HERITAGE IMPACT STATEMENT

1 - 5 Rainbow Road, Mittagong
December 2023

SUE ROSEN ASSOCIATES
HISTORY | HERITAGE | RESEARCH

This statement forms part of a Development Application for:

Demolition of the existing dwellings at 1-5 Rainbow Road Mittagong, and the construction of a basement carpark + 3 storey multi-flat residential development. The site is next to the Chalybeate Springs; a heritage item listed in schedule 5 of the *Wingecarribee Local Environmental Plan* 2010.

Date:

December 2023

Controls:

Wingecarribee Local Environmental Plan 2010
Mittagong Township Development Control Plan 2010 (effective 2021)

Address and Property Description:

1 - 5 Rainbow Road, Mittagong NSW 2575
Lot 32 DP 9299, Lots 141 & 142 DP 531051
Parish of Mittagong, County of Camden

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CONTENTS

1. EXECUTIVE SUMMARY

This Heritage Impact Statement has been commissioned to assess the heritage impact of the construction of a basement carpark + 3 storey multi-flat residential development at 1-5 Rainbow Road Mittagong. The study site is located next to the Chalybeate Spring; a heritage item listed in schedule 5 of the Wingecarribee LEP 2010.

The proposed works include:

- Demolition of the existing c.1969 and c.1977 dwellings and outbuildings at 1, 3 and 5 Rainbow Road.
- Removal of select trees and landscape features at the site.
- Earthworks to dig the basement carpark.
- Construction of an entry/exit driveway (E boundary).
- Construction of two E-W blocks of three storey residential flats with a landscaped central common area:
  - Sheet metal hip roof
  - Aluminum framed windows, doors, privacy screens
  - Tiled terraces and balconies
  - Exterior colour palette of charcoal greys, warm timbers, oxidized iron and light stone.
- Landscaping across site, including construction of a water detention basin, additional medium-tall native trees along the E boundary, and boundary fencing.

Architectural and landscape plans are at Appendix A.

The Chalybeate Spring site is a rare site of high historical and research value. It holds aesthetic value primarily for its leafy, parkland setting, which was cultivated as a tourist attraction in the 19th and early 20th centuries.

I am satisfied with the conclusions and recommendations provided by the geotechnic, hydrological and hydrogeological experts, which indicate that the aquifer feeding the spring will not be materially affected by the drainage of groundwater seepage at the study site, and that it is unlikely that excavations will encounter the aquifer feeding the spring. I am also satisfied that there are sufficient mitigative arrangements proposed to monitor the ground water at the site for changes, and that the excavations will be commenced at the further point away from the Spring and proceed with caution as they approach the eastern boundary.

I am satisfied that the visual impact of the development on the setting and views of the Spring site have been mitigated through respectful design which has resulted in an unobtrusive architectural outcome. The use of a traditional hip roofline, third floor incorporated into the roof plane with 'dormer' style balconies, recessive and muted earthy tones, and the leafy setting ensures that the development will sit sympathetically in the streetscape.

The 2nd and 3rd floor and gable ends of the blocks of flats are stepped back from the E boundary to avoid dominating/blocking views to the Spring site. The visual impact of the development will be further minimised through the retention of the street trees, select mature trees at the boundaries, and the addition of master-planned landscaping to provide screening and maintain the leafy setting of the northern side of Rainbow Road. The natural screening provided at the site also maintains the visual relationship with the parkland setting of the adjacent Chalybeate Spring site.

Overall, it is concluded that the heritage significance of the Chalybeate Spring will not be adversely affected by the proposed works.

It is therefore, recommended that Council **approve the application**.

The following mitigative measures are recommended so that all due diligence and care is taken in regard to the Chalybeate Spring before, during, and after excavations at the site:

1. That the JK Geotechnics detailed dewatering management plan incorporate requirements for monitoring the spring and consider options for managing groundwater if conditions are encountered which differ from those outlined in the study site's Hydrology Report;

2. That the water monitoring wells at the study site remain in situ to enable ongoing testing/monitoring as required;

3. Excavations be commenced furthest away from the spring at the western side of the site, and move in an easterly direction so as to allow sufficient room and scope to do any repair work should the unlikely event arise that flowing water is encountered; and

4. In the unlikely event that flowing water is encountered, the hole will be backfilled with a grout mixture to cap the flow while expert geotechnical/hydrological advice is sought.

In addition, that all recommendations and directions made in the expert technical reports by JK Geotechnics and ENRS Pty Ltd (and similar) be adopted and actioned at the site.

In regard to the Chalybeate Spring site, it is recommended that Council consider:

- Commissioning an interpretative strategy to highlight the historical, natural and cultural environmental significance of the site. Installations could include signage with historic photographs, pathways and picnic seating, restoration of the Spring surrounds. This installation could be expanded to encompass the Fitzroy Iron Works site across the road to emphasise the relationship between the two sites.
- At the least, order conservation works for the Brazenall Foundry lamp posts at the site to make sure their fabric is protected from the effects of the weather. These should be carried out by appropriate professionals who have experience working with heritage ironwork.
- In addition, consider having replicas produced and installed at the site, with the originals conserved and put on public display at an appropriate indoor location.

2. INTRODUCTION

2.1 Background

This Heritage Impact Statement has been commissioned by the owner of ('study site'), to assess the heritage impact of the construction of a basement + 3 storey multi-flat residential development next to the Chalybeate Springs, which is a heritage item listed in Schedule 5 of the Wingecarribee LEP.

2.2 Site Location and Description

1 - 5 Rainbow Road, Mittagong, comprises Lot 32 DP 9299, Lot 142 DP 531051 and Lot 141 DP 531051 respectively. No. 1 Rainbow Road is 2556m^2, while Nos. 3 and 5 both have an area of 1276m^2. The three rectangular lots have a combined area of approximately 5122m^2 and occupy the northern side of Rainbow Road, in the Parish of Mittagong, County of Camden in the Wingecarribee Local Government Area.

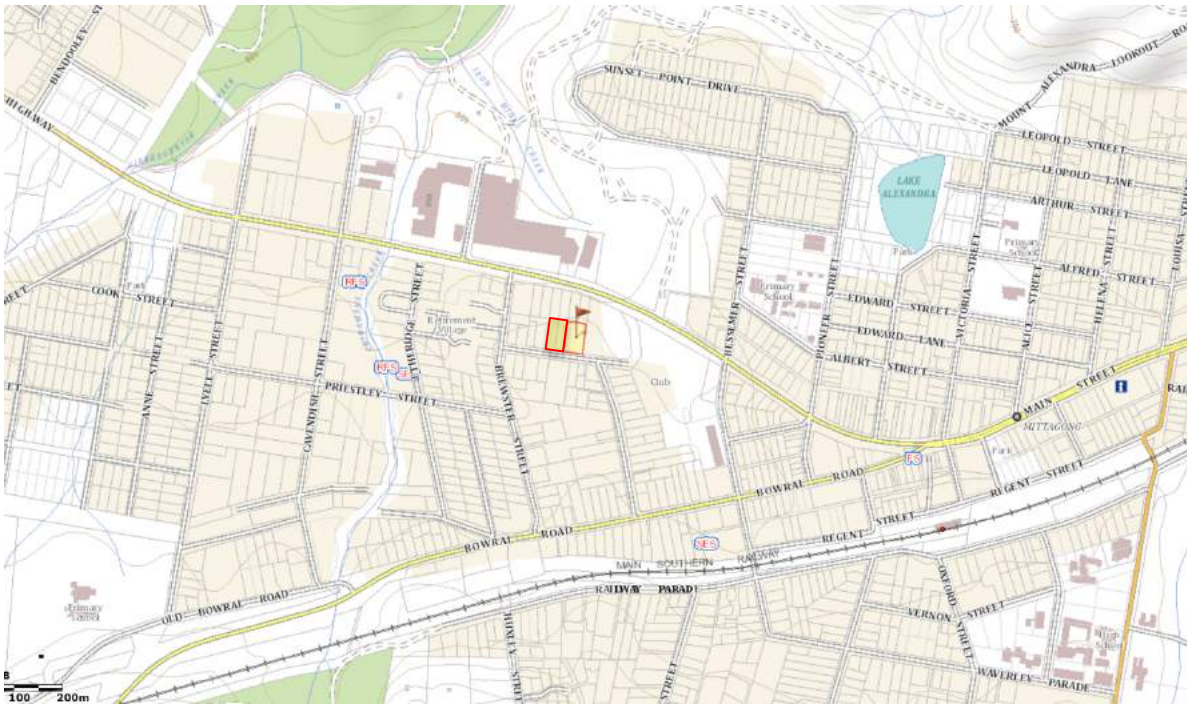


Figure 2.1 | Nos. 1 - 5 Rainbow Road, Mittagong are on the northern side of the road. The study area is marked in red. [Six Maps]

Figure 2.2 | Aerial view of immediate surrounds to study site; lot marked in red. The heritage-listed Chalybeate Springs site is the parkland adjacent to the east. [SIX Maps]

Figure 2.3 | Detail aerial of the study site. [SIX Maps]

2.3 Heritage Status

1 - 5 Rainbow Road, Mittagong is located adjacent to and in the vicinity of the Chalybeate Springs, heritage item I576. As such, it is subject to the heritage standards provided under the Wingecarribee LEP and Mittagong Township DCP 2010.

Heritage Listings are in Appendix B.

Figure 2.4 | Heritage map showing the study site (green) in relation to nearby heritage items. Heritage items shaded in brown, archaeological items in yellow. The study site is adjacent to item I576, which is the Chalybeate Spring. [NSW Planning Portal Spatial Viewer 2023]

2.4 Methodology

Two site inspections, review of Council's planning guidelines, historical research, and assessment of the proposal was undertaken by historian and heritage consultant, Liz Gorman. The heritage impact was evaluated in light of the heritage qualities of the site as a part of a heritage item, items in the vicinity, and the heritage conservation area.

The methodology employed in this study conforms to the principles and guidelines of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* 1999. The assessment presented is in accord with the criteria and guidelines prepared by the NSW Heritage Branch of the NSW Department of Planning for the preparation of Heritage Impact Statements.

2.5 Terminology

The terminology used in this report is consistent with the *NSW Heritage Manual* and the definitions of the *Burra Charter*.

3. HISTORICAL EVIDENCE

3.1 Fitzroy Iron

The land that the study site occupies has an association with the Fitzroy Ironworks and the subdivision of their land that created the core of the Mittagong township.

On the opening up of the Cowpastures, explorers and settlers began making their way south. An early nucleus of settlement near Mittagong existed from the 1820s along the Old South Road, with John Cutter erecting the *Kangaroo Inn* in 1826. When a more direct route to Berrima was established, Cutter erected another *Kangaroo Inn*, now the Fitzroy Inn, near Nattai Creek at the now-Old Hume Highway.[1]

The discovery of iron and coal in the area skewed the focus of development toward industry. An iron works was established in Mittagong in 1848 by Thomas Holmes, John Thomas Neale, Thomas Tipple Smith and William Tipple Smith, who were officially granted an 100 acre portion south of the Main South Road on 3rd Jan 1849. They commenced smelting with the erection of a small blast furnace and two beam engines, producing the first commercialized iron derived from Australian ore. This Ironworks, encompassing the study site, would later be named the 'Fitz Roy Iron Mine' in honour of Governor FitzRoy, who visited the site in January 1849.[2]

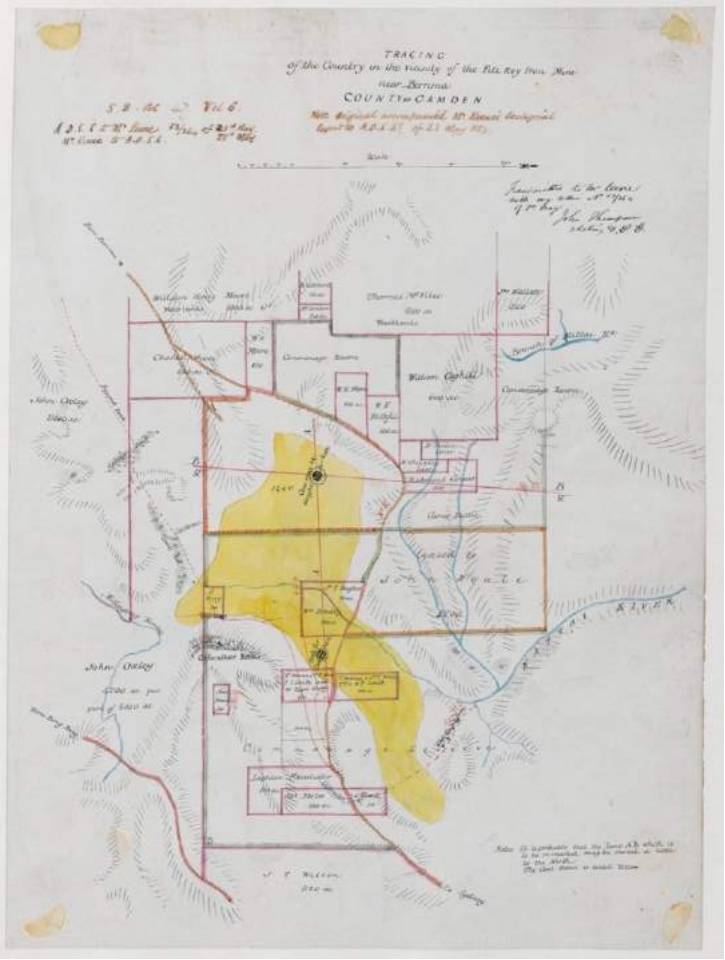


Figure 3.1 | 1853 Surveyor General Sketch Book entry *Tracing of the Country in the vicinity of the Fitzroy Iron Mine near Berrima, County of Camden*. The yellow shading indicated the extent of a coal basin near Mittagong which was mined (later as the Box Vale Colliery) to provide fuel for the Iron Works. [SARA: NRS-13886-1-[X764]-Volume 6 Part 2-69]

[1] WSC: *Mittagong Township DCP* 2021, Section A7.7 - History and Heritage Context of Mittagong, p.317

[2] *The Sydney Morning Herald*, 30 January 1849, p.2

There was minimal work underway at the mine until 15 Sep 1851 when the company was incorporated as the 'Fitz Roy Iron-mining Company' with Holmes and the Smith brothers the main shareholders.[3] Following inspection by mining surveyor William Keene, around 100 blooms of two and one-half tons were produced by the company, before the tilt-hammer of the furnace was broken.[4] This disaster delayed smelting indefinitely and ore was sent to Sydney for treatment instead. By 1854, renewed interest from investors resulted in the dissolution and re-incorporation of the company. More machinery was ordered and test shafts bored, but funds were soon exhausted.[5] The company was barely kept afloat by personal loans and mortgages taken out by shareholders. Production ground to a halt in the mid 1850s as financial strife crippled the company, resulting in the sale of its assets.[6]

By 1856 the company was effectively bankrupt but there was a desire from some shareholders, especially H. W. Johnson to resurrect production. Fresh capital and an 1859 expert assessment provided hope for the floating of a new company, but public distrust and lack of funds meant this was further delayed. While the provisional directors set about convincing anyone possible to invest, the Ironworks was leased to B. W. Lattin.[7] Lattin was engaged by the government to produce rails for the expanding Southern Railway Line at fifty tons per week for eight months and thereafter an increase to 120 tons per week. Work was in full swing by June 1863 and seventy men were employed at the coal mines, quarries and furnace. However, Lattin's lease was severed so amendments could be made to the furnace in October 1864. Finally, in June 1865 the company was re-incorporated as the 'Fitz Roy Iron Works Company'.[8] The works could not produce enough iron to cover their expenses and debts, but a government bail-out was refused, forcing the company to lease the works to successive firms who produced pig iron.[9] Eventually, on 29 Nov 1869 the company was wound up and dissolved, with the property and works offered for sale.[10]

Excepting the town of Sheffield on the northern side of the highway, Irish-born John Frazer purchased the whole undertaking in January 1872. A highly successful merchant, speculator, philanthropist and later politician, Fraser was one of four main shareholders of the venture, and was instrumental in reforming the company when it hit financial difficulty. He held the land in trust, and in 1873, transferred it to the re-launched Fitzroy Ironworks, now trading as the Fitzroy Bessemer Steel, Hematite Iron and Coal Company.[11]

The prospectus advertised:

> The Fitzroy estate is 1702 acres of freehold lands, underlaid by seams of coal and iron, and the iron ore is peculiarly adapted for the manufacture of Bessemer steel and railway rails, in sufficient quantities to supply the present and future demands of Australia for at least fifty years. It is to be hoped that the often attempted but yes neglected Fitzroy will now have a fair chance. Its development into an actual working mine must result in great good to New South Wales.[12]

[3] R. Else Mitchell, 'Mittagong and District. Its Industrial Development', *RAHSJP,* Vol. 26 pt. 5, 1940, p. 64.

[4] Mitchell, 'Mittagong District…', *RAHSJP,* p. 424.

[5] Mitchell, 'Mittagong District…', *RAHSJP,* pp. 425-427

[6] Mitchell, 'Mittagong District…', *RAHSJP,* p. 428

[7] Mitchell, 'Mittagong District…', *RAHSJP,* p. 433

[8] Mitchell, 'Mittagong District…', *RAHSJP,* p. 436.

[9] Mitchell, 'Mittagong District…', *RAHSJP,* pp. 438-440.

[10] R. Else Mitchell, 'Mittagong and District. Its Industrial Development', *RAHSJP,* Vol. 26 pt. 6, 1940, p. 442.

[11] LRS: CT Vol. 131 Fol. 77; *The Tasmanian*, 12 April 1873, p. 15.

[12] The Tasmanian, 12 April 1873, p. 15.

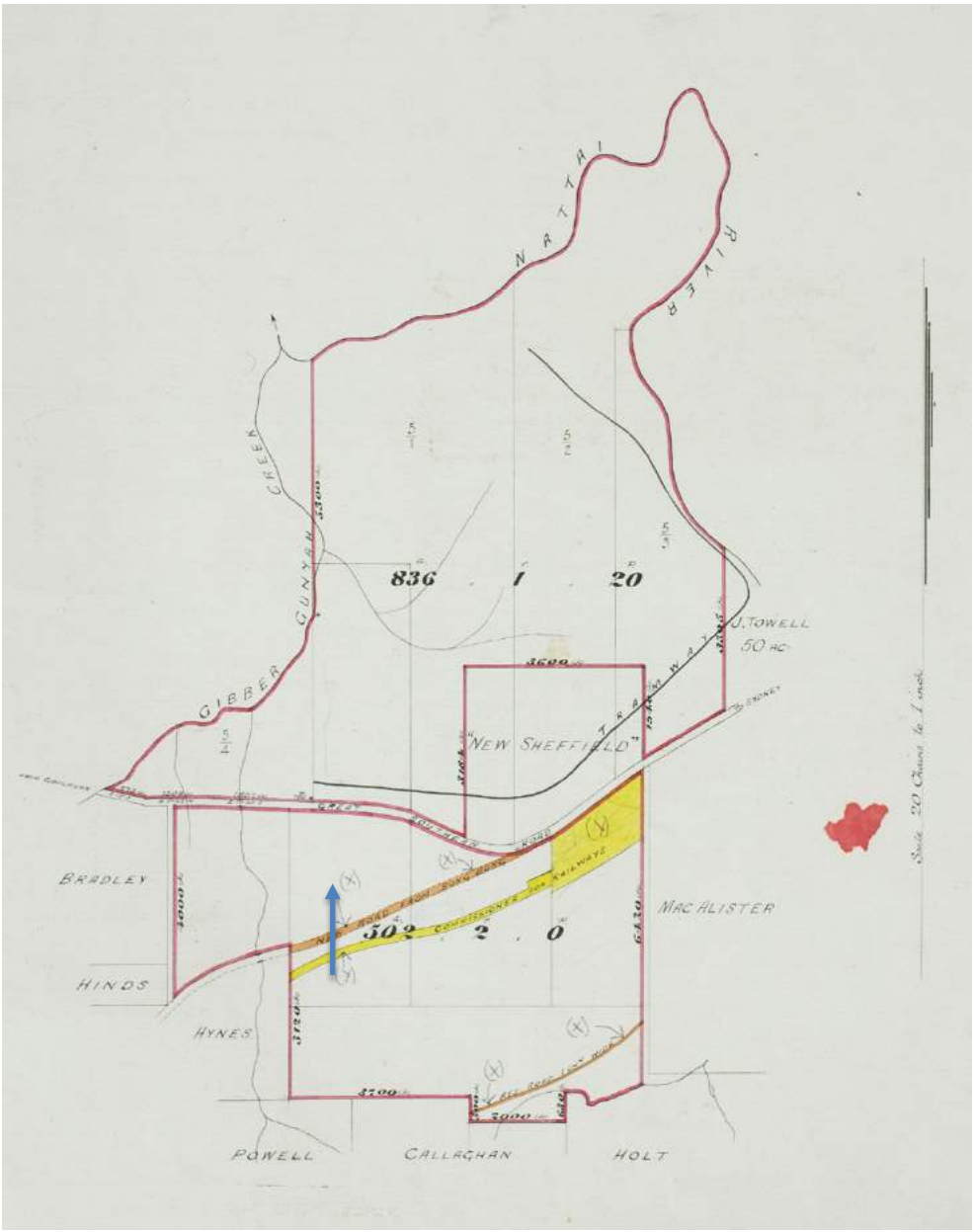


Figure 3.3 | Fitzroy Iron Works Company land holdings consolidated under John Fraser. The original portion containing the study site is indicated with and arrow. [LRS: CT Vol. 131 Fol.77]

The new Fitzroy company was English-owned due to Frazer's efforts in attracting investors while abroad in the early 1870s. In 1875, he and William Reginald, the Earl of Devon, became mortgagors to the Fitzroy BSHIC Company, with English gentleman Clement Witherby lending money again in 1877.

By 1884, the Supreme Court granted John Frazer the power to transfer the land of the Fitzroy BSHIC Company. Fraser sold the Iron Mine, plant, machinery and some 1340 acres of land to Mr A. S. Webster of the Mittagong Land Company for £27,100 in October 1883.[13] True to their name, the new owners set about subdividing and selling the Mittagong land around the ironworks.

[13] LRS: CT Vol. 167 Fol. 226; *Illustrated Melbourne News*, 3 October 1883, p.163

3.2 The Chalybeate Spring

The presence of a mineral spring at the site was first reported in the 1830s, during the survey and construction of the Great South Road through to Berrima.

The owners of the Fitzroy Iron Works had been granted the land containing the Spring in 1848. After Governor FitzRoy, visited the site in January 1849, the Spring was officially named the Lady Mary FitzRoy Spring.[14] Samples were taken back to Sydney for analysis, and it was found that water was particularly iron and mineral-rich; properties considered by many to have medicinal and therapeutic value.

The healing properties of the Spring became a tourist attraction, with people coming to 'take the waters' much as other famous springs such as England's Tunbridge Wells and Spa in Belgium.

The popularity of the site drove improvements at the site, with the piped source of the water covered with a spring house, other buildings and picnic tables erected at the site by c.1906

J.B Jacquet published information about the Fitzroy Iron deposit, including the Spring, in his 1901 publication on the iron ore deposits of New South Wales. The Spring House is noted on the plan, as well as the fact that there were other spring points that were either naturally occurring or were a result of the mining works tapping into the aquifer.[15]

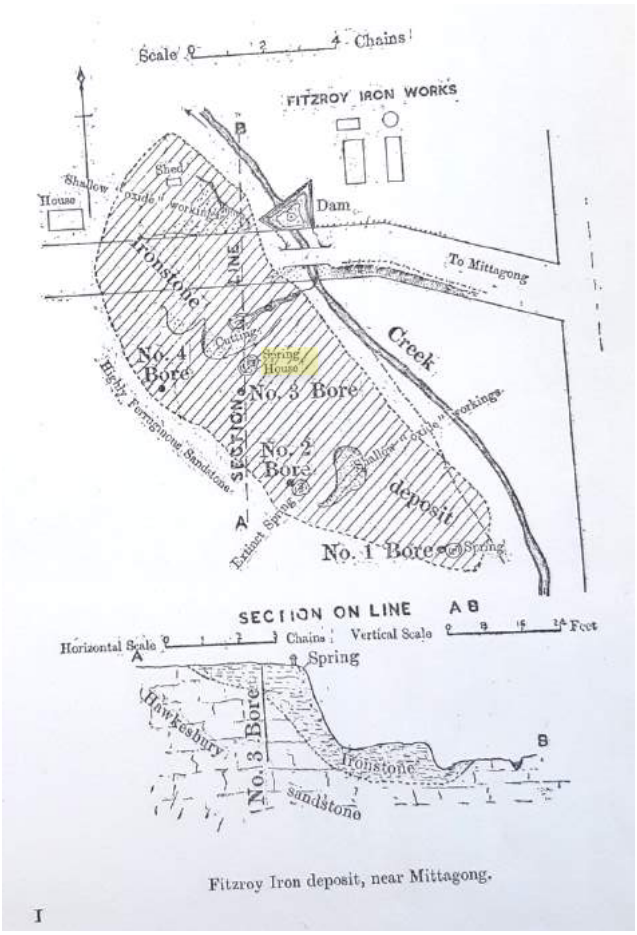


Figure 3.4 | Jacquet's survey of the Mittagong Chalybeate Spring site and its surrounding ironstone deposit. The Spring House is highlighted [BDH&FHS: Jacquet, 1901, p.51]

The popularity and use of the Spring eventually waned. The site was purchased by the Mittagong Land Company when the Fitzroy Iron Company folded. Eventually the site became Lot 33 of the 1918 Mineral Springs subdivision, though a newspaper report in the late 1940s recorded that public access to the spring was still available. Aerial photographs from the 1960s show that the site was generally just open park/pasture with no fencing visible.

In 1984, a submission was prepared to develop the site as an education complex, using federal and industry grants. Wingecarribee Council purchased the land from Mittagong RSL, and a purpose built interpretative centre, containing a 50 seat theatrette was built at the site, opening in 1987. Unfortunately, the Mineral Springs Educational Centre was a short-lived dream; ongoing funding and staffing problems forced its closure in 1988. The spring was capped, and over time, its surrounding landscaping either removed or buried. Extant are a group of cast iron lamp posts, which were originally produced by William Brazenhall's foundry in Mittagong from locally produced iron. A cairn of ironstone is indicative of the location of the Spring itself.[16]

The Education Centre Building is now used as the Aboriginal Community and Cultural Centre.

