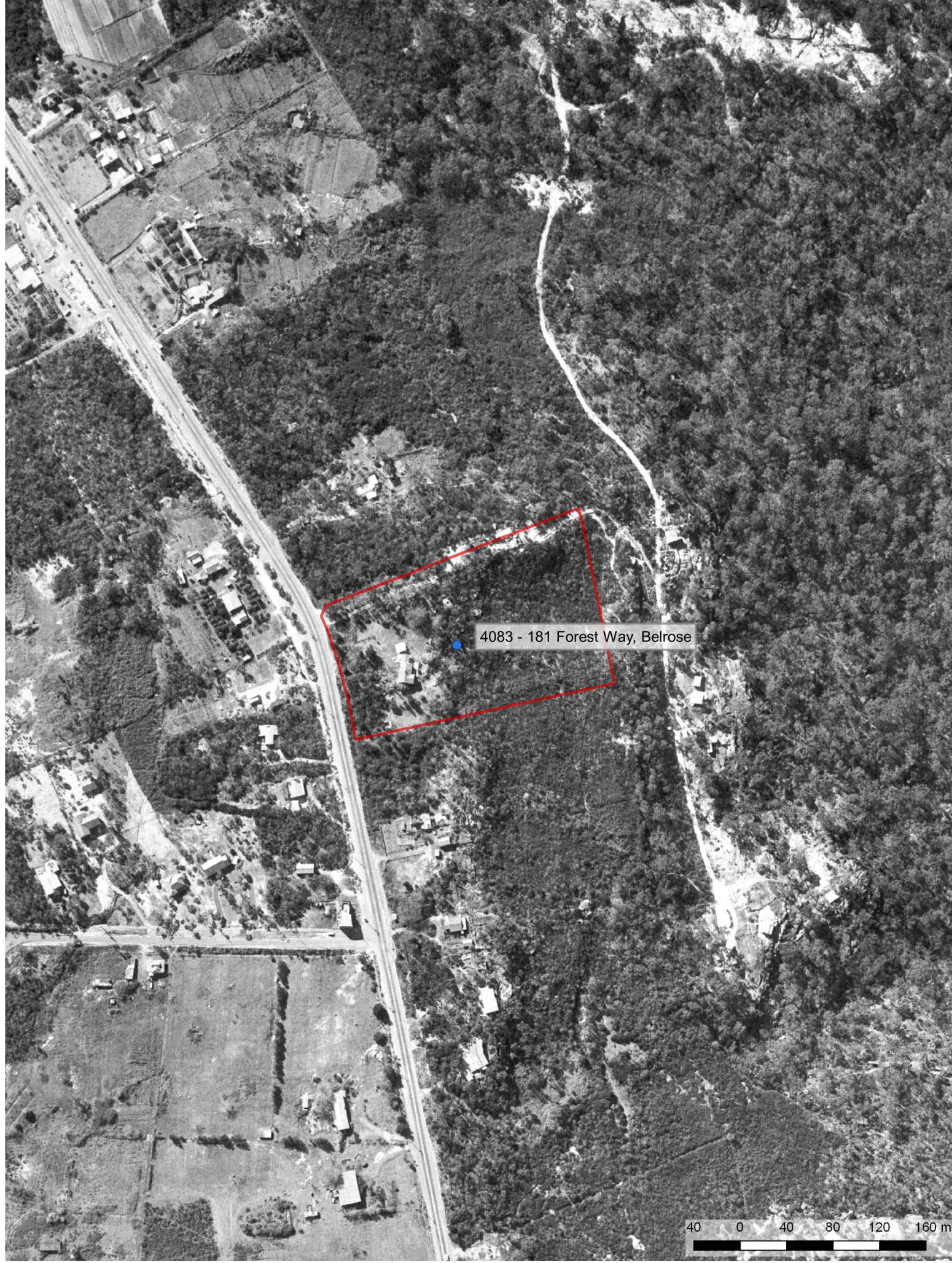
Morrison Design Partnership
 Since 1968

APPENDIX C: LOT SEARCH PTY LTD RESULT



4083 - 181 Forest Way, Belrose

40 0 40 80 120 160 m

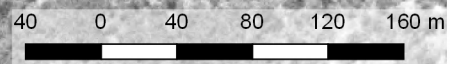


4083 - 181 Forest Way, Belrose

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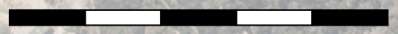
4083 - 181 Forest Way, Belrose





