



PRELIMINARY SITE INVESTIGATION

Proposed Apartment Building

December 2024

Prepared for: The Trustee ATF WAFI Property Trust

Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515
12-16 Florence Street
Tweed Heads NSW

HMC2024.1001.02

RE: Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW.

HMC Environmental Consulting Pty Ltd is pleased to present our report for a Preliminary Site Investigation for the abovementioned site.

We trust this report meets with your requirements. If you require further information, please contact HMC Environmental Consulting directly on the numbers provided.

| | |
|---|---|
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| Job No: | 2024.1001.02 |
| Client: | The Trustee ATF WAFI Property Trust |

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Enquiries should be addressed to HMC Environmental Consulting Pty Ltd.

EXECUTIVE SUMMARY

BACKGROUND

A multi-level residential development is proposed for a site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW. The proposal would comprise the demolition of two existing dwellings, and an existing funeral home, and the construction of a 14-storey residential apartment building, and associated ancillary works including earthworks for the proposed double basement carpark.

To address potential site contamination associated with current and former land use, HMC Environmental Consulting (HMC) was commissioned by the proponent, The Trustee ATF WAFI Property Trust, to undertake the required investigation in accordance with *State Environmental Policy (Resilience and Hazards) 2021 (SEPP 2021)*.

A Preliminary Site Investigation (PSI) including a desktop assessment of available information, and a detailed site inspection was completed. Due to the presence of slab on ground construction and also potential hazardous building materials associated with the aged structures, an investigation of potential underslab soil contamination and soil lead was completed. Presence of visible asbestos fragments/debris in the soil surrounding the structures was also assessed.

OBJECTIVES

The objectives of the Preliminary Site Investigation are to:

- Assess the current and former land use on the investigation area for potentially contaminating activities.
- Based on potentially contaminating activities associated with the current and former land use, assess the suitability of the investigation area for the proposed land use.

SCOPE OF WORKS

The scope of work undertaken during the investigation included the following:

- Desktop assessment of current and former land use on the site including a search of available records.
- Detailed site inspection.
- Collection of 17 underslab soil samples and laboratory analysis of 6 composite samples and 3 discrete samples for contaminants of potential concern (CoPC) in accordance with Tweed Shire Council's *Pre-demolition Testing Guideline*.
- Collection of 10 surface soil samples and laboratory testing for CoPC (soil lead associated with hazardous building material – lead paint).
- Preparation of a Preliminary Site Investigation report including:
 - review of available land use history information, and results of the site inspection.
 - Interviews with former/current landowners
 - assessment of potentially contaminating activities, contaminants of potential concern (CoPC) and areas of potential concern (AoPC).
 - Assessment of laboratory results for compliance with investigation criteria.
 - conclusions and recommendations including suitability of the site for the proposed residential development and need for further investigation and remediation.

CONCLUSIONS/RECOMMENDATIONS

The Preliminary Site Investigation conclusions are based on the information described in this report and Appendices and should be read in conjunction with the complete report, including Section 14 Limitations.

A multi-level residential development is proposed for the site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW. Historical aerial photography, and a review of available information indicated the long-term historic use of the property for residential purposes on 12-14

Florence Street, together with a funeral home on 16 Florence Street. The existing structures have been present on the proposed development site since prior to 1962, and may contain hazardous building materials used in their construction.

A Sampling and Analysis Quality Plan was prepared and implemented to assess total soil concentrations of contaminants of potential concern including lead. Laboratory results recorded all contaminants of potential concern below the investigation criteria Visible asbestos fragments/debris in soil across the proposed development site was also assessed with no evidence of soil asbestos recorded. Bonded asbestos containing material appears to be present in existing structures and would be removed prior to general demolition by a Safework NSW-licensed contractor.

Based on the information presented, in relation to potential site contamination, the site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW, as shown in Appendix 1 & 2 of this report, is considered suitable for the proposed apartment building development subject to:

1. Identification and removal of any asbestos from existing structures by an approved Safework NSW licensed contractor prior to general demolition.

Based on the information presented, in relation to potential site contamination associated with the current and former land use, no further investigation or remediation is required for the site of the proposed apartment building to be located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW, as shown in Appendix 1 & 2 of this report.

TABLE OF CONTENTS

| | |
|---|----|
| EXECUTIVE SUMMARY | 3 |
| Background | 3 |
| Objectives | 3 |
| Scope Of Works | 3 |
| Conclusions/Recommendations | 3 |
| 1 INTRODUCTION | 9 |
| 1.1 Background | 9 |
| 1.2 Project Description | 9 |
| 1.3 Objective of the Investigation | 9 |
| 1.4 Scope Of Works | 9 |
| 2 SITE INFORMATION | 10 |
| 2.1 Site Identification | 10 |
| 3 SITE HISTORY | 11 |
| 3.1 Ownership | 11 |
| 3.2 Aerial Photograph Interpretation | 11 |
| 3.3 Historic Parish Maps & Topographic Maps | 12 |
| 3.4 Tweed Shire Council – Informal Information Request | 13 |
| 3.5 Owner Interview | 13 |
| 4 SITE INSPECTION | 14 |
| 4.1 Summary of Site Conditions | 14 |
| 4.2 Site photographs | 14 |
| 4.3 Site layout | 14 |
| 4.4 Site Features | 14 |
| 5 IDENTIFIED AREAS OF POTENTIAL CONCERN AND CONTAMINANTS OF POTENTIAL CONCERN . | 15 |
| 6 APPLICABLE INVESTIGATION LEVELS AND INVESTIGATION CRITERIA | 15 |
| 6.1 Soil Criteria | 15 |
| 6.2 Relevant Environmental Media | 16 |
| 6.3 Investigation Criteria | 16 |
| 6.4 Data quality objectives | 17 |
| 7 SAMPLING AND ANALYSIS PLAN AND SAMPLING METHODOLOGY | 18 |
| 7.1 Sampling, analysis and data quality objectives | 18 |
| 7.2 Soil Sampling and Analysis Program | 18 |
| 8 QUALITY ASSURANCE AND QUALITY CONTROL | 19 |
| 9 FIELD AND ANALYTICAL RESULTS | 21 |
| 9.1 Fieldwork | 21 |
| 9.2 Analytical Testing | 22 |
| 9.3 Soil Program | 22 |
| 9.4 Primary and Replicate Results | 22 |
| 10 QA/QC LABORATORY DATA REVIEW | 22 |
| 10.1 Relative percent difference (RPD) | 22 |
| 10.1.1 Rinsate | 22 |
| 10.1.2 Statistical Analysis | 23 |
| 10.2 Soil Investigation Conclusions | 23 |
| 11 CONCEPTUAL SITE MODEL | 23 |
| 12 DISCUSSION | 23 |
| 13 CONCLUSIONS AND RECOMMENDATIONS | 23 |
| 14 LIMITATIONS | 25 |
| 15 SIGNATURE | 25 |
| 16 REFERENCES | 26 |

| | | |
|----|--|----|
| 17 | GLOSSARY | 27 |
| 18 | APPENDICES | 28 |
| | APPENDIX 1 - LOCATION MAPS | 29 |
| | APPENDIX 2 - SITE PLAN PROPOSED DEVELOPMENT | 32 |
| | APPENDIX 3 - GEOLOGY AND SOIL LANDSCAPE | 33 |
| | APPENDIX 4 - LICENSED GROUNDWATER BORES | 35 |
| | APPENDIX 5 - CATTLE DIP SITES | 37 |
| | APPENDIX 6 - HISTORICAL AERIAL PHOTOGRAPHY | 39 |
| | APPENDIX 7 - HISTORIC PARISH MAPS | 44 |
| | APPENDIX 8 - HISTORIC TOPOGRAHPIC MAPS | 48 |
| | APPENDIX 9 - ZONE MAPPING | 52 |
| | APPENDIX 10 - PHOTOGRAPHIC LOG | 54 |
| | APPENDIX 11 - LABORATORY RESULTS SUMMARY & RPD | 58 |
| | APPENDIX 12 - INVESTIGATION AREA - SAMPLING LOCATIONS PLAN | 60 |
| | APPENDIX 13 - CHAIN OF CUSTODY | 61 |
| | APPENDIX 14 - LABORATORY CERTIFICATES | 62 |

LIST OF TABLES

| | |
|--|----|
| Table 1 - Site Identification Summary | 10 |
| Table 2 – Site Characteristics | 10 |
| Table 3 – Property Ownership | 11 |
| Table 4 – Historic Aerial Photography Summary | 11 |
| Table 5 – Statutory Searches | 12 |
| Table 6 – Historic Parish and Topographic Map Summary | 12 |
| Table 7 - Site Features Indicating Potential Contamination | 14 |
| Table 8 - (CoPC) and (AoC) | 15 |
| Table 9 - Investigation Criteria (Soil & Sediment) | 16 |
| Table 10 – Soil Quality Control Samples | 19 |
| Table 11 - Data Quality Indicators | 19 |
| Table 12 – Sample Locations | 21 |
| Table 13 – Laboratory Results Summary (8 February 2023) | 22 |
| Table 14 – Conceptual Site Model | 23 |
| Table 15 – Strategic Sampling Laboratory Results | 59 |
| Table 16 – Relative Percentage Difference (RPD%) | 59 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1 - Surrounding Area (Source: Nearmap 2024) | 30 |
| Figure 2 – Subject Site (Source: Nearmap 2024) | 31 |
| Figure 3 - Geology Map (Source: Geoscience Australia) | 34 |
| Figure 4 - Soil Landscape (Source: eSPADE NSW) | 34 |
| Figure 5 – Groundwater Bore Locations (Source: http://allwaterdata.water.nsw.gov.au/water.stm) | 36 |
| Figure 6 – Cattle Dip Location (Source: DPI NSW) | 38 |
| Figure 7 - Historical Aerial 1962 (NSW Spatial Services Historical Imagery https://portal.spatial.nsw.gov.au) | 40 |
| Figure 8 - Historical Aerial 1972 (NSW Spatial Services Historical Imagery https://portal.spatial.nsw.gov.au) | 40 |
| Figure 9 - Historical Aerial 1979 (NSW Spatial Services Historical Imagery https://portal.spatial.nsw.gov.au) | 41 |
| Figure 10 - Historical Aerial 1991 (NSW Spatial Services Historical Imagery https://portal.spatial.nsw.gov.au) | 41 |
| Figure 11 - Historical Aerial 1997 (NSW Spatial Services Historical Imagery https://portal.spatial.nsw.gov.au) | 42 |
| Figure 12 - Historical Aerial 2003 (Google Earth) | 42 |
| Figure 13 - Historical Aerial 2010 (Google Earth) | 43 |

Figure 14 - Historic Aerial 2019 (Google Earth)..... 43
Figure 15 – 1913 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)..... 45
Figure 16 - 1918 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>) 45
Figure 17 – 1924 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)..... 46
Figure 18 – 1935 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)..... 46
Figure 19 – 1959 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)..... 47
Figure 20 – 1935 *Tweed Heads* Topographical Map extract..... 49
Figure 21 – 1966 *Tweed Heads* Topographical Map extract..... 49
Figure 22 – 1974 *Tweed Heads* Topographical Map extract..... 50
Figure 23 – 2002 *Tweed Heads* Topographical Map extract..... 50
Figure 24 – 2016 *Tweed Heads* Topographical Map extract..... 51
Figure 25 – 2022 *Tweed Heads* Topographical Map extract..... 51
Figure 26 – NSW Legislation Zone Plan 53

ABBREVIATIONS/ ACRONYMS

| | |
|--------------------|--|
| ACM | Asbestos containing material |
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| AoPC | Area of potential concern |
| ARMCANZ | Agricultural and Resource Management Council of Australia and New Zealand |
| AS | Australian Standard |
| ASC NEPM | National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013) |
| Client | The Trustee ATF WAFI Property Trust |
| CLM Act | <i>Contaminated Land Management Act 1997</i> |
| CoPC | Contaminants of Potential Concern |
| CSM | Conceptual site model |
| DQO | Data quality objective |
| DSI | Detailed Site Investigation |
| EIL | Ecological Investigation Level |
| EPA | Environment Protection Authority |
| HIL | Health Investigation Level |
| HMC | HMC Environmental Consulting |
| Investigation Area | Proposed development area |
| mBGL | Metres below ground level |
| OEH | [NSW] Office of Environment and Heritage |
| PSI | Preliminary Site Investigation |
| Site | Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW |
| TSC | Tweed Shire Council |

1 INTRODUCTION

1.1 BACKGROUND

A multi-level residential development is proposed for a site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW. The proposal would comprise the demolition of two existing dwellings, and an existing funeral home, and the construction of a 14-storey residential apartment building, and associated ancillary works including earthworks for the proposed double basement carpark.