[14] *The Sydney Morning Herald*, 30 January 1849, p.2

[15] Jaquet, J. B & Wilkinson, Charles Smith, 1844-1891 *The iron ore-deposits of New South Wales: with maps, plates, and sections*, W.A. Gullick, government printer, Sydney, 1901, p.51

[16] Linda Emery, *The Chalybeate Springs, Mittagong*, Berrima District Historical and Family History Society, July 2016

Figure 3.5 | Pre-1906, looking north toward Mount Alexandra, the Spring House(?) in middle of image. [Linda Emery, *Pictorial History: Southern Highlands,* Kingsclear Books, Alexandria [N.S.W.], 2008, p.25]

Figure 3.6 | Looking SW at the Spring site (white building) across now-Old Hume Highway. The ironstone deposit around the site had been exploited by the Fitzroy Iron Works, as evidenced by the cuttings present in the hill. [Berrima District Historical & Family History Society]

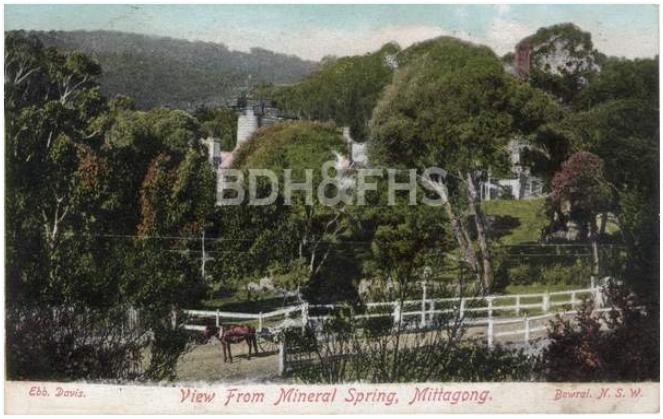


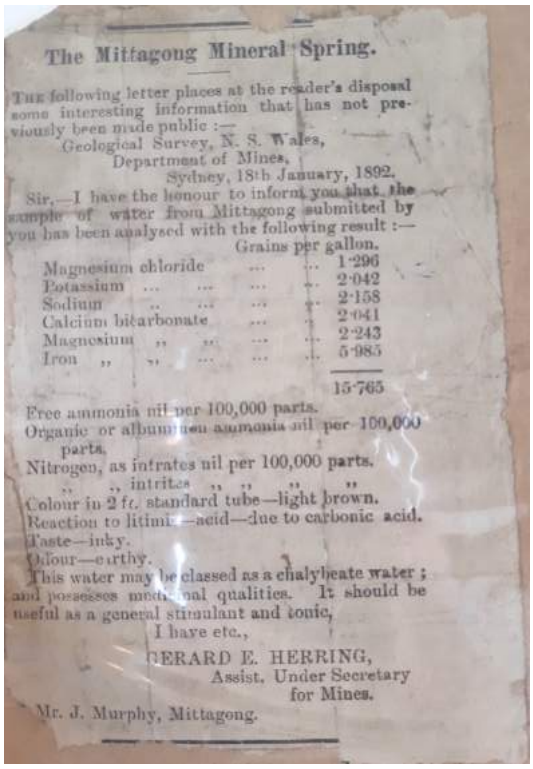
Figure 3.7 | View From Mineral Spring, Mittagong. Fitzroy Iron Works is pictured. [BDH&FHS]

Figure 3.8 | Looking west at the Chalybeate Spring, Mittagong [BDH&FHS]

Figure 3.9 | Mineral Spring, Mittagong, [BDH&FHS]

Chalybeate Spring at Mittagong.

Figure 3.10 | "ABOUT a quarter of a mile outside the town of Mittagong (New South Wales), and only a hundred yards from the main highway to Canberra, is the chalybeate spring shown in the accompanying illustration. A small pipe has been inserted into what looks like a rocky outcrop, and from this pipe there is a continual flow of the water, which is noted for its curative qualities. In recent years the public do not seem to have bothered much about this spring, but many who have taken the water over a period are loud in their praises of its tonic proper ties. The water, containing a big percentage of iron, is anything but pleasant to the taste; but all tonics are nasty. It seems a pity that local authorities do not give this spring greater publicity. At present there is not even a sign to indicate its position, and only a rough track leads from the road to the spring. It could be made one of the most popular and interesting places in the district."
[*Sydney Mail,* 01 Jun 1938, p.7]



The Mittagong Mineral Spring.

The following letter places at the reader's disposal some interesting information that has not previously been made public :—

Geological Survey, N. S. Wales,
Department of Mines,
Sydney, 18th January, 1892.

Sir,—I have the honour to inform you that the sample of water from Mittagong submitted by you has been analysed with the following result :—

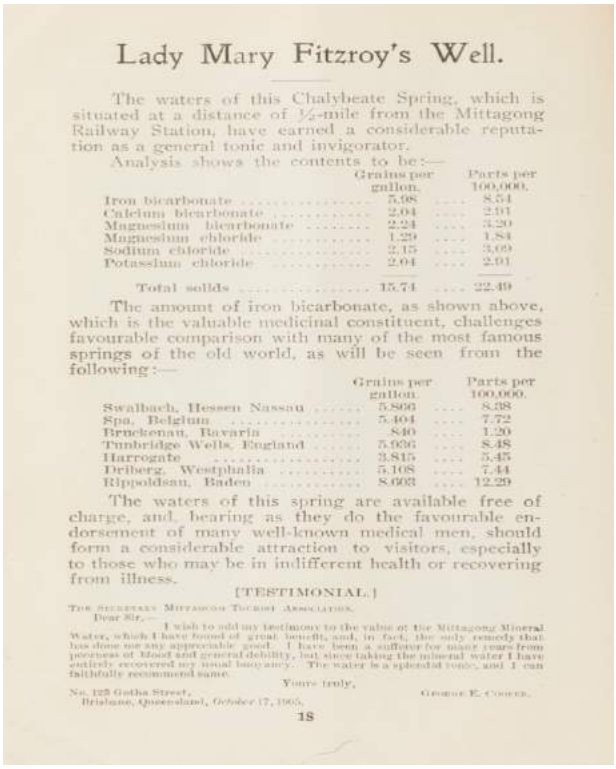
	Grains per gallon.
Magnesium chloride	1·296
Potassium	2·042
Sodium	2·158
Calcium bicarbonate	2·041
Magnesium ,, ,, ...	2·243
Iron ,, ,, ...	5·985
	15·765

Free ammonia nil per 100,000 parts.
Organic or albuminoid ammonia nil per 100,000 parts.
Nitrogen, as nitrates nil per 100,000 parts.
,, ,, nitrites ,, ,, ,, ,,
Colour in 2 ft. standard tube—light brown.
Reaction to litmus—acid—due to carbonic acid.
Taste—inky.
Odour—earthy.
This water may be classed as a chalybeate water; and possesses medicinal qualities. It should be useful as a general stimulant and tonic.

I have etc.,
GERARD E. HERRING,
Assist. Under Secretary for Mines.

Mr. J. Murphy, Mittagong.

Figure 3.11 | c.1892 newspaper report on the mineral content of the water from the Chalybeate Spring at Mittagong [BDH&FHS]



Lady Mary Fitzroy's Well.

The waters of this Chalybeate Spring, which is situated at a distance of ½-mile from the Mittagong Railway Station, have earned a considerable reputation as a general tonic and invigorator.

Analysis shows the contents to be:—

	Grains per gallon.	Parts per 100,000.
Iron bicarbonate	5.98	8.54
Calcium bicarbonate	2.04	2.91
Magnesium bicarbonate	2.24	3.20
Magnesium chloride	1.29	1.84
Sodium chloride	2.15	3.09
Potassium chloride	2.04	2.91
Total solids	15.74	22.49

The amount of iron bicarbonate, as shown above, which is the valuable medicinal constituent, challenges favourable comparison with many of the most famous springs of the old world, as will be seen from the following :—

	Grains per gallon.	Parts per 100,000.
Swalbach, Hessen Nassau	5.806	8.38
Spa, Belgium	5.404	7.72
Brückenau, Bavaria	840	1.20
Tunbridge Wells, England	5.926	8.48
Harrogate	3.815	5.45
Driberg, Westphalia	5.108	7.44
Rippoldsau, Baden	8.603	12.29

The waters of this spring are available free of charge, and, bearing as they do the favourable endorsement of many well-known medical men, should form a considerable attraction to visitors, especially to those who may be in indifferent health or recovering from illness.

[TESTIMONIAL.]

The Secretary Mittagong Tourist Association.
Dear Sir,—

I wish to add my testimony to the value of the Mittagong Mineral Water, which I have found of great benefit, and, in fact, the only remedy that has done me any appreciable good. I have been a sufferer for many years from weakness of blood and general debility, but since taking the mineral water I have entirely recovered my usual buoyancy. The water is a splendid tonic, and I can faithfully recommend same.

Yours truly,
GEORGE E. COOPER.

No. 125 Gotha Street,
Brisbane, Queensland, October 17, 1905.

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Figure 3.12 | The Mittagong Tourist Association's 1906 booklet contained a section on the Chalybeate Springs, comparing its qualities to that of world-renowned mineral springs. [SLNSW: *Picturesque Mittaǵoṅǵ, N.S.W: the favourite tourist resort on Southern line*, Mittagong Tourist Association, 1906, p.18]

Figure 3.13 | The rear of the photo has a note reading "Spring outlet and wall built at Lady Mary Chalybeate Spring as part of Bi-Centennial Project". Note the rusty ferrous oxide around the spring drain - when the water is exposed to air it begins to oxidise. [BDH&FHS]

3.3 1-5 Rainbow Road, Mittagong

By 1912, the Mittagong Land Company had sold thousands of township allotments and were left with residual land amounting to 1123 acres.[17] In 1918 they subdivided the vacant Former Ironworks land south of the Great Southern Road, avoiding the majority of the ironworks buildings, heavy machinery and plant that were situated north of the road (see Fig. 3.4).

This was called the "Mineral Springs" Subdivision, after the Chalybeate Spring located adjacent to the present-day study site. The roads were named after key members of the Mittagong Land Company:

"*The streets are named as follows :—From Bowral road towards the springs, Henderson Avenue, after a director of the Company. This is the road thirsty folk from Bowral will travel to get a short cut to the springs, making nearly ¾-mile shorter. The road from the Main road circling the spring, joining up with Henderson Avenue, and connecting with the Main road each side of the spring, is called Rainbow road, named After Mr. H. Rainbow, assistant shire engineer, who suggested the curve from Henderson Avenue down on to the Main road. The lots are now for sale from J. Napier, agent, Mittagong*."[18]

Figure 3.4 | 1891 Map of the Mittagong Land Company's holdings; a subdivision of part of the former Fitzroy Iron Works land, which went on sale in 1884. The study site is still encapsulated within the Former Ironworks as seen in centre of image. [Richardson & Wrench. 1891, Mittagong Land Compy. Limtd. for sale on the ground on Saturday 21st November 1891 Richardson and Wrench, [Sydney] viewed 29 April 2022 http://nla.gov.au/nla.obj-230304097.]

[17] LRS: CT Vol. 2294 Fol. 41.

[18] *Robertson Advocate,* 30 Aug 1918, p. 2.

Figure 3.5 | 1918 Mineral Springs Subdivision of Ironworks land south of the Main Southern Road by the Mittagong Land Company. The study site, enclosed in red, is located on Lots 14 and 32 of Section 50 of DP 9299. Mineral Spring located in lot 33. At this time, the study site extended from now 1 to 7 Rainbow Road. [LRS: DP1289]

Shire Clerk Claude Newton Lee purchased lots 14 and 32 [the study site] along with the 2 lots directly to their rear fronting the Main Southern Road from the Mittagong Land Company on 17 Jan 1929.[19] He was the son of stonemason Fred Lee, born at Mittagong's Leslie Cottage. As Shire Clerk for 40 years, Claude Lee's name appeared under every authoritative Council notice printed in the paper, and he became highly respected around Mittagong, especially for his ability as a cornet player.[20] With his wife Sarah Gladys (nee Stokes), Claude shared a passion for music and theatre and made their home a hub for artistic endeavour.[21]

After World War One, Lee branched out into real estate, advertising multiple properties for sale in the centre of Mittagong.[22] Lee was also one of the first supporters of a train service on the Main Southern Railway between Picton and Mittagong, which was completed in 1919.[23] He managed the Bowral Empire Theatre from 1935-1958, with other diverse interests including local history, poetry and rugby.[24] An extract from one of Lee's poems, 'Be Prepared', reads:

"…As good old Sol his warmth abates
The Council duns us for the rates
As hoar frost takes the place of dew
Accounts for electricity are due.
…Just when we think we've paid them all
Greet the Postie with assurance
There'll be one for the insurance!
Then you might well pause and think
If any's left to buy a drink…".

Claude and Sarah held their 2 acres 1 rood 39 ½ perches for 17 years until January 1946 when they sold to Geoffrey Valentine Shaw, a local poultry farmer.

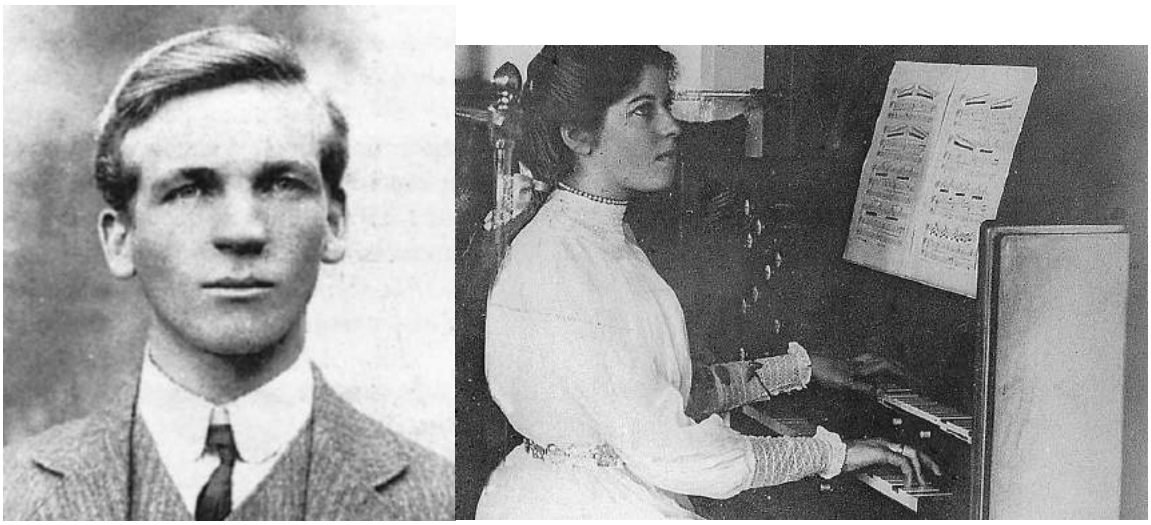

Figure 3.9 | Claude Newton Lee and Sarah Gladys Stokes [Berrima District Historical and Family History Society]

[19] LRS: CT Vol. 4238 Fol. 85.

[20] *Robertson Advocate*, 2 Feb 1912, p. 2.

[21] Philip Morton, 'Highlands history: The energetic and talented Claude N Lee', *Southern Highland News,* 20 Apr 2015, web: https://www.southernhighlandnews.com.au/story/3020451/highlands-history-the-energetic-and-talented-claude-n-lee/.

[22] *Robertson Advocate*, 18 Jan 1918, p. 3.

[23] *The Southern Mail,* 22 Jul 1919, p. 2.

[24] Philip Morton, 'A marriage of love and music', *Southern Highland News,* 28 Aug 2012, web: https://www.southernhighlandnews.com.au/story/255881/a-marriage-of-love-and-music/

By the late 1940s, Rainbow Road was badly in disrepair. The Southern Mail reported that "…during the war years, Rainbow Road had been damaged by people taking out ore, and had subsequently been fenced off."[25]

Geoff Shaw applied to Council for permission to build four poultry sheds on the study site, 15 ft. from the road alignment, in May 1951.[26] He successfully carried out a poultry farm for 20 years but eventually fell on hard times and could not meet his mortgage repayments. The mortgagee exercised power of sale and the land was sold to John Ernest Semmens, an insurance representative on 23 June 1966.[27]

Semmens sold No. 1 Rainbow Road the following year to Norman and Lillian May Giddings as tenants in common. In 1968, the Giddings also purchased Lot 14 from Semmens. They subdivided it into two equal portions; Lot 141 (No.5) and Lot 142 (No.3). No. 5 was sold to widow Viola Rae Black in February 1969, who then transferred it to Virginia Wendy Tupou in March 1986.[28] The Giddings retained No. 3 until their son Robert and his wife Prudence purchased it in April 1975.

Available aerial photographs show that the houses at No. 1 and No. 3 Rainbow Road had been constructed by the end of August 1970, with No. 3 by the September of 1977. There were two elections in 1977; the February roll shows that Robert & Pru were living at No. 1, along with brother Ross Albert Norman Giddings, and by the September roll, Robert and Pru were residing at 3 Rainbow Road, while Ross was joined by his parents at No. 1, when they moved over from 53 Bowral Road Mittagong.[29]

Norman passed away in 1989; Lillian in 2019, aged 92. No. 1 was sold in March of 2021, with the real estate photos showing that Lillian had stayed at 1 Rainbow Road in the years following the Norman's loss.[30]

No. 3 Rainbow Road was transferred to the current proprietor in April 2019.

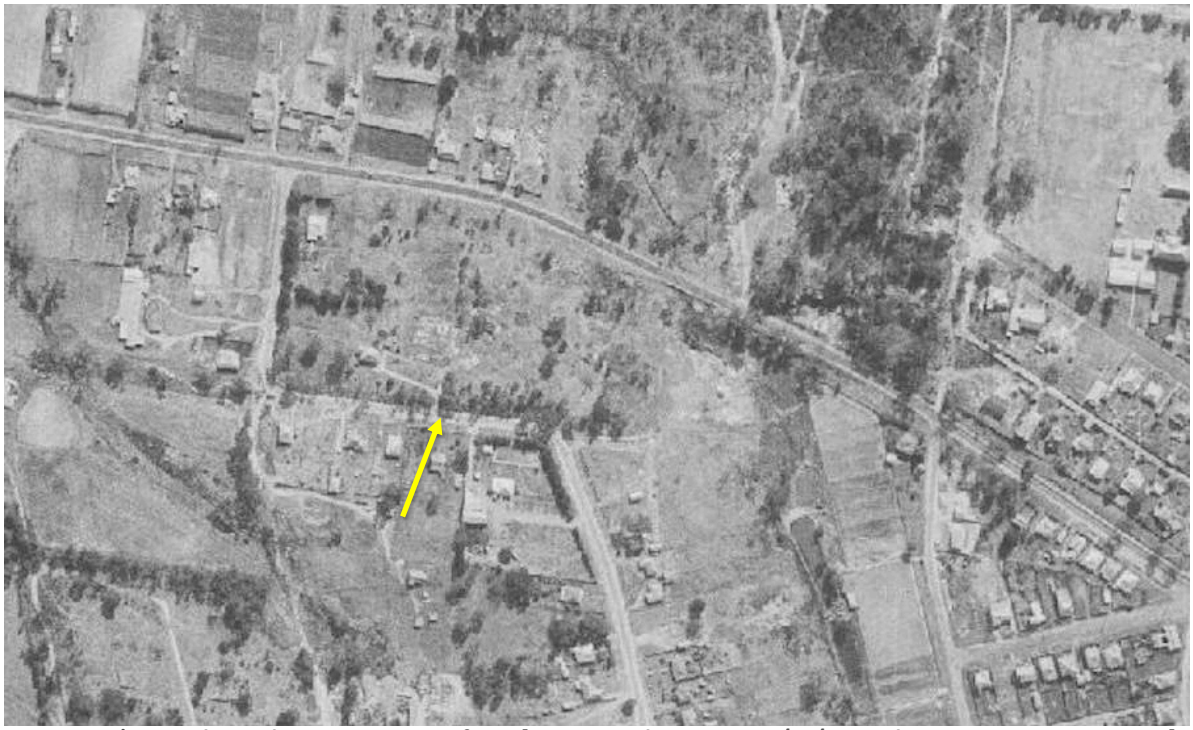

Figure 3.10 | 1963: the study site was in use a farm. [NSW Spatial Services: 19/08/1963 Film 1189 Run 5M Frame 019]

[25] *The Southern Mail,* 28 Jan 1949, p. 5.

[26] *The Southern Mail*, 25 May 1951, p. 3.

[27] LRS: CT Vol. 4238 Fol. 85.

[28] LRS: CT Vol. 10899 Fol. 77

[29] AEC: *NSW Electoral Rolls,* Macarthur/Bowral/1977 (to 25-2-77) and Macarthur/Bowral/1977 (to 16-9-77), p.12

[30] LRS: CT Vol. 10663 Fol. 143; Yass Tribune, 'Lillian May Giddings

Figure 3.11 | 1970: The study site had been purchased by the Giddings in 1968 and Lot 14 subdivided to create No. 3 and 5 Rainbow Road. The Giddings had constructed No.1, and Viola Black of No. 5 had also finished her house. No. 3 is a vacant lot. [NSW Spatial Services: 30/08/1970, Film 1807 Run 5W Frame 023]

Figure 3.12 | 1975: No. 3 is a still vacant lot but had been transferred to Robert & Pru Giddings. [NSW Spatial Services: 27/03/1975, Film 2299 Run 08 Frame 014]

Figure 3.13 | 1982: Robert & Pru Giddings finished construction of the house at No. 3 by September 1977. [NSW Spatial Services: 29/10/1982, Film 3267 Run 06 Frame 184]

4. PHYSICAL EVIDENCE

4.1 1 - 5 Rainbow Road, Mittagong

The study site at 1 - 5 Rainbow Road Mittagong consists of 3 low-density residential allotments:

- No. 1 contains a c.1969-1970 single storey blonde brick and tile dwelling
- No. 3 contains a c.1977 double storey brick and tile house
- No. 5 contains a c.1969-1970 single storey brown brick and tile dwelling.

All allotments are set in gardens, containing hedging/shrubs and mature trees.

The following photographs further describe the properties, the streetscape, and the Chalybeate Spring site.

4.2 Site Photographs

4.2.1 Rainbow Road

Figure 4.1 | Southern side of the Rainbow Road. Lot 1, and No. 2-4.

Figure 4.2 | View W up Rainbow Road. Study site at right of image.

Figure 4.3 | Eastern boundary of study site, shared with 1A Rainbow Road. View SW toward road.

Figure 4.4 | Eastern boundary of study site. Looking NW. Aboriginal Cultural Centre at right.

Figure 4.5 | Study Site; No. 1 Rainbow Road.

Figure 4.6 | Looking NE across yard of No. 1 to the Chalybeate Springs site. Roof visible is the cultural centre.

Figure 4.7 | Study Site: No. 1 Rainbow Road, looking NE.

Figure 4.8 | Study Site: No. 3 Rainbow Road, looking N.

Figure 4.9 | Study site: No. 5 Rainbow Road, looking N.

Figure 4.10 | Looking NE at the northern side of Rainbow Road

Figure 4.11 | Street trees along the northern side of Rainbow Road.

4.2.2 1A Rainbow Road: Chalybeate Spring site

Figure 4.12 | View W from parkland looking toward boundary shared with study site at No. 1.

Figure 4.13 | Looking NW at the Aboriginal Cultural Centre. Originally built as the Mineral Springs Historical Education Centre

Figure 4.14 | View W of the Cultural Centre building. Study site in background.

Figure 4.15 | View W toward the study site, neighbouring the Cultural Centre.

Figure 4.16 | View SW from the NW rear corner of the Cultural Centre at the boundary shared with the study site at No. 1.

Figure 4.17 | View SW at the boundary shared with the study site at No. 1. Cultural Centre at left.

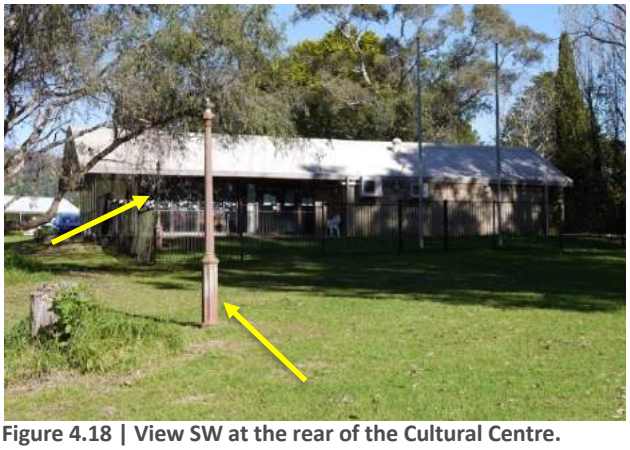

Figure 4.18 | View SW at the rear of the Cultural Centre. Highly significant are the cast iron lamp posts which were manufactured using locally produced iron at Brazenall's Foundry at Mittagong.

Figure 4.19 | View SW at the boundary shared with the study site at No. 1. Cultural Centre at left.

Figure 4.20 | View N at the stone cairn marking the site of the Chalybeate Spring. View across to now-Ironmines Oval and the site of the Fitzroy Iron Mine.

Figure 4.21 | View SW back toward Rainbow Road. Spring stone cairn indicated with arrow. Stone retaining wall at front of image is part of the remnant landscaping features associated with the historic spring.

Figure 4.22 | View SE of the stone cairn marking the spring site.

Figure 4.23 | View NE of the stone cairn marking the spring site. Old Hume Highway in background.

Figure 4.24 | View NW across parkland to the spring site (arrow). The lamp posts are locally cast iron, made at Brazenell's Foundry at Mittagong.

Figure 4.25 | View NE across parkland to the Fitzroy Iron site (arrow). The lamp posts are locally cast iron, made at Brazenell's Foundry at Mittagong.

Figure 4.26 | View SW across parkland to the Cultural Centre. Line of lamp posts evident.

Figure 4.27 | Detail of the cast iron lamp posts at the Spring site.

Figure 4.28 | View W across parkland back to the Cultural Centre. Fenced pond at to left.

Figure 4.29 | View S to the fenced pond.

Figure 4.30 | View N from carpark to the Spring site. Cultural Centre at left.

Figure 4.31 | View E to the fenced pond, fed by this creek/stormwater catchment.

4.2.3 Views from Streetscape

Figure 4.32 | View from the carpark of Ironmines Oval, near the site of the Fitzroy Iron Works SW to the Springs site. The study site is indicated with an arrow.

Figure 4.33 | View from the carpark of Ironmines Oval, near the site of the Fitzroy Iron Works SW to the Springs site. The Old Hume Highway crosses the creek here as it did when the Ironworks were in operation.

Figure 4.34 | Looking SE from Old Hume Highway to the Spring site.

Figure 4.35 | View from Old Hume Highway/Ironstone Cottage SW toward the study site (No. 1). 180 Old Hume Highway in middle of image.

Figure 4.36 | View S from Ironstone Cottage to 182 Old Hume Highway which backs onto the No. 1 of the study site.

Figure 4.37 | View S from Ironstone Cottage of 182 and 184 Old Hume Highway which backs onto the study site (1 & 3).

Figure 4.38 | View SW from Ironstone Cottage to No. 186 Old Hume Highway which backs onto the study site (No. 5).

5. HERITAGE SIGNIFICANCE

6. THE PROPOSAL

The proposal seeks to construct a three storey multi-flat residential development with basement parking. The works include:

- Demolition of the residences and outbuildings at 1, 3 and 5 Rainbow Road.
- Removal of select trees and landscape features at the site.
- Earthworks to dig the basement carpark.
- Construction of an entry/exit driveway (E boundary).
- Construction of two E-W blocks of three storey residential flats with a landscaped central common area;
  - Sheet metal hip roof
  - Aluminum framed windows, doors, privacy screens
  - Tiled terraces and balconies
  - Exterior colour palette of charcoal greys, warm timbers, oxidized iron and light stone.
- Landscaping across site, including construction of a water detention basin, additional medium-tall native trees along the E boundary, and boundary fencing.