4083 - 181 Forest Way, Belrose

40 0 40 80 120 160 m





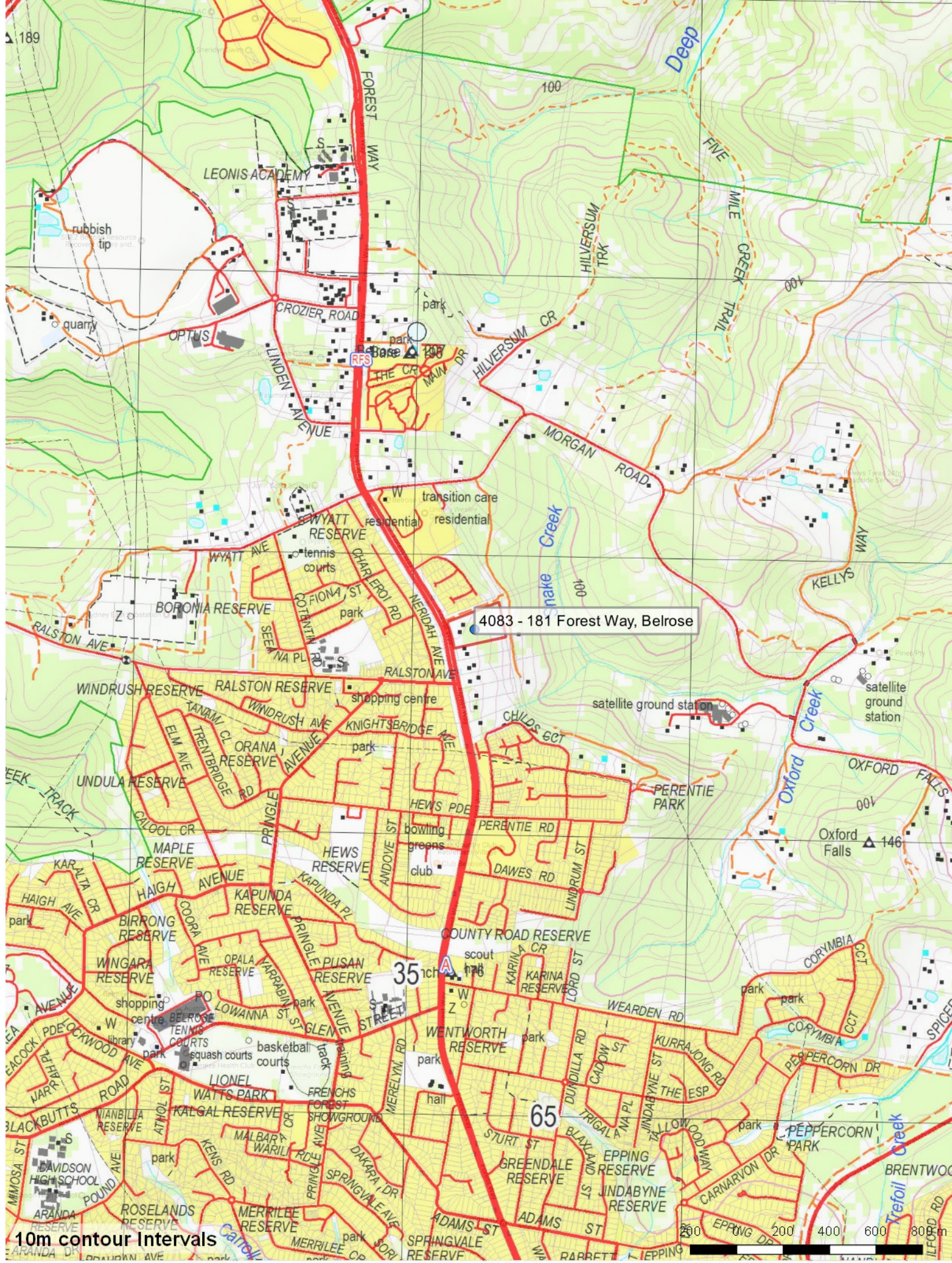
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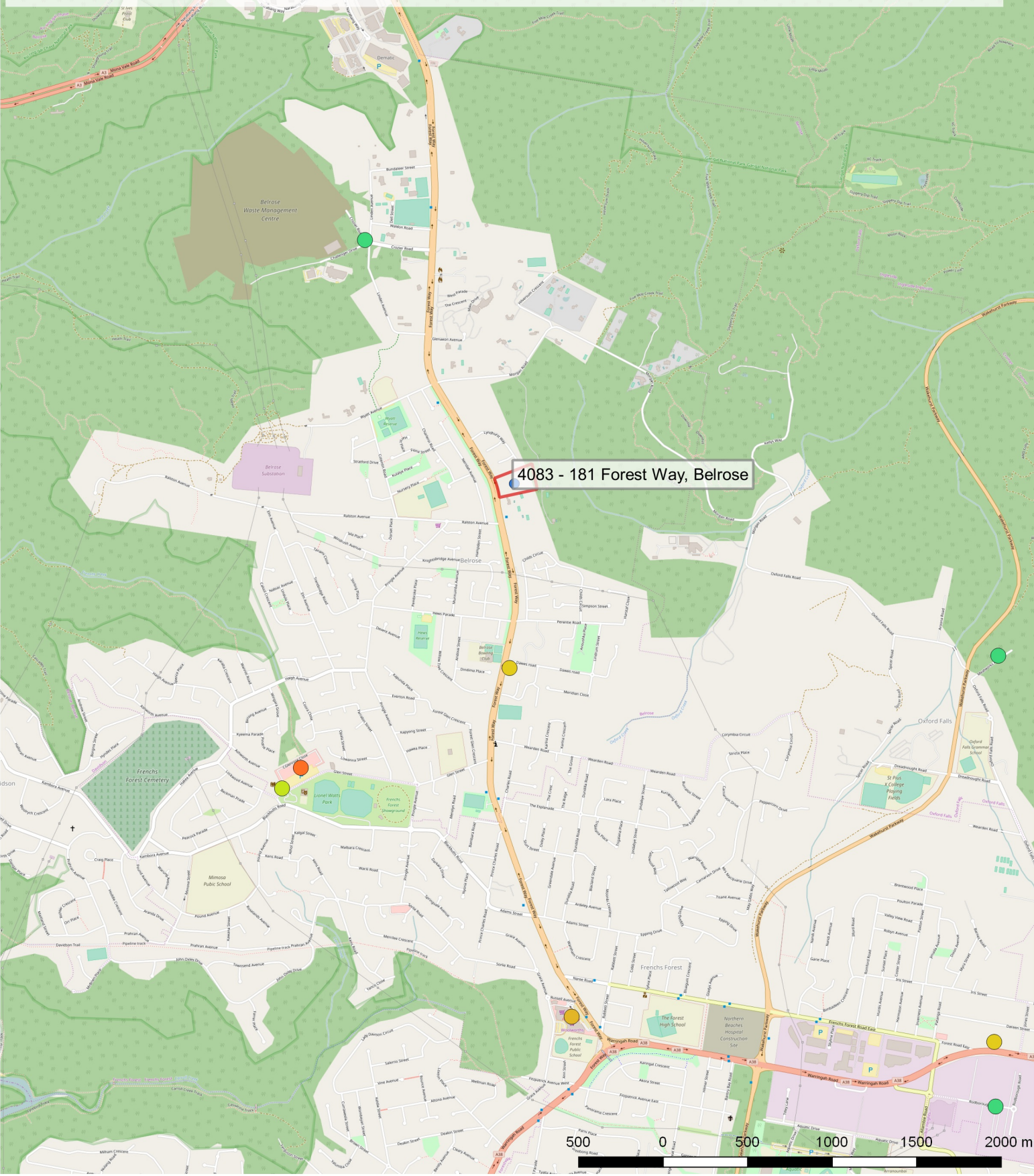
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40 0 40 80 120 160 m



