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5th February 2025

Geology Report for Proposed Hillview Hard Rock Quarry SSD 8239

67 Maytoms Lane, Booral, NSW

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Revision Table

Date	Version	Author	Reviewed	Approved
11/4/2023	D0	GVT		
08/08/2023	D1	SK/GVT		
29/01/2025	D2	RG/SK/GVT	SK/GVT	
05/02/2025	F0	RG/SK/GVT	ADWJ	

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Acronyms and Terms Used Throughout the Report

Throughout this document, a number of Acronyms and reference terms are frequently used. To assist the reader, the following lists are provided:

ACRONYMS	
AHD	Australian Height Datum, (AHD71) based upon mean sea level observations from 1966-1968 at 30 tide gauges around the Australian coast.
Ma	Million years.
RL (m)	Relative Level above sea level considered the same as AHD for this report.

Geology Glossary

Word	Meaning
Andesite	Named after the Andes Mountain range in South America. This is a fine grained intermediate volcanic igneous rock characterised by the presence of Oligoclase or Andesine. These rocks are often porphyritic and have 57 to 63 % SiO_2.
Bed Rock	The unweathered rock that lies below loose surface deposits of soil and alluvium.
Carboniferous	A time period that occurred between 298 to 354 ma
Devitrification	The development of crystals, initially on a very small scale, in a glassy igneous rock such as obsidian (or Rhyolite).
Erosion	The natural process where wind or water detaches a soil particle and provides energy to move the particle.
Faulting	A fracture in rock along which there has been an observable amount of displacement. Ref 3
Ignimbrite	Derived the term 'ignimbrite' from ‘fiery rock dust cloud’ (from the Latin *igni-* (fire) and *imbri-* (rain)), formed as the result of immense explosions of pyroclastic ash, lapilli and blocks flowing down the sides of volcanoes. Or sometimes known as Welded Tuffs. An ignimbrite is the deposit of an extremely hot pyroclastic ash, such that the edges of fragments can be seen to weld together. This term describes how the rock is formed not the chemical composition of the rock. Ignimbrites can only form as a result of sub-aerial volcanic activity Ref 3. Ignimbrites can be Rhyolite, Rhyodacite or Dacite in composition. Sometimes the crystals can appear flat to show a flow effect, but this is due to a layering of the material as the material compacts and presses down on the hot beds.
Induration	A process by which soft sediments becomes hard rock. Ref 3
Indicative	When you want to show that something is suggestive or serves as a sign of something. Ref 4
Lithology	A term usually applied to sediments, referring to their general characteristics. Ref 3 Can also be a general term for any rock, found in the field.
Quartz	Chemically SiO_2 this mineral is very resistant to weathering which allows it to be the most common mineral on the surface of the earth.
Rhyolite	Has greater than 69 % SiO_2 with quartz, Alkali feldspar and plagioclase common. This is a highly viscous lava, and can be highly explosive, during the formation process. This can be formed on the earth surface as an Ignimbrite or Tuff.

Word	Meaning
Rhyodacite	Rhyodacite is an extrusive volcanic rock, intermediate in composition between dacite and rhyolite. Rhyodacite is a high silica rock (20 to 60%) and often exists as explosive pyroclastic rocks, at the time of its creation. This can be formed on the earth surface as an Ignimbrite or Tuff.
Sand	Are categorised as particles that range between 0.0625 mm to 2.00 mm. (Ref 1.) These can be made from quartz, limestone, feldspar, basalts, latites, organic particles and olivine. These deposits are found on beaches, dunes, rivers, glacial outwash and volcanic slopes.
Sediment	Material of varying sizes that has been or is being moved from its site of origin by the action of wind, water or gravity.
Shear Zone	Intensely faulted zone with multiple fractures that could be highly weathered or even converted to clays due to water incursion.
Silt	Are categorised as particles that range between 0.0625 mm to 0.0039 mm. Ref 1
Soil	That part of the upper weathered layer of the earth's crust that can support plant growth. Any naturally occurring loose or soft deposit forming part of the earth's crust and resulting from weathering or breakdown of rock formation or from the decay of vegetation.
Trachyte	Fine grained alkali to intermediate igneous rock. Feldspars are often the dominant minerals, being sanidine, albite or sodic potassic. A characteristic feature of Trachytes is the packing together of lath like feldspars in parallel alignment. Trachytes occur mainly as lava flows of small extent due to their high viscous nature. Trachytes grade into Rhyolites with an increase in quartz. Ref 3
t – tonnes	Weight measurement being 1000 kilograms.
Vesicles	Holes or bubbles in the rock could be formed during deposition, or a weathering effect post deposition.
Volcanoclastic	Rocks sourced from volcanic origins.
Weathering	The process by which rocks are broken down and decomposed by the action of external agencies such as wind, rain, temperature changes, plants, and bacteria. Ref 3

Geology References

Ref 1. Pettijohn F.J, Potter, P.E. and Siever R. 1972 Sand and Sandstone.

Ref 2. G.C. Luton and G.M Johnson 2001

Ref 3. Penguin Geology Dictionary, Whitten and Brooks 1982

Ref 4. https://www.vocabulary.com/dictionary/indicative

Ref 5. NSW Resources Regulator Health and Safety at Quarries (2018) *NSW Resources Regulator Mines and Quarries Book Versions*

1 Executive Summary

Coastwide Materials Pty Ltd are seeking to develop a new hard rock quarry, located at Maytom's Lane Booral, NSW within the Mid Coast Local Government Area (LGA), see *Figure One*. The proposed Hillview Hard Rock Quarry will extract up to 1.5 million tonnes of concrete, sealing and road base aggregates annually and be operated by Coastwide Materials Pty Ltd. The proposed Hillview Hard Rock Quarry is expected to extract approximately 37.5 million tonnes of material over a life of up to 30 years.

The Quarry is a State Significant Development (SSD) …And Secretary's Environmental Assessment Requirements (SEARs) have been issued for the preparation of the Environmental Impact Statement (EIS).

The SEARs require:

- *"The resource to be extracted, including the amount, type and composition. "*

The rock is identified as a pyroclastic rock by the Regional NSW Minview 3 database [Ref 1] as part of the Carboniferous Nerong Volcanics, 330 to 346 million years old. Geotechnical testing identified this as a Rhyolitic Tuff with some Hematite (iron) in the upper portions of the deposit.

This assessment relies upon geological investigations undertaken in 2015 – 2017, surface mapping undertaken in 2020 and test pits dug in 2024. Data from 15 drill holes, 19 test pits and surface mapping has been reviewed. Three-dimensional modelling using 12D software, based upon the provided constraints has calculated, refer to *Table 1.*

Table 1. Resource Assessment Summary

Resource Area	Volume Cut (m^3)	Volume Fill (m^3)	Volume Net (m^3)	Tonnes*
Haul Road	148,400	53,000	95,400	238,500
Processing Pad	1,166,000	41,500	1,124,500	2,811,000
Main Resource	14,986,000	-	14,986,000	37,466,000

Note* Density 2.5g/cm^3

Rhyolite within the main resource area is estimated at 14.9 million metres cubed and based upon a density of 2.5 g/cm^3 a total resource of 37.5 million tonnes is available, to RL95 m.