See architectural drawings and associated reports in Appendix A.

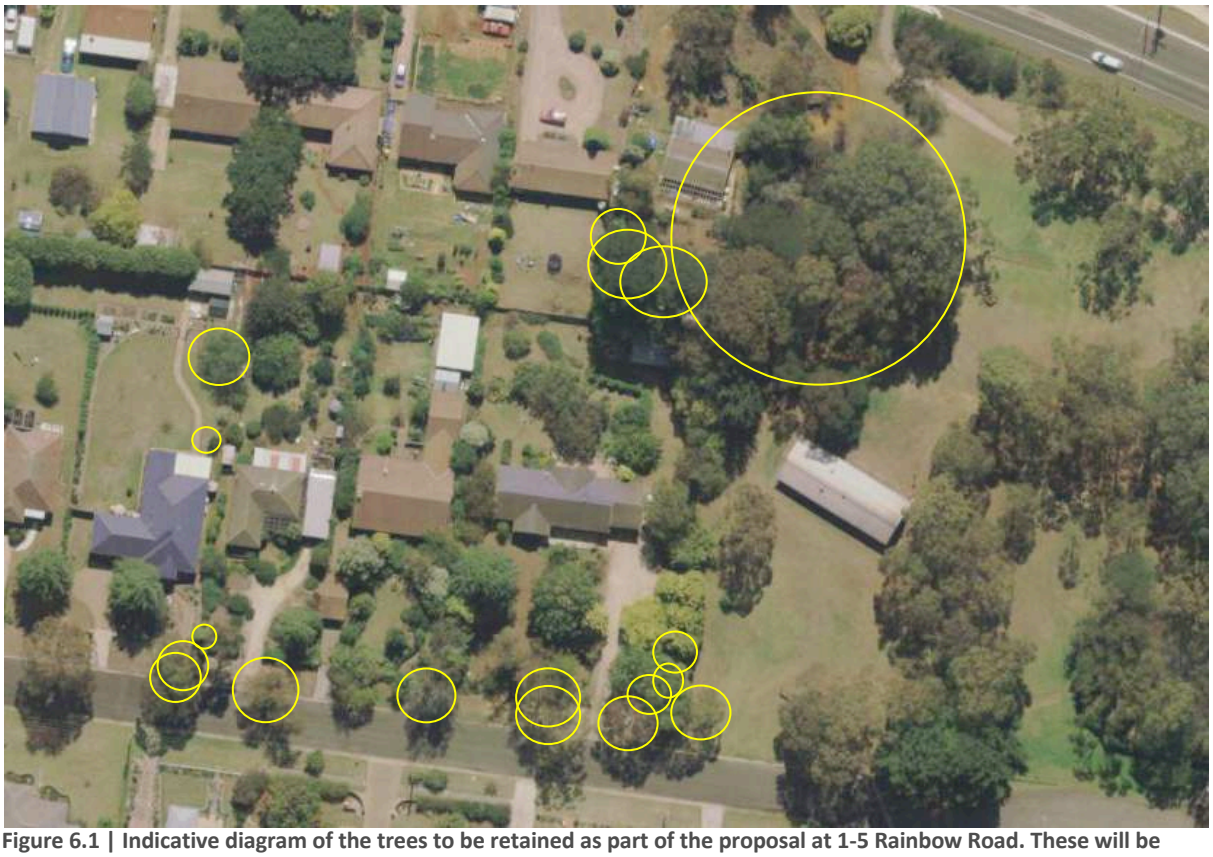

Figure 6.1 | Indicative diagram of the trees to be retained as part of the proposal at 1-5 Rainbow Road. These will be supplemented by additional plantings of Sported Gums, especially along the E boundary shred with the Spring site.

7. PLANNING POLICY / ASSESSMENT OF HERITAGE IMPACT

7.1 Wingecarribee Local Environmental Plan 2010

Heritage provisions are contained in Clause 5.10 of the WLEP 2010. The proposed development has been assessed against the following relevant provisions:

LEP Provision	Compliance Comments
4. Effect on heritage significance The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).	This statement of heritage impact has been written to determine the impacts of the proposed development on the significance of the adjacent heritage item.
5. Heritage assessment The consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.	This statement of heritage impact has been written to satisfy this requirement as 1 - 5 Rainbow Road Mittagong is identified as (c).

7.2 Mittagong Township Development Control Plan 2010

The proposed development has been assessed against the relevant heritage provisions directly pertaining to development in the vicinity of heritage items and in the Mittagong Medium Density Precinct, which are contained in Part A and Part C of Wingecarribee's Mittagong Township Development Control Plan (DCP) 2010.

DCP Control	Comment
PART A - A7.10 New Development within the vicinity of Heritage Items In considering a development application within the vicinity of Items of Heritage, Council shall not grant consent to the carrying out of development on any land to which this Clause applies unless it is satisfied that the development shall:	
(a) remain compatible with the average height, bulk and scale of buildings located on adjoining or nearby land and be adequately set back to ensure that heritage items and other significant buildings in the streetscape are not dominated by new or infill development.	The 2nd and 3rd floor and the gable roof ends of the blocks of flats are stepped back from the E and W boundaries to avoid dominating/blocking views and light of the neighbouring properties. The exterior colour palette is recessive in nature; comprised of dark greys, oxidised iron and natural stones. The visual impact of the development will be further minimised through the retention of the street trees, select mature trees at the boundaries, and the addition of master-planned landscaping to provide additional tall tree screening by additional Spotted Gum plantings to maintain and improve the leafy setting of the northern side of Rainbow Road. The natural screening provided at the site also maintains the visual relationship with the parkland setting of the adjacent Chalybeate Spring site.
(b) seek unification with existing built forms on adjoining or nearby land, by ensuring respect for and compatibility with architectural elements including: (i) the existing building line, (ii) brickwork styles, (iii) parapet style and rhythm, (iv) window and door opening dimensions, proportions and spacing, (v) fenestration treatment, (vi) roof form and treatment, (vii) materials and finishes	Not applicable. In this particular case, there are no nearby heritage structures to reference for architectural elements. See below comments in the C17.3 section regarding the compatibility of the design with the streetscape.
(c) ensure that the angle of awnings on the commercial street frontage is no greater than 20%, (i.e. within a range of 90 to 100 degrees from the wall of the building), and that the soffit (or underside of the awning) follows the line of the top of the awning and is not flat.	Not applicable, not in the commercial area.

Part C - C17.3 Medium Density Precinct, Specific Development Controls To achieve these preferred outcomes, Council requires that all future development shall:	
(a) ensure that the layout of future development complies with the objectives and guidelines set out within the Site Analysis section in Part A of this Plan.	Not Applicable; not heritage. Addressed in other project documentation.
(b) comply with the relevant controls of Part C4 above	Not Applicable; not heritage. Addressed in other project documentation.
(c) ensure that the heritage significance, visual prominence, landscape setting and vistas to and from heritage items and other contributory buildings, structures and places are maintained.	Compliant. The aesthetic significance of the Spring site lies in its leafy, parkland setting and its visual connection with the site of the Fitzroy Iron Works across the Old Hume Highway. This setting and connection will not be impacted by the works. As set out above and below, the design of the structures at 1-5 Rainbow Road has minimised the height and bulk by housing the majority of the third floor in the roof plane, stepping the 2nd, 3rd and roof gable end of the E side back from the boundary shared with the Item, and retained mature trees and will be planting trees and hedges to provide further softening and screening of the blocks of flats.
(d) retain existing buildings, structures and landscape features that contribute positively to streetscape quality and the overall garden character of the neighbourhood.	Complaint. The proposal retains a number of mature trees – most importantly, the eucalypts along Rainbow Road. The new planting schedule of 10 supplementary Spotted Gums along the E boundary of the site takes cues from historic photos of an early 'woodland' setting of the Spring; the new trees provide a sympathetic link between the medium-to-tall eucalypt canopy in the spring parkland and the eucalypt street trees along the N side of Rainbow Road in front of the study site. The Spotted Gums have a mature height of 15m which will provide sufficient screening of the built structure while reinforcing the native woodland setting of the spring parkland. The understory is planned to be planted out with grasses and shrubs up to 1.5m including Gymea Lily, Daphne, and Mat Rush. The new proposed landscape plan and planting schedule and is a significant improvement on the original put forward, putting in place a multi-level vegetative screen to the buildings which will contribute to the native woodland setting of the spring parkland

(e) incorporate architectural features, (including, but not limited to, roof forms, window positioning and proportioning, verandah treatment, fencing, and building proportions) that are reflective of any existing development, to be retained on the land or compatible with other existing architecture (including heritage and other contributory buildings) occupying adjoining or nearby land. (f) ensure that the extent, scale and configuration of new residential development reflects a discrete and unobtrusive architectural outcome, to remain compatible with the established spatial pattern of development within the precinct.	Compliant. Rainbow Road is zoned R3, however is still primarily only low-density detached dwellings. Despite this, the proposal has been designed to to emulate traditional house form through the use of hip roof with stylised 'dormers'. In this way, the overall scale, height and bulk of the structure is reduced by making use of the roof cavity. The 2nd and 3rd floor/gable ends of the blocks of flats are stepped back from the E and W boundaries to avoid dominating/blocking views and light of the neighbouring properties. The visual impact of the development will be further minimised through the retention of the street trees, select mature trees at the boundaries, and the addition of tall Spotted Gum trees and master-planned landscaping to provide screening and maintain the leafy setting of the northern side of Rainbow Road and the eastern boundary shared with the Spring. The natural screening provided at the site also maintains the visual relationship with the parkland setting of the adjacent Chalybeate Spring site.
(g) avoid large and unarticulated massing of walls and roofs.	Compliant. The design is appropriately articulated.
(h) incorporate simple architectural design treatments, materials, colours and finishes that result in a harmonious relationship with existing development on adjoining and nearby land.	Compliant. The use of a traditional roofline, third floor incorporated into the roof plane with 'dormer' style balconies, recessive and muted earthy tones, and the leafy setting will ensure that the development will sit sympathetically in the streetscape.
(i) incorporate provisions, to minimise the dependency on public infrastructure systems where capacity to service the development is considered by the Council to be less than optimal.	Not Applicable; not heritage. Addressed in other project documentation.

7.3 Impact on the Chalybeate Spring Aquifer

As part of the planning process, the client commissioned JK Geotechnics to undertake detailed geotechnical and groundwater studies.[31] It is our understanding that JK Geotechnics' geotechnical/hydrological investigations included a water monitoring study which involved drilling boreholes variously across the site and installing water monitoring/testing wells. I observed these wells near the eastern boundary shared with the spring site when I re-visited site on 30 August 2023, and in discussions with JK Geotechnics in early September 2023, established that the wells were drilled to a point lower than the maximum excavation depth required for the proposed basement. Measurements from the wells were used to inform volume estimates of groundwater discharge around the proposed basement; modelling concluded it would be less than 1ML/year.

ENRS Pty Ltd were commissioned to provide further expert hydrogeological services to perform additional due diligence in respect of the above issue. ENRS reviewed the JK Geotechnics reports, and then designed and undertook their own water testing regime at the site.

The objective of ENRS' testing regime was to

> …review the hydrogeological setting in context of the proposed basement construction to consider the degree of hydrological connection between the spring and groundwater which may be intersected at the Site based on the results of previous groundwater studies and supplementary groundwater laboratory analysis, including isotopes and major ion chemistry."[32]

I have reviewed the reports from JK Geotechnics and ENRS to inform my assessment of the potential of works to adversely impact the heritage significance of the spring, i.e. that it be able to continue to function as a natural spring. Core to this were the questions of if there is a relationship (or not) between the sampled groundwater at the study site and that of the spring, and whether the excavations were likely to hit the aquifer feeding the spring.

In this respect, ENRS makes the following observations/conclusions following the comparison of water samples collected from each of the water monitoring wells at the study site, the Spring, and Iron Mines Creek[33]:

> The geochemistry results indicate the Spring water and groundwater share similar characteristics likely due to the host geology. However, there are differences, and the results are not an exact match which indicates the Spring is not in direct hydraulic connection with the shallow groundwater sampled from the Site.

ENRS further concluded:

> In general, the weight of evidence from the previous hydrology study (JK, 2023) and the laboratory results reviewed herein, indicate the proposed basement area is unlikely to intercept the Spring aquifer and hence not adversely affect the Spring.

While it was concluded that the groundwater to be drained from study site has sufficiently different geochemistry to not originate from the aquifer feeding the spring, and that excavations are unlikely to intercept the spring's aquifer, additional mitigative arrangements have been recommended and are detailed below.

[31] JK Geotechnics: *Site Hydrology Report for 1-5 Rainbow Road Mittagong*, 2 August 2023
[32] ENRS Pty Ltd: *Hydrogeological Review – Chalybeate Spring, Rainbow Road, Mittagong*, 24 November 2023, p.1
[33] ENRS, 2023: p.4

8. CONCLUSION

The Chalybeate Spring site is a rare site of high historical and research value. It holds aesthetic value primarily for its leafy, parkland setting, which was cultivated as a tourist attraction in the 19th and early 20th centuries.

I am satisfied with the conclusions and recommendations provided by the geotechnic, hydrological and hydrogeological experts, which indicate that the aquifer feeding the spring will not be materially affected by the drainage of groundwater seepage at the study site, and that it is unlikely that excavations will encounter the aquifer feeding the spring. I am also satisfied that there are sufficient mitigative arrangements proposed to monitor the ground water at the site for changes, and that the excavations will be commenced at the further point away from the Spring and proceed with caution as they approach the eastern boundary.

I am satisfied that the visual impact of the development on the setting and views of the Spring site have been mitigated through respectful design which has resulted in an unobtrusive architectural outcome. The use of a traditional hip roofline, third floor incorporated into the roof plane with 'dormer' style balconies, recessive and muted earthy tones, and the leafy setting ensures that the development will sit sympathetically in the streetscape.

The 2nd and 3rd floor and gable ends of the blocks of flats are stepped back from the E boundary to avoid dominating/blocking views to the Spring site. The visual impact of the development will be further minimised through the retention of the street trees, select mature trees at the boundaries, and the addition of master-planned landscaping to provide screening and maintain the leafy setting of the northern side of Rainbow Road. The natural screening provided at the site also maintains the visual relationship with the parkland setting of the adjacent Chalybeate Spring site.

Overall, it is concluded that the heritage significance of the chalybeate spring will not be adversely affected by the proposed works.

9. RECOMMENDATIONS

Based on the above, it is recommended that Council **approve the application**.

The following mitigative measures are recommended so that all due diligence and care is taken in regard to the Chalybeate Spring before, during, and after excavations at the site:

1. That the JK Geotechnics detailed dewatering management plan incorporate requirements for monitoring the spring and consider options for managing groundwater if conditions are encountered which differ from those outlined in the study site's Hydrology Report;

2. That the water monitoring wells at the study site remain in situ to enable ongoing testing/monitoring as required;

3. Excavations be commenced furthest away from the spring at the western side of the site, and move in an easterly direction so as to allow sufficient room and scope to do any repair work should the unlikely event arise that flowing water is encountered; and

4. In the unlikely event that flowing water is encountered, the hole will be backfilled with a grout mixture to cap the flow while expert geotechnical/hydrological advice is sought.

In addition, that all recommendations and directions made in the expert technical reports by JK Geotechnics and ENRS Pty Ltd (and similar) be adopted and actioned at the site.

In regard to the Chalybeate Spring site, it is recommended that Council consider:

- Commissioning an interpretative strategy to highlight the historical, natural and cultural environmental significance of the site. Installations could include signage with historic photographs, pathways and picnic seating, restoration of the spring surrounds. This installation could be expanded to encompass the Fitzroy Iron Works site across the road to emphasise the relationship between the two sites.
- At the least, order conservation works for the Brazenall Foundry lamp posts at the site to make sure their fabric is protected from the effects of the weather. These should be carried out by appropriate professionals who have experience working with heritage ironwork.
- In addition, consider having replicas produced and installed at the site, with the originals conserved and put on public display at an appropriate indoor location.

APPENDIX A

ARCHITECTURAL DRAWINGS

SITE LOCATION PLAN

LOCATION MAP

COURTYARD WEST

AERIAL VIEW

LIST OF DOCUMENTS

Status	No.	Layout Name	Issue
DA	01	SITE PLAN & SITE ANALYSIS	P
DA	02	SITE/GROUND FLOOR PLAN	P
DA	03	BASEMENT FLOOR PLAN	P
DA	04	GROUND FLOOR PLAN	P
DA	05	FIRST FLOOR PLAN	P
DA	06	SECOND FLOOR PLAN	P
DA	07	ROOF PLAN	P
DA	08	ELEVATIONS	P
DA	09	ELEVATIONS 02 & COLOUR SCHEDULE	P
DA	10	SECTIONS	P
DA	11	SECTION & SCHEDULES	P
DA	12	STREET ELEVATION & 3D VIEWS	P
DA	13	ADAPTABLE UNIT TYPES A & B	P
DA	14	ADAPTABLE UNIT TYPES C	P
DA	15	ADAPTABLE UNIT TYPES E & F	P
DA	16	ADAPTABLE UNIT TYPES A2 & E2	P
DA	17	ADAPTABLE UNIT TYPES Q & R	P
DA	18	TYPICAL UNIT TYPES G1, G2, H, J & K	P
DA	19	TYPICAL UNIT TYPES L, M & S1 & S2	P
DA	20	TYPICAL UNIT TYPES N, O	P
DA	21	SITE MANAGEMENT PLAN	P
DA	22	ENERGY REQUIREMENTS	P
DA	23	SHADOW DIAGRAMS - JUNE 21ST & 12M HEIGHT LIMIT INDICATION	P
DA	24	SHADOW DIAGRAMS - AXONOMETRIC JUNE 21ST	P
DA	25	DIRECT SUNLIGHT/ DAYLIGHT ACCESS INDICATION PLANS	P
DA	26	SHADOW MODEL - SOUTHERN BUILDING	P
DA	27	SHADOW DIAGRAMS - CENTRAL COURTYARD	P
DA	28	NATURAL VENTILATION DIAGRAMS	P
DA	29	DRAFT STRATA PLANS	P
DA	30	REFUSE ROOM DETAIL	P
DA	31	COMMUNAL OPEN SPACE & DEEP SOIL ZONES	P
DA	32	DEEP SOIL ZONES	P

SITE PLAN & SITE ANALYSIS
Scale 1:400

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

NOTES

ALL DIMENSIONS TO BE CONFIRMED ON-SITE.
ALL TIMBER WORKS TO COMPLY WITH AS 1684 NATIONAL TIMBER FRAMING CODE.
ALL BRICKWORK TO COMPLY WITH AS 3700 MASONRY IN BUILDING.
TERMITE RESISTANT TIMBER FRAMES AND TRUSSES. PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
HARD WIRED SMOKE ALARMS ARE TO BE INSTALLED THROUGHOUT NEW WORK AND TO COMPLY WITH NCC AND RELEVANT AUSTRALIAN STANDARD REQUIREMENTS.

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
M	Development Application	30.09.22	AJC
N	DA Amend - Consultants Issue	24.09.23	AJC
	DA Amend - Council submission	12.10.23	AJC
O	DA Amend - Client/Consultant Issue	22.11.23	AJC
P	DA Amend - Consultant Issue	15.12.23	AJC

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Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at 1-5 Rainbow Road
MITTAGONG NSW
Lot 32, DP 9299 &
Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd
& Bilgola Beach Pty Ltd

DRAWING :
SITE PLAN & SITE ANALYSIS

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown
No. IN SET 1 of 32
DATE 15.12.23
SHEET NUMBER DA-01P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

Ground Floor Area (North): 899.76 m²

Ground Floor Area (South): 823.95 m²

WATER QUALITY & DETENTION BASIN PER HYDRAULIC ENGINEER'S DETAILS

37.91 m²

23.09 m²

UNIT 01 | UNIT 02 | UNIT 03 | UNIT 04 | UNIT 05 | UNIT 06 | UNIT 07 | UNIT 08 | UNIT 09 | UNIT 10 | UNIT 11 | UNIT 12 | UNIT 13 | UNIT 14 | UNIT 15 | UNIT 16

FFL 618.615

FFL 619.975

FFL 619.290

FFL 619.299

COMMUNITY GYM/ACTIVITIES

COMMUNITY TERRACE

BBQ AREA

PLAY GROUND

SEATING

vegetable garden

NOTE: ACCESSIBLE PATH MAX 1:20 TO LANDSCAPE ARCHITECTS DETAILS

FOYER

ENTRY

LETTERBOXES

LETTERBOX BANK TO AUSTRALIA POST STANDARDS

NEW ACCESSIBLE PATH TO COUNCIL REQUIREMENTS

NORTH

619.17 TK | 619.64 TK | 620.15 TK | 620.38 TK | 620.53 TK | 620.59 TK | 620.49 TK | 620.27 TK | 620.09 TK | 619.95 TK

SITE PLAN - GROUND FLOOR
Scale 1:200

A2 0 10 20 30 40 50 60 70 80 90 100

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200

300mm ON ORIGINAL

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

NOTES

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AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
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PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at 1-5 Rainbow Road
MITTAGONG NSW
Lot 32, DP 9299 &
Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd
& Bilgola Beach Pty Ltd

DRAWING :
SITE/GROUND FLOOR PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown

No. IN SET 2 of 32

DATE 15.12.23

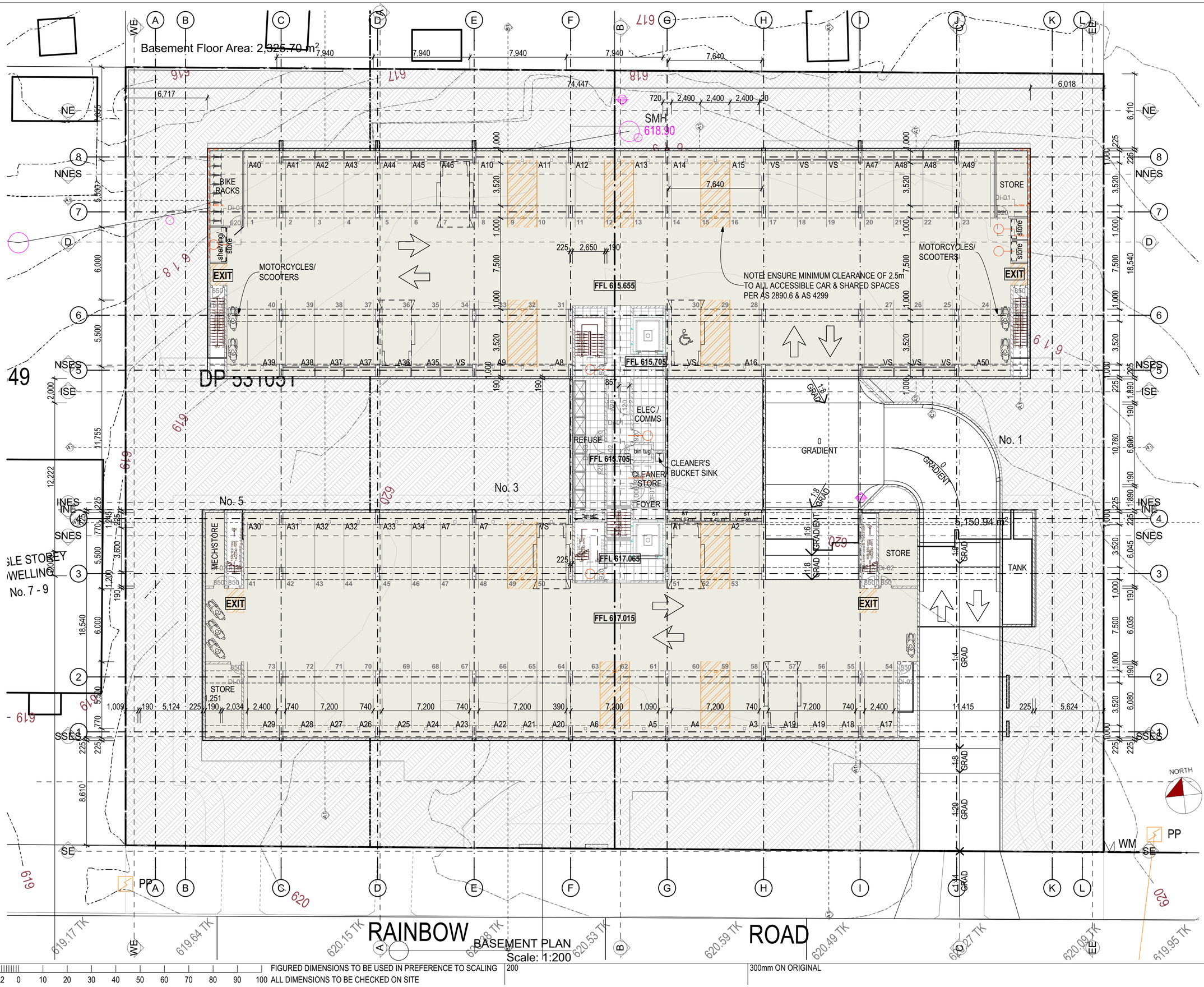
SHEET NUMBER DA-02P

DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023



BASEMENT PLAN
Scale: 1:200

A2 0 10 20 30 40 50 60 70 80 90 100

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200

300mm ON ORIGINAL

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

NOTES

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& Bilgola Beach Pty Ltd

DRAWING :
BASEMENT FLOOR PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES: as shown
No. IN SET: 3 of 32
DATE: 15.12.23
SHEET NUMBER: **DA-03P**
DRAWN BY: A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

Ground Floor Area (North): 899.76 m²
Ground Floor Area (South): 823.95 m²

WATER QUALITY & DETENTION BASIN PER HYDRAULIC ENGINEER'S DETAILS

ACTUAL SETBACK LINE FOR GROUND FLOOR ABOVE EGL

Landscape Area: 702.14 m²

37.91 m²

23.69 m²

80.665

FFL 618.615

UNIT 15 — 2 BED APT — Q
UNIT 14 — 2 BED APT — B
UNIT 13 — 2 BED APT — A
UNIT 12 — 2 BED APT
UNIT 11 — 2 BED APT — A
UNIT 10 — 2 BED APT — B
UNIT 09 — 2 BED APT — Q
UNIT 16 — 1 BED APT — R
UNIT 08 — 1 BED APT — R

vegetable garden

Landscape Area: 305.73 m²

FFL 619.295

41.53 m²
COMMUNITY GYM/ACTIVITIES

NOTE: ACCESSIBLE PATH MAX 1:20 TO LANDSCAPE ARCHITECT'S DETAILS

BBQ AREA

53.97 m²
BBQ AREA
COMMUNITY TERRACE

NOTE: ACCESSIBLE PATH MAX 1:20 TO LANDSCAPE ARCHITECT'S DETAILS

SEATING

Landscape Area: 57.71 m²
22.13 m²

PLAY GROUND
26.80 m²

FFL 619.975

UNIT 02 — 2 BED APT — A
UNIT 03 — 2 BED APT — C2
UNIT 04 — 2 BED APT — C1
UNIT 05 — 2 BED APT — C1
UNIT 06 — 2 BED APT — C2
UNIT 07 — 3 BED APT — B2
UNIT 01 — 2 BED APT — F