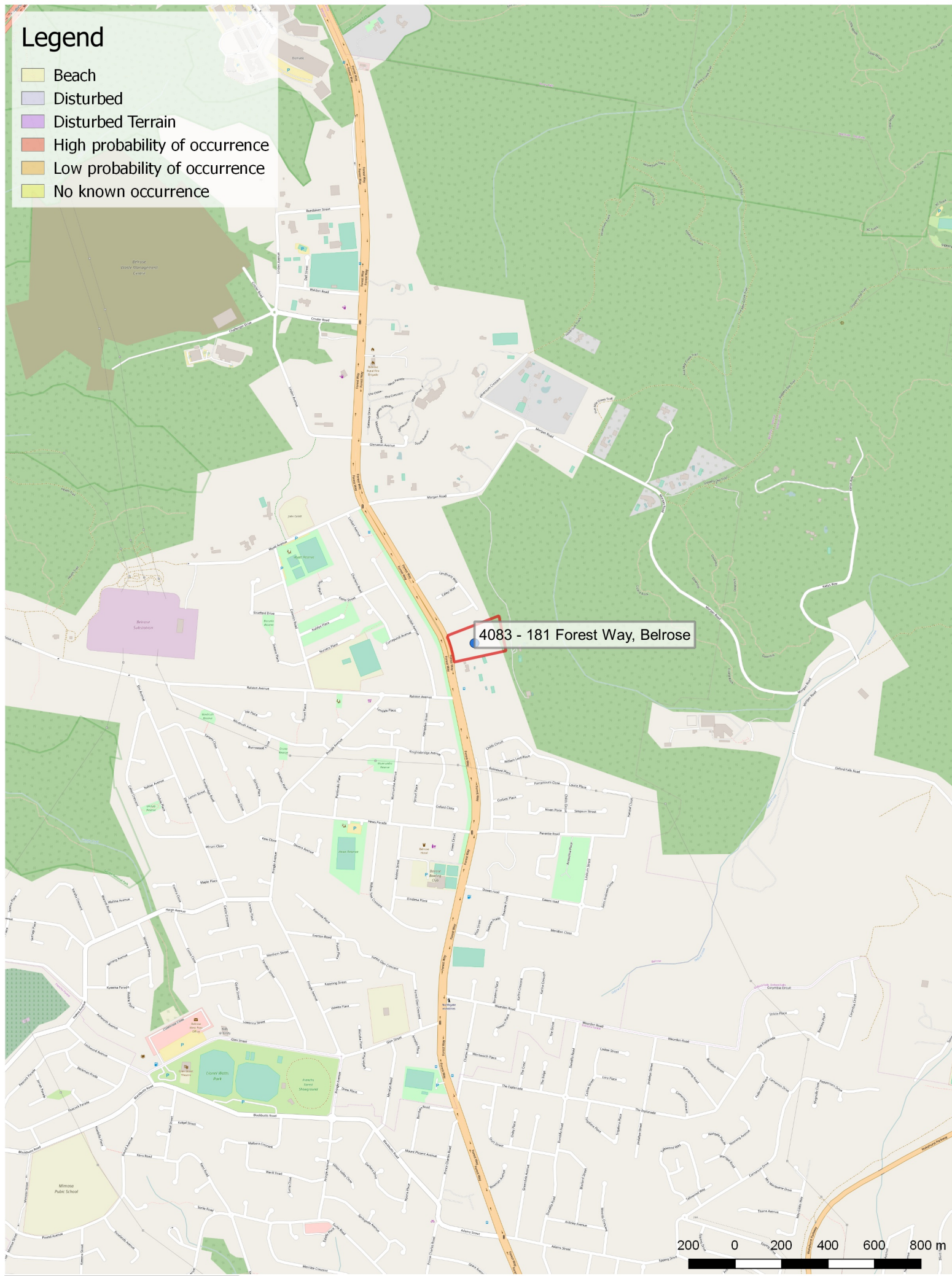
Legend

- Contamination being managed via the planning process (EP&A Act)
- Contamination currently regulated under CLM Act
- Contamination currently regulated under POEO Act
- Contamination formerly regulated under the CLM Act
- Contamination formerly regulated under the POEO Act
- Ongoing maintenance required to manage residual contamination (CLM Act)
- Regulation being finalised
- Regulation under CLM Act not required
- Under assessment
- Waste Management Facilities



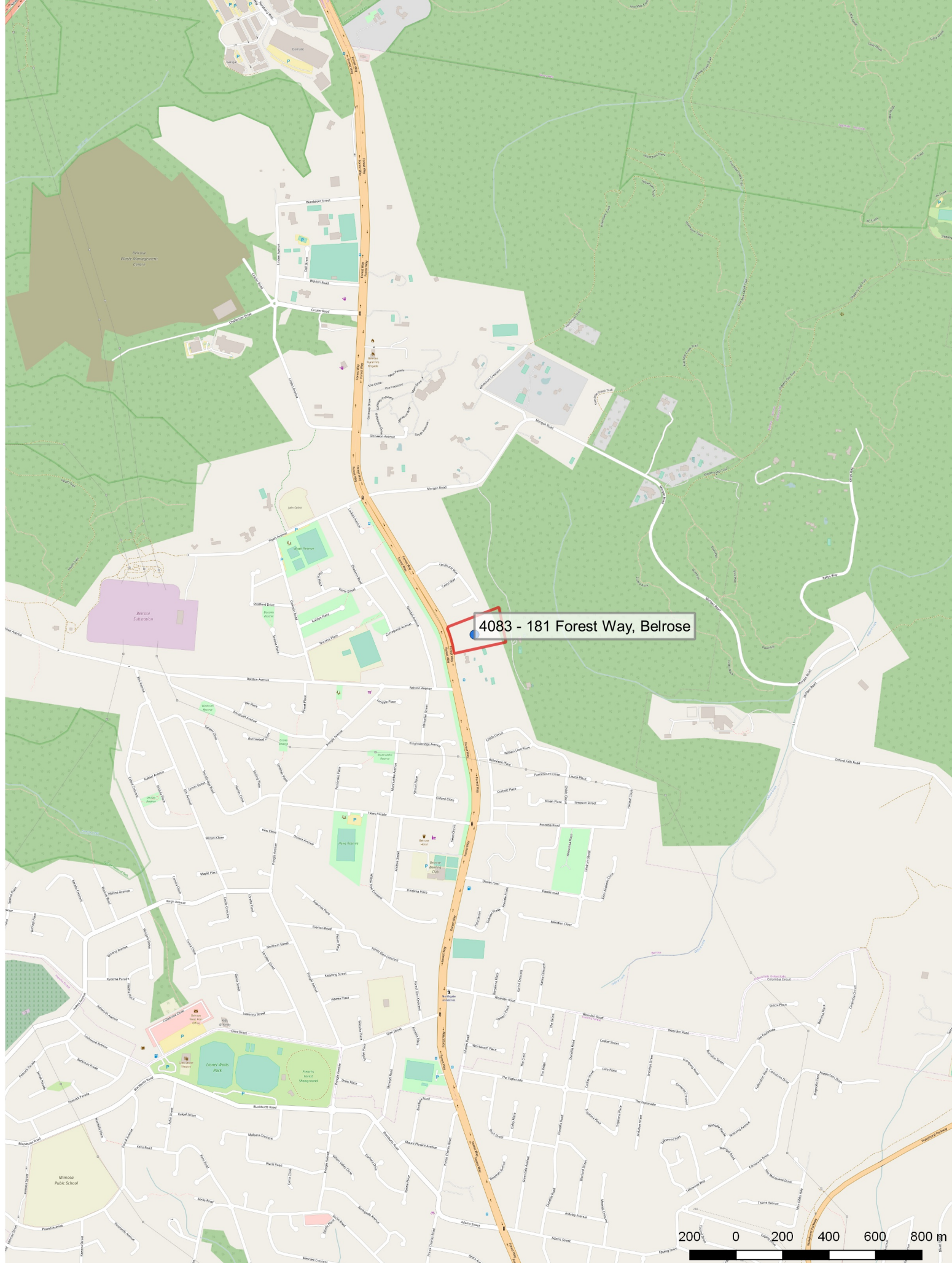
Legend

- Beach
- Disturbed
- Disturbed Terrain
- High probability of occurrence
- Low probability of occurrence
- No known occurrence