Further resources could be gained as BH 4 was sunk deeper and intersected Rhyolite to RL49 m.

There is little overburden observed on the main resource area and topsoil here may provide up to 45,000 metres cubed.

Within the Processing Pad area, test pit investigations, outcrop observations and drill data along the south and east suggest an additional Rhyolite volume of 1.03 million metres cubed, or 2.6 million tonnes.

Plan of:	**Hillview Quarry EIS - Site Location**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Client provided aerial and existing survey November 2014. NSW Clip & Ship cadastral.	**Plan By:**	TO
Figure:	**ONE**	**Council:**	MidCoast Council	**Survey:**	Photomapping November 2014	**Project Manager:**	GT
Version/ Date:	V1 28/01/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q01_V1_F1	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	N/A		

N

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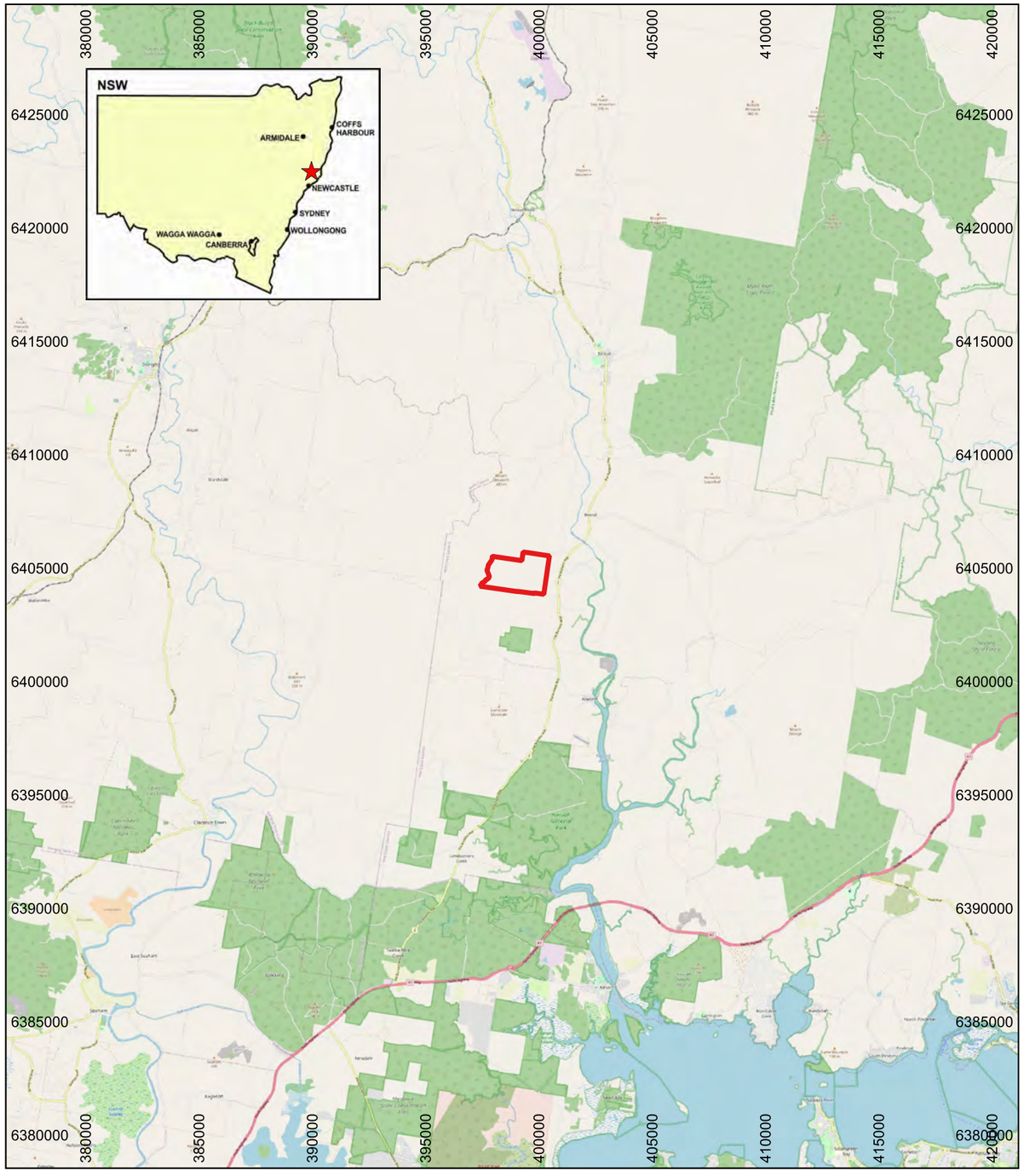
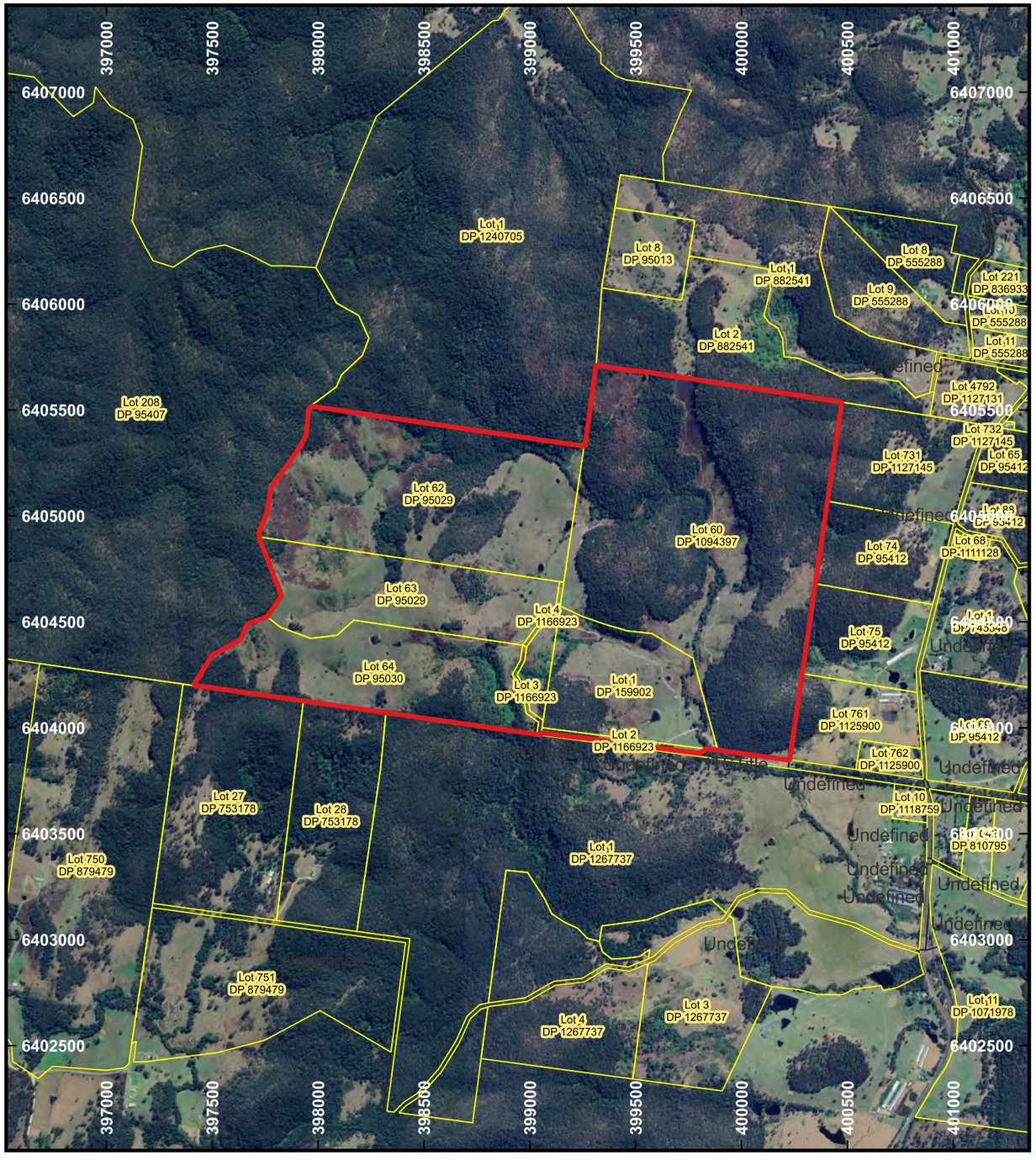