FOYER

ENTRY

LETTERBOXES

15.22 m²
140.93 m²
167.72 m²
125.00 m²
43.25 m²
130.14 m²

LETTERBOX BANK TO AUSTRALIA POST STANDARDS

NEW ACCESSIBLE PATH TO COUNCIL REQUIREMENTS

GROUND FLOOR PLAN
Scale: 1:200

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd
& Bilgola Beach Pty Ltd

DRAWING :
GROUND FLOOR PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

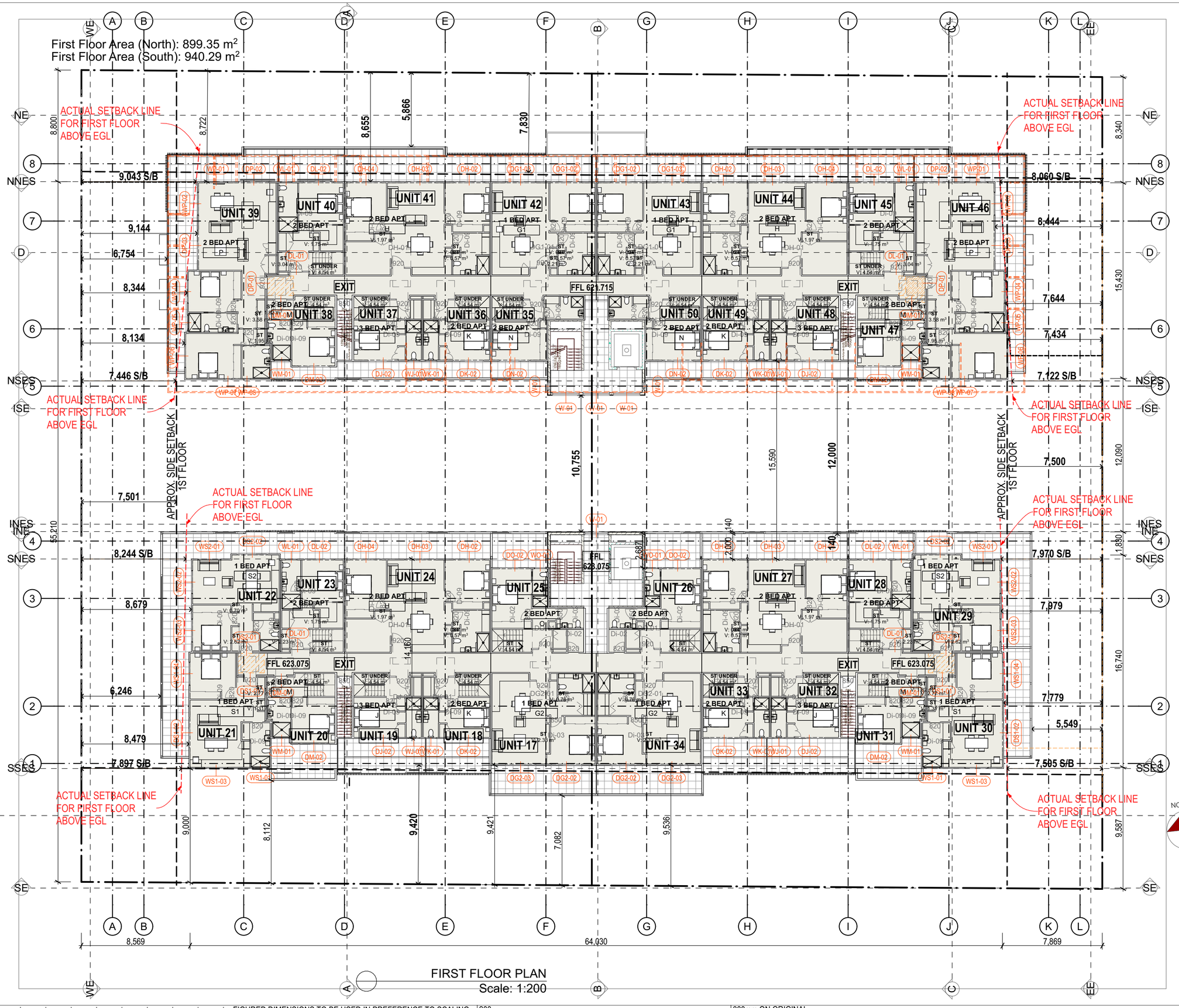
SCALES as shown
No. IN SET 4 of 32
DATE 15.12.23
SHEET NUMBER DA-04P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

First Floor Area (North): 899.35 m²
First Floor Area (South): 940.29 m²



FIRST FLOOR PLAN
Scale: 1:200

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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DRAWING :
FIRST FLOOR PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown
No. IN SET 5 of 32
DATE 15.12.23
SHEET NUMBER DA-05P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

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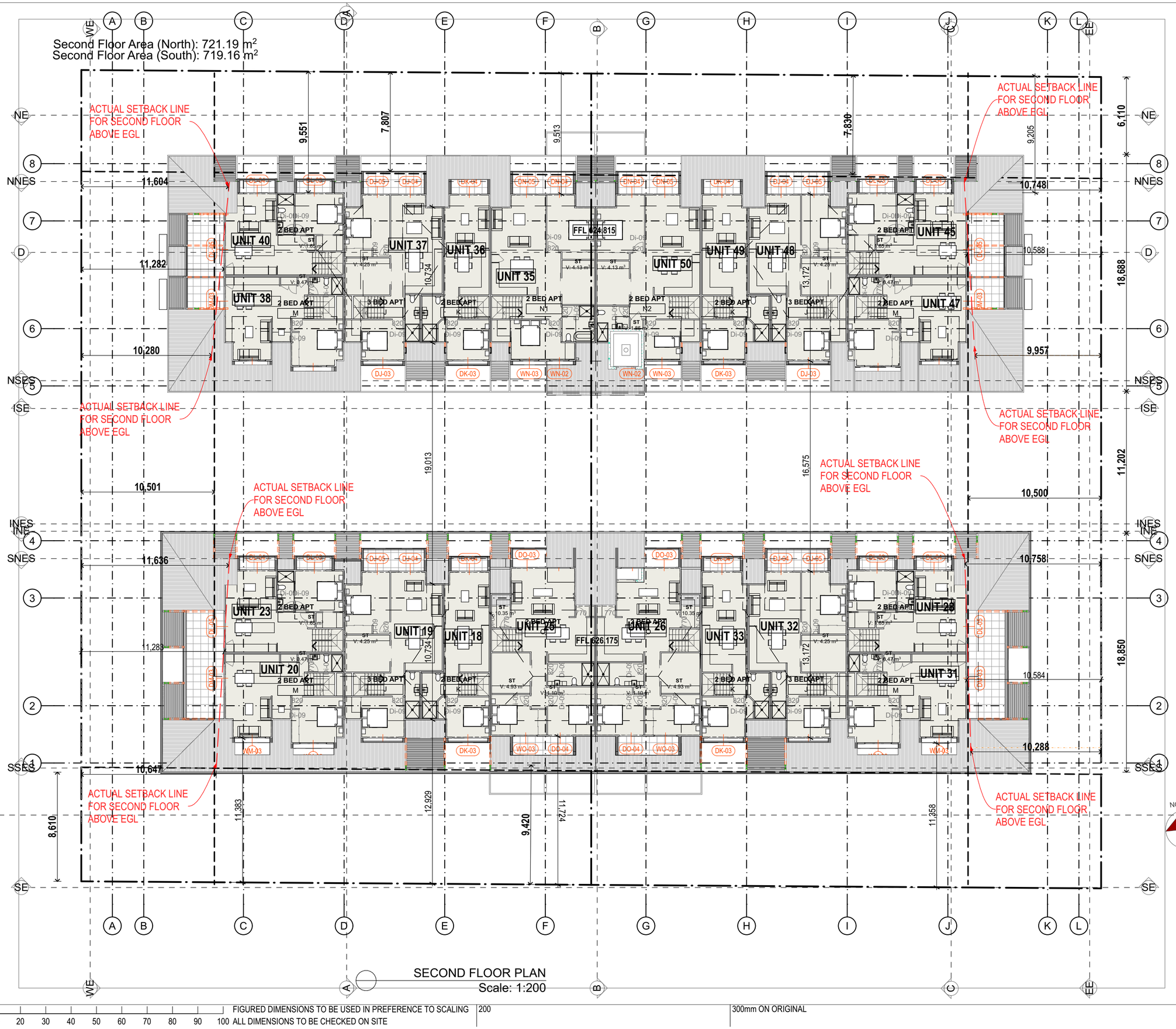
Print date 15/12/2023

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

Second Floor Area (North): 721.19 m²
Second Floor Area (South): 719.16 m²



SECOND FLOOR PLAN
Scale: 1:200

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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DRAWING :
SECOND FLOOR PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown
No. IN SET 6 of 32
DATE 15.12.23
SHEET NUMBER DA-06P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

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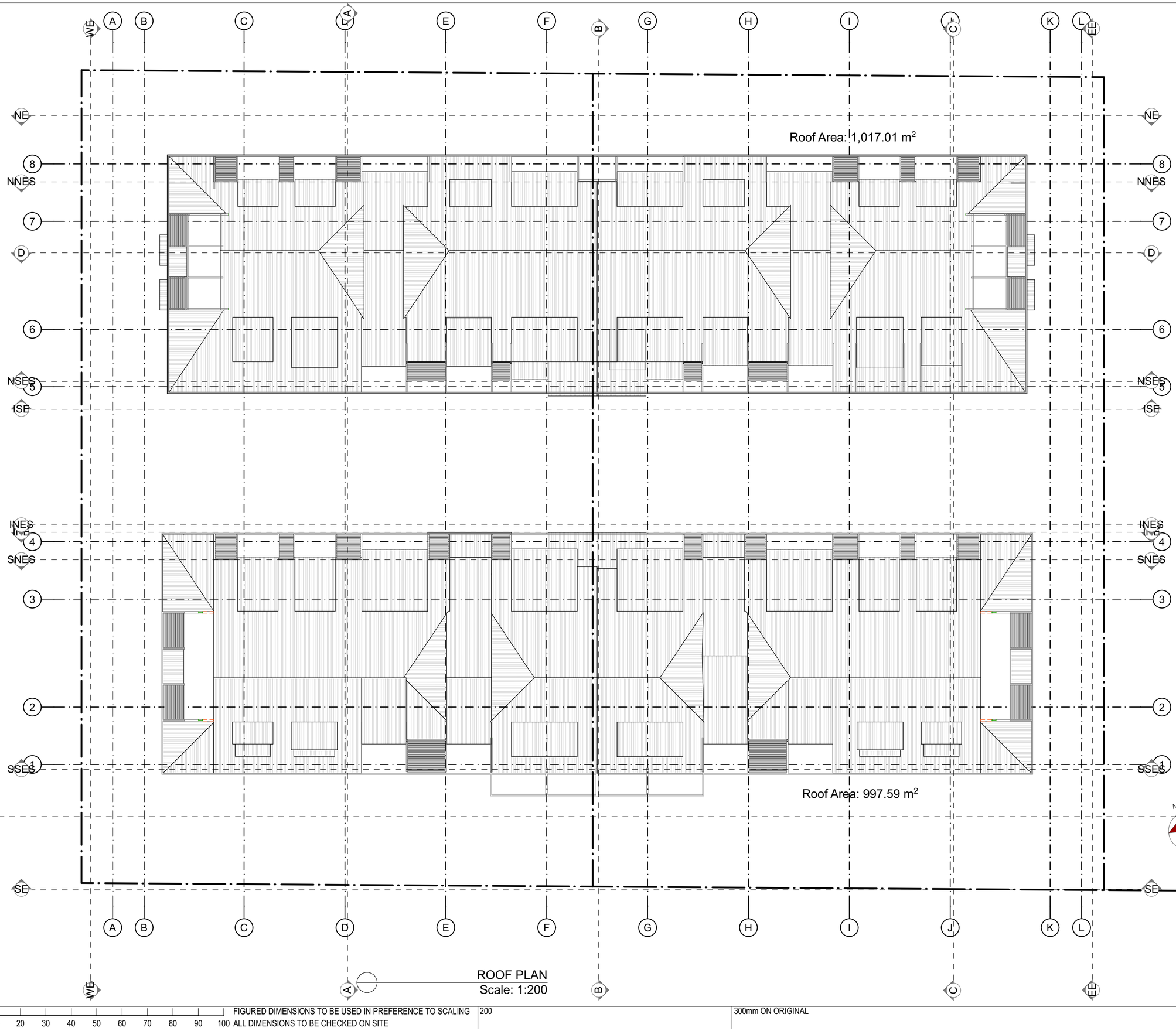
Print date 15/12/2023

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL



ROOF PLAN
Scale: 1:200

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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DRAWING :

ROOF PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown
No. IN SET 7 of 32
DATE 15.12.23
SHEET NUMBER DA-07P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

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A2 0 10 20 30 40 50 60 70 80 90 100
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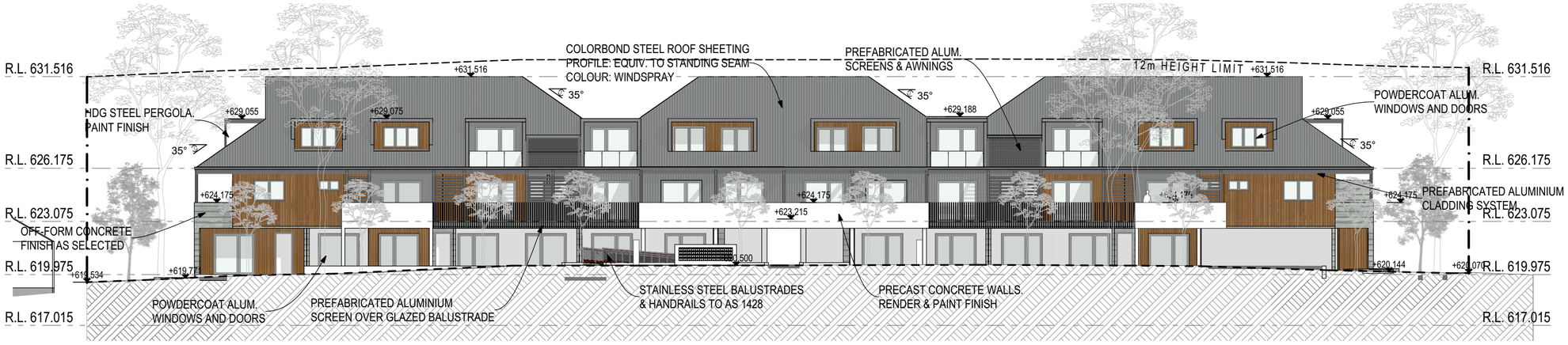

SOUTH ELEVATION
Scale 1:200

NORTH ELEVATION
Scale 1:200

INTERNAL NORTH ELEVATION
Scale 1:200

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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DRAWING :

ELEVATIONS

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES as shown	No. IN SET 8 of 32
DATE 15.12.23	SHEET NUMBER
DRAWN BY A J C	DA-08P

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

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A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
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200
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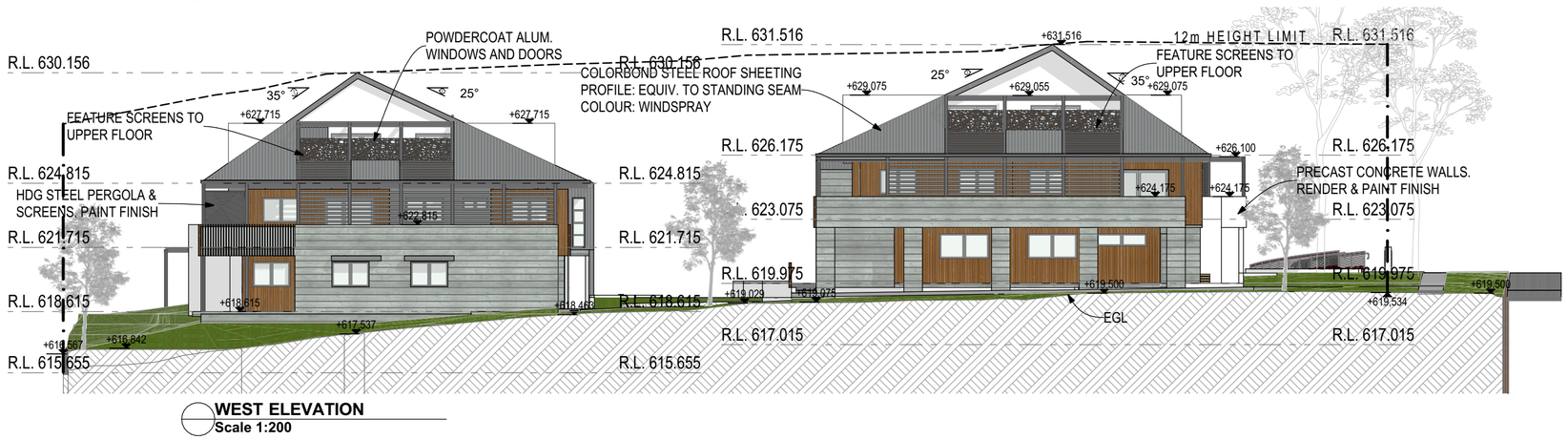
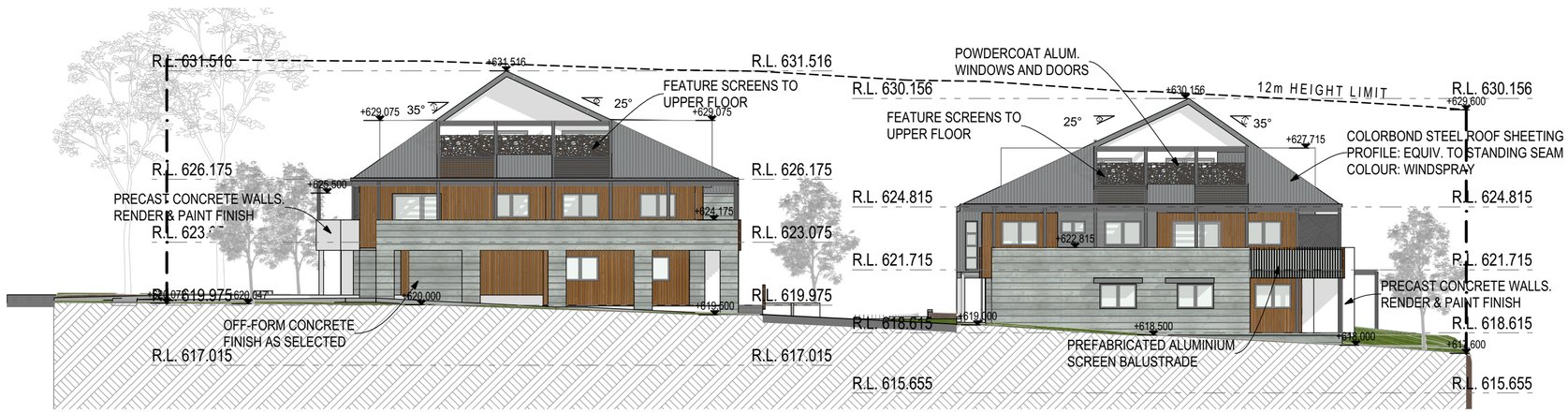
INTERNAL SOUTH ELEVATION
Scale 1:200



WEST ELEVATION
Scale 1:200



EAST ELEVATION
Scale 1:200

COLOUR SCHEDULE

Roof & Wall Sheeting
Colorbond 'Windspray'

Fascia; Barge; Gutters
Colorbond 'Windspray'

Steel Pergolas; screens
Colorbond 'Basalt'

Window/Door Frames
Colorbond 'Basalt'

Rendered Walls
Dulux 'Lexicon Half'

Aluminium Cladding
Supawood or equal

External walls
Off-form concrete

Feature balustrade
Corten Steel

Feature Cladding
Powdercoat Aluminium

Face Brickwork
Austral - 'San Selmo'

Non-slip Paving
Selected grey granite

A2 0 10 20 30 40 50 60 70 80 90 100

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200

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LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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CLIENT :

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DRAWING :

ELEVATIONS 02 & COLOUR SCHEDULE

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **as shown**
No. IN SET **9 of 32**
DATE **15.12.23**
SHEET NUMBER **DA-09P**
DRAWN BY **A J C**

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

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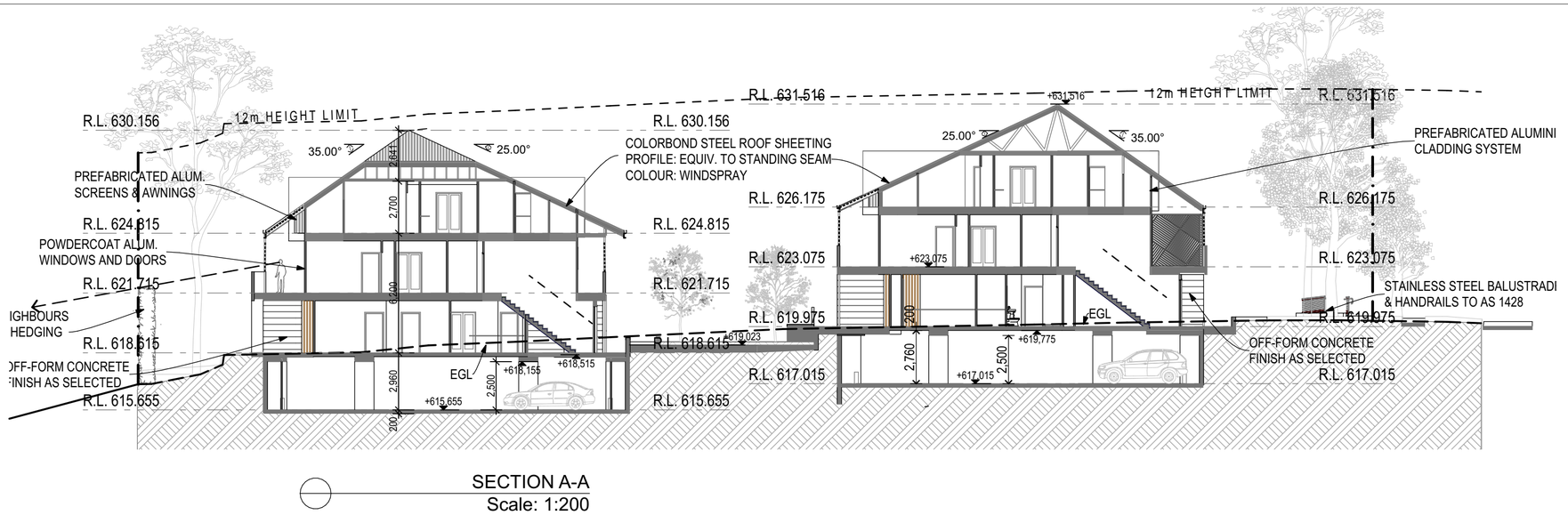
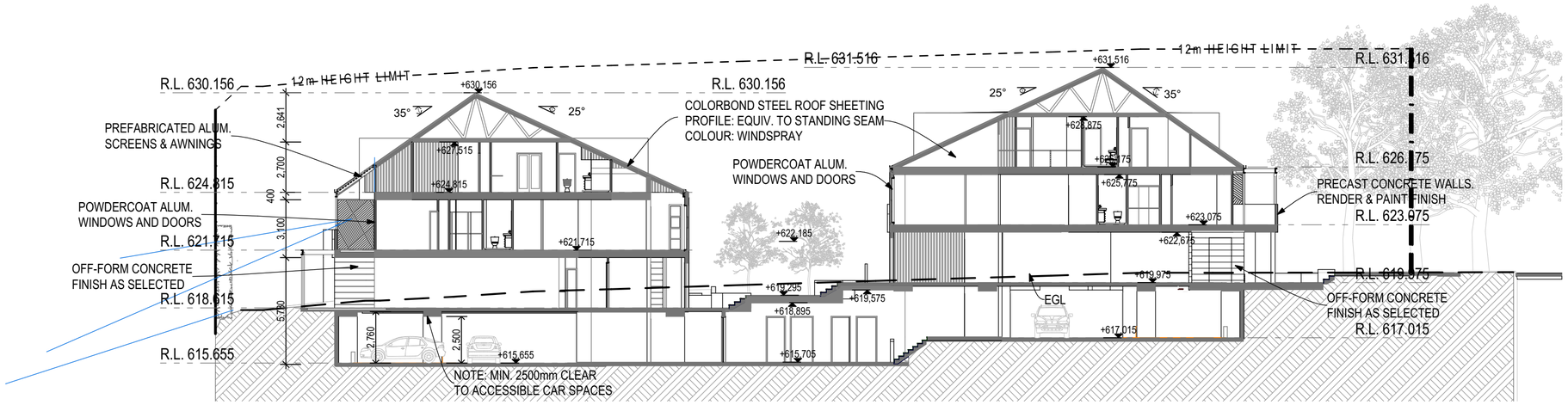
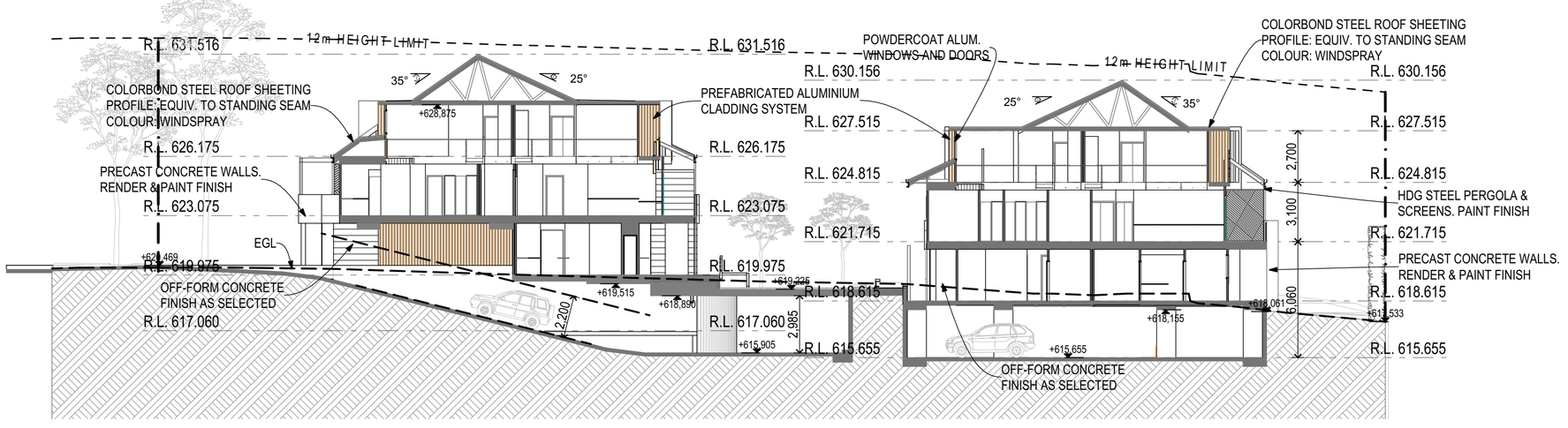