4083 - 181 Forest Way, Belrose

200 0 200 400 600 800 m

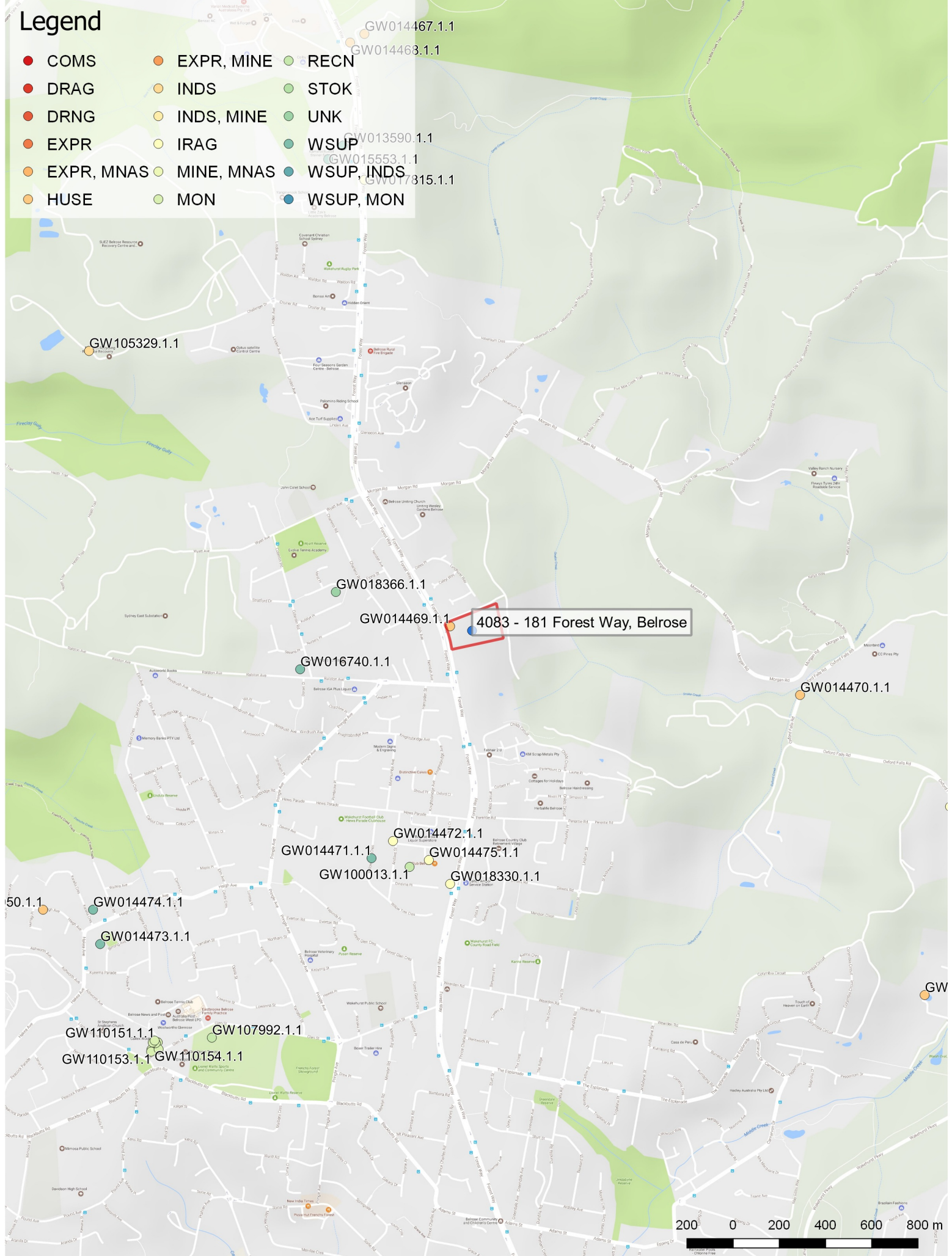


4083 - 181 Forest Way, Belrose



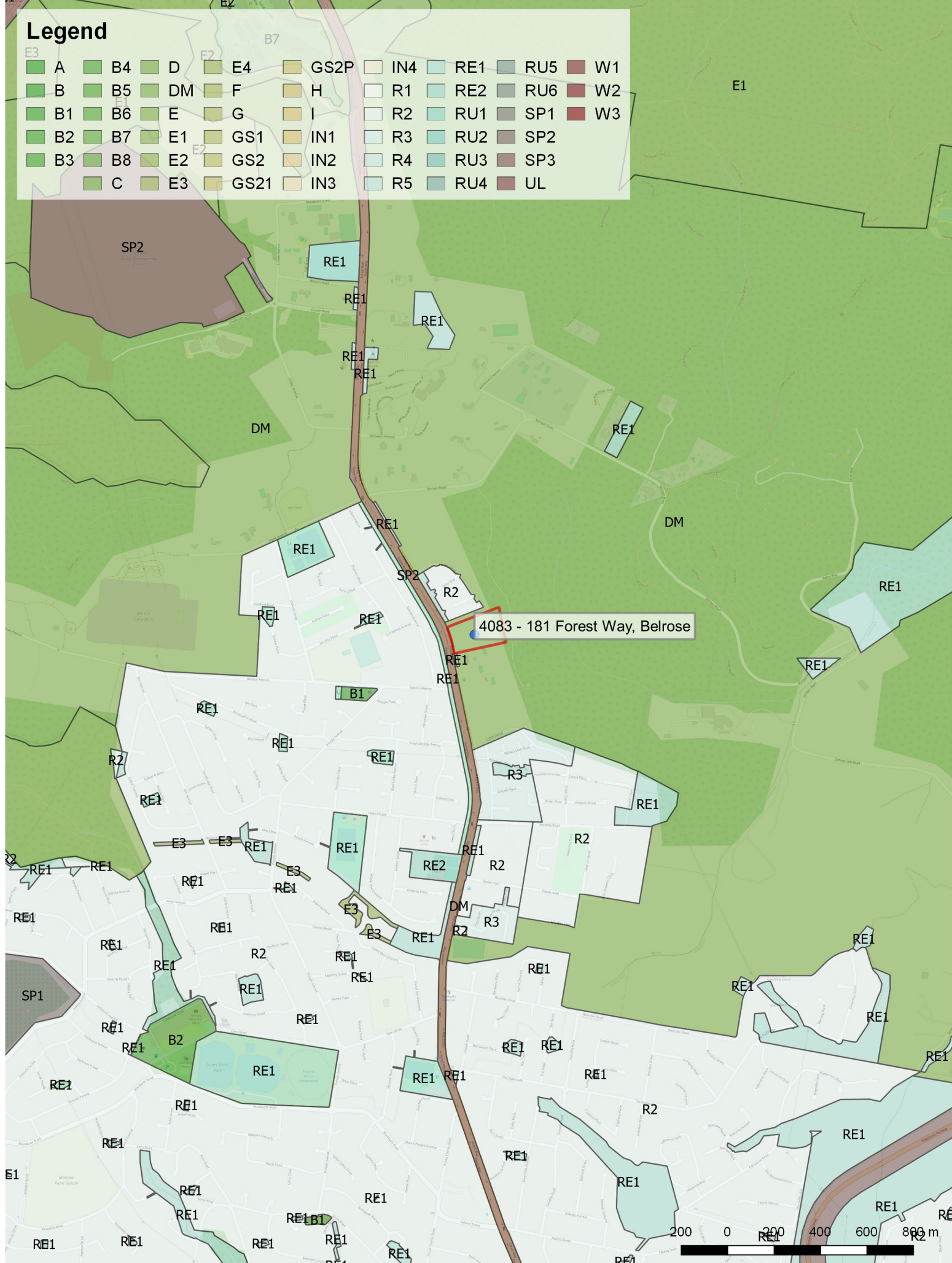
Legend

- COMS
- DRAG
- DRNG
- EXPR
- EXPR, MNAS
- HUSE
- EXPR, MINE
- INDS
- INDS, MINE
- IRAG
- MINE, MNAS