Legend

Site Boundary

0 2 4 6 8 10 km



Legend

Site Boundary

Lot Boundary (Cadastral)

0 0.25 0.5 0.75 1 km

2 Scope

VGT Environmental Compliance Solutions Pty Ltd (VGT) have been engaged by Coastwide Materials Pty Ltd to review the insitu available resources, within the area identified in *Figure One* for the proposed Hillview Hard Rock Quarry (HHRQ). The site is located approximately 8 kilometres (km) south of Stroud and 5 km northwest of Allworth on the western side of Bucketts Way in the Mid-Coast LGA. It is accessed from 67 Maytoms Lane, Booral NSW.

HHRQ proposes to extract up to 1.5 million tonnes per annum (Mtpa) over a planned life of 30 years, operate ancillary site infrastructure and amenities and transport material off site via public roads.

This assessment addresses the project SEARs requirement of:

- The resource to be extracted, including the amount, type and composition.

This assessment also addresses commentary received (during agency consultation conducted by the Applicant) from the NSW Department of Regional NSW – Mining, Exploration and geoscience (MEG) – Geological Survey of Australia, which includes:

"*A resource assessment which:*

- *Documents the size and quality of the resource and demonstrates that both have been adequately assessed, and*
- *Documents the methods used to assess the resource and its suitability for its intended applications."*

3 Regional Geology

Describing rocks is a combination of chemistry, structure, and depositional environment. Imagining you are there at the time of deposition is beneficial to understanding rock sequences.

Around 330 million years ago, during the Carboniferous Period, the environment in this area was volcanically active; ash clouds and lavas (Rhyodacites, Andesites, Ignimbrites, Breccias etc) flowed violently down steep sloped volcanoes. These events were interspersed with less active times where rivers flowed depositing conglomerates, sandstones and siltstones.

The Nerong Volcanics has all of these rocks described in it. The age of the rocks also leads to post depositional change, which can be faulting, folding, and weathering. These activities put strain on the crystals within the rock which can weaken them creating cracks and fissures which allows water in to modify hard rock into clays. One of these post depositional events is shown below in *Figure Two*, where a North East / South West trending fault has been identified in the Minview 3, NSW Mines Department web site [Ref 1].

Plan of:	**Hillview Quarry EIS - Regional Geology**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Google maps, NSW Geology Simplified WMS	**Plan By:**	TO
Figure:	**TWO**	**Council:**	MidCoast Council	**Survey:**	Not Applicable	**Project Manager:**	GT
Version/ Date:	V1 28/01/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q02_V1_F2	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	N/A		

N

0 100 200 300 400 500 m

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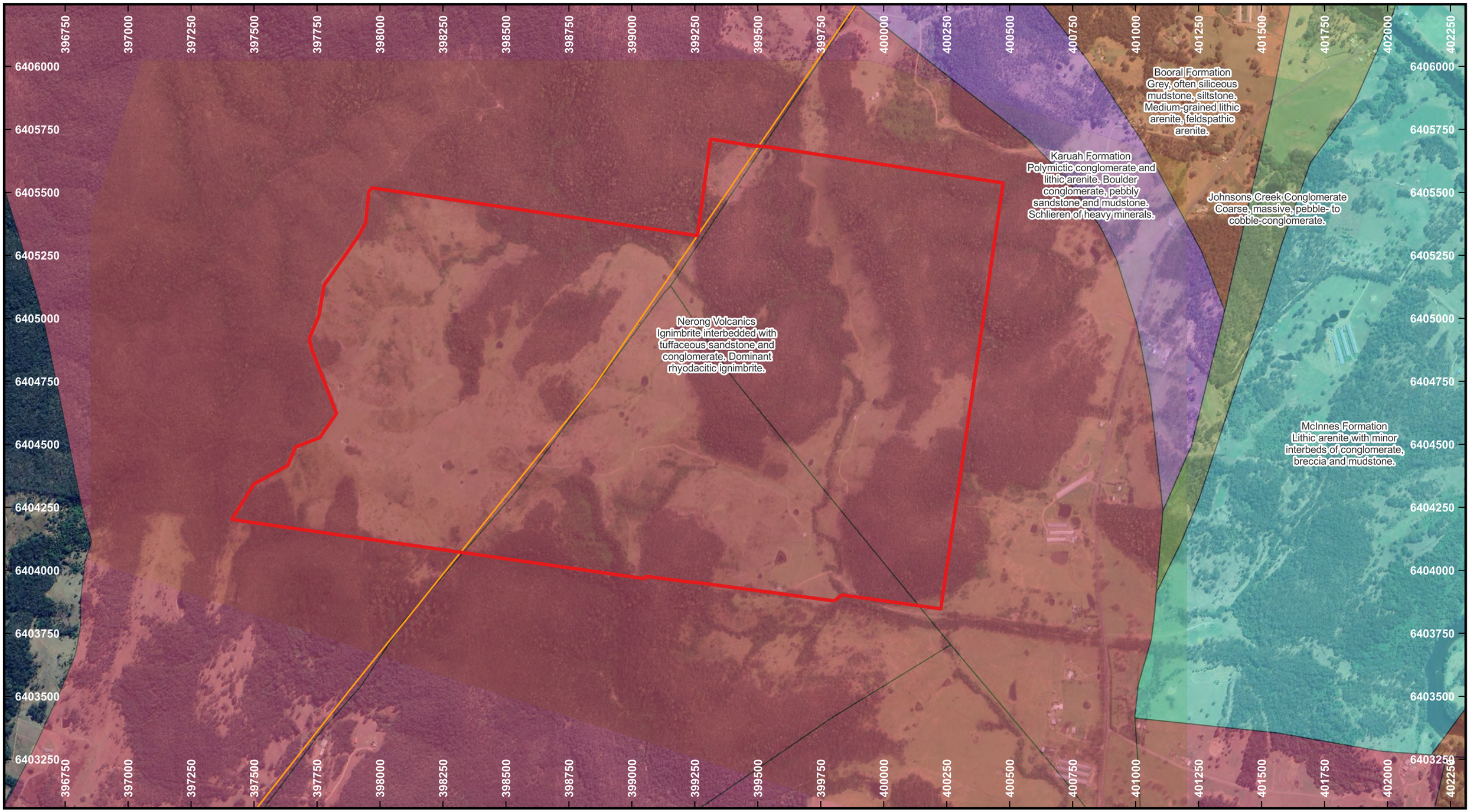

Legend

- Site Boundary
- Fault Line from Minview

Rock Units

- Nerong Volcanics
- Karuah Formation
- Johnsons Creek Conglomerate
- McInnes Formation
- Booral Formation

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4 Local Geology

The site is dominated with undulating terrain with many steep hills, which rises from the front entrance at Maytom's Lane from around RL 20 m up to RL 203 m.