SECTION A-A
Scale: 1:200



SECTION B-B
Scale: 1:200



SECTION C-C
Scale: 1:200

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
M	Development Application	30.09.22	AJC
N	DA Amend - Consultants Issue	24.09.23	AJC
	DA Amend - Council submission	12.10.23	AJC
O	DA Amend - Client/Consultant Issue	22.11.23	AJC
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Ph 02 4869 5395 ■ architects@coblestephens.com
Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at 1-5 Rainbow Road
MITTAGONG NSW
Lot 32, DP 9299 &
Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd
& Bilgola Beach Pty Ltd

DRAWING :
SECTIONS

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

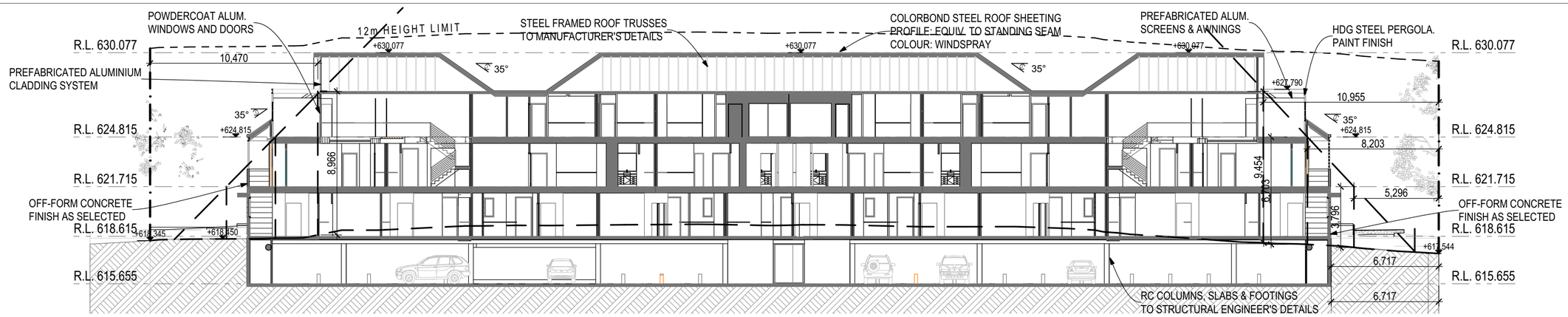
SCALES as shown | No. IN SET 10 of 32
DATE 15.12.23 | SHEET NUMBER DA-10P
DRAWN BY A J C

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

A2 0 10 20 30 40 50 60 70 80 90 100 FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING | ALL DIMENSIONS TO BE CHECKED ON SITE | 200 | 300mm ON ORIGINAL



SECTION D-D
Scale 1:200

APARTMENT BREAKDOWN / **APARTMENT BALCONIES**

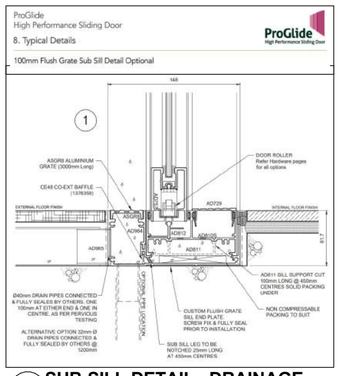
Apt No.	Apt Type	Story	Area	Beds	Car sp req'd	Car sp prov'd	Adaptable	Livable	Affordable	Main Balcony Area	Secondary Balcony Area	Depth	Length	Orientation
Apt 01	F	GROUND FLOOR	92.07	2	0.5	1 + shared	Yes	Yes	Yes	34.21		3.80	10.22	SW
Apt 02	E	GROUND FLOOR	88.83	2	0.5	1 + shared	Yes	Yes	Yes	28.63		3.01	10.96	NW
Apt 03	C2	GROUND FLOOR	99.31	2	0.5	1 + shared	Yes	Yes	Yes	20.45	21.15	3.00	7.74	N/S
Apt 04	C1	GROUND FLOOR	116.20	2	0.5	1 + shared	Yes	Yes	Yes	20.45	22.92	3.00	7.74	N/S
Apt 05	C1	GROUND FLOOR	116.20	2	0.5	1 + shared	Yes	Yes	Yes	20.45	22.92	3.00	7.74	N/S
Apt 06	C2	GROUND FLOOR	99.31	2	0.5	1 + shared	Yes	Yes	Yes	20.45	21.15	3.00	7.74	N/S
Apt 07	E2	GROUND FLOOR	117.16	3	0.5	1 + shared	Yes		Yes	28.21	9.29	3.01	10.96	NE/S
Apt 08	R	GROUND FLOOR	74.71	1	0.4	1 + shared	Yes		Yes	27.27		2.7	7.64	SE
Apt 09	Q	GROUND FLOOR	108.55	2	0.5	1 + shared	Yes		Yes	35.35		2.7	7.64	NE
Apt 10	B	GROUND FLOOR	99.35	2	0.5	1 + shared	Yes		Yes	22.08	25.59	3.20	7.64	N/S
Apt 11	A	GROUND FLOOR	100.63	2	0.5	1 + shared	Yes	Yes	Yes	20.55	26.56	3.00	7.64	N/S
Apt 12	A2	GROUND FLOOR	85.12	2	0.5	1 + shared	Yes		Yes	31.25		4.40	7.64	N
Apt 13	A	GROUND FLOOR	100.63	2	0.5	1 + shared	Yes	Yes	Yes	20.55	26.57	3.00	7.64	N/S
Apt 14	B	GROUND FLOOR	99.35	2	0.5	1 + shared	Yes		Yes	22.08	24.23	3.20	7.64	N/S
Apt 15	Q	GROUND FLOOR	108.55	2	0.5	1 + shared	Yes		Yes	33.63		3.20	7.64	NW
Apt 16	R	GROUND FLOOR	74.71	1	0.4	1 + shared	Yes		Yes	27.27		2.7	7.64	SW
Apt 17	G2	FIRST FLOOR	56.55	1	0.4	1			Yes	18.76		2.26	8.20	S
Apt 18	K	FIRST FLOOR	24.18	2	0.5	1			Yes	13.35		2.69	4.96	S
Apt 18	K	SECOND FLOOR	45.95							3.37		1.17	2.87	N
Apt 19	J	FIRST FLOOR	27.38	3	1	2			No	18.49		2.69	6.85	S
Apt 19	J	SECOND FLOOR	78.62							8.61		1.80	4.78	N
Apt 20	M	FIRST FLOOR	27.16	2	0.5	1			Yes	14.67		3.15	7.05	S
Apt 20	M	SECOND FLOOR	53.23							16.21		3.19	5.08	SW
Apt 21	S1	FIRST FLOOR	50.03	1	0.4	1			Yes	18.26		2	8	SW/NW
Apt 22	S2	FIRST FLOOR	50.29	1	0.4	1				32.54		2	8	SW/NW
Apt 23	L	FIRST FLOOR	34.45	2	0.5	1			Yes	10.89		2.14	5.09	N
Apt 23	L	SECOND FLOOR	54.76							16.82	6.08	3.19	5.27	NW
Apt 24	H	FIRST FLOOR	80.89	2	0.5	1			Yes	22.99		2.00	11.42	N
Apt 25	O	FIRST FLOOR	35.35	2	0.5	1			No	11.72		2.68	6.64	N
Apt 25	O	SECOND FLOOR	93.14							4.13		1.53	3.28	N/S
Apt 26	O	FIRST FLOOR	35.35	2	0.5	1			No	11.72		2.68	6.64	N
Apt 26	O	SECOND FLOOR	93.14							4.13		1.53	3.28	N/S
Apt 27	H	FIRST FLOOR	80.89	2	0.5	1			Yes	22.99		2.00	11.42	N
Apt 28	L	FIRST FLOOR	36.22	2	0.5	1			Yes	10.89		2.14	5.09	N
Apt 28	L	SECOND FLOOR	54.76							16.82	6.08	3.19	5.27	NE/N
Apt 29	S2	FIRST FLOOR	50.03	1	0.4	1			Yes	32.54	20.94	2	8	SE/NE
Apt 30	S1	FIRST FLOOR	50.29	1	0.4	1			Yes	18.26	20.94	2	8	SE/NE
Apt 31	M	FIRST FLOOR	27.16	2	0.5	1			Yes	14.67		3.15	7.05	S
Apt 31	M	SECOND FLOOR	53.23							16.21		3.19	5.08	SE
Apt 32	J	FIRST FLOOR	27.38	3	1	2			No	18.99		2.69	6.85	S
Apt 32	J	SECOND FLOOR	78.62							8.61		1.80	4.78	N
Apt 33	K	FIRST FLOOR	24.18	2	0.5	1			Yes	13.35		2.69	4	S
Apt 33	K	SECOND FLOOR	45.95							3.37		1.17	2.87	N
Apt 34	G2	FIRST FLOOR	56.55	1	0.4	1			Yes	18.76		2.26	8	S
Apt 35	N	FIRST FLOOR	26.45	2	0.5	1			No	6.31		1.45	6.72	S
Apt 35	N	SECOND FLOOR	93.51							8.60		1.80	4.78	N
Apt 36	K	FIRST FLOOR	24.18	2	0.5	1			Yes	7.31		1.45	5.04	S
Apt 36	K	SECOND FLOOR	45.95							3.37		1.17	2.87	N
Apt 37	J	FIRST FLOOR	27.38	3	1	1			No	10.06		1.45	6.92	S
Apt 37	J	SECOND FLOOR	78.62							8.60		1.80	4.78	N
Apt 38	M	FIRST FLOOR	27.16	2	0.5	1			Yes	5.87		1.45	4.94	S
Apt 38	M	SECOND FLOOR	53.23							16.21		3.19	5.08	SW
Apt 39	P	FIRST FLOOR	95.59	2	0.5	1			No	47.85		2.4	16	N/W/S
Apt 40	L	FIRST FLOOR	36.22	2	0.5	1			Yes	13.26		2.60	5.10	N
Apt 40	L	SECOND FLOOR	54.76							16.82	6.08	3.19	5.27	NW/N
Apt 41	H	FIRST FLOOR	80.89	2	0.5	1		Yes	Yes	27.58		2.60	11.46	N
Apt 42	G1	FIRST FLOOR	57.52	1	0.4	1		Yes	Yes	16.49		2.00	8.24	N
Apt 43	G1	FIRST FLOOR	57.52	1	0.4	1			Yes	16.49		2.00	8	N
Apt 44	H	FIRST FLOOR	80.89	2	0.5	1			Yes	27.58		2.60	11.46	N
Apt 45	L	FIRST FLOOR	36.22	2	0.5	1			Yes	13.26		2.60	5.10	N
Apt 45	L	SECOND FLOOR	54.76						Yes	16.82	6.08	3.19	5.27	NE/N
Apt 46	P	FIRST FLOOR	95.59	2	0.5	1			No	47.85		2.4	16	N/E/S
Apt 47	M	FIRST FLOOR	27.16	2	0.5	1			Yes	5.87		1.45	4.94	S
Apt 47	M	SECOND FLOOR	53.23							16.21		3.19	5.08	SE
Apt 48	J	FIRST FLOOR	27.38	3	1	2			No	10.06		1.45	6.92	S
Apt 48	J	SECOND FLOOR	78.62							8.60		1.80	4.78	N
Apt 49	K	FIRST FLOOR	24.18	2	0.5	1			Yes	7.31		1.45	5.04	S
Apt 49	K	SECOND FLOOR	45.95							3.37		1.17	2.87	N
Apt 50	N	FIRST FLOOR	26.45	2	0.5	1			No	6.31		1.45	6.72	S
Apt 50	N	SECOND FLOOR	87.55							8.60		1.80	4.78	N
			4,403.37 m²	95 beds	26 car spaces	53 car spaces +9 shared spaces +8 visitor spaces	16 (32%)	10 (20%)	40 (80%)					

AREAS - SOFT LANDSCAPING

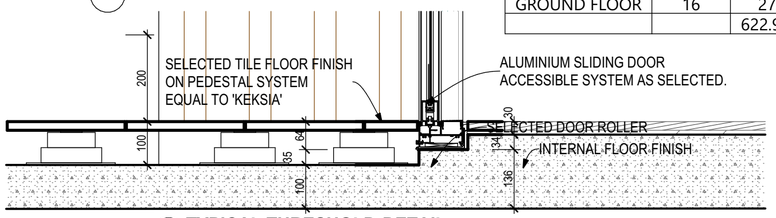
Story	Location	Area
GROUND FLOOR	Courtyard Central	53.97
GROUND FLOOR	Courtyard East	57.71
GROUND FLOOR	Courtyard West	305.73
GROUND FLOOR	Entry Garden	0.60
GROUND FLOOR	Entry Garden	0.67
GROUND FLOOR	Front Yard Central	15.22
GROUND FLOOR	Front Yard East	43.25
GROUND FLOOR	Front Yard South East	140.93
GROUND FLOOR	Front Yard South West	167.72
GROUND FLOOR	Gym/Activity Area	41.53
GROUND FLOOR	Playground	22.13
GROUND FLOOR	Playground	26.80
GROUND FLOOR	Rear + Sides (2)	702.14
GROUND FLOOR	Side (East)	130.14
GROUND FLOOR	Side (West)	125.00
		1,833.54 m²

AREAS - HARD LANDSCAPING/PATHS

Story	Location	Area
GROUND FLOOR	Central Community Terrace	259.12
GROUND FLOOR	Eastern pathway	39.10
GROUND FLOOR	NE path landing	3.61
GROUND FLOOR	North Building Entry	20.47
GROUND FLOOR	NW path landing	6.79
GROUND FLOOR	Southern Entry Terrace	177.97
GROUND FLOOR	Sth Building North terrace	77.94
GROUND FLOOR	Western pathway	43.26
		628.26 m²



SUB SILL DETAIL - DRAINAGE



TYPICAL THRESHOLD DETAIL
Scale 1:10

AREA - SITE

SITE	Area
Site Area	5,150.94
	5,150.94 m²

AREAS - FLOOR SPACE

Story	Location	Area
GROUND FLOOR	Nthn Building	899.76
GROUND FLOOR	Sthn Building	823.95
FIRST FLOOR	Nthn Building	899.35
FIRST FLOOR	Sthn Building	940.29
SECOND FLOOR	Nthn Building	721.19
SECOND FLOOR	Sthn Building	719.16
		5,003.70 m²

FLOOR SPACE RATIO: 0.971:1

TOTAL OPEN SPACE AREA : 3,091.13m² (INCL. SOFT & HARD LANDSCAPING + GROUND FLOOR TERRACES)

OPEN SPACE RATIO: 0.60:1

AREAS - APARTMENT TERRACES

Story	Apt No.	Area
GROUND FLOOR	01	34.21
GROUND FLOOR	02	28.63
GROUND FLOOR	03	20.45
GROUND FLOOR	03	21.15
GROUND FLOOR	04	20.45
GROUND FLOOR	04	22.92
GROUND FLOOR	05	20.45
GROUND FLOOR	05	22.92
GROUND FLOOR	06	20.45
GROUND FLOOR	06	21.15
GROUND FLOOR	07	9.29
GROUND FLOOR	07	28.21
GROUND FLOOR	08	4.34
GROUND FLOOR	08	27.27
GROUND FLOOR	09	35.35
GROUND FLOOR	10	22.08
GROUND FLOOR	10	25.59
GROUND FLOOR	11	20.55
GROUND FLOOR	11	26.56
GROUND FLOOR	12	31.75
GROUND FLOOR	13	20.55
GROUND FLOOR	13	26.57
GROUND FLOOR	14	22.08
GROUND FLOOR	14	24.23
GROUND FLOOR	15	33.63
GROUND FLOOR	16	4.89
GROUND FLOOR	16	27.27
		622.99 m²

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

NOTES

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ALL TIMBER WORKS TO COMPLY WITH AS 1684 NATIONAL TIMBER FRAMING CODE.
ALL BRICKWORK TO COMPLY WITH AS 3700 MASONRY IN BUILDING.
TERMITE RESISTANT TIMBER FRAMES AND TRUSSES. PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
HARD WIRED SMOKE ALARMS ARE TO BE INSTALLED THROUGHOUT NEW WORK AND TO COMPLY WITH NCC AND RELEVANT AUSTRALIAN STANDARD REQUIREMENTS.

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PROJECT :
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at 1-5 Rainbow Road MITTAGONG NSW Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
SECTION & SCHEDULES

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **as shown** | No. IN SET **11 of 32**

DATE **15.12.23** | SHEET NUMBER **DA-11P**

DRAWN BY **A J C**

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

STREET ELEVATION

STREET VIEW

ISOMETRIC VIEW

NORTH EAST VIEW

CIRCULATION CORE EAST

PHOTO MONTAGE

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
STREET ELEVATION & 3D VIEWS

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **as shown**	No. IN SET **12 of 32**
DATE **15.12.23**	SHEET NUMBER **DA-12P**
DRAWN BY **A J C**	

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

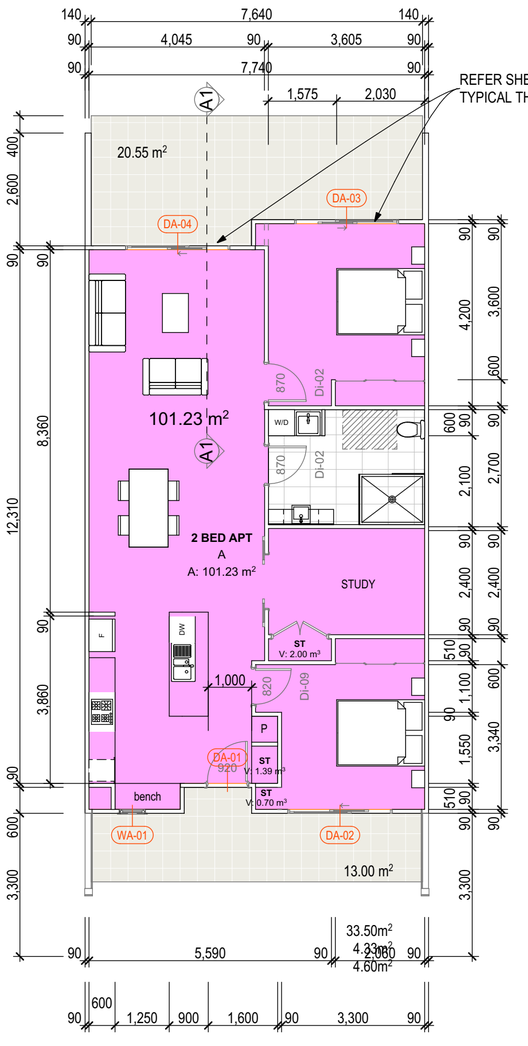
A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

DOOR SCHEDULE - A (Apts 11, 13)				
Door No.	DA-01	DA-02	DA-03	DA-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

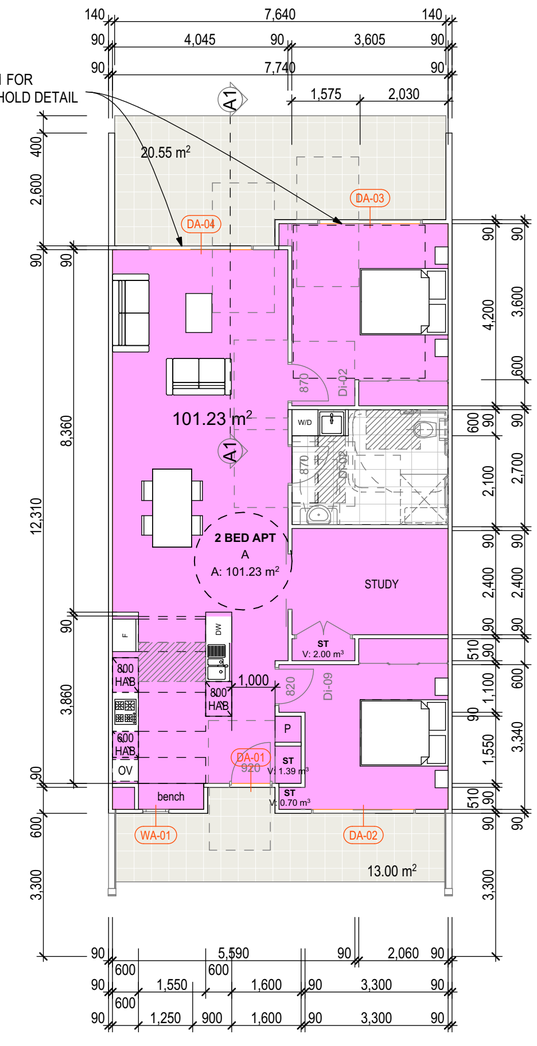
WINDOW SCHEDULE - A (Apts 11, 13)	
Window No.	WA-01
Dimensions	600×1,200
Surface Area	0.72
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

DOOR SCHEDULE - B (Apts 10, 14)				
Door No.	DB-01	DB-02	DB-03	DB-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

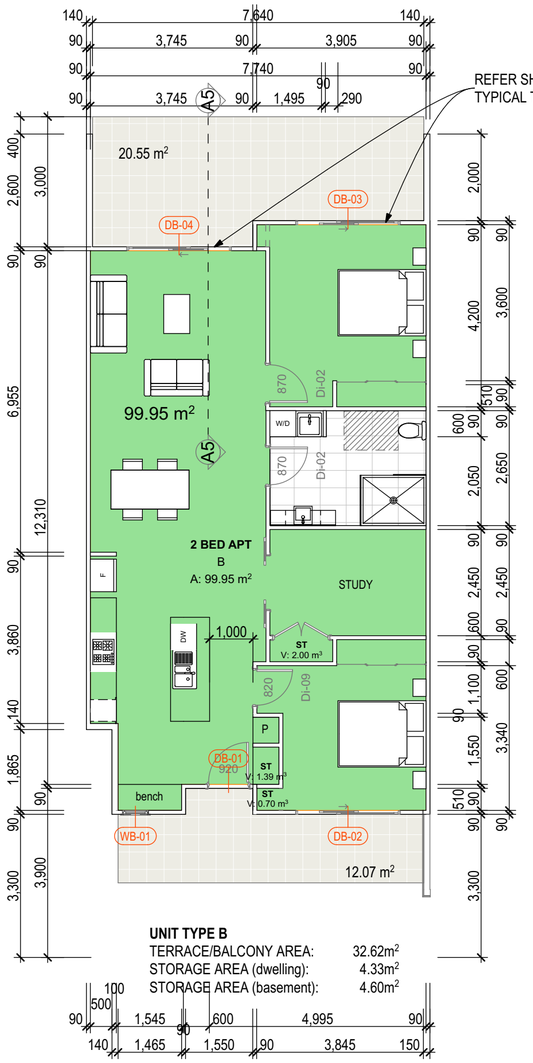
WINDOW SCHEDULE - B (Apts 10, 14)	
Window No.	WB-01
Dimensions	600×1,200
Surface Area	0.72
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	



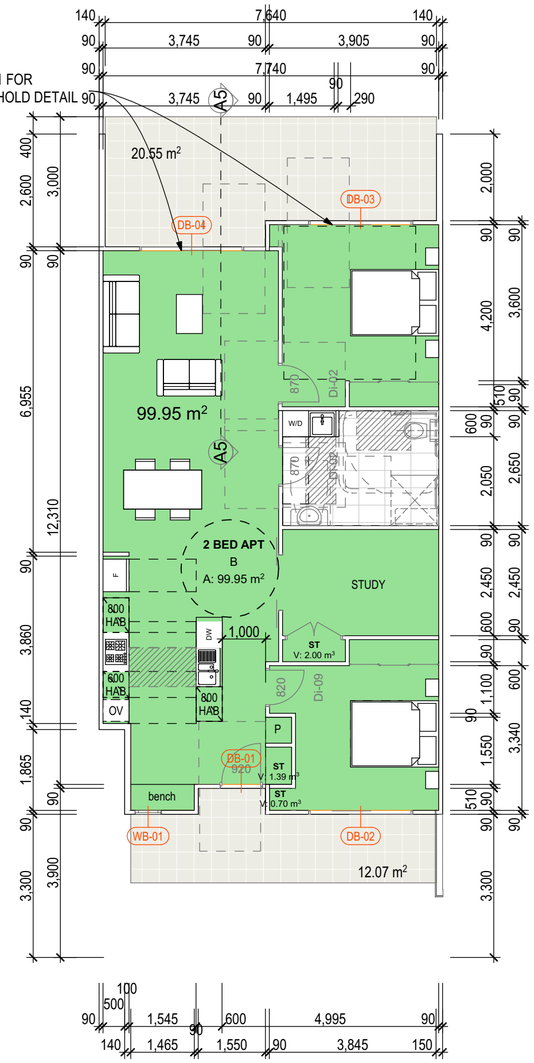
UNIT TYPE A - PRE-ADAPTABLE
Scale 1:100



UNIT TYPE A - POST ADAPTABLE
Scale 1:100



UNIT TYPE B - PRE-ADAPTABLE
Scale 1:100



UNIT TYPE B - POST ADAPTABLE
Scale 1:100

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LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

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at
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CLIENT :
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DRAWING :
ADAPTABLE UNIT TYPES A & B

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES AS SHOWN | No. IN SET 13 of 32

DATE 15.12.23 | SHEET NUMBER DA-13P

DRAWN BY AJC

Print Date: 15/12/2023

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Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

SCALE 0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200

300mm ON ORIGINAL

DOOR SCHEDULE - C1 (Apts 04, 05)				
Door No.	DC1-01	DC1-02	DC1-03	DC1-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

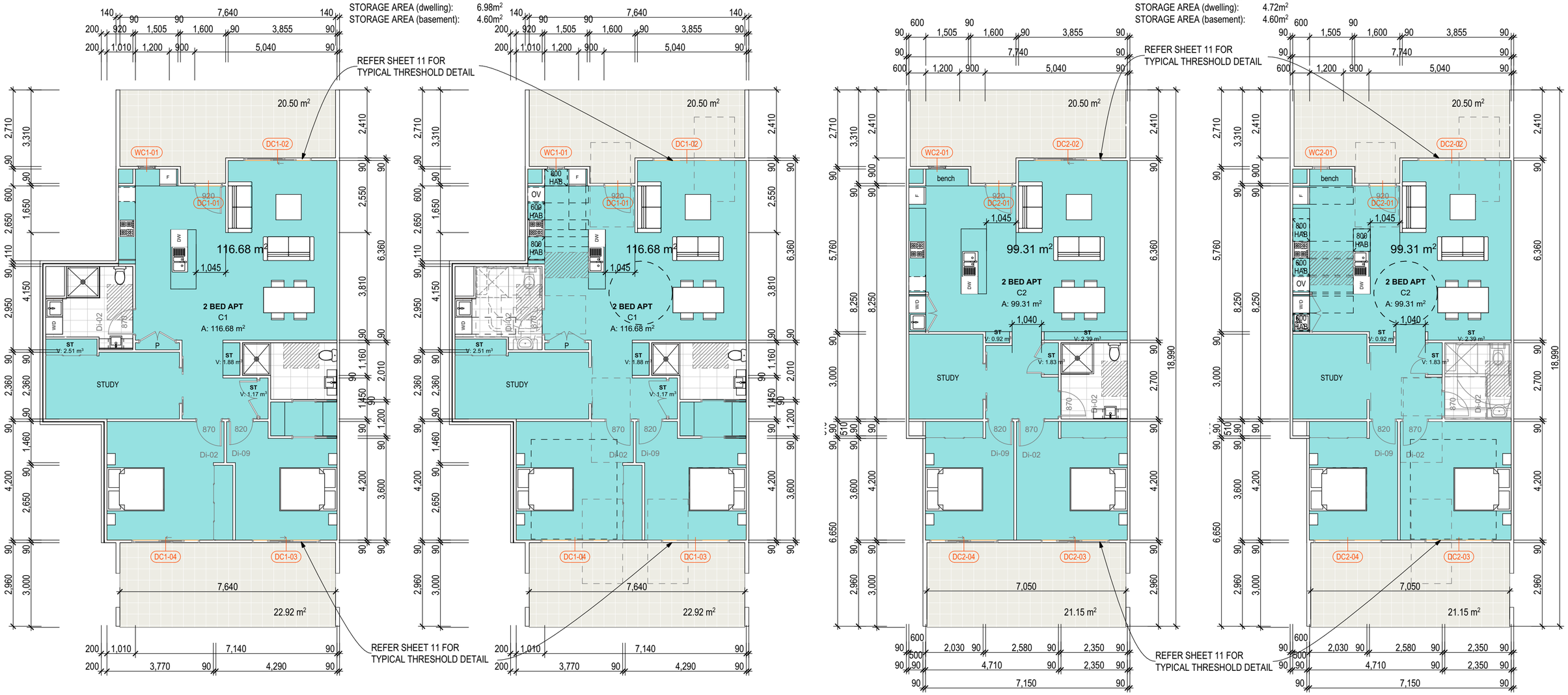
WINDOW SCHEDULE - C1 (Apts 04, 05)	
Window No.	WC1-01
Dimensions	600×1,200
Surface Area	0.72
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

DOOR SCHEDULE - C2 (Apts 03, 06)				
Door No.	DC2-01	DC2-02	DC2-03	DC2-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

WINDOW SCHEDULE - C2 (Apts 03, 06)	
Window No.	WC2-01
Dimensions	600×1,200
Surface Area	0.72
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

UNIT TYPE C1
TERRACE/BALCONY AREA: 43.37m²
STORAGE AREA (dwelling): 6.98m²
STORAGE AREA (basement): 4.60m²

UNIT TYPE C2
TERRACE/BALCONY AREA: 41.60m²
STORAGE AREA (dwelling): 4.72m²
STORAGE AREA (basement): 4.60m²



UNIT TYPE C1 - PRE-ADAPTABLE
Scale 1:100

UNIT TYPE C1 - POST ADAPTABLE
Scale 1:100

UNIT TYPE C2 - PRE-ADAPTABLE
Scale 1:100

UNIT TYPE C2 - POST ADAPTABLE
Scale 1:100

NOTES

ALL DIMENSIONS TO BE CONFIRMED ON-SITE.
ALL TIMBER WORKS TO COMPLY WITH AS 1684 NATIONAL TIMBER FRAMING CODE.
ALL BRICKWORK TO COMPLY WITH AS 3700 MASONRY IN BUILDING.
TERMITE RESISTANT TIMBER FRAMES AND TRUSSES.
PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
HARD WIRED SMOKE ALARMS ARE TO BE INSTALLED THROUGHOUT NEW WORK AND TO COMPLY WITH NCC AND RELEVANT AUSTRALIAN STANDARD REQUIREMENTS.

LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
M	Development Application	30.09.22	AJC
N	DA Amend - Consultants Issue	24.09.23	AJC
	DA Amend - Council Submission	12.10.23	AJC
O	DA Amend - Client/Consultant Issue	28.11.23	AJC
P	DA Amend - Consultant Issue	15.12.23	AJC

PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT

at
1-5 Rainbow Road MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
ADAPTABLE UNIT TYPES C

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES AS SHOWN | No. IN SET 14 of 32

DATE 15.12.23 | SHEET NUMBER DA-14P

DRAWN BY A J C

Print Date: 15/12/2023

coble stephens architects
1 EAST STREET ■ MOSS VALE ■ NSW 2577
PO BOX 2072 ■ BOWRAL ■ NSW 2576
Ph 02 4869 5395 ■ Fax 02 4869 5495 ■ cs.arch@bigpond.net.au
Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

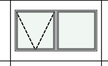
SCALE 0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

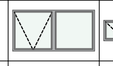
A2 0 10 20 30 40 50 60 70 80 90 100 FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING ALL DIMENSIONS TO BE CHECKED ON SITE

200 300mm ON ORIGINAL

DOOR SCHEDULE - E			
Door No.	DE-01	DE-02	DE-03
Dimensions	920×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

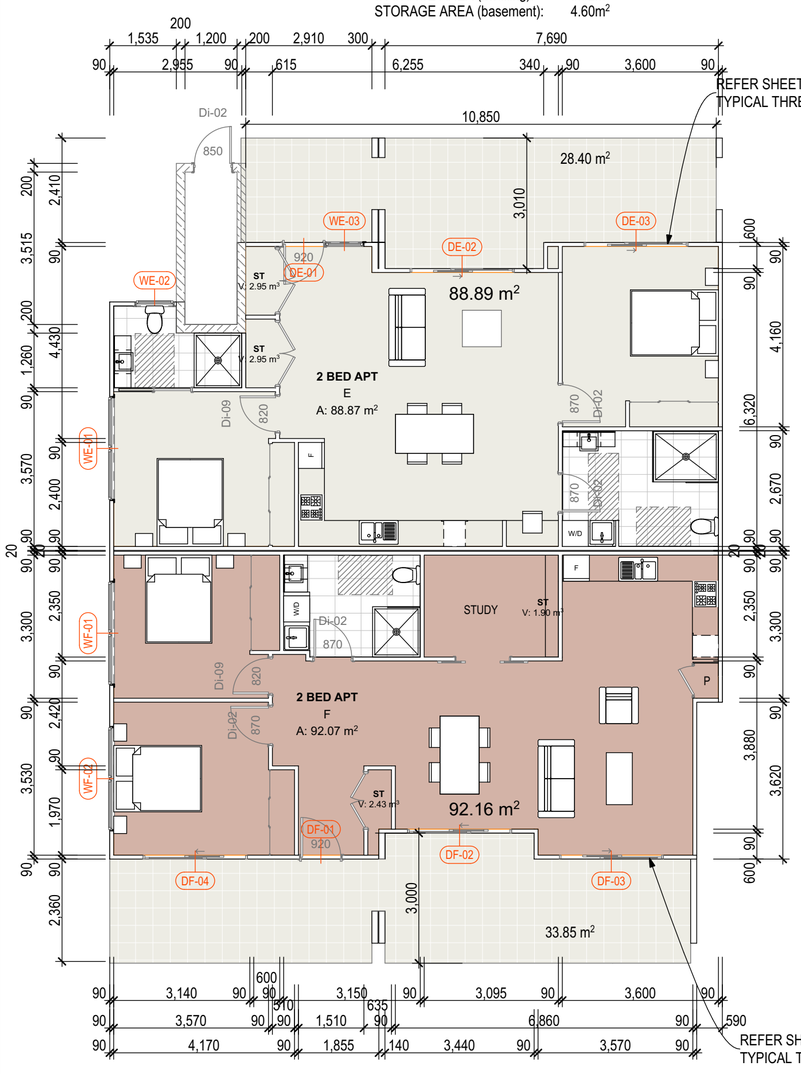
WINDOW SCHEDULE - E			
Window No.	WE-01	WE-02	WE-03
Dimensions	2,400×1,200	900×1,200	900×2,400
Surface Area	2.88	1.08	2.16
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			

DOOR SCHEDULE - F				
Door No.	DF-01	DF-02	DF-03	DF-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

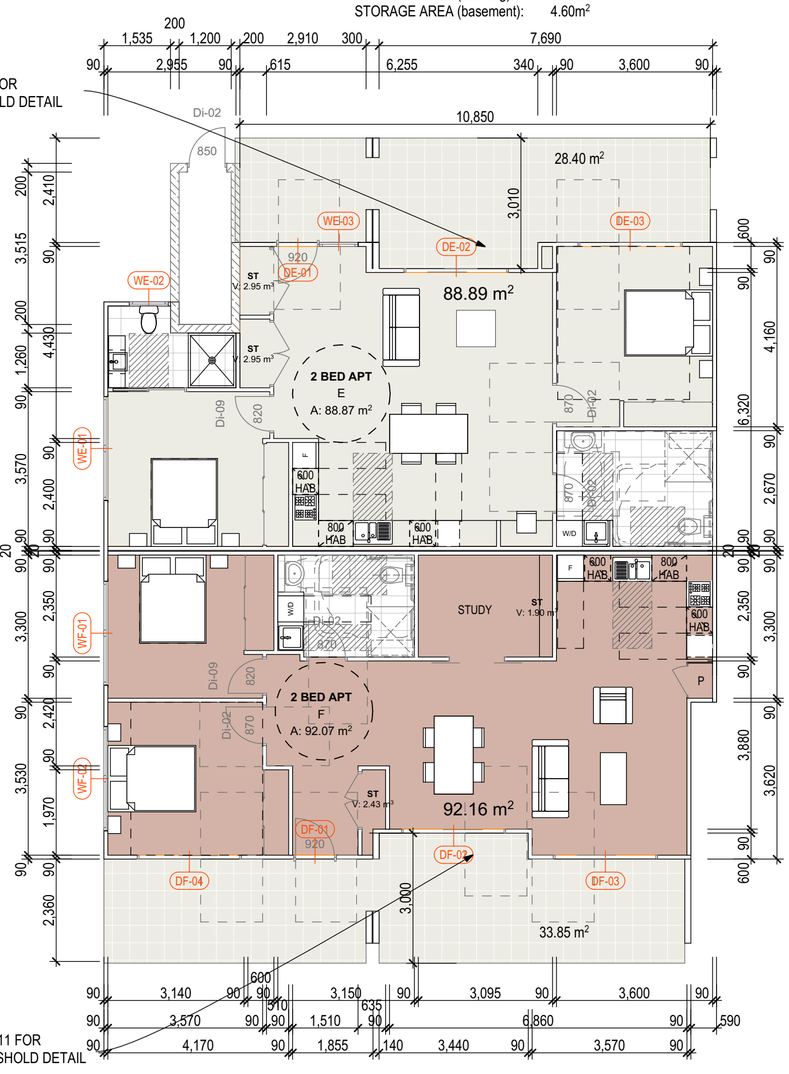
WINDOW SCHEDULE - F		
Window No.	WF-01	WF-02
Dimensions	2,400×1,200	2,400×600
Surface Area	2.88	1.44
Sill Height		
Front View		
Window Type		
Glazing Type		
Frame Type		

UNIT TYPE E
TERRACE/BALCONY AREA: 28.40m²
STORAGE AREA (dwelling): 5.32m²
STORAGE AREA (basement): 4.60m²

UNIT TYPE F
TERRACE/BALCONY AREA: 27.45m²
STORAGE AREA (dwelling): 4.01m²
STORAGE AREA (basement): 4.60m²



UNIT TYPE E & F - PRE ADAPTABLE
Scale 1:100



UNIT TYPE E & F - POST ADAPTABLE
Scale 1:100

NOTES

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PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
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LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
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P	DA Amend - Consultant Issue	15.12.23	AJC

PROJECT :

PROPOSED NEW AFFORDABLE HOUSING PROJECT

at
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CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
ADAPTABLE UNIT TYPES E & F

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES AS SHOWN | No. IN SET 15 of 32

DATE 15.12.23 | SHEET NUMBER DA-15P

DRAWN BY A J C

Print Date: 15/12/2023

coble stephens architects
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SCALE 0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200

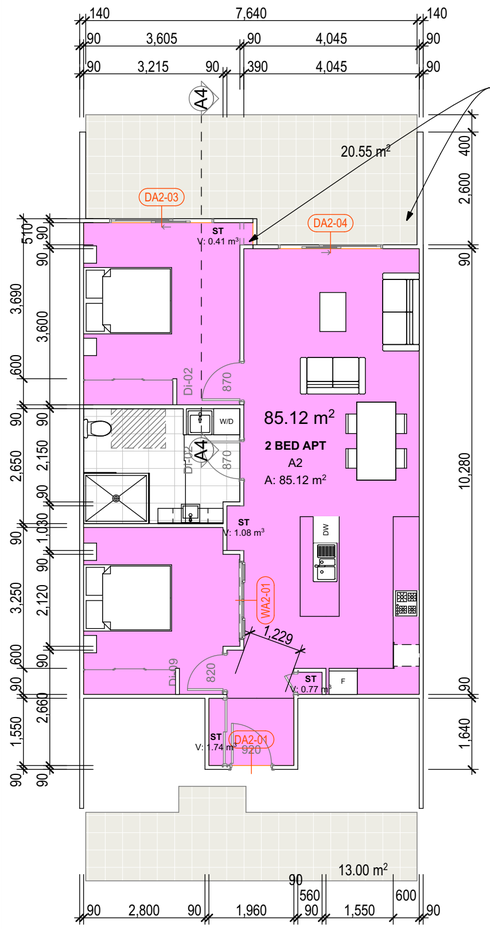
300mm ON ORIGINAL

DOOR SCHEDULE - A2			
Door No.	DA2-01	DA2-03	DA2-04
Dimensions	920×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

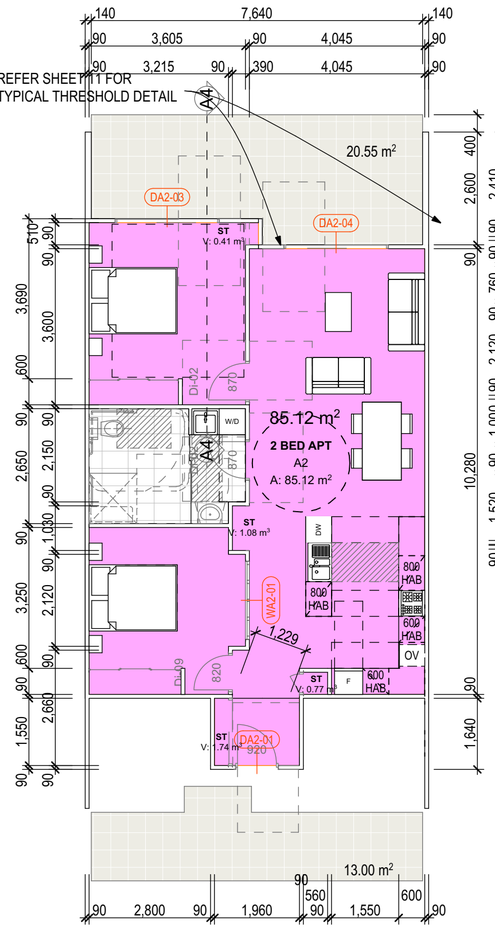
DOOR SCHEDULE - E2				
Door No.	DE2-01	DE2-02	DE2-03	DE2-05
Dimensions	920×2,400	1,800×2,400	1,800×2,400	2,400×2,400
Surface Area	2.37	4.32	4.32	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

WINDOW SCHEDULE - E2			
Window No.	WE2-01	WE2-02	WE2-03
Dimensions	900×1,200	1,800×1,200	1,800×1,200
Surface Area	1.08	2.16	2.16
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			

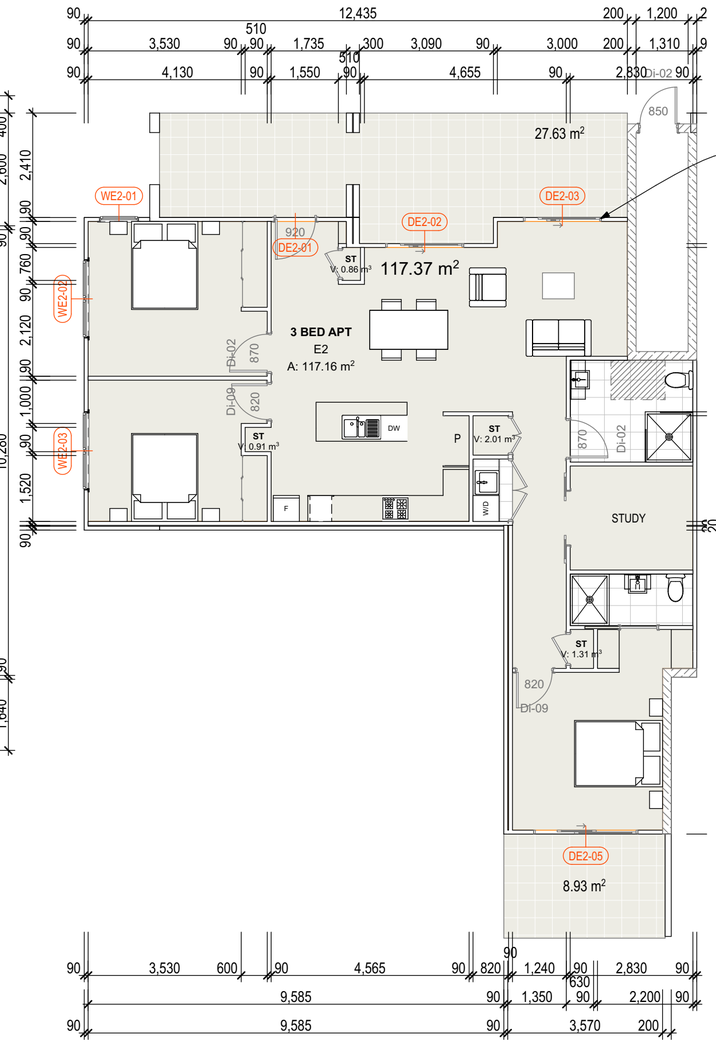
UNIT TYPE E2
TERRACE/BALCONY AREA: 28.40m²
STORAGE AREA (dwelling): 5.09m²
STORAGE AREA (basement): 4.60m²



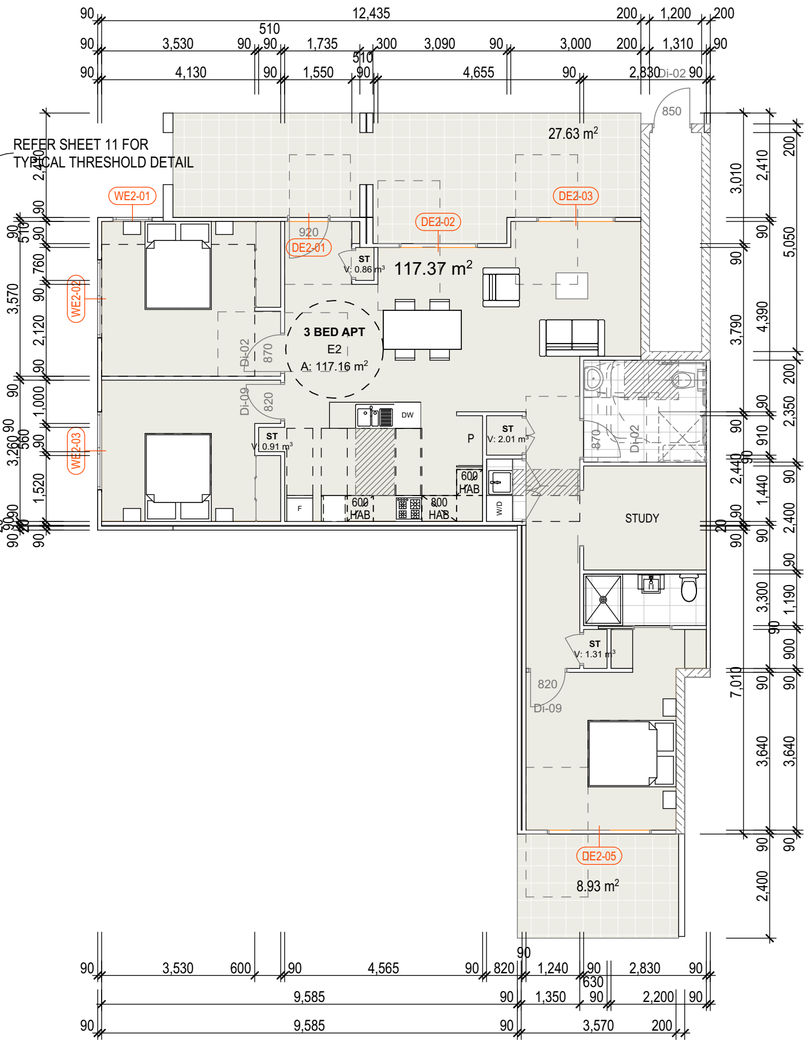
REFER SHEET 11 FOR TYPICAL THRESHOLD DETAIL



UNIT TYPE A
TERRACE/BALCONY AREA: 33.50m²
STORAGE AREA (dwelling): 4.28m²
STORAGE AREA (basement): 4.60m²



REFER SHEET 11 FOR TYPICAL THRESHOLD DETAIL



UNIT TYPE A2 - PRE-ADAPTABLE
Scale 1:100

UNIT TYPE A2 - POST ADAPTABLE
Scale 1:100

UNIT TYPE E2 - PRE ADAPTABLE
Scale 1:100

UNIT TYPE E2 - POST ADAPTABLE
Scale 1:100

NOTES

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LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
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	DA Amend - Council Submission	12.10.23	AJC
O	DA Amend - Client/Consultant Issue	28.11.23	AJC
P	DA Amend - Consultant Issue	15.12.23	AJC

PROJECT :

PROPOSED NEW AFFORDABLE HOUSING PROJECT

at
1-5 Rainbow Road
MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :

Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :

ADAPTABLE UNIT TYPES A2 & E2

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES AS SHOWN

DATE 15.12.23

DRAWN BY A J C

No. IN SET 16 of 32

SHEET NUMBER DA-16P

Print Date: 15/12/2023

coble stephens architects
1 EAST STREET ■ MOSS VALE ■ NSW 2577
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SCALE 0 1.0 2.0 3.0 4.0 5.0

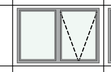
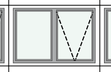
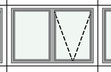
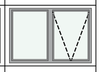
THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100

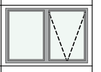
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200 300mm ON ORIGINAL

DOOR SCHEDULE - Q		
Door No.	DQ-01	DQ-03
Dimensions	920×2,400	2,400×2,400
Surface Area	2.37	5.76
Front View		
Door Type		
Glazing Type		
Frame Type		

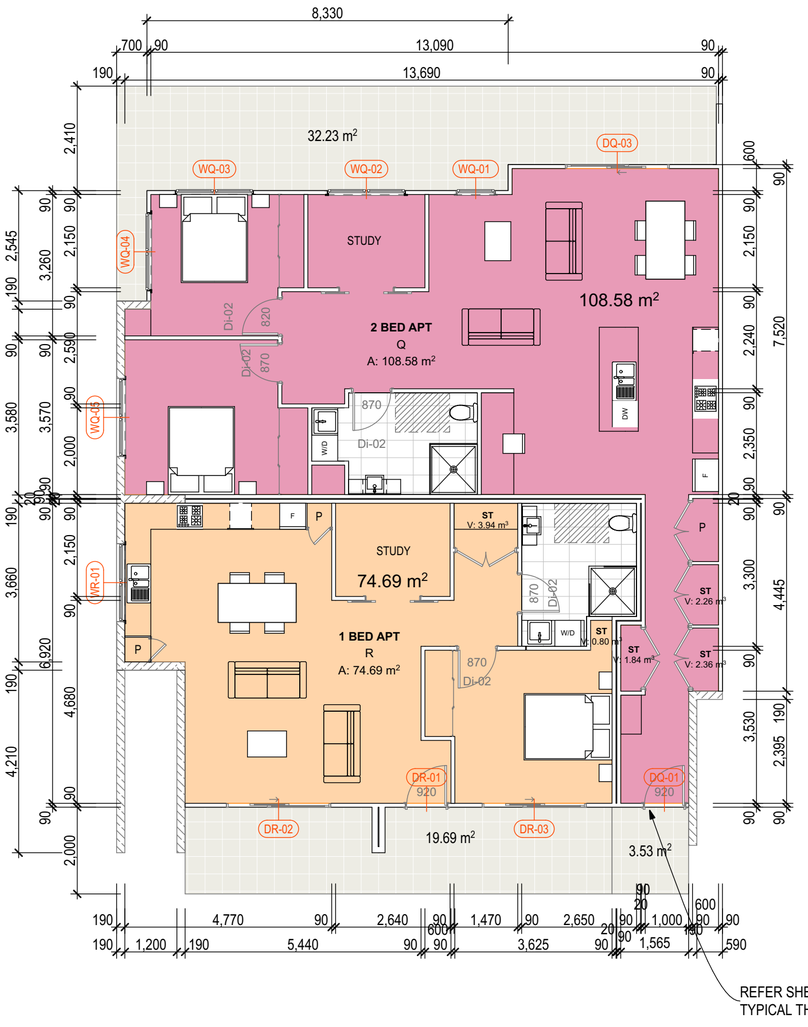
WINDOW SCHEDULE - Q					
Window No.	WQ-01	WQ-02	WQ-03	WQ-04	WQ-05
Dimensions	900×2,400	1,800×1,200	1,800×1,200	1,800×1,200	1,800×1,200
Surface Area	2.16	2.16	2.16	2.16	2.16
Sill Height					
Front View					
Window Type					
Glazing Type					
Frame Type					

DOOR SCHEDULE - R			
Door No.	DR-01	DR-02	DR-03
Dimensions	920×2,400	2,400×2,400	2,400×2,400
Surface Area	2.37	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

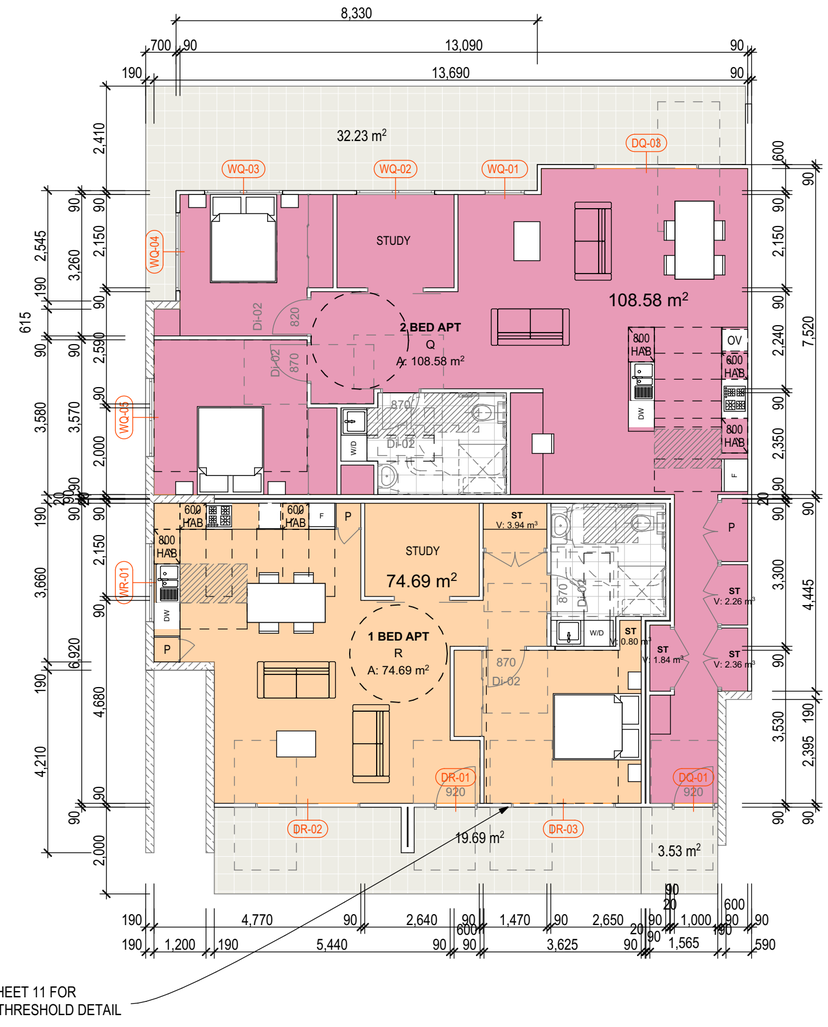
WINDOW SCHEDULE - R	
Window No.	WR-01
Dimensions	1,800×1,200
Surface Area	2.16
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