To address potential site contamination associated with current and former land use, HMC Environmental Consulting (HMC) was commissioned by the proponent, The Trustee ATF WAFI Property Trust, to undertake the required investigation in accordance with *State Environmental Policy (Resilience and Hazards) 2021 (SEPP 2021)*.

A Preliminary Site Investigation (PSI) including a desktop assessment of available information, and a detailed site inspection was completed. Due to the presence of slab on ground construction and also potential hazardous building materials associated with the aged structures, an investigation of potential underslab soil contamination and soil lead was completed. Presence of visible asbestos fragments/debris in the soil surrounding the structures was also assessed.

1.2 PROJECT DESCRIPTION

It is proposed to construct a 14-storey residential apartment building (57 units), along with a proposed double basement carpark and ancillary works including landscaping.

Currently the properties are occupied by existing dwellings located at No. 12 and 14, together with a funeral home located at No. 16. All existing structures would be demolished for the proposed development.

For the purposes of this report, as the proposed development will occupy the majority of the site, the *investigation area* covers the land within the three lot boundaries.

1.3 OBJECTIVE OF THE INVESTIGATION

The objectives of the Preliminary Site Investigation are to:

- Assess the current and former land use on the investigation area for potentially contaminating activities.
- Based on potentially contaminating activities associated with the current and former land use, assess the suitability of the investigation area for the proposed land use.

1.4 SCOPE OF WORKS

The scope of work undertaken during the investigation included the following:

- Desktop assessment of current and former land use on the site including a search of available records.
- Detailed site inspection.
- Collection of 17 underslab soil samples and laboratory analysis of 6 composite samples and 3 discrete samples for contaminants of potential concern (CoPC) in accordance with Tweed Shire Council's *Pre-demolition Testing Guideline*.
- Collection of 10 surface soil samples and laboratory testing for CoPC (soil lead associated with hazardous building material – lead paint).
- Preparation of a Preliminary Site Investigation report including:
 - review of available land use history information, and results of the site inspection.
 - Interviews with former/current landowners
 - assessment of potentially contaminating activities, contaminants of potential concern (CoPC) and areas of potential concern (AoPC).
 - Assessment of laboratory results for compliance with investigation criteria.

- conclusions and recommendations including suitability of the site for the proposed residential development and need for further investigation and remediation.

2 SITE INFORMATION

2.1 SITE IDENTIFICATION

Table 1 - Site Identification Summary

| | | |
|--|--|--|
| Street Address | 12-14 Florence Street, Tweed Heads NSW | |
| Allotment Description | Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515 | |
| Allotment size | 531 m ² (No. 12), 430 m ² (No. 14), 594m ² (No.16) | |
| Property Number | 6306, 6307, 6309 | |
| Local Government | Tweed Shire | |
| Parish | Terranora | |
| County | Rous | |
| Geographical Coordinates (MGA Zone 56) | Easting: -28.175795m E Northing: 153.540522 m S (Approximate centre of site) | |
| Zoning | R2 – Low Density Residential | |
| Land use - Existing | Residential and Commercial (Funeral Home) | |
| Land use - Proposed | Residential | |
| Site Services | Power, Mains Water, Sewer | |
| Surround Land Uses | North | Florence Street, Residential, Commercial |
| | East | Residential, Commercial |
| | South | Commercial, Tourist Accommodation |
| | West | Boyd Street, Residential, Commercial |
| Closest Sensitive Environment | The subject site is located approximately 230m from the Tweed Marina. Surface runoff would flow into the street stormwater system before eventually discharging into the Tweed Marina. | |

Table 2 – Site Characteristics

| | |
|--------------------------------|---|
| Topography | Landform: Alluvial Plain Aspect: Northwest Slope: <3% Gradient: Generally level Elevation: Approximately 3.8m-4.4m AH across the investigation area |
| Regional Geology | Cenozoic Undifferentiated Sediments/Sedimentary Rocks Unconsolidated mud, silt, sand and gravel of an uncertain age and origin. |
| Soil Landscape | Kingscliff (ki) landscape: Extremely low, level to gently undulating Pleistocene sand sheets. Extensively cleared and disturbed open-heathland and forest. Soils: Deep, generally well-drained Podzols. Geology: Aeolian and marine quartz sand sheets and dunes of the Pleistocene inner barrier system. |
| Australian Soil Classification | Podosols (PO) Soils with B horizons dominated by the accumulation of compounds of organic matter, aluminium and/or iron. |

| | |
|-----------------------------|---|
| Regional Hydrogeology | Groundwater vulnerability is mapped as High for the site. The property is located nearby to Tweed Marina and, although slightly elevated, shallow groundwater may be present. A perched water table may be intercepted where dense indurated material is located near the ground surface. |
| Groundwater Database Search | The online NSW Office of Water groundwater mapping (http://allwaterdata.water.nsw.gov.au/water.stm) shows the nearest mapped registered groundwater bore is GW303657 located approximately 250m east of the site. The bore is registered for domestic use. |

3 SITE HISTORY

3.1 OWNERSHIP

A review of the title information via the online Land and Property Information portal on the 5th September 2024 provides the following information:

Table 3 – Property Ownership

| Folio Description | Date of Folio | Search Date | Ownership Details |
|-------------------|---------------|-------------|--|
| 2/300515 | 14/8/2024 | 5/9/2024 | Here We Dream Again Pty Ltd <i>In ½ Share</i> McMahons Point Investments Pty Ltd <i>In ½ Share</i> <i>As tenants in common</i> |

3.2 AERIAL PHOTOGRAPH INTERPRETATION

A summary of the reviewed historic aerial photography is shown in Table 4.

Table 4 – Historic Aerial Photography Summary

| Year | Source | Comments | Areas of Potential Concern Yes/No |
|-------------|---|---|---|
| 1962 | NSW Government (Historical Imagery) ⁽¹⁾ | The poor quality aerial is difficult to distinguish, however, it appears that all three existing structures are visible on site. The existing smaller brick structure adjacent south of the funeral home is also visible, however, it is difficult to determine if any other structures are existing on the properties. The surrounding area appears to be generally developed for residential use. | Yes. Given the age of the existing structures, hazardous building materials (including lead paint and ACM) may have been used in their construction. |
| 1972 | | Similar to 1962. No visible changes noted to the subject sites. | |
| 1979 | | The structures at the rear of No. 16 now appear to be existing. No other changes are noted to the subject site. | |
| 1991 | | Similar to 1979. All existing structures are visible across the subject sites besides the metal awning structure at the rear of No. 16. The surrounding area appears to be heavily developed for residential and commercial uses. No visible potentially contaminating activities are noted on site or within the surrounding area. | |
| 1997 | | The metal awning at the rear of No 16. is now visible. No other changes noted. | |
| 2003 - 2024 | Google Earth | Similar to 1997. No significant changes are noted to the subject site or any of the existing structures during this period. | |

| | | | |
|--|--|--|--|
| | | It appears that the awning at the rear of No.14 was replaced prior to 2012. There are no potentially contaminating activities noted. The existing structures on No. 12 and 14 have increasing vegetation cover surrounding them. | |
|--|--|--|--|

- (1) <https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccdda8075238cb>

Table 5 – Statutory Searches

| Search | Comment |
|--|--|
| NSW EPA Contaminated Land Public Record http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx | No records (orders, notices) for the site were discovered. |
| Australian Department of Defence Unexploded Ordinance Contaminated Sites http://www.defence.gov.au/uxo/where_is_uxo/UXOSearch.asp?State=NSW | No UXO sites are located near the investigation area. |
| Cattle dip site locator http://www.dpi.nsw.gov.au/agriculture/livestock/health/specific/cattle/ticks/cattle-dip-site-locator | There are no mapped Cattle Dips in a 5km radius. |

3.3 HISTORIC PARISH MAPS & TOPOGRAPHIC MAPS

A summary of the available historic parish and topographic mapping information is shown in Table 6.

Table 6 – Historic Parish and Topographic Map Summary

| Search | Comment |
|---|--|
| <p>Historic Terranora Parish Maps 1913, 1918, 1924, 1959</p> <p>Town of Tweed Parish Maps 1941 https://hrlv.nswlrs.com.au/</p> | Maps do not record land use. Terranora parish maps 1913 to 1959 show the subject site as part of the larger historic portion 24 (40 acres), within the Town of Tweed. No changes were noted during the 1913-1959 period. The Town of Tweed 1941 map shows the subject sites as part of historic portion 22. |
| <p>Topographic Maps</p> <ul style="list-style-type: none"> ● Australian Section of the Imperial General Staff (1935), 1:63360 N°213A Zone 8 Tweed Heads, Topographic Map ● Department of National Development (1966), 1:50000 9641-IV Tweed Heads, Topographic Map ● Department of Lands NSW (1974), 1:25000 9641-IV-S Tweed Heads, Topographic Map ● NSW Land & Property Information (2002), 1:25000 9641-4S Tweed Heads, Topographic Map | <p>The subject sites and surrounding area appear to be developed, including Florence St to the north and Boyd Street to the west. The lot boundaries are not mapped. Structures appear to be mapped on the site, but it does not show in detail what the structures are.</p> <p>Lot boundaries are not mapped. The subject site is mapped as <i>built-up area</i>.</p> <p>Similar to 1966.</p> <p>The existing lot boundaries are now mapped. It remains mapped as <i>built-up area</i>.</p> |

| | |
|--|------------------|
| <ul style="list-style-type: none">● NSW Land & Property Information (2016) 1:25000 9641-4S Tweed Heads, GeoPDF Topographic Map | Similar to 2002. |
| <ul style="list-style-type: none">● NSW Government (2022) 1:25000 9641-4S Tweed Heads, GeoPDF Topographic Map | Similar to 2016. |

3.4 TWEED SHIRE COUNCIL – INFORMAL INFORMATION REQUEST

An informal request for information was submitted by HMC on 9 September 2024. A response was received on 16 September 2024, which along with a search of TSC online DA database, provided the following information:

- A Building Application (BA 258/72) was submitted on 19 June 1972 for additions to a funeral home at 16 Florence Street. The application was to create a funeral home with small chapel extensions and the modernization of the existing facilities. The land use at the time was listed as funeral parlour. Approval was granted on 23 June 1972.
- A Building Application (BA 95/120) was approved on 10 May 1975 for the erection of a new mortuary at the rear of 16 Florence Street. Approval to operate was given on 4 July 1995.
- A Building Application (BA 831/78) was submitted on 13 November 1978 for a carport at 14 Florence Street. The application was approved on 15 December 1978; however, a review of the historic aerials show that the construction did not occur.
- A Development Application (DA 12/0507) was submitted on 29 October 2012 for the additions to existing mortuary at 16 Florence Street, including an entry ramp and entry awning. The application was approved 19 December 2012.