Volcanic outcrop is very common on this site with some occasional conglomerate exposures. The volcanic outcrop is identified as Rhyolite Tuff.

5 Geological Mapping

A 50 metre by 50 metre grid was developed, and samples were taken where found. *Appendix A* has the summary table with all samples described and photographed. 116 samples were collected and one of these was identified as Volcanoclastic Conglomerate (sedimentary), the remaining 115 were identified as Hematized Rhyolite Tuff (Volcanic), with varying degrees of weathering.

Figure Three shows the distribution of samples and rock types over the area of interest.

Plan of:	**Hillview Quarry EIS - Surface Sampling Locations**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Client provided aerial and existing survey November 2014. NSW Clip & Ship cadastral.	**Plan By:**	TO
Figure:	**THREE**	**Council:**	MidCoast Council	**Survey:**	Photomapping November 2014	**Project Manager:**	GT
Version/ Date:	V1 28/01/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q03_V1_F3	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	5m		

N

0 50 100 150 200 m

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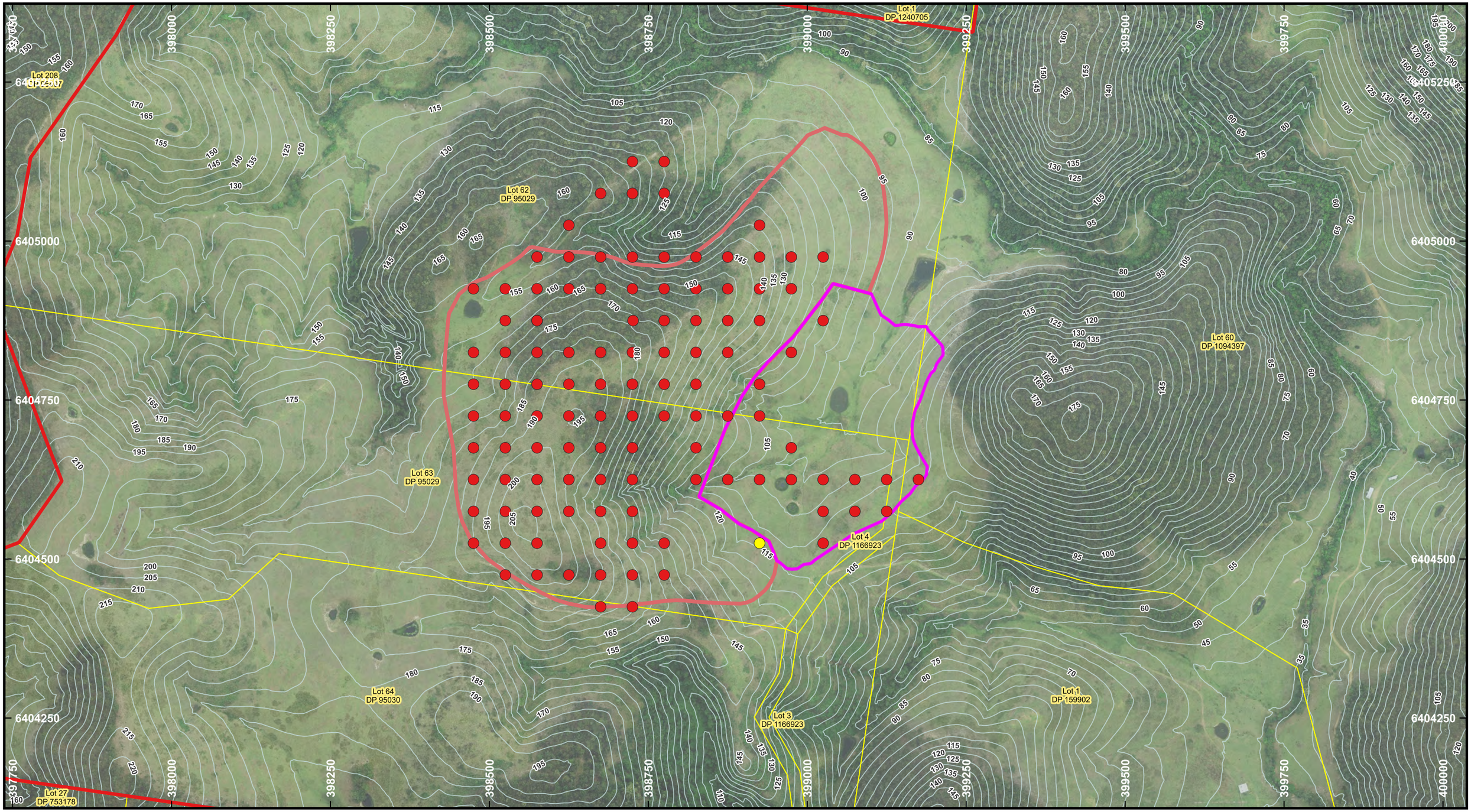


Legend

- Site Boundary
- Lot Boundary (Cadastral)

Existing Contours

- 5m

- Proposed Quarry Boundary
- Processing Pad Boundary

Surface Sampling Sites

- Haematised Rhyolitic Tuff
- Volcanoclastic Conglomerate

6 Exploration Activities

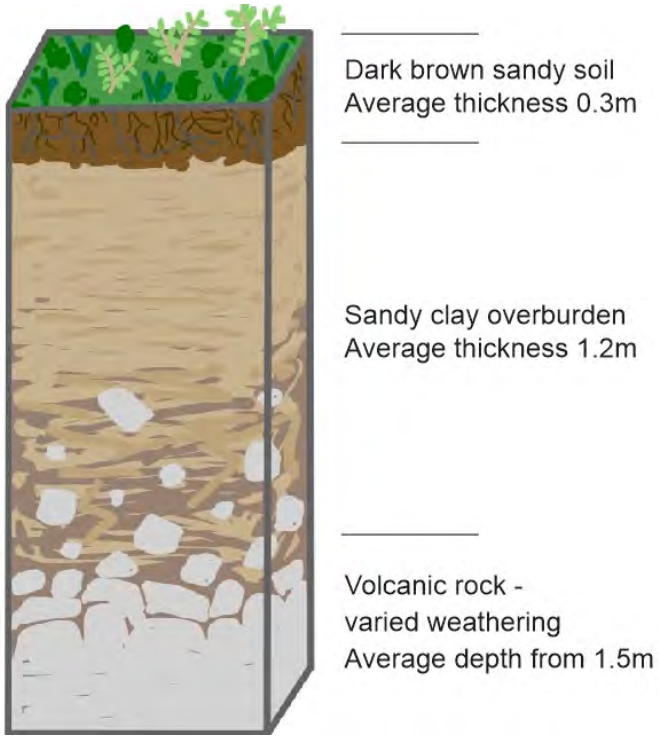
6.1 BACKGROUND

In addition to surface sampling, test pitting and drilling have been undertaken to establish an understanding of the underlying geological context of the site to the best of our knowledge. Access to all parts of the area of interest was not obtainable due to steep slopes and wet ground. These investigations cannot conclusively determine the underlying geology but provide an indication of expected subsurface rock units and trends. *Figure Four* shows test pit locations, and *Figure Five* shows the drill hole locations.