UNIT TYPE Q
TERRACE/BALCONY AREA: 28.40m²
STORAGE AREA (dwelling): 6.57m²
STORAGE AREA (basement): 4.60m²

UNIT TYPE R
TERRACE/BALCONY AREA: 27.45m²
STORAGE AREA (dwelling): 4.15m²
STORAGE AREA (basement): 4.60m²



UNIT TYPE Q & R - PRE ADAPTABLE
Scale 1:100



UNIT TYPE Q & R - POST ADAPTABLE
Scale 1:100

NOTES

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LEGEND :

EGL	Existing Ground Line
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PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
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DRAWING :
ADAPTABLE UNIT TYPES Q & R

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561

SCALES AS SHOWN | No. IN SET 17 of 32

DATE 15.12.23 | SHEET NUMBER DA-17P

DRAWN BY AJC

Print Date: 15/12/2023

coble stephens architects
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SCALE 0 1.0 2.0 3.0 4.0 5.0

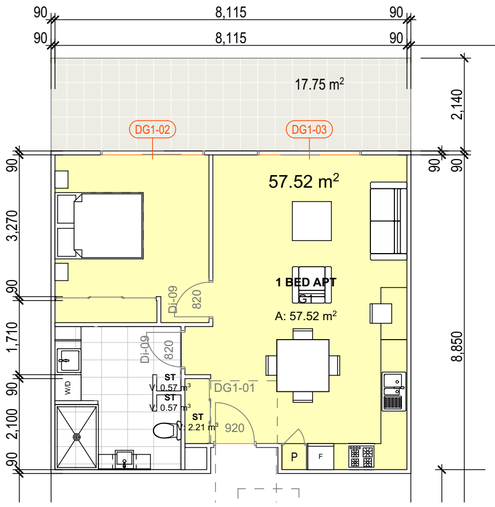
THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

DOOR SCHEDULE - G1			
Door No.	DG1-01	DG1-02	DG1-03
Dimensions	920×2,040	2,400×2,400	2,400×2,400
Surface Area	2.02	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

DOOR SCHEDULE - G2			
Door No.	DG2-01	DG2-02	DG2-03
Dimensions	920×2,040	2,400×2,400	2,400×2,400
Surface Area	2.02	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

DOOR SCHEDULE - J					
Door No.	DJ-01	DJ-02	DJ-03	DJ-04	DJ-05
Dimensions	920×2,040	2,400×2,400	2,400×2,400	1,800×2,400	1,800×2,400
Surface Area	2.02	5.76	5.76	4.32	4.32
Front View					
Door Type					
Glazing Type					
Frame Type					



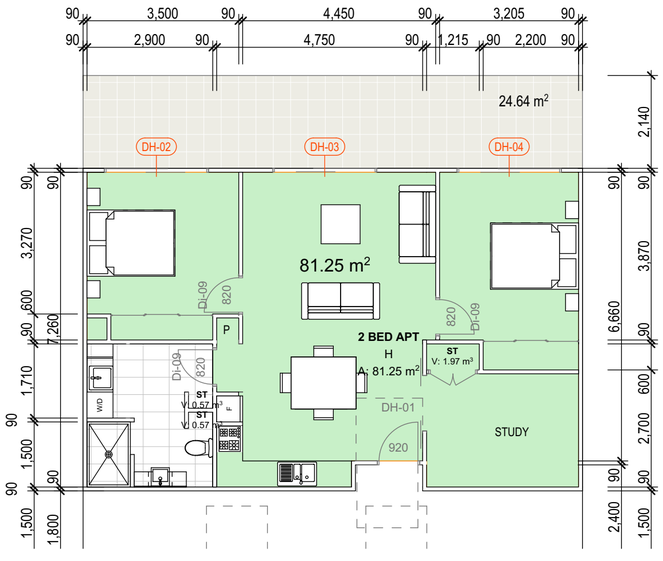
UNIT TYPE G1
Scale 1:100

UNIT TYPE G1
TERRACE/BALCONY AREA: 17.75m²
STORAGE AREA (dwelling): 3.11m²
STORAGE AREA (basement):min. 4.60m²

UNIT TYPE G2
TERRACE/BALCONY AREA: 18.54m²
STORAGE AREA (dwelling): 3.11m²
STORAGE AREA (basement):min. 4.60m²

DOOR SCHEDULE - H				
Door No.	DH-01	DH-02	DH-03	DH-04
Dimensions	920×2,040	2,400×2,400	2,400×2,400	2,400×2,400
Surface Area	2.02	5.76	5.76	5.76
Front View				
Door Type				
Glazing Type				
Frame Type				

UNIT TYPE H
TERRACE/BALCONY AREA: 24.64m²
STORAGE AREA (dwelling): 3.02m²
STORAGE AREA (basement):min. 4.60m²



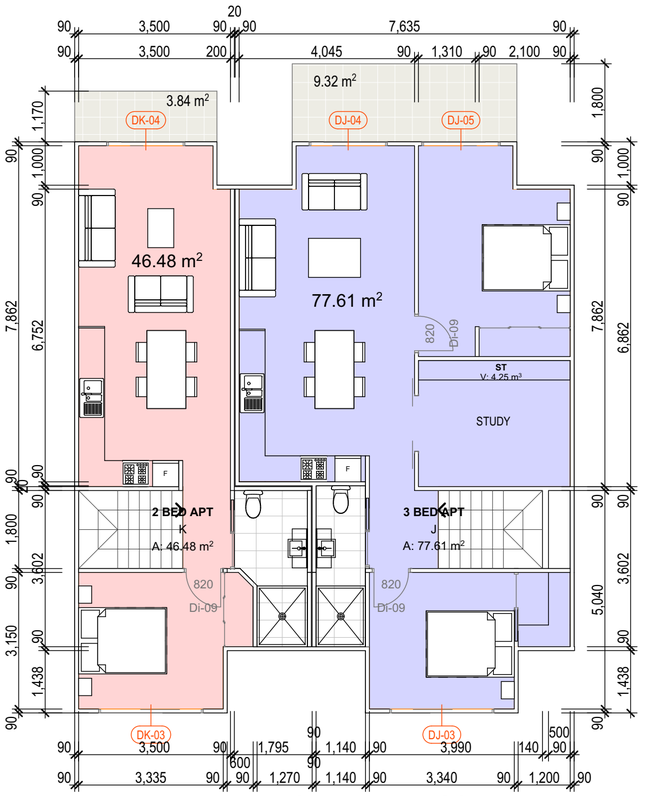
UNIT TYPE H
Scale 1:100

DOOR SCHEDULE - K				
Door No.	DK-01	DK-02	DK-03	DK-04
Dimensions	920×2,040	2,400×2,400	2,400×2,400	1,800×2,400
Surface Area	2.02	5.76	5.76	4.32
Front View				
Door Type				
Glazing Type				
Frame Type				

WINDOW SCHEDULE - J	
Window No.	WJ-01
Dimensions	900×1,200
Surface Area	1.08
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

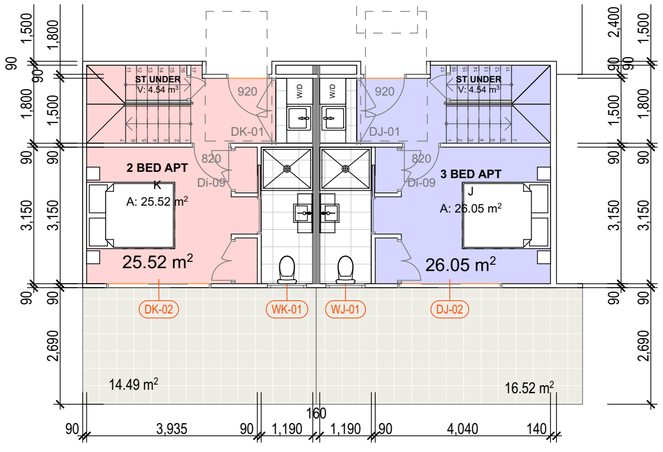
WINDOW SCHEDULE - K	
Window No.	WK-01
Dimensions	900×1,200
Surface Area	1.08
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

UNIT TYPE J
TERRACE/BALCONY AREA: 26.33m²
STORAGE AREA (dwelling): 5.16m²
STORAGE AREA (basement): min. 9.2m²

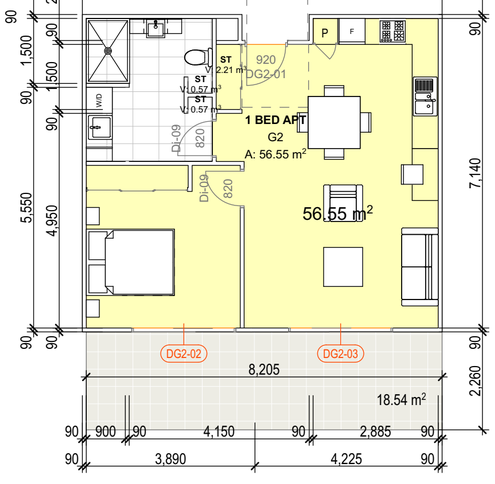


UNIT TYPE J & K UPPER FLOOR
Scale 1:100

UNIT TYPE K
TERRACE/BALCONY AREA: 17.59m²
STORAGE AREA (dwelling): 6.16m²
STORAGE AREA (basement): min. 4.6m²



UNIT TYPE J & K LOWER FLOOR
Scale 1:100



UNIT TYPE G2
Scale 1:100

NOTES

ALL DIMENSIONS TO BE CONFIRMED ON-SITE.
ALL TIMBER WORKS TO COMPLY WITH AS 1684 NATIONAL TIMBER FRAMING CODE.
ALL BRICKWORK TO COMPLY WITH AS 3700 MASONRY IN BUILDING.
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PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
HARD WIRED SMOKE ALARMS ARE TO BE INSTALLED THROUGHOUT NEW WORK AND TO COMPLY WITH NCC AND RELEVANT AUSTRALIAN STANDARD REQUIREMENTS.

LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
M	Development Application	30.09.22	AJC
N	DA Amend - Consultants Issue	24.09.23	AJC
	DA Amend - Council Submission	12.10.23	AJC
O	DA Amend - Client/Consultant Issue	28.11.23	AJC
P	DA Amend - Consultant Issue	15.12.23	AJC

PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at
1-5 Rainbow Road MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
TYPICAL UNIT TYPES G1, G2, H, J & K

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561
SCALES AS SHOWN
No. IN SET 18 of 32
DATE 15.12.23
SHEET NUMBER DA-18P
DRAWN BY A J C
Print Date: 15/12/2023

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Ph 02 4869 5395 ■ Fax 02 4869 5495 ■ cs.arch@bigpond.net.au
Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

SCALE 0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

DOOR SCHEDULE - L					
Door No.	DL-01	DL-02	DL-03	DL-04	DL-05
Dimensions	920×2,340	2,400×2,400	1,800×2,400	1,800×2,400	2,400×2,400
Surface Area	2.31	5.76	4.32	4.32	5.76
Front View					
Door Type					
Glazing Type					
Frame Type					

WINDOW SCHEDULE - L	
Window No.	WL-01
Dimensions	900×2,400
Surface Area	2.16
Sill Height	
Front View	
Window Type	
Glazing Type	
Frame Type	

DOOR SCHEDULE - M			
Door No.	DM-01	DM-02	DM-03
Dimensions	920×2,340	2,400×2,400	2,400×2,400
Surface Area	2.31	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

WINDOW SCHEDULE - M			
Window No.	WM-01	WM-02	WM-03
Dimensions	1,200×600	2,100×1,200	2,100×1,200
Surface Area	0.72	2.52	2.52
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			

UNIT TYPE P
TERRACE/BALCONY AREA: min. 43.57m²
STORAGE AREA (dwelling): 4.24m²
STORAGE AREA (basement): min. 4.6m²

DOOR SCHEDULE - P			
Door No.	DP-01	DP-02	DP-03
Dimensions	920×2,340	2,400×2,400	2,400×2,400
Surface Area	2.31	5.76	5.76
Front View			
Door Type			
Glazing Type			
Frame Type			

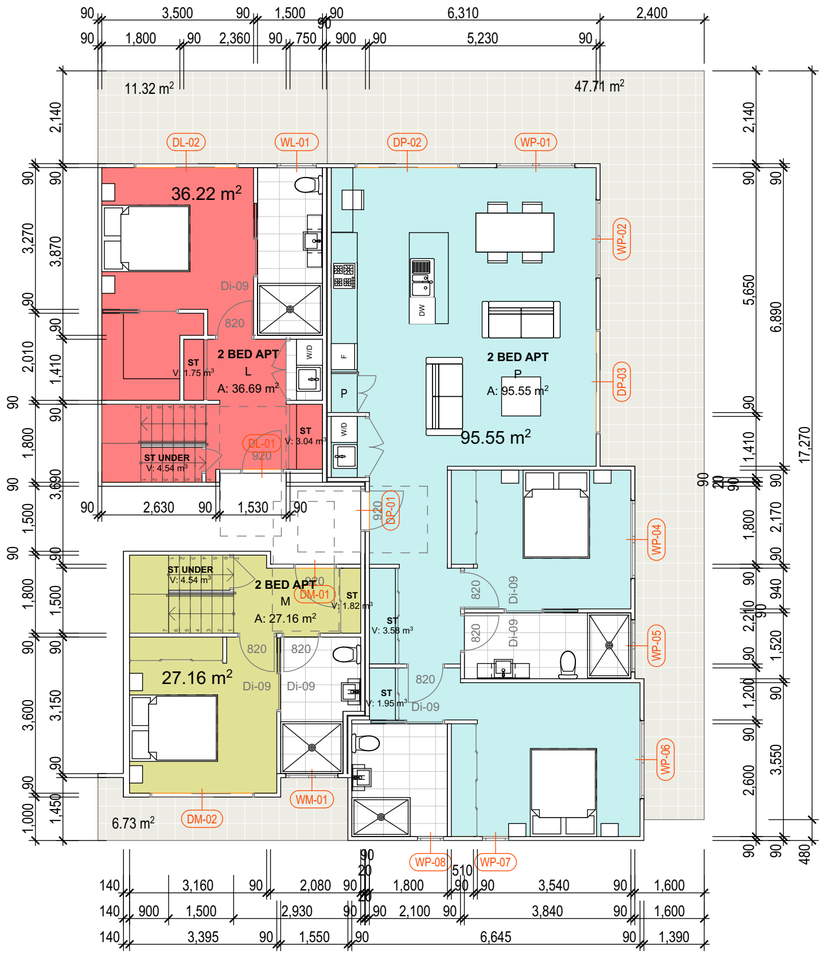
WINDOW SCHEDULE - P							
Window No.	WP-01	WP-02	WP-04	WP-05	WP-06	WP-07	WP-08
Dimensions	1,800×1,200	1,800×1,200	1,800×1,200	1,200×600	1,800×1,200	600×1,200	600×1,200
Surface Area	2.16	2.16	2.16	0.72	2.16	0.72	0.72
Sill Height							
Front View							
Window Type							
Glazing Type							
Frame Type							

DOOR SCHEDULE - S1		
Door No.	DS1-01	DS1-02
Dimensions	920×2,340	2,400×2,400
Surface Area	2.31	5.76
Front View		
Door Type		
Glazing Type		
Frame Type		

WINDOW SCHEDULE - S1			
Window No.	WS1-01	WS1-03	WS1-04
Dimensions	1,200×600	1,800×1,200	1,800×1,200
Surface Area	0.72	2.16	2.16
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			

DOOR SCHEDULE - S2		
Door No.	DS2-01	DS2-02
Dimensions	920×2,340	2,400×2,400
Surface Area	2.31	5.76
Front View		
Door Type		
Glazing Type		
Frame Type		

WINDOW SCHEDULE - S2			
Window No.	WS2-01	WS2-02	WS2-03
Dimensions	1,800×1,200	1,800×1,200	1,800×1,200
Surface Area	2.16	2.16	2.16
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			



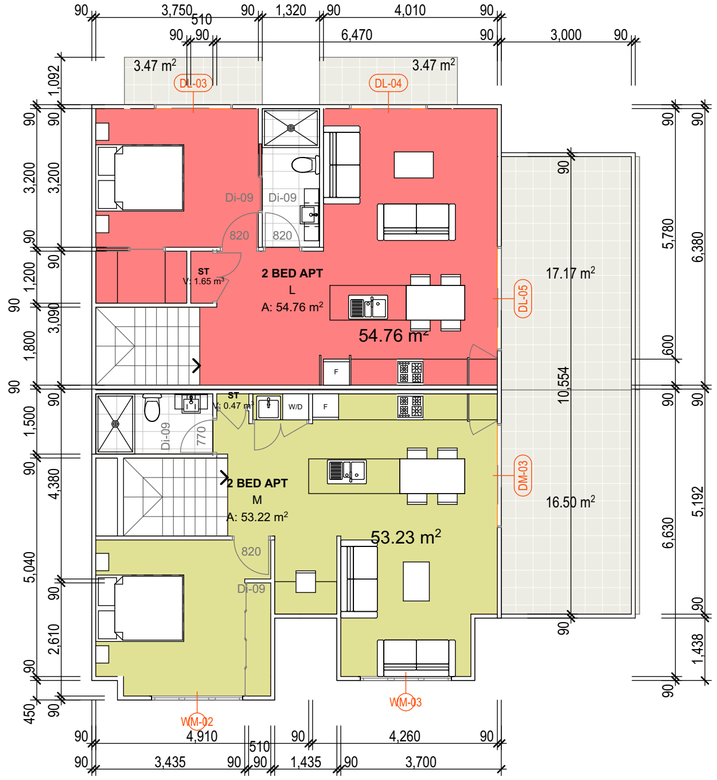
UNIT TYPE L & M & P LOWER FLOOR
Scale 1:100

UNIT TYPE L
TERRACE/BALCONY AREA: 35.43m²
STORAGE AREA (dwelling): 9.23m²
STORAGE AREA (basement): min. 4.60m²

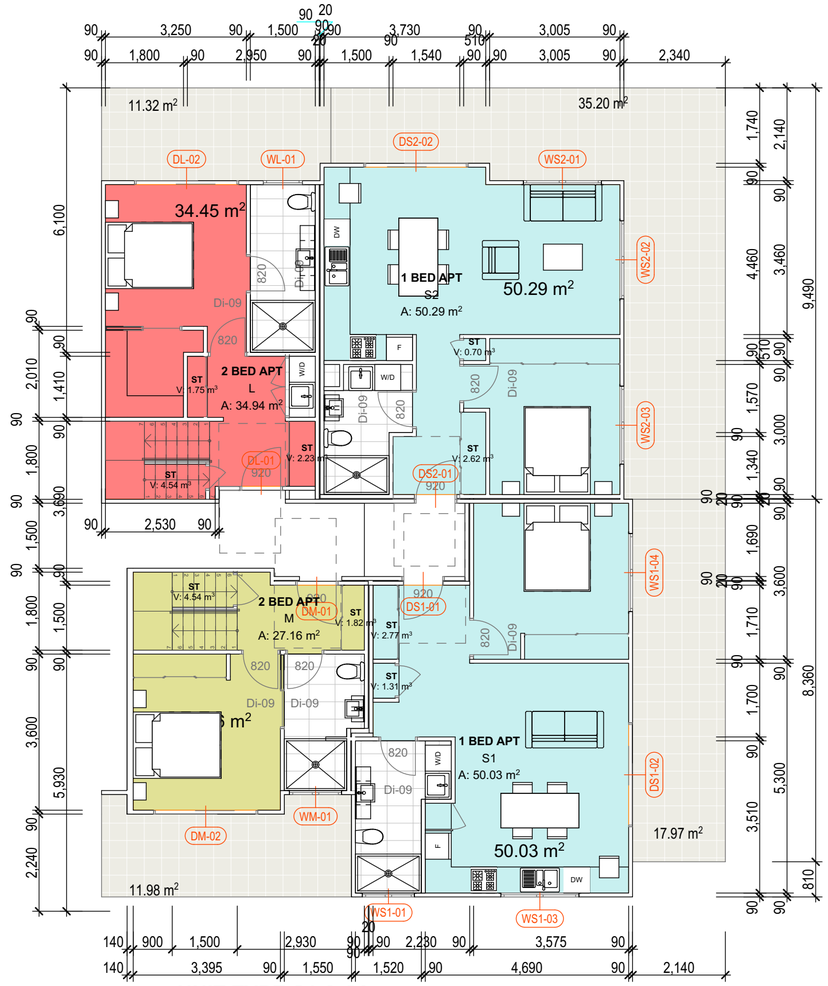
UNIT TYPE M
TERRACE/BALCONY AREA: 30.38m²
STORAGE AREA (dwelling): 6.83m²
STORAGE AREA (basement): min. 4.60m²

UNIT TYPE S1
TERRACE/BALCONY AREA: 17.97m²
STORAGE AREA (dwelling): 4.23m²
STORAGE AREA (basement): min. 4.60m²

UNIT TYPE S2
TERRACE/BALCONY AREA: 35.20m²
STORAGE AREA (dwelling): 3.32m²
STORAGE AREA (basement): min. 4.60m²



UNIT TYPE L & M UPPER FLOOR
Scale 1:100



UNIT TYPE S1 & S2
Scale 1:100

NOTES

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Do not scale off this drawing. Only figured dimensions are to be used. Any discrepancy in the document is to be referred to the company for clarification before proceeding with any work.

LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

REV	AMENDMENT	DATE	BY
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L	DD - Consultant Issue - Car Parking	06.07.22	AJC
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P	DA Amend - Consultant Issue	15.12.23	AJC

PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT

at
1-5 Rainbow Road MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
TYPICAL UNIT TYPES L, M & S1 & S2

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561
SCALES AS SHOWN
No. IN SET 19 of 32
DATE 15.12.23
SHEET NUMBER DA-19P
DRAWN BY A J C
Print Date: 15/12/2023

coble stephens architects
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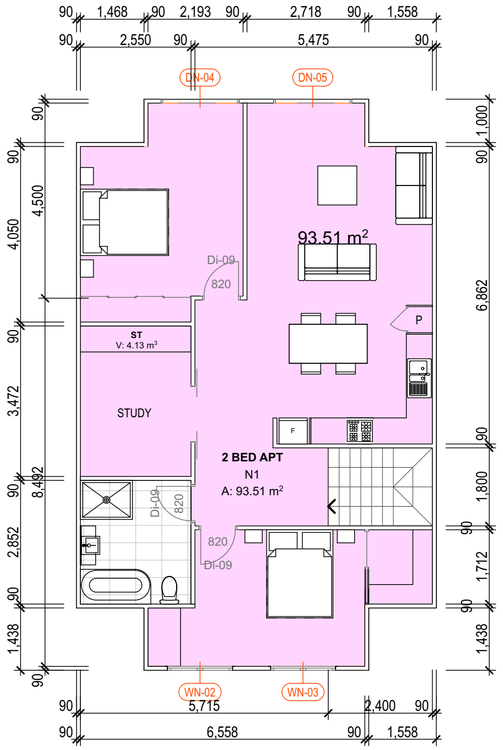
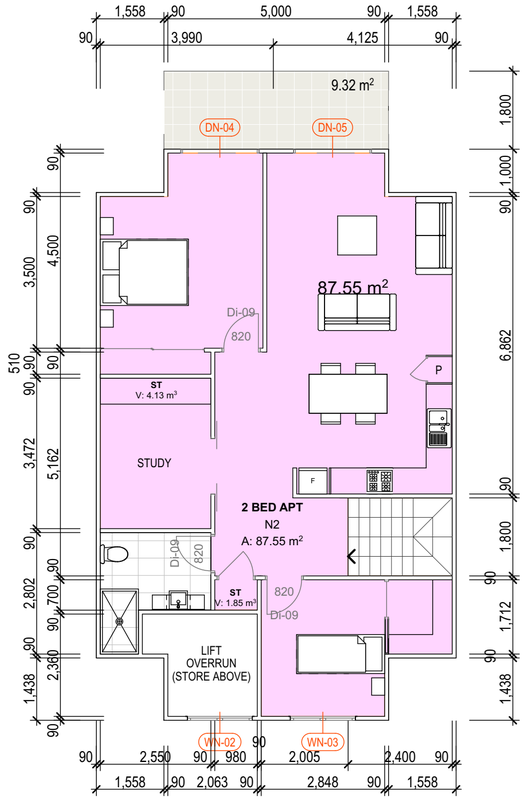
Ph 02 4869 5395 ■ Fax 02 4869 5495 ■ cs.arch@bigpond.net.au
Andrew Coble Architects Registration 6922 Alison Stephens Architects Registration 6678

SCALE 0 1.0 2.0 3.0 4.0 5.0
THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

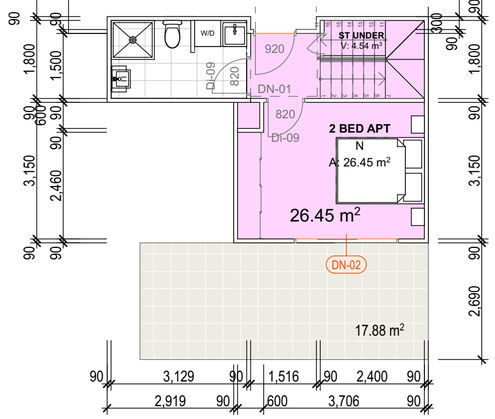
A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL



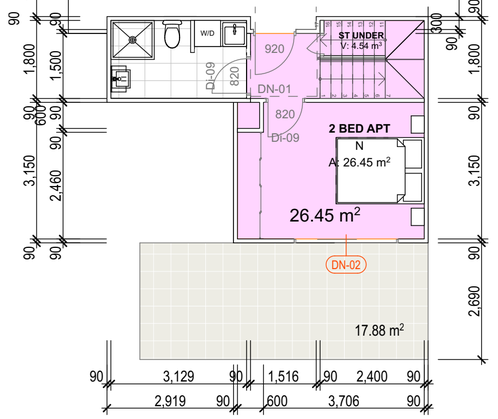
UNIT TYPE N1 UPPER FLOOR
Scale 1:100



UNIT TYPE N2 UPPER FLOOR
Scale 1:100



UNIT TYPE N1 LOWER FLOOR
Scale 1:100



UNIT TYPE N2 LOWER FLOOR
Scale 1:100

DOOR SCHEDULE - N

Door No.	DN-01	DN-02	DN-04	DN-05
Dimensions	920×2,040	2,400×2,400	1,800×2,400	1,800×2,400
Surface Area	2.02	5.76	4.32	4.32
Front View				
Door Type				
Glazing Type				
Frame Type				