3.5 OWNER INTERVIEW

An interview was conducted by HMC with the proponent Stefano Macri on 9 September 2024. The information gathered is as follows:

- The property was purchased in August 2024 from Keith Heritage Pty Ltd who had owned it for 15 years. At the time of the purchase all structures were existing on site, including the two dwellings and funeral home. It has not been developed since purchased.
- He is not aware of any cropping or intensive land use having occurred on the site nor of any bulk storage or chemicals and fuel. To the best of his knowledge there has not been any fill, farm dumps or groundwater bores located on site.
- The property will be used for residential purposes.

4 SITE INSPECTION

A site inspection was undertaken by Mark Tunks of HMC on 5 September 2024, and again during the soil investigation on 17 October 2024.

There are a number of existing structures located across the three lots within the investigation area.

A two -story weatherboard dwelling, with a single garage and storage on the ground floor, and a metal roof is located at 12 Florence Street on the corner of Boyd Street. There is a lawn area adjacent Boyd Street with access off Florence Street.

There is an existing single-storey brick veneer, and fibrous cement clad dwelling on 14 Florence Street, along with a detached fibrous cement garage with a concrete floor. The remainder of the lot is generally lawn grass cover, with garden pots extending to the south and east of the existing garage. Vegetation also extends along the boundaries.

An existing funeral home operation is located in what appears to be a former dwelling at 16 Florence Street, and appears from the records to have been used for this purpose since before 1972. A number of structures are located across this part of the investigation area, including:

- partially rendered structure fronting Florence Street with apparent externals fibreboard cladding (1972 building application in TSC records notes asbestos cement);
- a single fibrous cement single garage on the south-east corner of the site;
- two detached single-storey brick veneer structures on the southwestern portion of the property, connected by a large metal awning. The structure in the south-west corner is the mortuary, while the other structure appears to be an office with storage;
- the remainder of the property is generally concrete paving except with limited exposed soil.

No vegetative die-off, soil staining or other indicators of CoPC were recorded.

4.1 SUMMARY OF SITE CONDITIONS

Table 7 provides a summary of observations during the site inspection.

4.2 SITE PHOTOGRAPHS

See Appendix 10

4.3 SITE LAYOUT

The details of the site inspections are shown in Table 7.

4.4 SITE FEATURES

Table 7 - Site Features Indicating Potential Contamination

| Features of Contamination | Comments |
|---|--|
| Disturbed, discoloured, or stained soil | None observed during the inspection |
| Disturbed or distressed vegetation | None observed during the inspection |
| Surface water quality | No surface water existing onsite |
| Agrichemical Storage/Use | None observed during the inspection |
| Other chemical/fuel storage | None observed during the inspection |
| Waste storage | Typical domestic and commercial waste storage receptacles, biohazard waste collected by contractor |

| | |
|-------------------------------------|---|
| Asbestos Waste or Use in Structures | No fragments or debris recorded, however, bonded asbestos containing material (ASM) appears to have been extensively used in structures construction. |
| Fill from unapproved source | None observed during the inspection |
| Other | Nil |

5 IDENTIFIED AREAS OF POTENTIAL CONCERN AND CONTAMINANTS OF POTENTIAL CONCERN

While difficult to distinguish in the poor-quality historic aerials, the existing structures appear to have generally been present onsite since 1962. Additional work has been completed in the years since at 16 Florence for the purposes of the Funeral Home operation. Given the age of the structures, hazardous building materials including ACM and lead paint may have been used in their construction, which could have weathered over time causing potential contamination of the surrounding soils.

Table 8 - (CoPC) and (AoC)

| AoPC | CoPC | Description and common relationship |
|---------------------|--|--|
| Existing structures | Hazardous Building Materials – lead paint (Pb), asbestos containing material (ACM) | Potential historic use of hazardous building materials |

6 APPLICABLE INVESTIGATION LEVELS AND INVESTIGATION CRITERIA

6.1 SOIL CRITERIA

The proposed apartment building would increase the number of persons using the property. The existing land use is residential & commercial (Funeral Home).

The proposal would allow for proposed apartment building development which would include increased occupancy on the property, and, therefore, increased exposure to CoPC may occur. However, to create the double level basement carpark it is expected all surface topsoil and underlying subsoil would be removed to a depth of 6-8m below the current ground surface across the investigation area.

As the soil is being removed, final exposure to the existing soil surface would not occur during occupancy of the apartment building, however for the purposes of this PSI, the exposure settings for potential exposure of persons to soil, and soil disturbance associated with the potential land use, in and around the investigation area assessed were:

- **Health investigation level (HIL B)** - residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- **Ecological investigation level (EIL)** - urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios. Note: as the soil across the investigation area would be removed to a depth of 6-8m below the ground surface, no assessment of EIL compliance was completed.

The following guidance notes were considered in the preparation of this report:

- *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (April 2013), EPHC 2013, Canberra.

(Schedule B)

- *(1) Guidelines on the Investigation Levels for Soil and Groundwater, and*
- *(2) Guidelines on Site Characterisation*

In NSW the Measure is now being implemented by way of endorsement under section 105 of the Contaminated Land Management Act 1997. This will provide expanded technical guidance to site auditors, contaminated land consultants, planning authorities and the public when assessing a contaminated site.

- **NSW EPA (2022) *Sampling design part 1 - application–Contaminated Land guidelines*** were followed during design of the sampling and analysis plan and predetermination of data quality objectives (DQOs).
- **SEPP (2021) *State Environmental Planning Policy (Resilience and Hazards)***– provided guidance on project objectives.’
- **NSW EPA (2020) *Consultants reporting on contaminated land - Contaminated land guidelines*** were followed throughout the investigations and during preparation of this report.

Table 9 - Investigation Criteria (Soil & Sediment)

| Analyte | HIL B ⁽¹⁾ |
|----------------------------------|----------------------|
| Metals/Metalloids (mg/kg) | |
| Lead | 1200 |

- (1) Health Investigation Levels for residential “B” land use (HIL B) as stated in Table 1A (1) of *Schedule B (1) Guideline of Investigation Levels for Soil and Groundwater* within the *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended and in force from 16 May 2013.

6.2 RELEVANT ENVIRONMENTAL MEDIA

Based on the site history, topography and soils, the relevant environmental media would generally be the surface soil, on and around the existing structures, where soil would be disturbed during earthworks associated with the construction of the development, or subject to movement due to erosion (rain) or wind (dust).

6.3 INVESTIGATION CRITERIA

The investigation criteria are based on the Health Investigation Level deemed relevant for the proposed land use in clayey soil.

Groundwater measured on site was approximately 1.3 – 2.5m m depth near the investigation area with silty sand and dense dark sand observed at depth. No groundwater investigation was completed during this preliminary investigation, however a groundwater investigation was completed for proposed dewatering activities associated with proposed earthworks. If surface soil investigation recorded elevated CoPC exceeding investigation criteria then the groundwater regime would be further assessed for CoPC and, if warranted, a groundwater investigation, including collection of representative samples, would be implemented. No groundwater use for domestic purposes is proposed.

ASC NEPM (2013) recommends that " *at the very least, the maximum and the 95% UCL of the arithmetic mean contaminant concentration should be compared to the relevant Tier 1 screening criteria*" and also that " *the results should also meet the following criteria:*

- *the standard deviation of the results should be less than 50% of the relevant investigation or screening level, and*
- *no single value should exceed 250% of the relevant investigation or screening level".*

The 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than, or equal to, this value. The 95% UCL is a useful mechanism to account for uncertainty in whether the data set is large enough for the mean to provide a reliable measure of central tendency

6.4 Data quality objectives

● State the Problem

- A review of historic aerial photography shows the existing structures having existed on site since prior to 1962. Given their age, they may have contained historic hazardous building materials, which may be a potentially contaminating activity. Contaminants of potential concern (CoPC) may be present in the soil at concentrations exceeding the investigation criteria for the proposed land use.

● Identify the Decisions/Goals

- Soil concentrations of CoPC (includes visible asbestos containing material in soil) to meet adopted investigation criteria for future residential land use.

● Identify Information Inputs

- Soil metal (lead only) concentrations
- Visible presence of soil ACM
- Sampling depth and location 0-100mm (surface) based on NSW EPA (2022) – Sampling design part 1 – application (section 5.3.1)
- Soil texture
- Field measurements - visual and olfactory. Visual assessment for ACM.
- Investigation criteria generally based on residential land use for surface sand (coarse) soil as shown in Table 9

● Define the Study Boundaries

- The investigation area is confined to the immediate surrounds of the existing structures. This area would be subject to future residential land use as shown in Appendix 2 in this report. Targeted sampling was completed to assess areas adjacent structure walls, subject to ground cover and access. Ten (10) sampling locations were used for this investigation, with 4 locations located around the existing dwelling at No. 12, 5 locations located around the existing dwelling at No. 14, and one location adjacent to the existing funeral parlour at No. 16 (very limited access to ground surface).

● Develop the Analytical Approach

- If the results exceeded the investigation criteria, then the soil would require further investigation/remediation.
- If the results were below the investigation criteria, then the soil can remain in-situ, and the investigation area would be suitable for the proposed residential land use.

● Specify the Acceptance Criteria

- Investigation criteria – 95% UCL < HIL B, Standard Deviation <50% HIL B, maximum sample concentration <250% HIL B - see Table 9

● Investigation Criteria

- See Table 9

● Optimise the Design

- Vary design based on site conditions and results.

7 SAMPLING AND ANALYSIS QUALITY PLAN AND SAMPLING METHODOLOGY

7.1 SAMPLING, ANALYSIS AND DATA QUALITY OBJECTIVES

The following sampling, analysis and data quality objectives have been adopted for this site investigation:

- To collect the minimum number of soil samples across the investigation area to assess whether concentrations of CoPC are present and meet the soil investigation criteria for the proposed land use.
- To visually assess the ground surface for the presence/absence of ACM (generally bonded asbestos cement fragments)
- To employ quality assurance when sampling, assessing, and during evaluation of the subject soils.
- To ensure that decontamination techniques are applied during the sampling procedure and that no cross contamination of samples occurs.