- MON
- RECN
- STOK
- UNK
- WSUP
- WSUP, INDS
- WSUP, MON



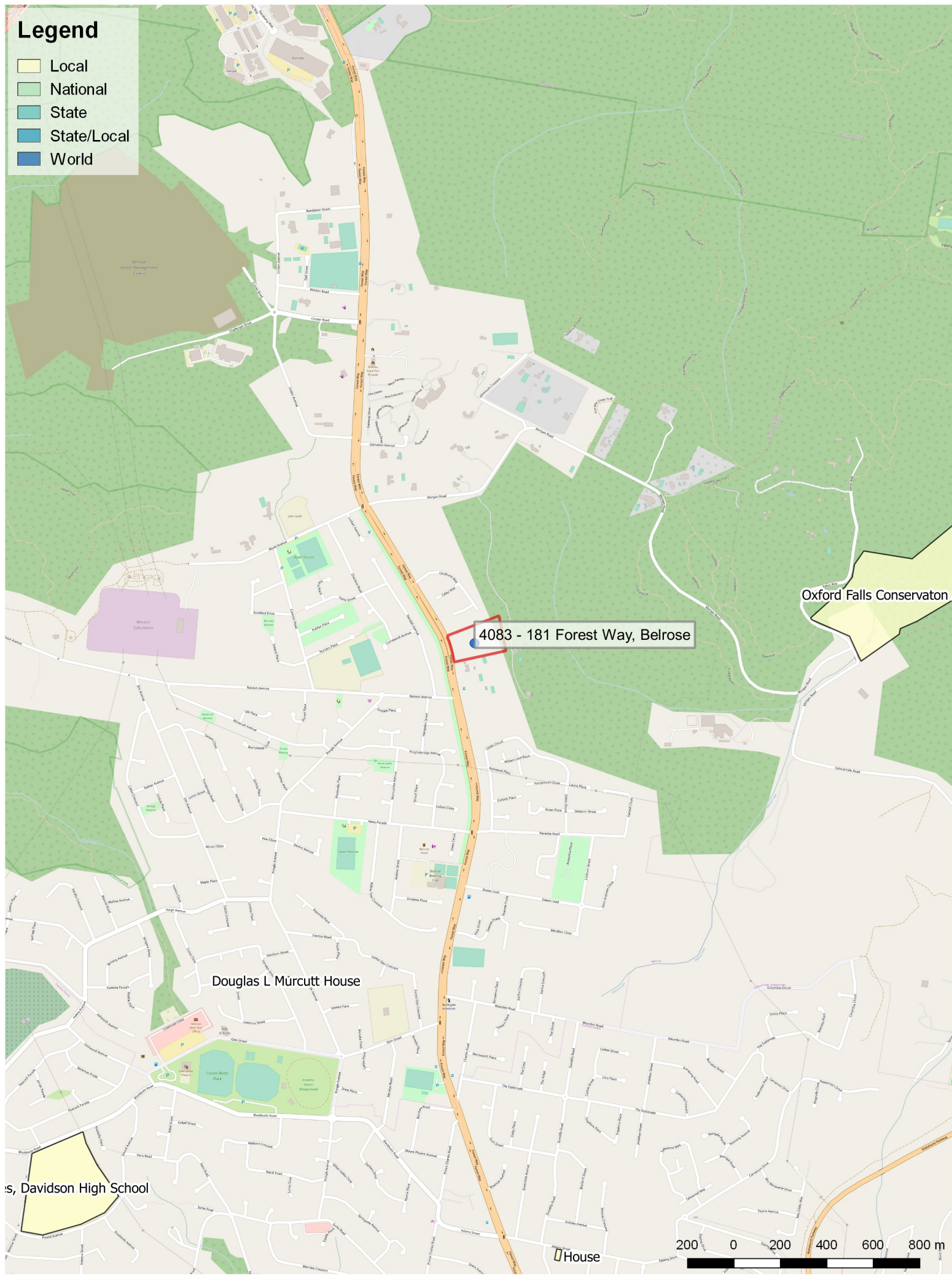
Legend

A	B4	D	E4	GS2P	IN4	RE1	RU5	W1
B	B5	DM	F	H	R1	RE2	RU6	W2
B1	B6	E	G	I	R2	RU1	SP1	W3
B2	B7	E1	GS1	IN1	R3	RU2	SP2	
B3	B8	E2	GS2	IN2	R4	RU3	SP3	
C	E3	GS21	IN3	R5	RU4	UL		