6.2 TEST PITS

On the 23rd of July 2024 investigations into near-surface geology and soil depths were undertaken in the proposed Processing Pad area (see *Figure Five*). 19 test pits were sunk with a 20 tonne excavator to determine soil depth and underlying rock type. Pit depths varied from 0.5 to 3.2m with an average depth of 1.5m, sunk to the level of exposed rock or equipment refusal. All pits exposed volcanic rock at their base with varying levels of weathering, no sedimentary units were intersected, see *Photoplate 1*. Pits were not sunk in the central zone along the creek line below a surface RL of 95 as this area will be filled for the Processing Pad. No test pits were sunk in drainage lines above RL95 due to site access constraints. Test pit locations are shown on *Figure Four* and results are outlined in *Appendix B – VGT Test Pit Logs*.

Photoplate 1. Hillview Processing Pad - Typical Soil Profile



Processing Pad Material Volume Calculations	
Total Processing Pad (PP) Area	10.27Ha
PP area to be filled (below 95 RL)	1.41Ha
PP area to be cut (above 95 RL)	8.86Ha
Average PP soil thickness	0.3m
Average PP clay overburden thickness	1.2m
Estimated soil volume in PP area	26,588.4m^3
Estimated clay overburden volume in PP area	106,353.6m^3

Plan of:	**Hillview Quarry Assistance - 2024 Test Pit Locations**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Client provided aerial photo, November 2014. Google Earth surruond. NSW C&S - Clip & Ship cadastral and drainage. Haul and proposed disturbance provided by ADW. Disturbance amended 2022 by VGT.	**Plan By:**	RG
Figure:	**FOUR**	**Council:**	MidCoast Council	**Survey:**	Photomapping November 2014	**Project Manager:**	GT
Version/ Date:	V0 28/01/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q06_V0_F4	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	5m		

N

0 50 100 m

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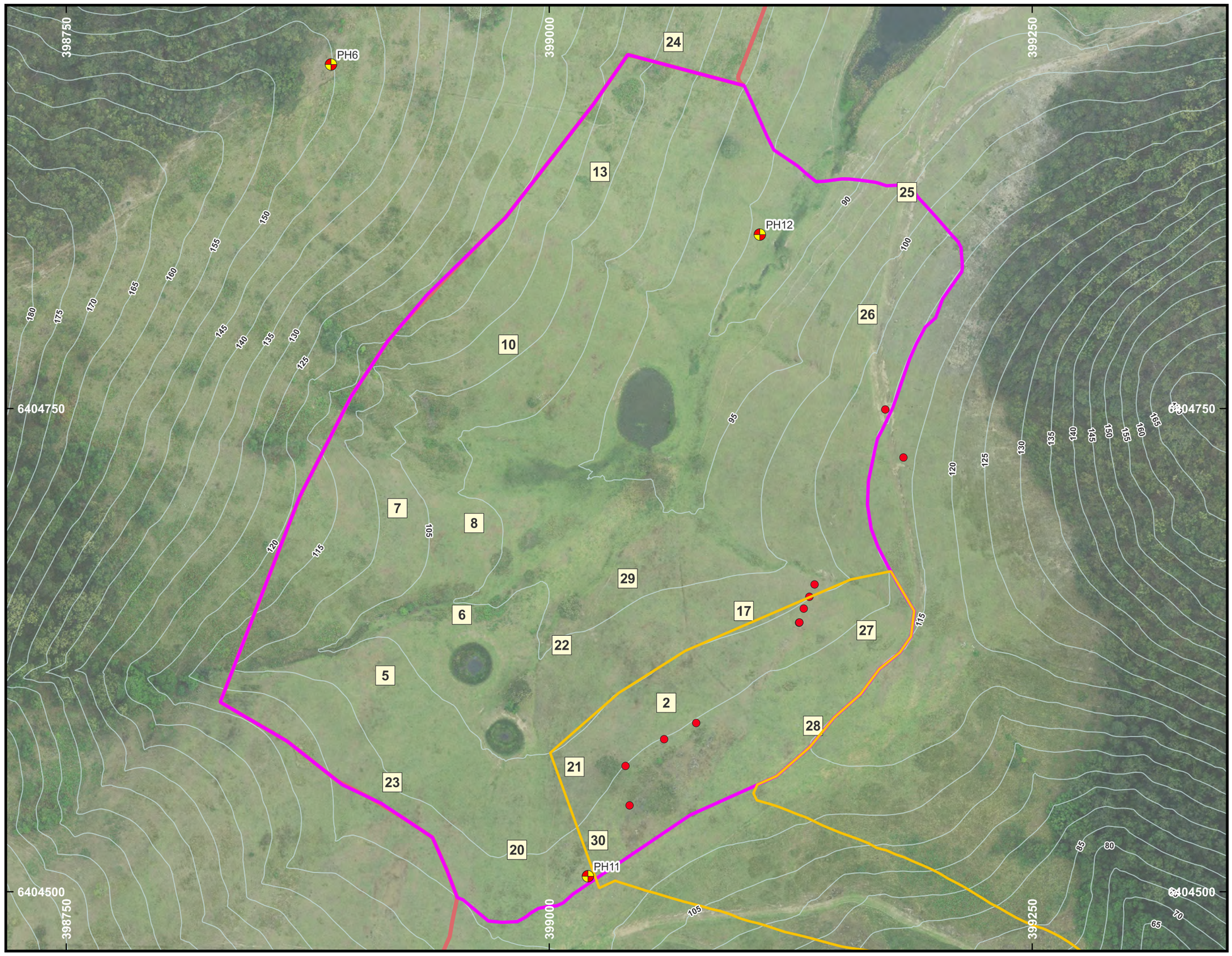

Legend

- Proposed Quarry Boundary
- Processing Pad Boundary
- Stage 1 Haul Road and Processing Pad