7.2 SOIL SAMPLING AND ANALYSIS PROGRAM

A sampling and analysis quality plan (SAQP), and a sampling and analysis program, were developed to assess the site for CoPC associated with hazardous building materials.

A strategic (targeted) sampling approach was adopted in the immediate surrounds of the existing structures. 10 primary soil sample locations were planned surrounding the structures, including four locations surrounding the dwelling at No. 12, and five locations surrounding the dwelling at No.14. The ground surface of No.16 is generally completely concrete, with only part of one side of the existing funeral home with exposed soil. A single sampling location was planned for this structure.

Surface soil sampling was adopted as any soil exposure would be to the surface soil within the investigation area. The NSW EPA (2022) recommends 0-100mm sampling interval.

The following basic measures were undertaken by HMC Environmental Consulting to conform to the minimum standards for field quality assurance and quality control procedures for the samples collected:

- Soil sampling was undertaken by Mark Tunks and Taylah Richards of HMC Environmental Consulting, with experience in site contamination investigations on 17 October 2024.
- Dedicated, clean stainless-steel trowels were used to collect samples from immediately below the root zone and detritus layer, where present, (0-100mm) using disposable nitrile gloves.
- The trowels were decontaminated before sampling by pressure cleaning (12V) thoroughly with clean water, scrubbing with Decon 90 cleanser, and finally re-rinsing with clean water.
- Field quality assurance and quality control (QA/QC) protocols implemented included details of collection and analysis of field duplicate and triplicate samples.
- Chain of custody documentation was completed.
- The laboratory results and quality assurance and quality control reports including a description of the analytical methods used and reporting for surrogates was also completed.

8 QUALITY ASSURANCE AND QUALITY CONTROL

Sampling was undertaken in accordance with the SAQP (see section 7).

Table 10 – Soil Quality Control Samples

| Primary Sample ID | Type | Quality Control Sample ID | Laboratory | Analytes |
|-------------------|------------|---------------------------|---------------|----------|
| FSL4 | Duplicate | FSLDUP | ALS, Brisbane | Lead |
| | Triplicate | FSLTRIP | ALS, Sydney | Lead |

The laboratory results and quality control reports include a description of the analytical methods used and reporting for surrogates used by ALS Environmental.

Table 11 - Data Quality Indicators

| Data Quality Indicator | Criteria | Comment |
|--|--|--|
| Precision | | |
| Laboratory matrix duplicate relative percentage differences (RPDs) within criteria | Limits set by the laboratory: Soil results <10 times the LOR: No limit Soil results between 10-20 times the LOR: RPD must lie between 0-50% Soil results >20 times the LOR: RPD must lie between 0-30% | All soil results recorded an RPD within the prescribed limits. |
| Field duplicate RPDs within criteria | In accordance with AS4482.1 (2005), RPD results $\geq 50\%$ will be considered to exceed the data quality objectives (DQO) of the assessment. However, based on industry best practice, RPD results will be discounted if both sample results used to calculate the RPD are below the laboratory's limit of reporting (LOR) or less than 10 times the LOR. | All field duplicate and triplicate <50% RPD or the results was less than 10 times the LOR. |
| Accuracy | | |
| Matrix spike sample results reported with prescribed limits | Limits set by the laboratory: Results to be between 70-130%. | All results were all between 70-130%. |
| Surrogate spike sample results reported with prescribed limits | Limits set by the laboratory: Recoveries must lie between 50-150%. | Surrogate spike sample results reported within the prescribed limits. |
| Laboratory method blanks reported with prescribed limits | Concentrations of targeted parameters should be below the laboratory's limit of reporting (LOR). | Laboratory method blanks reported with prescribed limits. |

| | | |
|--|--|---|
| All analysis NATA accredited | Analysis to be completed by a NATA accredited laboratory. | All analysis NATA accredited |
| Representativeness | | |
| Samples delivered to laboratory within sample holding times, chilled and with correct preservative | Target temp <4°C. Samples to be submitted to the laboratory within the designated holding times. Different holding times exist for different parameters. Samples to meet the preservation requirements set by the laboratory. | Samples delivered to laboratory within sample holding times, chilled and with correct preservative |
| Required number of field duplicates and sample blanks taken | Intra and inter laboratory duplicates are to be collected at a ratio of one duplicate pair per 20 samples. One rinse blank and field blank to be collected per day as required. One trip blank to be collected per cooler where analysis of volatile compounds is proposed. | Required number of field duplicates and sample blanks taken Dedicated stainless steel trowels but rinsate collected prior to sampling to check HMC implement cleaning. |
| Sample blanks reported results below detection limits | Concentrations of targeted parameters to be below the laboratory's limit of reporting (LOR). | The sample blank results were below the LOR |
| Samples collected in accordance with regulatory and HMC procedures | Samples to be collected in general accordance with standard operating procedures (SOPs) which are based on applicable regulatory guidance and industry best practice. | Samples collected in accordance with regulatory and HMC procedures |
| Comparability | | |
| Same standard operation procedures (SOPs) applied during each sampling event | The same SOPs to be adopted for each sampling event. | Same standard operation procedures (SOPs) applied during each sampling event |
| LORs below the adopted assessment criteria | The laboratory's LOR is to be below the adopted assessment criteria. | LORs below the adopted assessment criteria |
| Suitably Qualified Person to collect Samples | The sampler is to be a Suitably Qualified Person (SQP) | SQP collected samples |
| Same type of sample preservation and analysis techniques | The same type of sample preservation and analysis techniques are to be applied to all samples. This information is to be provided within laboratory reports. | Same type of sample preservation and analysis techniques applied to all samples |

| Completeness | | |
|--|---|--|
| All laboratory data reviewed and presented in the report (i.e., COCs, SRNs, COAs and QCRs) | All information provided by the laboratory is to be provided in the final report. | All laboratory data reviewed and presented in the report |
| All sample results reported | All sample results are to be reported and discussed. | All sample results reported |
| Sample blanks data reported | All sample blank data is to be reported. | Sample blanks not required |
| Relative percent differences (RPDs) calculated | RPDs to be calculated for all sets of field duplicates. | Relative percent differences (RPDs) calculated |
| Laboratory duplicates reported | All laboratory duplicate results are to be reported. | Laboratory duplicates/triplicates reported |
| NATA stamp on reports | NATA stamps to be shown on all laboratory reports. | NATA stamp on reports |

9 FIELD AND ANALYTICAL RESULTS

9.1 FIELDWORK

Systematic and strategic field sampling was conducted by experienced environmental scientists on 17 October 2024.

Table 12 – Sample Locations

| Address | Primary Sample ID | Location | Depth (mm) | ID | Soil Description | Laboratory Program Analysis |
|---------|-------------------|---|------------|---------|---------------------------------|-----------------------------|
| No.14 | FSL1A | Western wall of existing garage | 0 – 150mm | Primary | Brown/grey, sand and sandy loam | Lead (pb) |
| | FSL2A | Southern wall of existing garage | | | | |
| | FSL3A | Northern wall of existing dwelling | | | | |
| | FSL4A | Western wall of existing dwelling | | | | |
| No.12 | FSL5A | South-western wall of existing dwelling | | | | |
| | FSL6A | South-eastern wall of existing dwelling | | | | |
| | FSL7A | Eastern wall of existing dwelling | | | | |
| | FSL8A | North-eastern corner of existing dwelling | | | | |
| No.14 | FSL9A | Eastern wall of existing dwelling | | | | |

| | | | | | | |
|-------|---------|--|--|------------------|--|--|
| No.16 | FSL10A | Western wall of existing funeral parlour | | | | |
| | FSLDUP | QA/QC Samples | | Duplicate QA/QC | | |
| | FSLTRIP | | | Triplicate QA/QC | | |

A total of 10 primary surface soil samples (plus 2 x QA/QC) were recovered and placed in laboratory supplied glass jars. The primary samples, together with the QA/QC samples were transported to the HMC office for refrigerated storage prior to delivery to ALS Environmental laboratory Brisbane for analysis for CoPC.

Refer to Appendix 12 for the site plan and sampling locations.

9.2 ANALYTICAL TESTING

Laboratory analytical services were provided by ALS Environmental, Brisbane.

9.3 SOIL PROGRAM

A total of 10 primary samples were taken across the investigation area, and submitted for analysis for the following:

- Metals - lead (Pb)

Visual inspection for ACM soil fragments/debris was also completed.

9.4 PRIMARY AND REPLICATE RESULTS

The laboratory analysis of the selected primary samples is summarised in Table 13.

Table 13 – Laboratory Results Summary (8 February 2023)

| Parameter | Number of primary samples | LOR (mg/kg) | Criteria Exceedances | Range (mg/kg) | Typical Background (Olszowy et al, 1995) mg/kg |
|--------------------------|---------------------------|-------------|----------------------|---------------|--|
| Metals/Metalloids | | | | | |
| Lead | 10 | 5 | 0 | 166 – 620 | 5-56 |

* **Bold** indicates a criteria exceedance

10 QA/QC LABORATORY DATA REVIEW

10.1 RELATIVE PERCENT DIFFERENCE (RPD)

The results show very good correlation between the primary sample (FSL4A) and the field replicate (FSLDUP) with all results below 50% RPD or less than 10 times the LOR. The results also show generally very good correlation between the primary sample (FSL4A) and the triplicate (FSLTRIP) sample.

10.1.1 Rinsate

Very slight detections of lead were detected; however, the levels are not indicative of cross contamination.

10.1.2 Statistical Analysis

All CoPC results (total concentrations) for the investigation area were below the investigation criteria and therefore statistical analysis was not required.

10.2 SOIL INVESTIGATION CONCLUSIONS

The Soil and Analysis Quality Plan was implemented, with elevated lead recorded across the site, ranging from 166 - 620 mg/kg. However, they were all below the HIL B (1200 mg/kg) and EIL (1100 mg/kg) investigation criteria. There were no ACM fragments identified within the soil during the investigation, with all existing cladding on the structures in good condition.

11 CONCEPTUAL SITE MODEL

Table 14 – Conceptual Site Model

| POTENTIAL SOURCE | PATHWAY | EXPOSURE ROUTE | RECEPTOR | OUTCOME |
|--|----------------------------|--|--|---|
| Historic Structures (Potential Hazardous Building Materials) | Surface water runoff | Chemical/sediment entering local water ways | Ecological receptors | The structures may contain hazardous building materials (asbestos) with demolition of structure to be in accordance with Safework NSW requirements. The soil investigation surrounding the structure returned lead results below the investigation criteria |
| | Atmospheric dispersion | Inhalation of soil exposed during earthworks and in exposed bare soil areas | Site worker, Occupier, Visitor | |
| | Leaching to groundwater | Groundwater movement off-site to beneficial users or ecological receptors | Beneficial users/Ecological receptor | |

12 DISCUSSION

The historic aerial photography showed the existing structures have generally been present on site since prior to 1962. Given the age of the structures, potentially hazardous building materials may have been used in their construction, including asbestos containing materials (ACM) and lead paint. A targeted hotspot investigation for contaminants of potential concern associated with these potential uses was conducted in the immediate surrounds of the existing structures to be demolished. The recorded results showed all contaminants below the investigation criteria, and therefore the investigation area (entire site) is suitable for the proposed development, with no further investigation or remediation required.