Legend

































- Local
- National
- State
- State/Local
- World

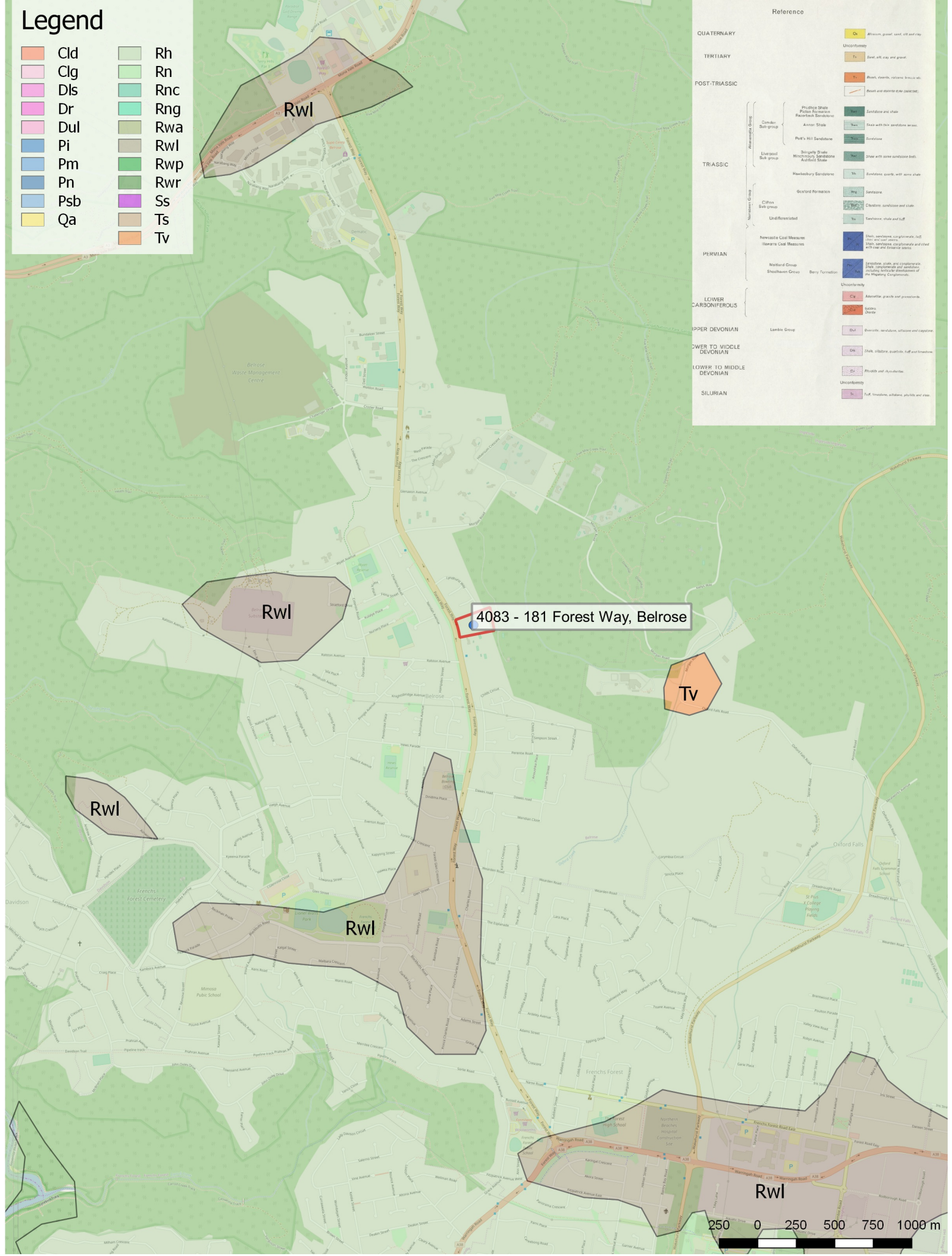


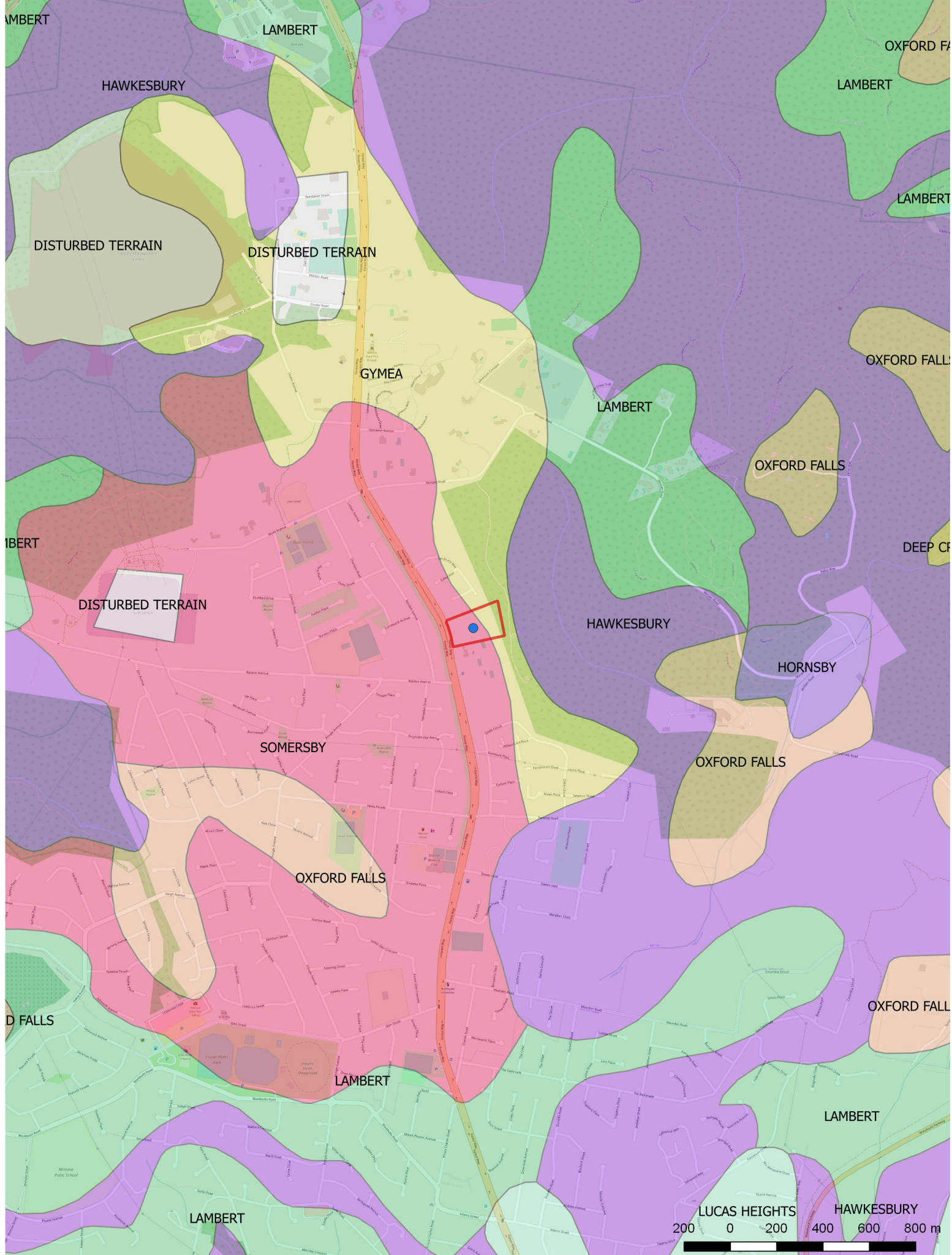
Legend

- | | |
|---|---|
|  Cld |  Rh |
|  Clg |  Rn |
|  Dls |  Rnc |
|  Dr |  Rng |
|  Dul |  Rwa |
|  Pi |  Rwl |
|  Pm |  Rwp |
|  Pn |  Rwr |
|  Psb |  Ss |
|  Qa |  Ts |
| |  Tv |

















Reference

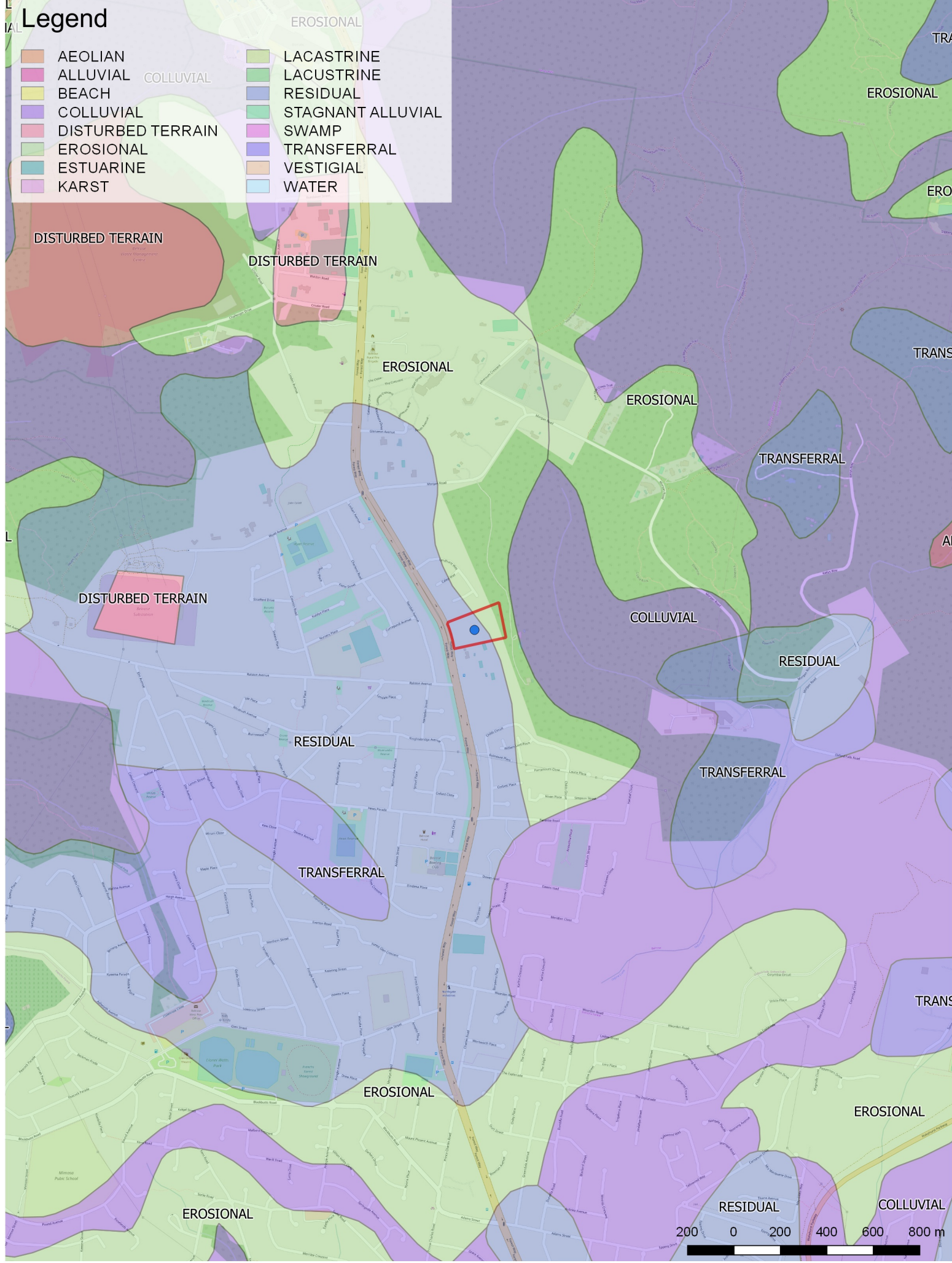
QUATERNARY	 Qa	Alluvium, gravel, sand, silt and clay
	 Unconformity	
TERTIARY	 Tt	Sand, silt, clay and gravel
POST-TRIASSIC	 Rh	Shale, siltstone, calcareous breccia etc.
	 Rn	Basalt and andesite (rare)
	 Rnc	
	 Rng	Sandstone and shale
	 Rwa	Shale with fine sandstone lenses
	 Rwl	Sandstone
	 Rwp	Shale with siltstone bands
	 Rwr	Sandstone, quartz with silt shale
TRIASSIC	 Ss	Sandstone
	 Ts	Shale, siltstone, calcareous breccia etc.
	 Tv	Shale, siltstone, calcareous breccia etc.