Existing Contours

- 5m
- Drill Holes
- Volcanic Rock Outcrop Markers
- Test Pits July 2024

Pit No	Depth	Eastings	Northings	Elevation
1	*Deleted*			
2	1.20	399060.57	6404597.77	108.03
3	*Deleted*			
4	*Deleted*			
5	0.50	398915.09	6404611.88	106.49
6	2.20	398954.77	6404643.31	101.06
7	1.40	398921.42	6404698.42	108.02
8	1.50	398961.09	6404690.73	101.83
9	*Deleted*			
10	1.80	398978.86	6404783.10	106.43
11	*Deleted*			
12	*Deleted*			
13	1.10	399026.22	6404872.50	107.04
14	*Deleted*			
15	*Deleted*			
16	*Deleted*			
17	0.60	399100.70	6404645.24	103.41
18	*Deleted*			
19	*Deleted*			
20	3.20	398983.28	6404521.67	109.98
21	1.60	399013.05	6404564.65	106.55
22	2.40	399006.47	6404627.59	100.34
23	2.50	398918.75	6404556.60	110.33
24	1.20	399064.29	6404939.68	103.75
25	1.10	399185.14	6404861.94	95.82
26	1.05	399164.73	6404798.70	102.22
27	0.90	399164.18	6404635.28	111.31
28	0.90	399136.57	6404585.88	114.79

6.3 DRILLING

Table 2. Drill Hole Summary

Drillhole Code	Easting	Northing	RL (Top of PVC Pipe)	Surveyed RL (Ground Level)	Depth Drilled* (m)	Base of Hole (mRL)	Weathered Metres (%)	Fresh / Slightly Weathered Metres (%)
DDH1	399325	6404237	101.77	101.67	34	67.67	N/A	N/A
DDH2* **	398672.97	6404803.67	190.67	189.85	101	88.85	0	101 (100%)
PH1	398559	6404551	206.60	206.50	127	79.50	7	122 (5%)
PH2**	399005.78	6404038.86	112.78	112.27	68	44.27	N/A	N/A
PH2A**	399008.90	6404038.53	112.74	112.17	68	44.17	N/A	N/A
PH3	398601	6404686	194.42	194.38	113	81.38	0	113 (100%)
PH4	398671.72	6404803.76	190.39	189.83	140	49.83	4	136 (97%)
PH5	398462.10	6404674.32	181.37	180.93	60	120.93	0	60 (100%)
PH7	398673.19	6404802.76	190.25	189.87	46	143.87	0	46 (100%)
PH8	398463.58	6404673.63	181.70	181.15	46	135.15	0	46 (100%)
PH9	398794.30	6404421.15	158.56	158.04	36	122.04	6	30 (83%)
PH10	398794.41	6404422.35	158.52	157.98	75	82.98	9	66 (88%)
PH11	399018.56	6404504.41	113.86	113.57	23.5	90.07	0	23.5 (100%)
PH12	399114.48	6404843.48	88.56	88.15	20	68.15	5	15 (75%)
PH13	398919.44	6405189.27	100.16	100.24	20	80.24	0	20 (100%)

***VGT Depth from Drill Logs

** Depth drilled of PH2 and PH2A unknown. One drill log available for both holes, uncertain which PH2 it is. These hole/s are located outside the project boundary.

***Drilled off site not considered as part of this assessment

Plan of:	**Hillview Quarry EIS - Drill Hole Locations**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Client provided aerial and existing survey November 2014. NSW Clip & Ship cadastral.	**Plan By:**	TO
Figure:	**FIVE**	**Council:**	MidCoast Council	**Survey:**	Photomapping November 2014	**Project Manager:**	GT
Version/ Date:	V1 28/01/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q04_V1_F5	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	5m		

N

0 100 200 300 400 m

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BH	Easting	Northing	RL (Top of PVC Pipe)	Surveyed RL (Ground Level)	Depth Drilled (VGT depths/logs) (m)	Base of Hole (from VGT depths/drill logs) (mRL)
DDH1	399325	6404237	101.77	101.67	34	67.67
DDH2	398673	6404804	190.67	189.85	101	88.85
PH1	398559	6404551	206.60	206.50	127	79.50
PH2	399006	6404039	112.78	112.27	68	44.27
PH2A	399009	6404039	112.74	112.17	68	44.17
PH3	398601	6404686	194.42	194.38	113	81.38
PH4	398672	6404804	190.39	189.83	140	49.83
PH5	398462	6404674	181.37	180.93	60	120.93
PH7	398673	6404803	190.25	189.87	46	143.87
PH8	398464	6404674	181.70	181.15	46	135.15
PH9	398794	6404421	158.56	158.04	36	122.04
PH10	398794	6404422	158.52	157.98	75	82.98
PH11	399019	6404504	113.86	113.57	23.5	90.07
PH12	399114	6404843	88.56	88.15	20	68.15
PH13	398919	6405189	100.16	100.24	20	80.24

Legend

Site Boundary | Drainage Line | ***Topo Contours*** 5m | Quarry Boundary | Process Pad Boundary | ADWJ Surveyed Borehole Locations | Cross Sections

6.4 GEOLOGICAL TERMINOLOGY CLARIFICATION

A petrographic assessment of the drill core was undertaken which identified the upper red/pink portion of the drill core as “Hematized Rhyolitic Tuff (HRT)” and the lower grey rock as “Rhyolitic Tuff” (Rhyolite).

For ease of reporting the surface samples mapped as HRT and the lower grey portions of the drill holes are described as Rhyolite.

6.5 PERCUSSION DRILLING RESULTS

Drill hole logs are found in *Appendix C*, from the percussion hole drilling the following lithologies were identified as listed in *Table 3*.

Table 3. Lithology Summary

Lithological Name	Description	Hardness	Photograph
Weathered Material	Clay, very weathered Volcanic rock.	Weak, Soft	
Slightly Weathered Hematized Rhyolitic Tuff	Light brown, pink very minor amounts of clay, white plagioclase laths	Hard, Strong	
Hematized Rhyolitic Tuff	Pinky / red with white plagioclase laths	Hard, Strong	
Rhyolitic Tuff	Grey with white plagioclase laths	Hard, Strong	

The slightly weathered and fresh sample material were both considered to be suitable for aggregate uses.

6.6 DIAMOND DRILLING RESULTS

Diamond drill hole 2 (DDH2) was the principal hole used for assessing the main resource area. The upper 38 metres of red/pink material were identified as hematized rhyolitic tuff (HRT). The lower 63 metres of grey material were identified as rhyolitic tuff, called rhyolite within this report. Five basaltic dykes from 0.5 to 0.75 metres thick were intersected at approximately 9, 11.5, 17, 31 and 33 metres down the hole, all in the hematized zone.

The rock was sent for geotechnical assessment by Qualtest, the full results are attached as *Appendix D* and are summarised below:

“The rock is considered to have adequate strength and durability for use in Asphaltic / Sealing Aggregate, and is also suitable for uses as a source of Roadbase, Rail Ballast and Rip Rap” and “*…suitable for use as Dimension Stone and Armour rock”.*