13 CONCLUSIONS AND RECOMMENDATIONS

The Preliminary Site Investigation conclusions are based on the information described in this report and Appendices and should be read in conjunction with the complete report, including Section 14 Limitations.

A multi-level residential development is proposed for the site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW. Historical aerial photography, and a review of available information indicated the long-term historic use of the property for residential purposes on 12-14 Florence Street, together with a funeral home on 16 Florence Street. The existing structures have been

present on the proposed development site since prior to 1962, and may contain hazardous building materials used in their construction.

A Sampling and Analysis Quality Plan was prepared and implemented to assess total soil concentrations of contaminants of potential concern including lead. Laboratory results recorded all contaminants of potential concern below the investigation criteria. Visible asbestos fragments/debris in soil across the proposed development site was also assessed with no evidence of soil asbestos recorded. Bonded asbestos containing material appears to be present in existing structures and would be removed prior to general demolition by a Safework NSW-licensed contractor.

Based on the information presented, in relation to potential site contamination, the site located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW, as shown in Appendix 1 & 2 of this report, is considered suitable for the proposed apartment building development subject to:

1. Identification and removal of any asbestos from existing structures by an approved Safework NSW licensed contractor prior to general demolition.

Based on the information presented, in relation to potential site contamination associated with the current and former land use, no further investigation or remediation is required for the site of the proposed apartment building to be located at Lot 1 DP 781624, Lot 1 DP 419177 & Lot 2 DP 300515, 12-16 Florence Street, Tweed Heads NSW, as shown in Appendix 1 & 2 of this report.

14 LIMITATIONS

Any conclusions presented in this report are relevant to the site condition at the time of inspection and legislation enacted as at date of this report. Actions or changes to the site after time of inspection or in the future will void this report as will changes in relevant legislation.

The findings of this report are based on the objectives and scope of work outlined in Section 1. HMC Environmental has performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees expressed or implied, are given. This report does not comment on any regulatory issues arising from the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated and does not relate to any other works undertaken for the client. The report and conclusions are based on the information obtained at the time of the assessment.


The site history and associated uses, areas of use, and potential contaminants were determined based on the activities described in the scope of work. Additional site information held by the client, regulatory authorities or in the public domain, which was not provided to HMC Environmental or was not sourced by HMC Environmental under the scope of work, may identify additional uses, areas of use and/or potential contaminants. The information sources referenced have been used to determine the site history.

Whilst HMC Environmental has used reasonable care to avoid reliance on data and information that is inaccurate and unsuitable, HMC Environmental is not able to verify the accuracy or completeness of all information and data made available. Further chemicals or categories of chemicals may exist at the sites, which were not identified in the site history, and which may not be expected at the site. The absence of any identified hazardous or toxic materials on the subject land should not be interpreted as a warranty or guarantee that such materials do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis should be commissioned.

The results of this assessment are based upon site inspections and fieldwork conducted by HMC Environmental personnel and information provided by the client. All conclusions regarding the property area are the professional opinions of the HMC Environmental personnel involved with the project, subject to the qualifications made above. HMC Environmental assume no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HMC Environmental, or developments resulting from situations outside the scope of this project.

15 SIGNATURE

This report has been prepared by Mark Tunks of HMC Environmental Consulting, a suitably qualified environmental consultant, in accordance with the NSW EPA (2020) *Consultants reporting on contaminated land – Contaminated land guidelines*. Note that HMC Environmental Consulting holds current Professional Indemnity Insurance to 4th August 2025.

.....


Mark Tunks
Principal

31 October 2024
Completion Date

16 REFERENCES

Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC guidelines) published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992

Hashimoto T.R & Troedson A.I. 2008 *Tweed Heads 1:100 000 and 1:25 000, Coastal Quaternary Geology Map Series*. Geological Survey of New South Wales, Maitland

Morand, D.T., Soil Landscapes of the Murwillumbah-Tweed Heads 1:100 000 Sheet, 1996

NEPC, 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999 Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater, National Environment Protection Council Service Corporation, as amended 16 May 2013

NSW Environment Protection Authority (2020) Consultants reporting on contaminated land - Contaminated land guidelines

State Environmental Planning Policy (Resilience and Hazards) 2021

17 GLOSSARY

Added contaminant limit (ACL) is the added concentration of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values will be required. ACL values are generated in the process of deriving ecological investigation levels (EILs).

Ambient background concentration (ABC) of a contaminant is the soil concentration in a specified locality that is the sum of the naturally occurring background and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity not attributable to industrial, commercial or agricultural activities.

An **area of ecological significance** is one where the planning provisions or land use designation is for the primary intention of conserving and protecting the natural environment. This would include national parks, state parks, and wilderness areas and designated conservation areas.

Bioavailability is a generic term defined as the fraction of a contaminant that is absorbed into the body following dermal contact, ingestion or inhalation.

Bonded asbestos-cement-material (bonded ACM) comprises bonded asbestos containing material which is in sound condition (although possibly broken or fragmented), and is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected as it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and potential for fibre release.

Conceptual site model (CSM) is a description of a site including the environmental setting, geological, hydrogeological and soil characteristics together with the nature and distribution of contaminants. Potentially exposed populations and exposure pathways are identified. Presentation is usually graphical or tabular with accompanying explanatory text.

Contamination means the condition of land or water where any chemical substance or waste has been added as a direct or indirect result of human activity at above background level and represents, or potentially represents, an adverse health or environmental impact.

Ecological investigation levels (EILs) are the concentrations of contaminants above which further appropriate investigation and evaluation will be required. EILs depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2 m of soil. EILs may also be referred to as soil quality guidelines in Schedules B5b and B5c.

Health investigation levels (HILs) are the concentrations of a contaminant above which further appropriate investigation and evaluation will be required. HILs are generic to all soil types and generally apply to the top 3 m of soil.

Health risk assessment (HRA) is the process of estimating the potential impact of a chemical, biological or physical agent on a specified human population system under a specific set of conditions.

Investigation levels and **screening levels** are the concentrations of a contaminant above which further appropriate investigation and evaluation will be required. Investigation and screening levels provide the basis of Tier 1 risk assessment.

Multiple-lines-of-evidence approach is the process for evaluating and integrating information from different sources of data and uses best professional judgement to assess the consistency and plausibility of the conclusions which can be drawn.

Risk assessment is the process of estimating the potential impact of a chemical, physical, microbiological or psychosocial hazard on a specified human population or ecological system under a specific set of conditions and for a certain timeframe.

Risk management is a decision-making process involving consideration of political, social, economic and technical factors with relevant risk assessment information relating to a hazard to determine an appropriate course of action.

Screening is the process of comparison of site data to screening criteria to obtain a rapid assessment of contaminants of potential concern.

Tier 1 assessment is a risk-based analysis comparing site data with investigation and screening levels for various land uses to determine the need for further assessment or development of an appropriate management strategy.

18 APPENDICES

See following pages

APPENDIX 1 - LOCATION MAPS





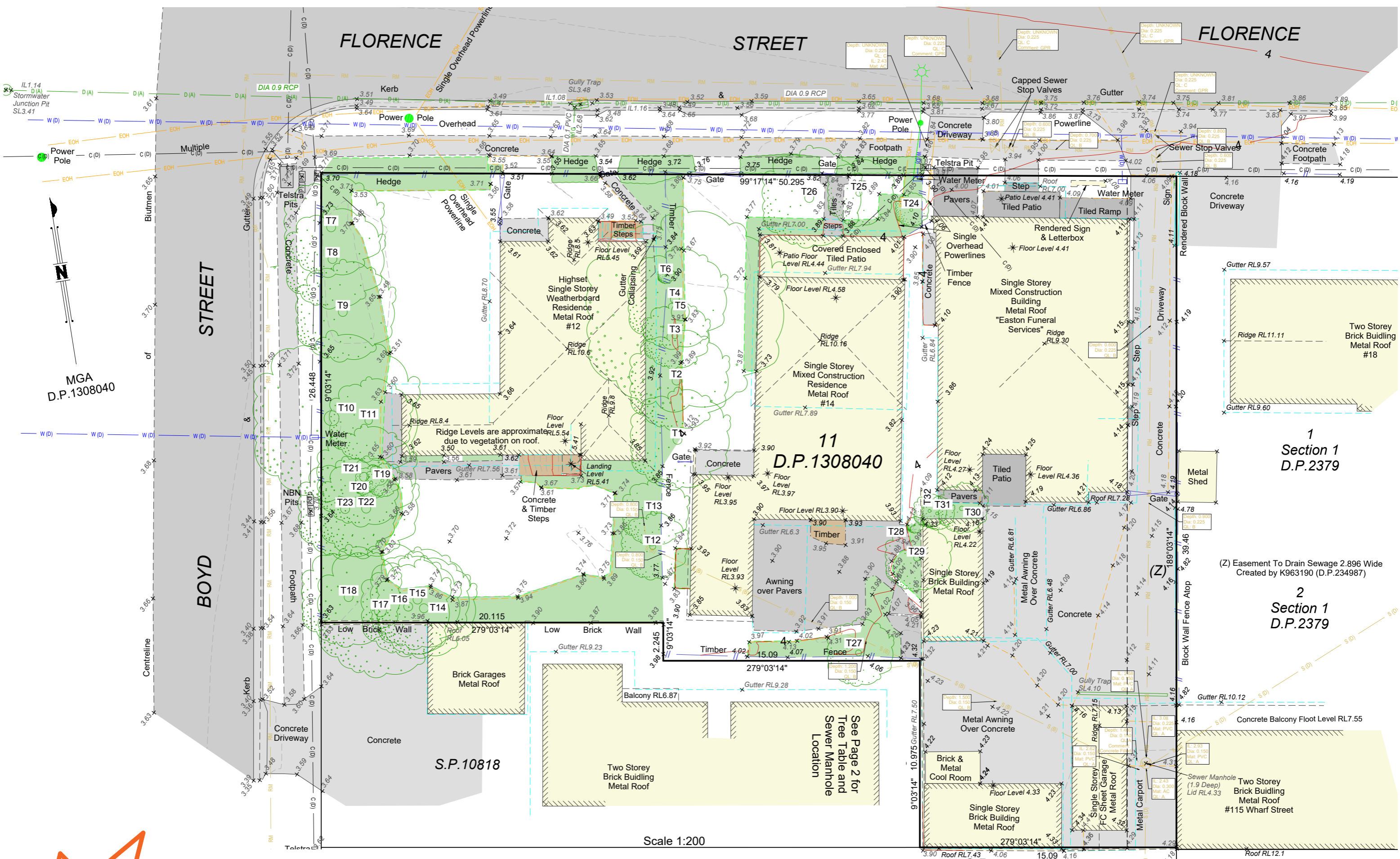
Figure 1 - Surrounding Area (Source: Nearmap 2024)



Figure 2 – Subject Site (Source: Nearmap 2024)

APPENDIX 2 - SITE PLAN PROPOSED DEVELOPMENT





MGA
D.P.1308040

11
D.P.1308040

1
Section 1
D.P.2379

2
Section 1
D.P.2379

(Z) Easement To Drain Sewage 2.896 Wide
Created by K963190 (D.P.234987)