PERMIAN	 Unconformity	
	 Ck	Admettite, gravel and pebbles
	 Ss	Siltstone, shale and conglomerate
	 Dls	Shale, siltstone, calcareous breccia etc.
	 Dul	Shale, siltstone, calcareous breccia etc.
	 Pi	Shale, siltstone, calcareous breccia etc.
	 Pm	Shale, siltstone, calcareous breccia etc.
	 Pn	Shale, siltstone, calcareous breccia etc.
	 Psb	Shale, siltstone, calcareous breccia etc.
	 Qa	Shale, siltstone, calcareous breccia etc.
LOWER CARBONIFEROUS	 Ck	Admettite, gravel and pebbles
	 Ss	Siltstone, shale and conglomerate
	 Dls	Shale, siltstone, calcareous breccia etc.
UPPER DEVONIAN	 Dul	Shale, siltstone, calcareous breccia etc.
LOWER TO MIDDLE DEVONIAN	 Pi	Shale, siltstone, calcareous breccia etc.
LOWER TO MIDDLE DEVONIAN	 Pm	Shale, siltstone, calcareous breccia etc.
LOWER TO MIDDLE DEVONIAN	 Pn	Shale, siltstone, calcareous breccia etc.
SILURIAN	 Psb	Shale, siltstone, calcareous breccia etc.