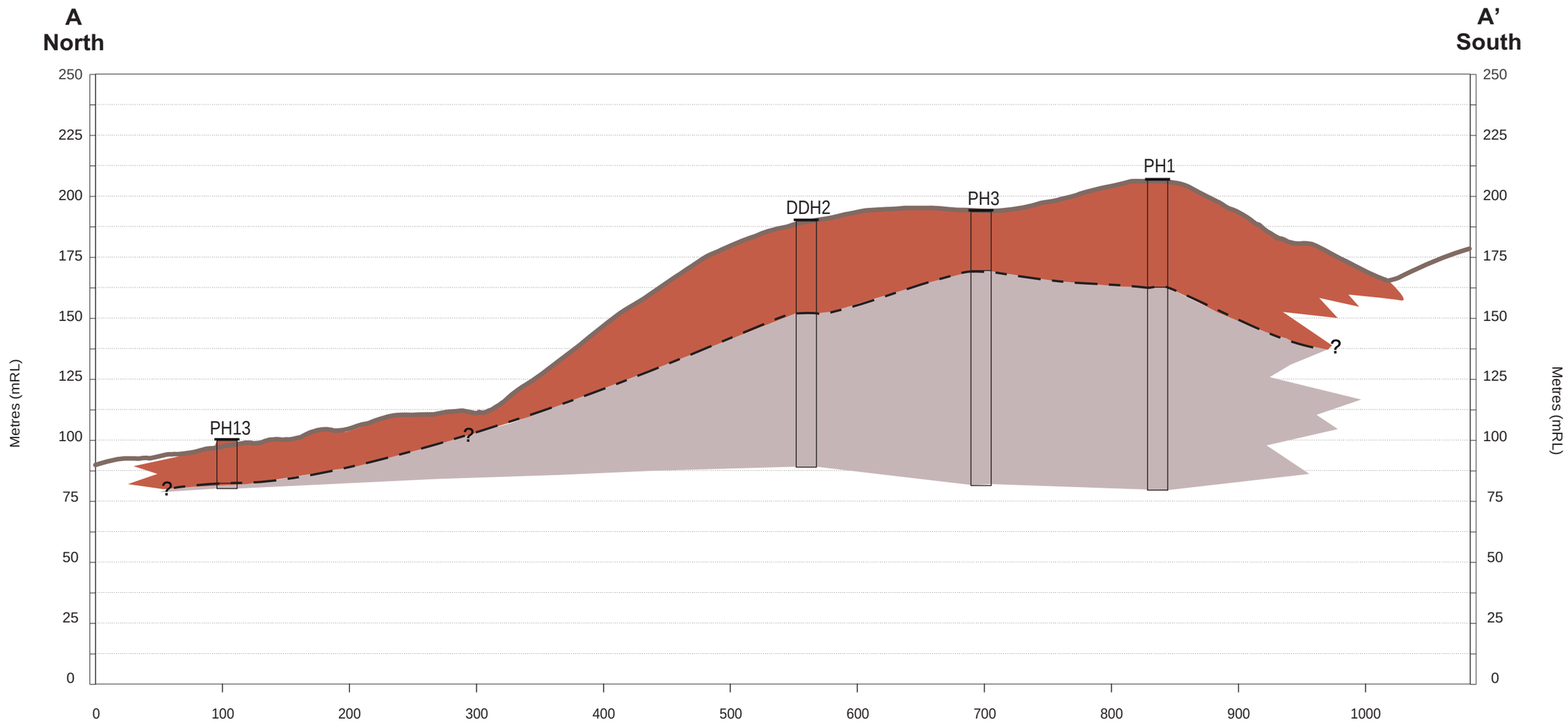
Concrete uses for these aggregates can be undertaken if *“… appropriate precautions are taken such as the use of fly ash and shrinkage limited cement blends in the production and design phase this can be controlled.”*

Plan of:	Hillview Quarry - Geological Assessment 2025 - Cross-Section A-A' (North-South)	***Location:***	Off Maytoms Lane, Booral, NSW	***Source:***	Drillhole data 2015-2017. Surface survey 2014.	***Our Ref:***	1195_HQ_GR2023_XS AA'_C001_V0_F6.cdr
Figure:	SIX	***Council:***	MidCoast Council	***Survey:***	Photomapping November 2014	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Not Applicable	***Projection:***	GDA2020	***Project Manager:***	GVT
Version/Date:	V0 28/01/2025	***Client:***	Coastwide Materials Pty Ltd	***Contour Interval:***	Not Applicable	***Office:***	Thornton