Scale 1:200



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CLIENT
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LEGEND

AMENDMENTS
REV DESCRIPTION DRAWN CHK DATE



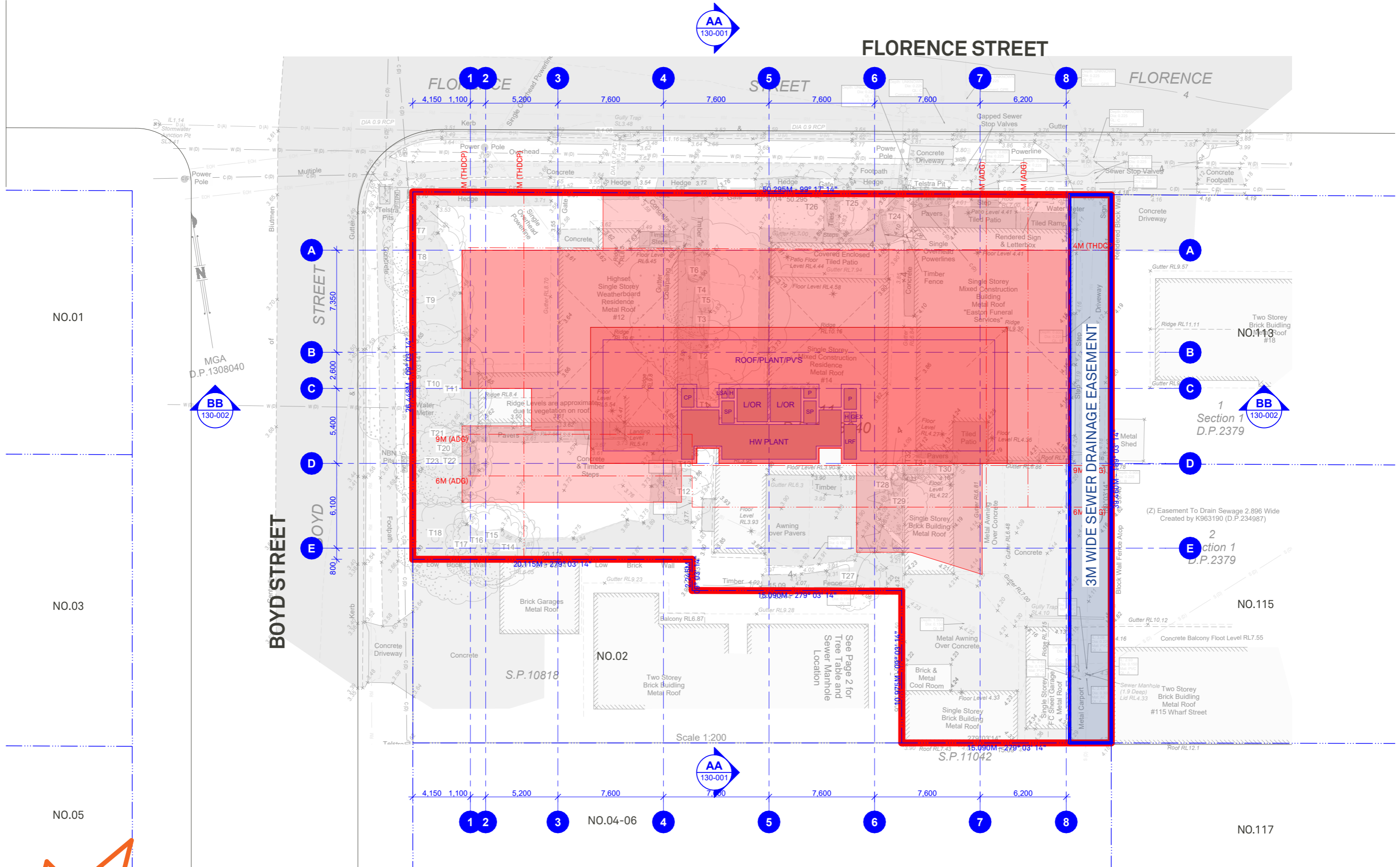
SITE INFORMATION
Site Survey

PROJECT NAME
2408A - 12-16F
12-16 FLORENCE STREET,
TWEED HEADS NSW 2485
BUNDJALUNG COUNTRY

STATUS
PRELIMINARY DESIGN

DRAWING NUMBER
DA-001-001

SCALE
1:1 @ A3
REVISION



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CLIENT
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 6/37A KING ROAD,
 HORNSBY NSW 2077

LEGEND

AMENDMENTS
 REV DESCRIPTION DRAWN CHK DATE



SITE INFORMATION
Site Plan

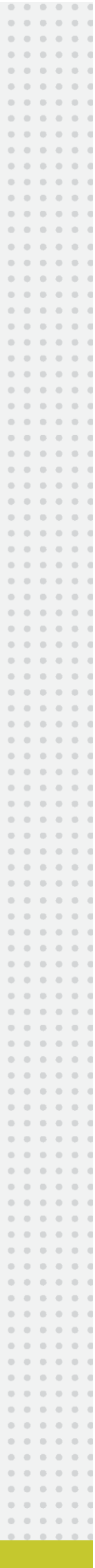
PROJECT NAME
2408A - 12-16F
 12-16 FLORENCE STREET,
 TWEED HEADS NSW 2485
 BUNDJALUNG COUNTRY

STATUS PRELIMINARY DESIGN SCALE 1:1.25, 1:250 @ A3

DRAWING NUMBER DA-001-002 REVISION

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APPENDIX 3 - GEOLOGY AND SOIL LANDSCAPE



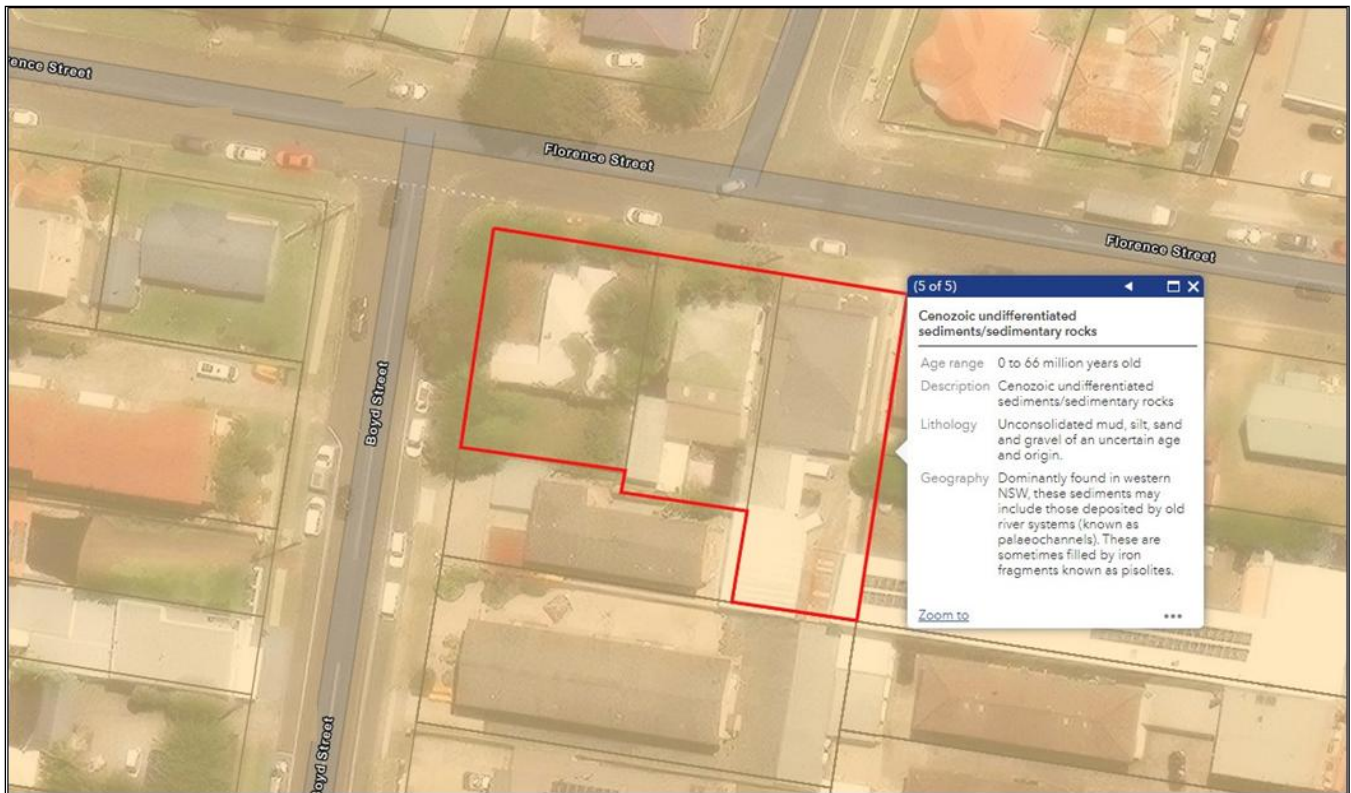


Figure 3 - Geology Map (Source: Geoscience Australia)



Figure 4 - Soil Landscape (Source: eSPADE NSW)

APPENDIX 4 - LICENSED GROUNDWATER BORES





Figure 5 – Groundwater Bore Locations (Source: <http://allwaterdata.water.nsw.gov.au/water.stm>)

APPENDIX 5 - CATTLE DIP SITES



Figure 6 – Cattle Dip Location (Source: DPI NSW)

APPENDIX 6 - HISTORICAL AERIAL PHOTOGRAPHY





Figure 7 - Historical Aerial 1962 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 8 - Historical Aerial 1972 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 9 - Historical Aerial 1979 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 10 - Historical Aerial 1991 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 11 - Historical Aerial 1997 (NSW Spatial Services Historical Imagery <https://portal.spatial.nsw.gov.au>)



Figure 12 - Historical Aerial 2003 (Google Earth)



Figure 13 - Historical Aerial 2010 (Google Earth)



Figure 14 - Historic Aerial 2019 (Google Earth)

APPENDIX 7 - HISTORIC

PARISH MAPS





Figure 15 – 1913 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)



Figure 16 - 1918 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)



Figure 17 – 1924 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)



Figure 18 – 1935 Terranora Parish Map Extract (<http://hlrv.nswlrs.com.au/pixel.htm>)

APPENDIX 8 - HISTORIC TOPOGRAPHIC MAPS





Figure 20 – 1935 *Tweed Heads* Topographical Map extract.



Figure 21 – 1966 *Tweed Heads* Topographical Map extract.



Figure 22 – 1974 *Tweed Heads* Topographical Map extract.



Figure 23 – 2002 *Tweed Heads* Topographical Map extract.