Legend

- | | |
|---|---|
|  AEOLIAN |  LACASTRINE |
|  ALLUVIAL |  LACUSTRINE |
|  BEACH |  RESIDUAL |
|  COLLUVIAL |  STAGNANT ALLUVIAL |
|  DISTURBED TERRAIN |  SWAMP |
|  EROSIONAL |  TRANSFERRAL |
|  ESTUARINE |  VESTIGIAL |
|  KARST |  WATER |



APPENDIX D: ALS ANALYSIS

CERTIFICATE OF ANALYSIS

Work Order : **ES1705530**
Client : **ENVIROTECH P/L**
Contact : **Cheyne Hudson**
Address : **PO BOX 3086**
EAST BLAXLAND NSW, AUSTRALIA 2774
Telephone : **+61 02 47399232**
Project : **BELROSE**
Order number : **16-4083**
C-O-C number : **----**
Sampler : **CH**
Site : **----**
Quote number : **SYBQ/324/15**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 08-Mar-2017 14:00
Date Analysis Commenced : 09-Mar-2017
Issue Date : 15-Mar-2017 13:24



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.



Analytical Results

Sub-Matrix: PAINT (Matrix: SOIL)				Client sample ID	3	----	----	----	----
				Client sampling date / time	06-Mar-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1705530-003	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Lead	7439-92-1	5	mg/kg	2930	----	----	----	----	----



Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Client sample ID		1	2	----	----	----
Client sampling date / time				[06-Mar-2017]	[06-Mar-2017]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1705530-001	ES1705530-002	-----	-----	-----	-----	-----
				Result	Result	----	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples										
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	Yes	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	Ch	Ch + Am	----	----	----	----	----
Sample weight (dry)	----	0.01	g	8.18	11.2	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	N.WEBB	N.WEBB	----	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOLID		
Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	1 - [06-Mar-2017]	One piece of asbestos cement sheeting approx 50 x 30 x 5mm
EA200: Description	2 - [06-Mar-2017]	Two pieces of asbestos fibre board approx 50 x 40 x 5mm

CHAIN OF CUSTODY

ALS Laboratory
please tick →

DADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

CLIENT: Envirotech PTY LTD
OFFICE: PROSPECT
PROJECT: BELROSE
ORDER NUMBER: 16-4083
PROJECT MANAGER: CHEYNE HUDSON
SAMPLER: CH

TURNAROUND REQUIREMENTS:
 Standard TAT (List due date):
 Non Standard or urgent TAT (List due date):
 (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:
 CONTACT PH: 0438002613
 SAMPLER MOBILE:
 EDD FORMAT (or default):
 Email Reports to (will default to PM if no other addresses are listed): cheyne@envirotech.com.au
 Email Invoice to (will default to PM if no other addresses are listed): cheyne@envirotech.com.au

BRISBANE 32
 Ph: 07 3243 7222
 Ph: 07 3243 7222
 Ph: 07 747 15600
 Ph: 07 747 15600

GLADSTONE
 Ph: 07 747 15600
 Ph: 07 747 15600

RECEIVED BY: **Fahy AUS**
 DATE/TIME: **8-3-17 1400**

RECEIVED BY:
 DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	TOTAL CONTAINERS (refer to)	ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
1	S	6/03/2017	S	BAG	1		
2	S	6/03/2017	S	BAG	1		
3	S	6/03/2017	S	BAG	1		
						ASBESTOS (CONFIRMATION ONLY)	
						ASBESTOS (CONFIRMATION ONLY)	
						LEAD (IN PAINT SCRAPE)	
							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Environmental Division
 Sycdney
 Work Order Reference
ES1705530



Telephone : + 61-2-8784 8656

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1705530	Page	: 1 of 4
Client	: ENVIROTECH P/L	Laboratory	: Environmental Division Sydney
Contact	: Cheyne Hudson	Telephone	: +61-2-8784 8555
Project	: BELROSE	Date Samples Received	: 08-Mar-2017
Site	: ----	Issue Date	: 15-Mar-2017
Sampler	: CH	No. of samples received	: 3
Order number	: 16-4083	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Snap Lock Bag (EG005P) 3	06-Mar-2017	09-Mar-2017	02-Sep-2017	✓	09-Mar-2017	02-Sep-2017	✓

Matrix: **SOLID**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) 1, 2	06-Mar-2017	----	----	----	14-Mar-2017	02-Sep-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES (Paint matrices)	EG005P	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES (Paint matrices)	EG005P	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES (Paint matrices)	EG005P	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Metals by ICP-AES (Paint matrices)	EG005P	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals in paint are determined following a specific acid digestion. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. ALS is not NATA accredited for this service.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Preparation of Acid Extracts of Paints	EN37	SOIL	In house: Referenced to AS/NZS 1580.1.501. Samples are digested with Nitric acid prior to analysis.

QUALITY CONTROL REPORT

Work Order	: ES1705530	Page	: 1 of 3
Client	: ENVIROTECH P/L	Laboratory	: Environmental Division Sydney
Contact	: Cheyne Hudson	Contact	: Customer Services ES
Address	: PO BOX 3086 EAST BLAXLAND NSW, AUSTRALIA 2774	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 47399232	Telephone	: +61-2-8784 8555
Project	: BELROSE	Date Samples Received	: 08-Mar-2017
Order number	: 16-4083	Date Analysis Commenced	: 09-Mar-2017
C-O-C number	: ----	Issue Date	: 15-Mar-2017
Sampler	: CH		
Site	: ----		
Quote number	: SYBQ/324/15		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

- Key :
- Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 - CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 - LOR = Limit of reporting
 - RPD = Relative Percentage Difference
 - # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				<i>Laboratory Duplicate (DUP) Report</i>					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EG005T: Total Metals by ICP-AES (QC Lot: 783657)									
ES1705441-002	Anonymous	EG005P: Lead	7439-92-1	5	mg/kg	0.251	2540	1.28	0% - 20%
ES1705441-014	Anonymous	EG005P: Lead	7439-92-1	5	mg/kg	0.596	6060	1.66	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 783657)								
EG005P: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	110	81	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**