vgt Environmental Compliance Solutions Pty Ltd

25m
Vertical Scale
0

0 50m
Horizontal Scale



Legend

Existing Ground Level

Lithology

Hematized Rhyolite Tuff

Rhyolite Tuff

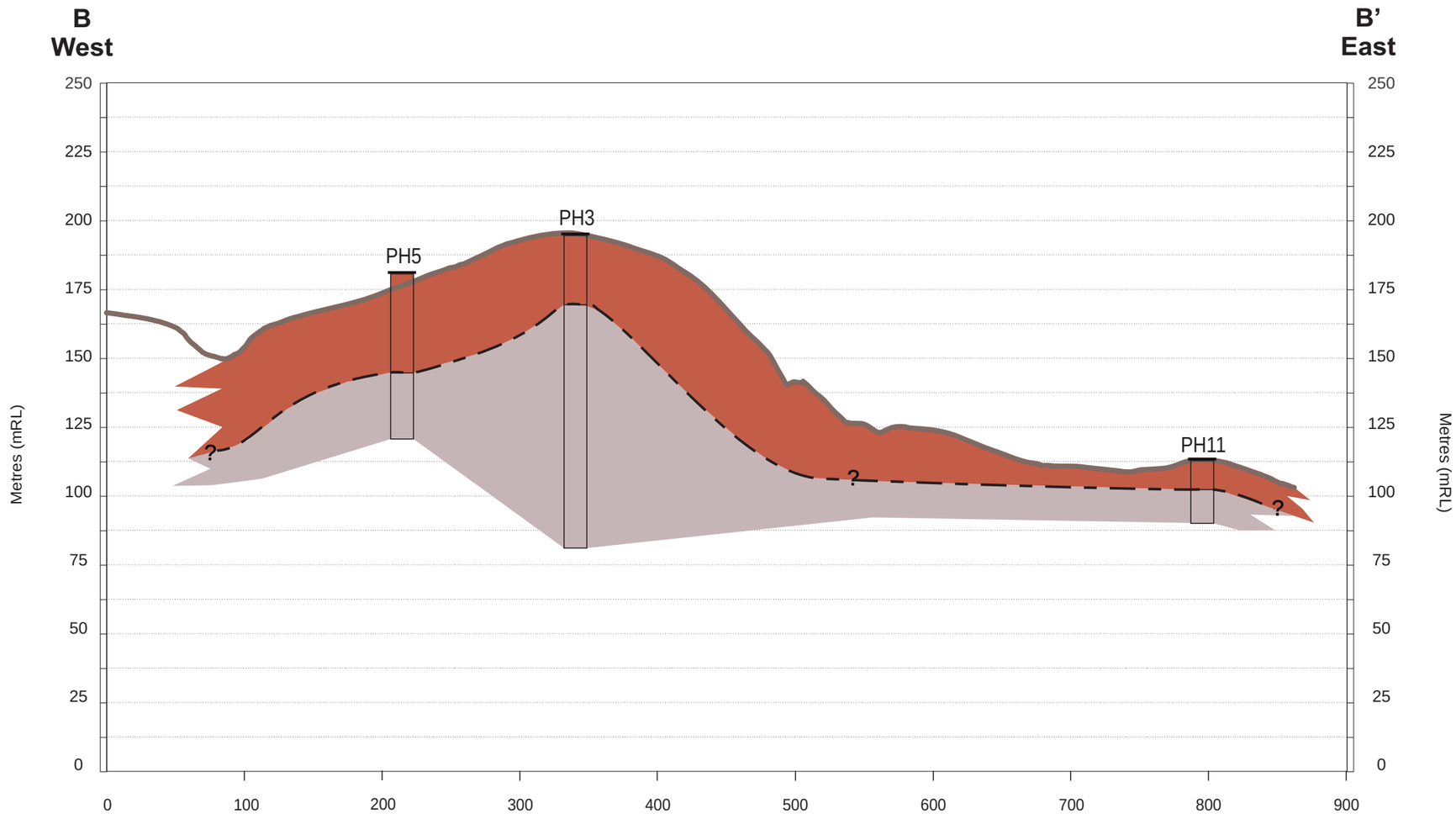
Dislocation

Plan of:	Hillview Quarry - Geological Assessment 2025 - Cross-Section B-B' (West-East)	***Location:***	Off Maytoms Lane, Booral, NSW	***Source:***	Drillhole data 2015-2017, Surface survey November 2014	***Our Ref:***	1195_HQ_GR2023_XS AA'_C002_V0_F7.cdr
Figure:	SEVEN	***Council:***	MidCoast Council	***Survey:***	Photomapping November 2014	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenures:***	Not Applicable	***Projection:***	GDA2020	***Project Manager:***	GVT
Version/Date:	V0 28/01/2025	***Client:***	Coastwide Materials Pty Ltd	***Contour Interval:***	Not Applicable	***Office:***	Thornton

vgt Environmental Compliance Solutions Pty Ltd

25m
Vertical Scale
0

0 50m
Horizontal Scale



Legend

Existing Ground Level

Lithology

Hematized Rhyolite Tuff

Rhyolite Tuff

Dislocation

7 Resource Assessment

7.1 CURRENT INVESTIGATION RESOURCE ASSESSMENT

The resource assessment has the following assumptions and criteria:

1. Survey and extraction boundaries provided by client, (presented in *Figure Three)* no buffers within the quarry boundary;
2. Quarry floor 95.0 m RL;
3. Approximately six five-metre width benches, 15m height batters at an angle of approximately 0.5H:1V, as shown on oblique view on *Figure Eight*; and
4. Density of Rhyolite 2.5 g/cm^3 (Qualtest *Appendix D*).

This assessment relies upon geological investigations undertaken in 2015 – 2017, and 2020 surface mapping. Data from 15 drill holes and surface mapping has been reviewed. Three-dimensional modelling using 12D software, based upon the provided constraints has calculated, refer to *Table 4*. The conceptual final landform is included in *Figure Eight..*

Table 4. Resource Assessment Summary

Resource Area	Volume Cut (m^3)	Volume Fill (m^3)	Volume Net (m^3)	Tonnes*
Haul Road	148,400	53,000	95,400	238,500
Processing Pad	1,166,000	41,500	1,124,500	2,811,000
Main Resource	14,986,000	-	14,986,000	37,466,000

Note* Density 2.5g/cm^3

Rhyolite within the main resource area is estimated at 14.9 million metres cubed and based upon a density of 2.5 g/cm^3 a total resource of 37.5 million tonnes is available, to RL95 m.

Further resources could be gained as BH 4 was sunk deeper and intersected Rhyolite to RL49 m.

There is little overburden observed on the main resource area and topsoil here may provide up to 45,000 metres cubed.

Within the Processing pad area, test pit investigations exposed volcanic bedrock at an average depth of 1.5m below the surface. In combination with outcrop observations and drilling data from the South and East of the Processing Pad area, this suggests the majority of material obtained within this area will most likely be volcanic Rhyolite rock. Topsoil and saprolite clay depths observed in the test pits suggest an overburden volume of 0.13 million metres cubed(see *Table 5*), while the volume of Rhyolite resource within the Processing Pad area is estimated at 1.03 million metres cubed, or 2.6 million tonnes. The haul road has not been investigated at a sub-surface level but volcanic outcrops occurring within the haul road boundary suggest hard rock is also present in this area.

Table 5. Processing Pad Assessment Summary

Processing Pad Materials	Estimated Volume (m^3)	Tonnes*
Total Cut (to 95RL)	1,166,000	
Topsoil (0.3m deep)	26,588	
Saprolite Clay (0.3m to 1.5m deep)	106,353	
Hard Rock Resource	1,033,059	2,582,648*

8 Conclusion

VGT have produced this Geology Report for the proposed Hillview Hard Rock Quarry. It has been demonstrated that there is approximately 37.5 million tonnes of material available to be extracted including rhyolite material suitable for concrete, asphaltic and sealing aggregates, road base, rip rap and rail ballast applications.

Subsurface geology is complex, and assumptions and interpolations are made between data points such as drill holes and surface exposures. Geological reports are limited by the amount of data that can be effectively collected. This report presents all available data at this time.

Plan of:	**Hillview Quarry EIS - Resource Estimation**	**Location:**	Off Maytoms Lane, Booral, NSW	**Source:**	Photomapping 2014. Extraction boundaries supplied by client.	**Plan By:**	SK
Figure:	**EIGHT**	**Council:**	MidCoast Council	**Survey:**	Photomapping 2014	**Project Manager:**	GT
Version/ Date:	V2 05/02/2025	**Tenure:**	N/A	**Projection:**	GDA2020 EPSG:7856		
Our Ref:	1195_HV_EIS_Q05_V2_F8	**Client:**	Coastwide Materials Pty Ltd	**Contour Interval:**	1m		

N

0 50 100 150 200 m

vgt environmental compliance solutions and laboratories

398500 398750 399000 399250 399500 399750 400000

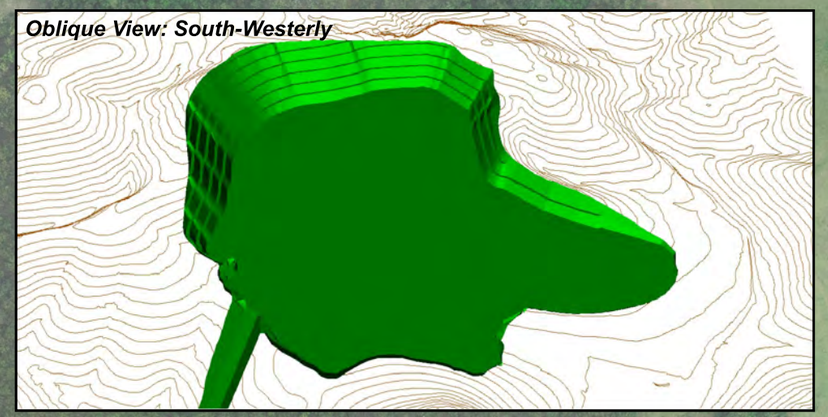
6405000 6404750 6404500

Resource Assessment Summary

Resource Area	Volume Cut (m^3)	Volume Fill (m^3)	Volume Net (m^3)	Tonnes*
Haul Road	148,400	53,000	95,400	238,500
Processing Pad	1,166,000	41,500	1,124,500	2,811,000
Main Resource	14,986,000	-	14,986,000	37,466,000

Note* Density 2.5g/cm^3

Oblique View: South-Westerly



Legend

Project Disturbance

Conceptual Final Contours

5m

1m

Elevation Final Landform

190.7mRL

21.2mRL

9 References

Ref 1 Regional NSW Minview website, version 2022.8.3.