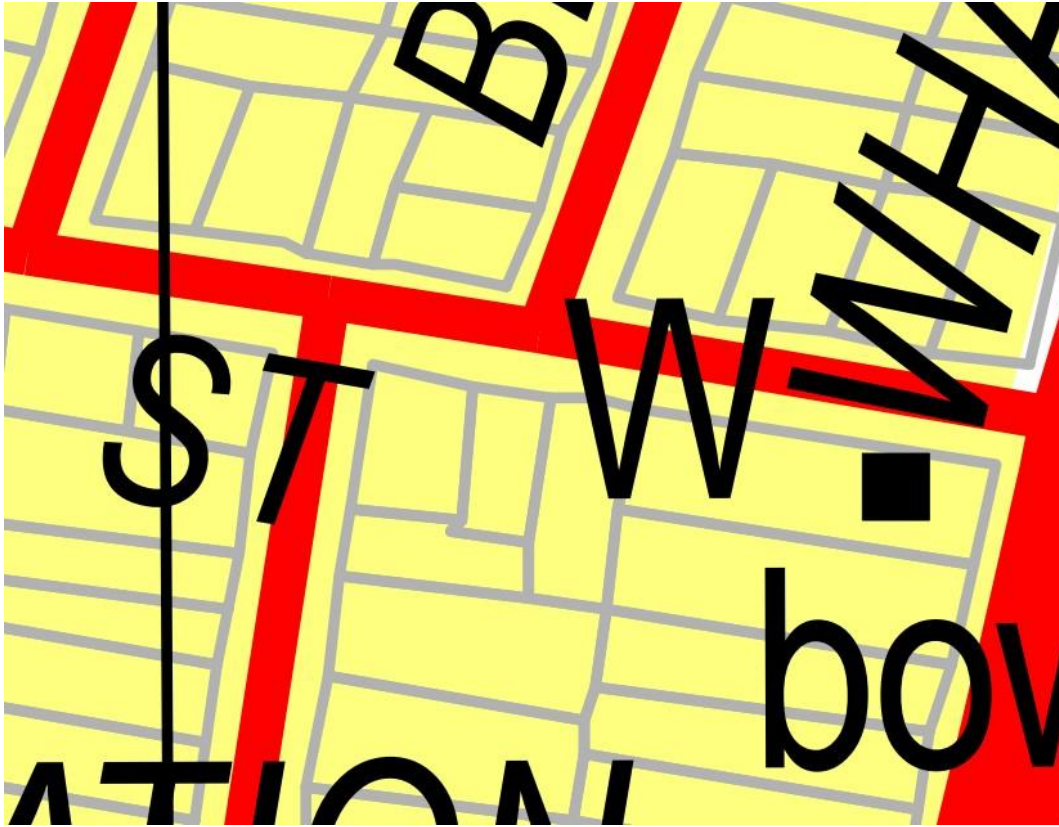


Figure 24 – 2016 *Tweed Heads* Topographical Map extract



Figure 25 – 2022 *Tweed Heads* Topographical Map extract

APPENDIX 9 - ZONE MAPPING





Figure 26 – NSW Legislation Zone Plan

(Source: <http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+177+2014+cd+0+N>)

APPENDIX 10 - PHOTOGRAPHIC LOG



| Photo No. 1 | Date |
|-------------|------------|
| | 17.10.2024 |

Description:
View south overlooking existing weatherboard dwelling to be demolished on 12 Florence Street.



| Photo No. 2 | Date |
|-------------|------------|
| | 17.10.2024 |

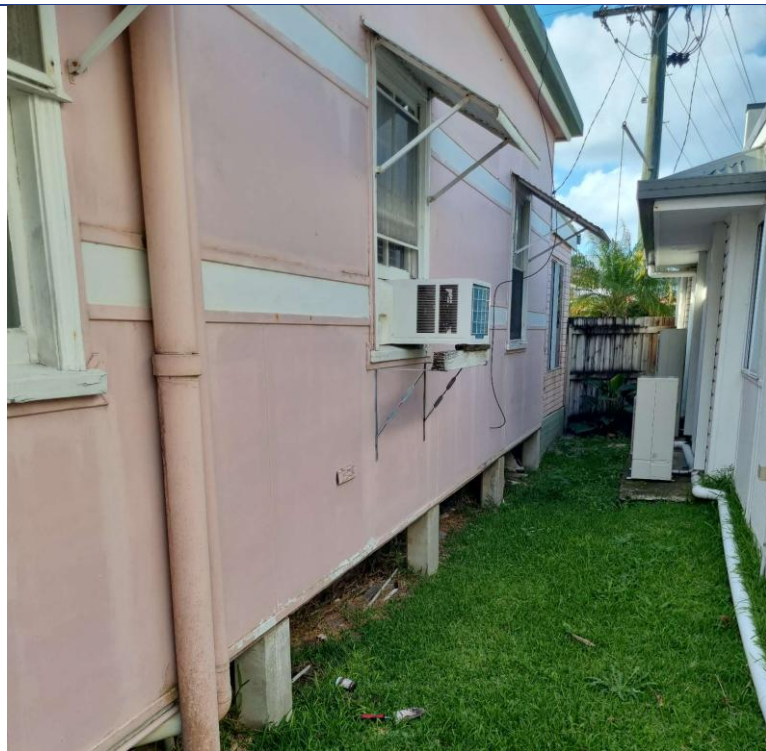
Description:
View northeast overlooking existing weatherboard dwelling to be demolished on 12 Florence Street.



| Photo No. 3 | Date |
|--|------------|
| | 17.10.2024 |
| Description: View northeast overlooking existing fibrous cement dwelling to be demolished on 14 Florence Street. | |



| Photo No. 4 | Date |
|--|------------|
| | 17.10.2024 |
| Description: View southwest overlooking existing fibrous cement dwelling to be demolished on 14 Florence Street. | |



| Photo No. 5 | Date |
|-------------|------------|
| | 05.09.2024 |

Description:
View southwest overlooking existing rendered cement funeral home to be demolished on 16 Florence Street.



| Photo No. 6 | Date |
|-------------|------------|
| | 05.09.2024 |

Description:
View southwest overlooking the existing structures to be demolished at the rear of the funeral home on 16 Florence Street.



APPENDIX 11 - LABORATORY

RESULTS SUMMARY & RPD

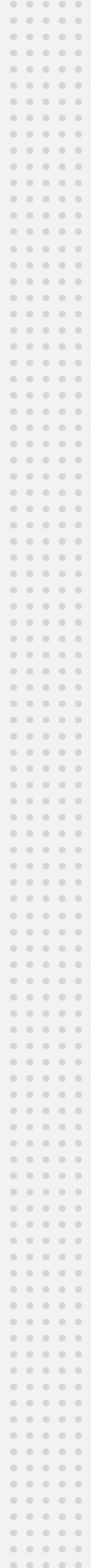


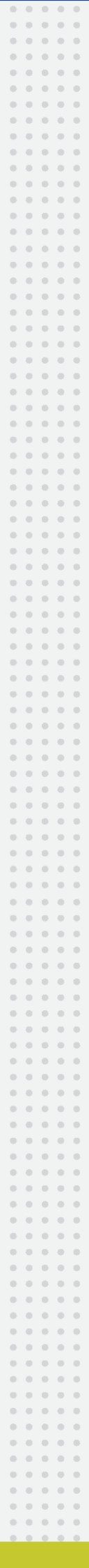
Table 15 – Strategic Sampling Laboratory Results

| Analyte (mg/kg) | FSL1A | FSL2A | FSL3A | FSL4A | FSL5A | FSL6A |
|--------------------------|-------|-------|-------|--------|--------|---------|
| Metals/Metalloids | | | | | | |
| Lead | 183 | 208 | 174 | 205 | 166 | 175 |
| Analyte (mg/kg) | FSL7A | FSL8A | FSL9A | FSL10A | FSLDUP | FSLTRIP |
| Metals/Metalloids | | | | | | |
| Lead | 329 | 620 | 325 | 359 | 173 | |

Table 16 – Relative Percentage Difference (RPD%)


| Analyte | FSL4A | FSLDUP | Mean | RPD% | FSL4A | FSLTRIP | Mean | RPD% |
|----------------------------------|-------|--------|------|------|-------|---------|------|------|
| Metals/Metalloids (mg/kg) | | | | | | | | |
| Lead | 205 | 173 | 189 | 16.9 | 205 | | | |

APPENDIX 12 - INVESTIGATION AREA - SAMPLING LOCATIONS PLAN



PRELIMINARY SITE INVESTIGATION

SAMPLING LOCATIONS

 HMC Sampling Locations - 17.10.2024



Lot 1 DP781624, Lot 1 DP419177
& Lot 2 DP 300515
12-14 Florence Street
Tweed Heads NSW

HMC2024.1001
DATE: October 2024
VERSION: 30/10/2024
DRAWN: MF
BASE: Nearmap 2024



ENVIRONMENTAL CONSULTING Pty Ltd
HMC Environmental Consulting Pty Ltd
Tweed Heads NSW
0755368863
www.hmcenvironment.com.au
admin@hmcenvironment.com.au



BOYD STREET

FLORENCE STREET

Scale: 0 5 10m

APPENDIX 13 - CHAIN OF CUSTODY





CHAIN OF CUSTODY

ALS Laboratory, please tick →

LABORATORY: 111 Sturtan Road, Tweed Heads NSW 2455
Ph: 07 4322 9330 E: als@als.com.au

LABORATORY: 2 Bygon Street, Shellharbour NSW 2508
Ph: 07 4322 7222 E: als@als.com.au

LABORATORY: 48 Catherine Street, Gladstone QLD 4685
Ph: 07 4978 7344 E: als@als.com.au

LABORATORY: 2120 Caldera Drive, Pigeon Creek QLD 4740
Ph: 07 4912 5751 E: als@als.com.au

LABORATORY: 2-4 Woodall Road, Springvale VIC 3171
Ph: 03 8919 5600 E: als@als.com.au

LABORATORY: 129 Sydney Road, Mulgrave NSW 2850
Ph: 02 6372 6736 E: als@als.com.au

LABORATORY: 5555 Marston Road, Newcastle NSW 2304
Ph: 02 4314 2500 E: als@als.com.au

LABORATORY: 4/13 Geary Place, North Sydney NSW 2060
Ph: 02 4423 2055 E: als@als.com.au

LABORATORY: 10 Wood Way, Naretha WA 2090
Ph: 08 9209 7555 E: als@als.com.au

LABORATORY: 111 Sturtan Road, Tweed Heads NSW 2455
Ph: 07 4322 9330

LABORATORY: 2 Bygon Street, Shellharbour NSW 2508
Ph: 07 4322 7222

LABORATORY: 48 Catherine Street, Gladstone QLD 4685
Ph: 07 4978 7344

LABORATORY: 2120 Caldera Drive, Pigeon Creek QLD 4740
Ph: 07 4912 5751

LABORATORY: 2-4 Woodall Road, Springvale VIC 3171
Ph: 03 8919 5600

LABORATORY: 129 Sydney Road, Mulgrave NSW 2850
Ph: 02 6372 6736

LABORATORY: 5555 Marston Road, Newcastle NSW 2304
Ph: 02 4314 2500

LABORATORY: 4/13 Geary Place, North Sydney NSW 2060
Ph: 02 4423 2055

LABORATORY: 10 Wood Way, Naretha WA 2090
Ph: 08 9209 7555

Environmental Division
Brisbane
Work Order Reference
EB2435960

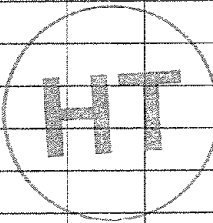


Telephone: + 61-7-3552-8686

| | | | | | |
|--|--|--|--|-----------------------------|--|
| CLIENT: HMC Environmental Consulting Pty Ltd | | TURNAROUND REQUIREMENTS: <input checked="" type="checkbox"/> Standard TAT (List due date): | | FOR LABO | |
| OFFICE: Tweed Heads | | (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) | | Custody Seal | |
| PROJECT: Florence Street Tweed Heads | | PROJECT NO.: | | Free ice / fro. receipt? | |
| ORDER NUMBER: HMC2024.1001 | | PURCHASE ORDER NO.: | | Random San | |
| PROJECT MANAGER: Mark Tunks | | CONTACT PH: 0755368863 | | Other comm | |
| SAMPLER: Mark Tunks | | SAMPLER MOBILE: 0481279212 | | RECEIVED BY: <i>ET</i> | |
| COC Emailed to ALS? (YES / NO) | | EDD FORMAT (or default): | | DATE/TIME: 18.10.24 1400 | |
| Email Reports to (will default to PM if no other addresses are listed): admin@hmcenvironment.com.au | | RELINQUISHED BY: <i>Mark Tunks</i> | | DATE/TIME: | |
| Email Invoice to (will default to PM if no other addresses are listed): admin@hmcenvironment.com.au | | DATE/TIME: 18/10/2024 @ 11am | | DATE/TIME: | |

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE ONLY | SAMPLE DETAILS MATRIX: Solid(S) Water(W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | | | | | | | Additional Information | |
|--------------|---|-----------------|-------------|-----------------------|---|---|------|------------------------------------|------|------|-----------------------|--------------|------------------------|---------------|
| | LAB ID | SAMPLE ID | DATE / TIME | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | TOTAL BOTTLES | NI-2 | EG2020F (Soluble Iron & Aluminium) | NI-2 | NI-3 | ED033 - TOTAL ACIDITY | EA028H - TSS | | EG005T - LEAD |
| 1 | FSGW1 | 17/10/2024 0:00 | W | N,SP,P | 3 | X | X | X | X | X | X | X | | |
| 2 | FSGW2 | 17/10/2024 0:00 | W | N,SP,P | 3 | X | X | X | X | X | X | X | | |
| 3 | FSGW3 | 17/10/2024 0:00 | W | N,SP,P | 3 | X | X | X | X | X | X | X | | |
| 4 | FSGWDUP | 17/10/2024 0:00 | W | N | 1 | X | | | | | | | | |
| 5 | FSGWTRIP | 17/10/2024 0:00 | W | N | 1 | X | | | | | | | INTERLAB SYDNEY | |
| 6 | FSL1 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 7 | FSL2 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 8 | FSL3 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 9 | FSL4 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 10 | FSL5 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 11 | FSL6 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 12 | FSL7 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 13 | FSL8 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 14 | FSL9 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 15 | FSL10 | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 16 | FSLDUP | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | | |
| 17 | FSLTRIP | 17/10/2024 0:00 | S | ST | 1 | | | | | | | X | INTERLAB SYDNEY | |
| 18 | FSLRS1 | 17/10/2024 0:00 | W | N | 1 | | | | | | | X | | |
| TOTAL | | | | | | 24 | 5 | 3 | 3 | 3 | 3 | 3 | 13 | |



Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisphosphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight 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 Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles

APPENDIX 14 - LABORATORY CERTIFICATES





CERTIFICATE OF ANALYSIS

| | | | |
|-------------------------|--|-------------------------|---|
| Work Order | : EB2435960 | Page | : 1 of 7 |
| Client | : HMC ENVIRONMENTAL | Laboratory | : Environmental Division Brisbane |
| Contact | : MARK TUNKS | Contact | : Customer Services EB |
| Address | : SUITE 29, LEVEL 2 75-77 WHARF STREET TWEED HEADS 2485 | Address | : 2 Byth Street Stafford QLD Australia 4053 |
| Telephone | : 07 5536 8863 | Telephone | : +61-7-3552-8685 |
| Project | : FLORENCE STREET TWEED HEADS | Date Samples Received | : 18-Oct-2024 14:00 |
| Order number | : HMC2024.1001 | Date Analysis Commenced | : 19-Oct-2024 |
| C-O-C number | : ---- | Issue Date | : 24-Oct-2024 10:27 |
| Sampler | : MARK TUNKS | | |
| Site | : ---- | | |
| Quote number | : EN/222 | | |
| No. of samples received | : 16 | | |
| No. of samples analysed | : 16 | | |



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

| Signatories | Position | Accreditation Category |
|------------------|-----------------------------|--|
| Beatriz Llarinas | Senior Chemist - Inorganics | Brisbane Inorganics, Stafford, QLD |
| Vincent Muller | Chemist - Inorganics | Brisbane Inorganics, Stafford, QLD |
| Vincent Muller | Chemist - Inorganics | Brisbane Soil Preparation, Stafford, QLD |



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

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

- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Sample ID | FSL1 | FSL2 | FSL3 | FSL4 | FSL5 |
|--|------------|-----|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Sampling date / time | | | | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 |
| Compound | CAS Number | LOR | Unit | EB2435960-005 | EB2435960-006 | EB2435960-007 | EB2435960-008 | EB2435960-009 | |
| | | | | Result | Result | Result | Result | Result | |
| EA055: Moisture Content (Dried @ 105-110°C) | | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 19.9 | 28.4 | 14.9 | 10.0 | 10.6 | |
| EG005(ED093)T: Total Metals by ICP-AES | | | | | | | | | |
| Lead | 7439-92-1 | 5 | mg/kg | 183 | 208 | 174 | 205 | 166 | |



Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Sample ID | FSL6 | FSL7 | FSL8 | FSL9 | FSL10 |
|--|------------|-----|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------|
| Sampling date / time | | | | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | |
| Compound | CAS Number | LOR | Unit | EB2435960-010 | EB2435960-011 | EB2435960-012 | EB2435960-013 | EB2435960-014 | |
| | | | | Result | Result | Result | Result | Result | |
| EA055: Moisture Content (Dried @ 105-110°C) | | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 21.1 | 1.0 | 10.1 | 8.2 | 8.7 | |
| EG005(ED093)T: Total Metals by ICP-AES | | | | | | | | | |
| Lead | 7439-92-1 | 5 | mg/kg | 175 | 329 | 620 | 325 | 359 | |



Analytical Results

| Sub-Matrix: SOIL (Matrix: SOIL) | | | | Sample ID | FSLDUP | ---- | ---- | ---- | ---- |
|--|------------|-----|-------|-------------------|--------|-------|-------|-------|-------|
| Sampling date / time | | | | 17-Oct-2024 00:00 | ---- | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | EB2435960-015 | ----- | ----- | ----- | ----- | ----- |
| | | | | Result | ---- | ---- | ---- | ---- | ---- |
| EA055: Moisture Content (Dried @ 105-110°C) | | | | | | | | | |
| Moisture Content | ---- | 0.1 | % | 9.4 | ---- | ---- | ---- | ---- | ---- |
| EG005(ED093)T: Total Metals by ICP-AES | | | | | | | | | |
| Lead | 7439-92-1 | 5 | mg/kg | 173 | ---- | ---- | ---- | ---- | ---- |



Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | FSGW1 | FSGW2 | FSGW3 | FSGWDUP | FSLRS1 |
|---|-------------|--------|------|-------------------|-------------------|-------------------|-------------------|-------------------|--------|
| Sampling date / time | | | | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | |
| Compound | CAS Number | LOR | Unit | EB2435960-001 | EB2435960-002 | EB2435960-003 | EB2435960-004 | EB2435960-016 | |
| | | | | Result | Result | Result | Result | Result | |
| EA025: Total Suspended Solids dried at 104 ± 2°C | | | | | | | | | |
| Suspended Solids (SS) | ---- | 5 | mg/L | 423 | 224 | 317 | ---- | ---- | |
| ED037P: Alkalinity by PC Titrator | | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | <1 | <1 | ---- | ---- | |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | <1 | <1 | ---- | ---- | |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | 39 | 25 | 9 | ---- | ---- | |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 39 | 25 | 9 | ---- | ---- | |
| ED038: Acidity | | | | | | | | | |
| Acidity as CaCO3 | ---- | 1 | mg/L | 6 | 15 | 17 | ---- | ---- | |
| ED041G: Sulfate (Turbidimetric) as SO4 2- by DA | | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 8 | 16 | 16 | ---- | ---- | |
| ED045G: Chloride by Discrete Analyser | | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | 19 | 34 | 43 | ---- | ---- | |
| EG020F: Dissolved Metals by ICP-MS | | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | 0.03 | 0.60 | 0.46 | ---- | ---- | |
| Arsenic | 7440-38-2 | 0.001 | mg/L | 0.003 | <0.001 | <0.001 | <0.001 | ---- | |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | ---- | |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | 0.002 | <0.001 | <0.001 | ---- | |
| Copper | 7440-50-8 | 0.001 | mg/L | 0.001 | <0.001 | <0.001 | <0.001 | ---- | |
| Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | 0.001 | 0.002 | 0.002 | ---- | |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | ---- | |
| Zinc | 7440-66-6 | 0.005 | mg/L | 0.024 | 0.085 | 0.070 | 0.072 | ---- | |
| Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.59 | 1.15 | ---- | ---- | |
| EG020T: Total Metals by ICP-MS | | | | | | | | | |
| Lead | 7439-92-1 | 0.001 | mg/L | ---- | ---- | ---- | ---- | 0.019 | |
| EG035F: Dissolved Mercury by FIMS | | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | ---- | |
| EK055G: Ammonia as N by Discrete Analyser | | | | | | | | | |



Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | FSGW1 | FSGW2 | FSGW3 | FSGWDUP | FSLRS1 |
|---|------------|------|------|-------------------|-------------------|-------------------|-------------------|-------------------|--------|
| Sampling date / time | | | | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | 17-Oct-2024 00:00 | |
| Compound | CAS Number | LOR | Unit | EB2435960-001 | EB2435960-002 | EB2435960-003 | EB2435960-004 | EB2435960-016 | |
| | | | | Result | Result | Result | Result | Result | |
| EK055G: Ammonia as N by Discrete Analyser - Continued | | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | 2.29 | 0.11 | 0.15 | ---- | ---- | |
| EK057G: Nitrite as N by Discrete Analyser | | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | 0.03 | <0.01 | <0.01 | ---- | ---- | |
| EK058G: Nitrate as N by Discrete Analyser | | | | | | | | | |
| Nitrate as N | 14797-55-8 | 0.01 | mg/L | 1.57 | 0.01 | <0.01 | ---- | ---- | |
| EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser | | | | | | | | | |
| Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 1.60 | 0.01 | <0.01 | ---- | ---- | |
| EK061G: Total Kjeldahl Nitrogen By Discrete Analyser | | | | | | | | | |
| Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | 3.6 | 1.4 | 1.1 | ---- | ---- | |
| EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser | | | | | | | | | |
| [^] Total Nitrogen as N | ---- | 0.1 | mg/L | 5.2 | 1.4 | 1.1 | ---- | ---- | |
| EK067G: Total Phosphorus as P by Discrete Analyser | | | | | | | | | |
| Total Phosphorus as P | ---- | 0.01 | mg/L | 0.44 | 0.17 | 0.16 | ---- | ---- | |