WINDOW SCHEDULE - N

Window No.	WN-02	WN-03
Dimensions	1,500×1,200	1,500×1,200
Surface Area	1.80	1.80
Sill Height		
Front View		
Window Type		
Glazing Type		
Frame Type		

DOOR SCHEDULE - O

Door No.	DO-01	DO-02	DO-03	DO-04
Dimensions	920×2,040	2,400×2,400	1,800×2,400	1,800×2,400
Surface Area	2.02	5.76	4.32	4.32
Front View				
Door Type				
Glazing Type				
Frame Type				

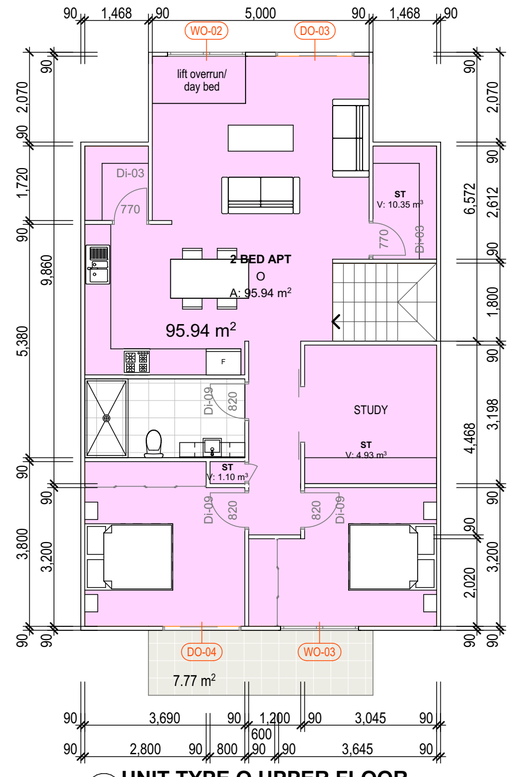
WINDOW SCHEDULE - O

Window No.	WO-01	WO-02	WO-03
Dimensions	900×1,200	1,800×1,200	1,800×2,400
Surface Area	1.08	2.16	4.32
Sill Height			
Front View			
Window Type			
Glazing Type			
Frame Type			

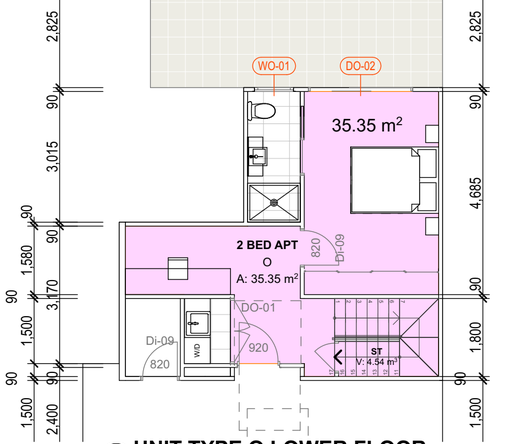
UNIT TYPE N1
TERRACE/BALCONY AREA: 27.20m²
STORAGE AREA (dwelling): 8.67m²
STORAGE AREA (basement): min. 4.60m²

UNIT TYPE N2
TERRACE/BALCONY AREA: 27.20m²
STORAGE AREA (dwelling): 10.52m²
STORAGE AREA (basement): min. 4.60m²

UNIT TYPE O
TERRACE/BALCONY AREA: 26.80m²
STORAGE AREA (dwelling): 10.57m²
STORAGE AREA (basement): min. 4.60m²



UNIT TYPE O UPPER FLOOR
Scale 1:100



UNIT TYPE O LOWER FLOOR
Scale 1:100

NOTES

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LEGEND :

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EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

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PROJECT :
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at
1-5 Rainbow Road
MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
TYPICAL UNIT TYPES N, O

NOT FOR CONSTRUCTION

CSA JOB NO. : 610-21-561
SCALES AS SHOWN
No. IN SET 20 of 32
DATE 15.12.23
SHEET NUMBER DA-20P
DRAWN BY A J C
Print Date: 15/12/2023

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SCALE 0 1.0 2.0 3.0 4.0 5.0

THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL

16.0 SOIL AND WATER MANAGEMENT

16.1 EXTENT OF WORKS

Incorporate requirements to comply with the New South Wales Clean Water Act, Soil Conservation Act, and other relevant legislation.

16.2 INTRODUCTION

Erosion and sediment control measures are to be implemented on the site. These works are to be maintained and/or varied as specified during the contract period unless the area they protect is rehabilitated via landscaping, turfing or other landscaping method.

16.3 LEGISLATION

The Clean Waters Act, 1970, as amended, prohibits a person polluting any waters as defined under the Act. No solid, liquid or gaseous matter is to be placed in a position where it is likely to fall, descend, be washed, be blown or percolate into unconfined surface water, a natural or artificial watercourse, drain, channel or gutter used to convey rainwater, stormwater, floodwater, or unpolluted water.

The Act is enforced under the Environment Offences & Penalties Act, 1989 with stiff penalties for offences ranging from "on the spot" infringement notices to fines for corporations and fines and/or imprisonment of individuals.

The contractor shall make all site workers and sub-contractors aware of their responsibilities to minimise the potential for soil erosion and pollution to downslope lands and waters.

16.4 GEOFABRIC "SILT" FENCING

Construct "silt" fencing on the upslope side of "clean water diversion banks" where shown on the Soil & Water Management Plan.

Excavate a 100mm wide x 200mm deep trench along each length of the proposed "silt" fence on the upslope side. Supply 1200mm long painted steel star pickets and drive each 600mm into the ground at maximum 2000mm centres in front of the trench. Fix F818 mesh x 500mm high to the star pickets where joins occur in mesh.

Provide geotextile fabric equal to "Bidim" as supplied by Geofabrics Australasia, Ph (02) 821 3277. Lay in trench and over mesh on the upslope side. Turn-down over top edge and tie at 1000mm centres both horizontally and vertically overall with 1.26mm tie wire. Fill and compact trench burying the fabric's bottom edge.

Repair "silt fencing when required or as directed. Replace damaged or torn sections, straighten and/or redrive pickets and retie when the mesh or fabric comes adrift.

16.5 SEDIMENT TRAP

Construct sediment traps to the sizes and in the locations shown on Soil & Water Management Plan.

16.6 DIVERSION BANKS

Construct "clean water diversion banks" as shown on the Soil & Water Management Plan.

Incorporate a 300mm minimum deep spoon drain on the upslope side to carry water to the sediment trap. Diversion banks are to be repositioned if required as construction work proceeds.

16.7 TEMPORARY STRAW BALE BUNDS

Straw bales are to be used in temporary situations, i.e. whilst installing control measures or when a control measure has been partially or fully dismantled to permit building works to proceed.

Use only bales bound with wire and placed lengthwise in twin rows with straws parallel to the ground surface. Lay the bale flat and embed 100mm minimum into the downslope side. Secure each bale by driving two wooden stakes or steel pickets through the centre. The soil immediately upslope from the bale is to be compacted to prevent piping. Replace bales where deterioration or straw loss occurs.

16.8 EARTHWORKS

Earthworks are to be carried out in stages starting from the sediment trap and progressing upslope. Protect the immediate work area with temporary straw bale bunds.

Remove any topsoil layer as specified. Excavate or fill to finished ground level with allowance for topsoil and planting requirements. Construct any retaining structures as detailed and/or batter slopes to contain existing or filled ground. Rehabilitate surface drains where building works are delayed by more than 20 days.

16.9 STORMWATER DRAINAGE

Stormwater drainage lines and pits which are to be used for discharging sediment traps shall be installed during earthworks. The contractor is to allow in the tender for any additional works necessary to stormwater lines or to deepen any pit in order to suit the pipe's invert.

Where temporary access roads or delivery vehicular routes cross spoon drains, provide a 300mm dia concrete class "Y" pipeline under the access lane with mass concrete headwall either side. Maintain sufficient cover so that construction traffic does not crush the pipe. Where necessary, build up the surface level using compacted fill and taper back to finished ground level either side.

16.10 DRAIN REHABILITATION

All spoon drains shall be rehabilitated where building works are delayed by more than 20 days. Cover the surface with jute mesh or other biodegradable blanket. Bury each fabric length's top edge strip into a 150mm deep trench and tamp full with soil. Secure staples located 100mm below trench. Overlap top length 300mm over lower length and staple as before. Provide erosion stops comprising a fold in the fabric setdown in a 150mm deep tamped slit trench with staples both sides, at 1500mm centres. Staple outside edges at 300mm centres where two or more strip widths are required, overlap 100mm and staple at 400mm centres. Staples shall be 8 gauge wire formed into a "U" shaped peg, 250mm long, with legs 40mm apart.

After wetting, spray the fabric in place with medium setting anionic bitumen emulsion in accordance with manufacturer's recommendation.

16.11 VARIATIONS TO CONTROL MEASURES

Allow in tender to relocate control measures from time to time to suit the construction programme and to permit building construction works to proceed whilst still maintaining adequate protection to downslope lands and waters.

16.12 MAINTENANCE

All sediment and erosion control measures shall be maintained in a satisfactory working order throughout the contract or up until such time as the area which they protect is rehabilitated.

The contractor shall inspect the site weekly to ensure that:

- § Control measures operate effectively and to initiate repairs or maintenance as required.
- § Spilled material is removed from hazard areas including likely areas of concentrated or high velocity flows such as spoon drains, gutters, paved areas and driveways.
- § Traps when 10% capacity is trapped in the settling zone.
- § Gravel or other filter materials are clean and have been reinstated or replaced to maintain effective performance.

All devices are to be inspected after each storm for structural damage or clogging by silt or other debris and to make prompt repairs or replacement.

16.13 FINAL SITE LANDSCAPING

Final site landscaping is to be undertaken as soon as possible in any precinct after building activities surrounding the buildings are completed.

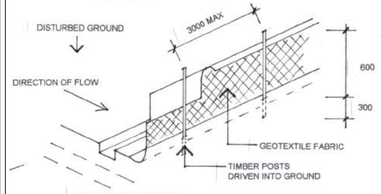
16.14 REINSTATEMENT

Remove all construction and materials use din these soil and water control measures from the site when they cease to perform effectively and are replaced, are damaged or are no longer required.

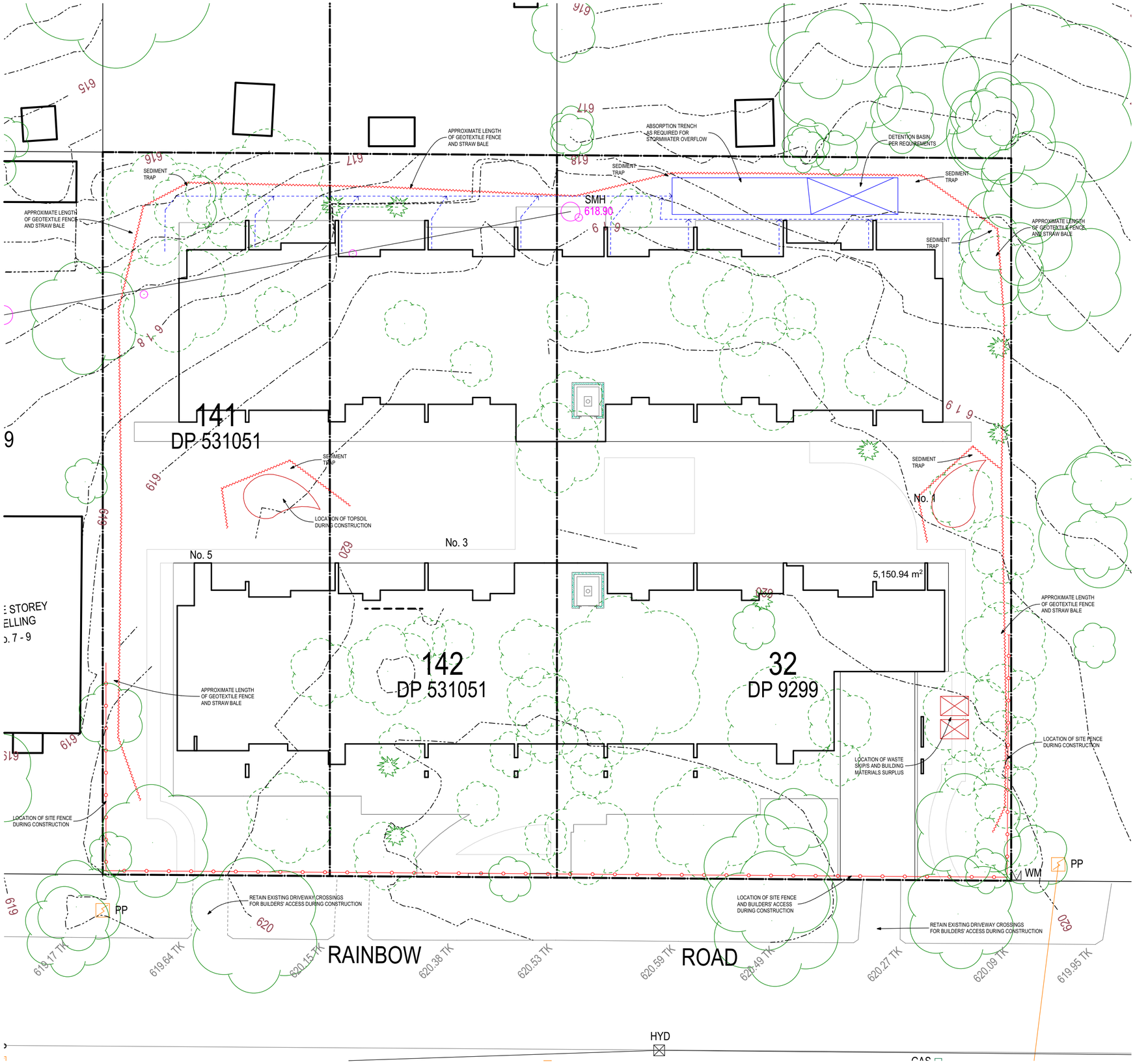
Reinstate the finished ground level around the works after it is determined that the areas they protect are satisfactorily rehabilitated. Fill spoon drains using approved compacted fill. Level banks and remove surplus soil.

SEDIMENT CONTROL NOTES

1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES, INCLUDING REVEGETATION AND STORAGE OF SOIL, SHALL BE IMPLEMENTED TO THE STANDARDS OF THE SOIL CONSERVATION OF NSW.
2. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS SOON AS POSSIBLE DURING DEVELOPMENT.
3. SEDIMENT STRAPS SHALL BE CONSTRUCTED AROUND ALL INLET PITS, CONSISTING OF 300mm WIDE x 300mm DEEP TRENCH.
4. ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEARED WHEN THE STRUCTURES ARE A MINIMUM OF 60% FULL OF SOIL MATERIALS, INCLUDING THE MAINTENANCE PERIOD.
5. ALL DISTURBED AREAS SHALL BE REVEGITATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED.
6. SOIL AND STOCKPILES SHALL BE LOCATED AWAY FROM DRAINAGE LINES AND AREA WHERE WATER MAY CONCENTRATE.
7. FILTER SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR APPROVED EQUIVALENT) BETWEEN POSTS AT 3.0m CENTRES. FABRIC SHALL BE BURIED 150mm ALONG ITS LOWER EDGE.



SEDIMENT FENCE



LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

NOTES

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ALL BRICKWORK TO COMPLY WITH AS 3700 MASONRY IN BUILDING.
TERMITE RESISTANT TIMBER FRAMES AND TRUSSES. PROVIDE TERMITE BARRIER IN ACCORDANCE WITH AS 3660.1.
HARD WIRED SMOKE ALARMS ARE TO BE INSTALLED THROUGHOUT NEW WORK AND TO COMPLY WITH NCC AND RELEVANT AUSTRALIAN STANDARD REQUIREMENTS.

AMENDMENTS

REV	AMENDMENT	DATE	BY
J	Design Development - Consultant Issue	07.04.22	AJC
L	DD - Consultant Issue - Car Parking	06.07.22	AJC
M	Pre DA- Consultant Issue - Floor levels dropped. Circulation core amended	02.09.22	AJC
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PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at 1-5 Rainbow Road MITTAGONG NSW Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
SITE MANAGEMENT PLAN

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

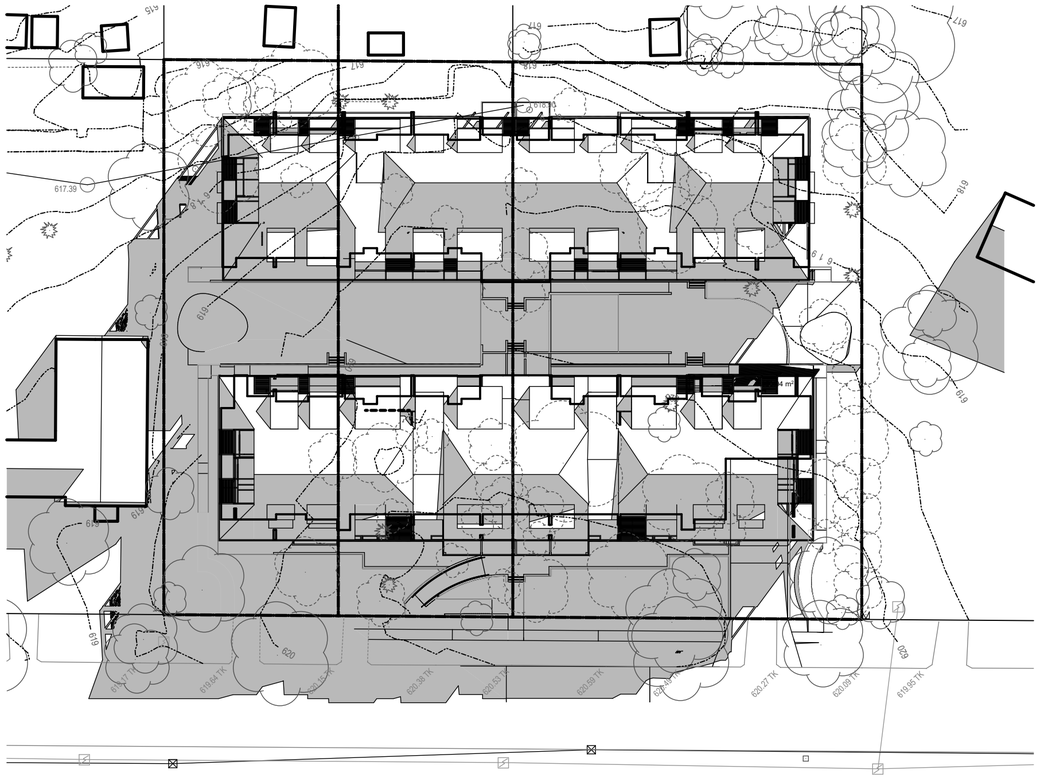
SCALES **as shown**
No. IN SET **21 of 32**
DATE **15.12.23**
SHEET NUMBER **DA-21P**
DRAWN BY **A J C**

SCALE 1:100 @ A2
0 1.0 2.0 3.0 4.0 5.0

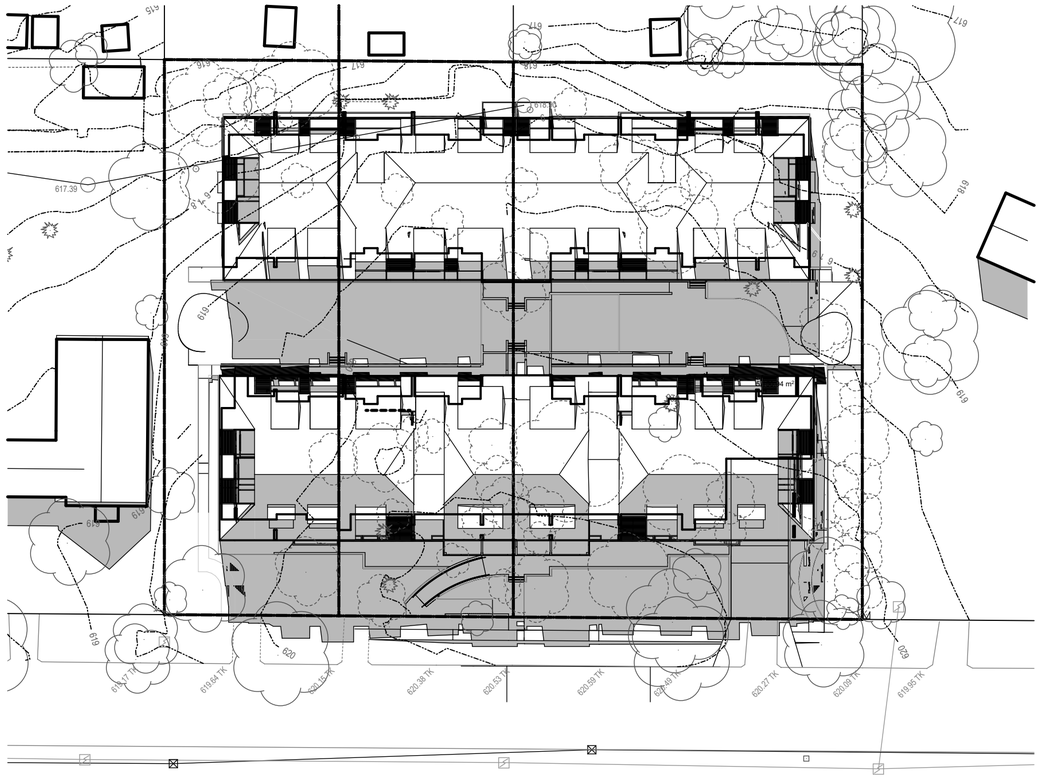
THESE DRAWINGS HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION

Print date 15/12/2023

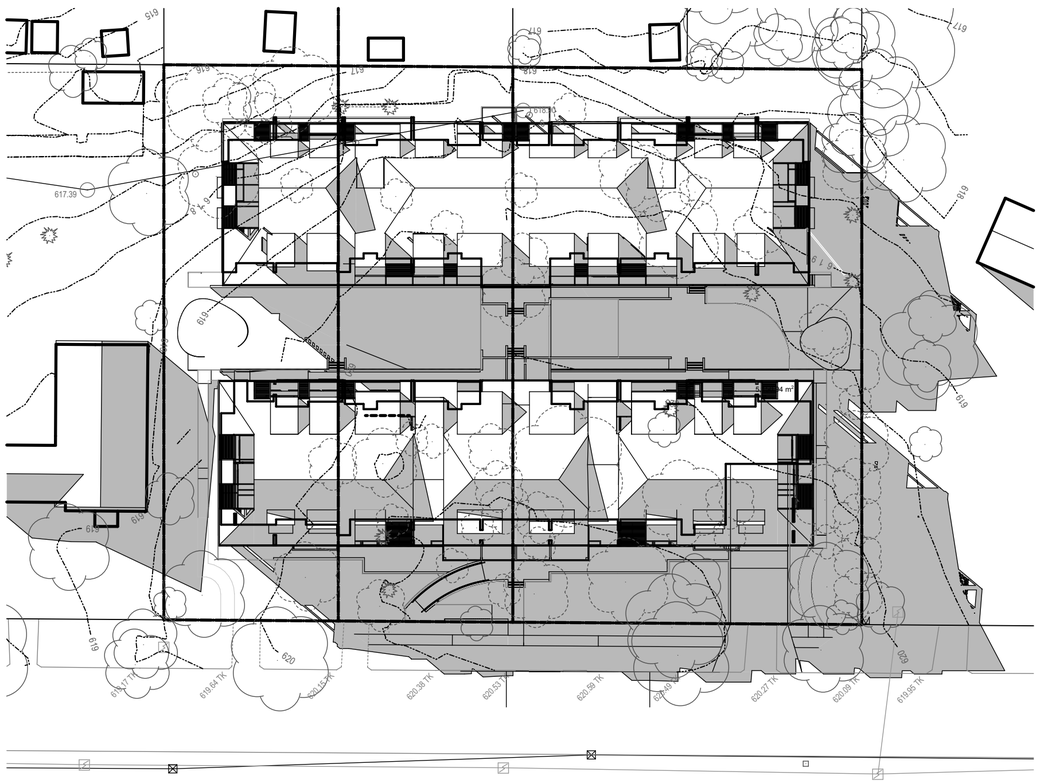
A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE
200
300mm ON ORIGINAL



SHADOW DIAGRAM - JUNE 21ST 9AM
Scale 1:500



SHADOW DIAGRAM - JUNE 21ST 12PM
Scale 1:500



SHADOW DIAGRAM - JUNE 21ST 9AM
Scale 1:500

12M HEIGHT LINE

NORTH

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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PROJECT :

PROPOSED NEW AFFORDABLE HOUSING PROJECT

at 1-5 Rainbow Road MITTAGONG NSW Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :

Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :

SHADOW DIAGRAMS - JUNE 21ST & 12M HEIGHT LIMIT INDICATION

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **as shown**
No. IN SET **23 of 32**
DATE **15.12.23**
SHEET NUMBER **DA-23P**
DRAWN BY **A J C**

SCALE 1:100 @ A2
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A2 0 10 20 30 40 50 60 70 80 90 100
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
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300mm ON ORIGINAL

BASIX Project Commitments — BASIX Number: 1334291M

Proposed: Class 2 Apartment Units
Address: 1-5 Rainbow Road Mittagong 2575
Lot No / DP: 32/9299

Water

Fixtures	Specification
Shower head rating	4 star (> 4.5 but <= 6 L/min)
Toilet rating	4 star
Kitchen taps rating	4 star
Bathroom taps rating	4 star
All Clotheswashers	4 star
All Dishwashers	4 star

Alternative water details		
Rainwater tank size		None
Connected to:	Garden and lawn areas	No
	All toilets	No
	Laundry	No

Thermal Comfort — Accreditation Number: HERA 10056 — NatHERS Number: 0008145300

External walls	Requirements		
Metal clad	Medium colour	R2.5	Bulk + Anti-glare foil
Fibro cavity panel direct fix	Medium colour	R2.5	Bulk + Anti-glare foil
Metal clad	Dark colour	R4.6	Bulk + Reflective side down, Anitglare above

Internal walls	
Cavity wall, direct fix plasterboard	No insulation

Partition walls	
Double stud with plasterboard	Bulk insulation in the centre R1

Ceiling	
External ceiling - Plasterboard	R3.5 Bulk insulation
Internal ceiling - Plasterboard	No insulation

Roof	
Corrugated iron	Dark Colour (solar absorptance >0.70) R1.8 Bulk + Reflective side down, Anitglare above

Floors		
Concrete slab on ground		No insulation
Suspended concrete slab	Above Car Park	R1.0 Bulk insulation

Windows		
Aluminium frame ALM-001-01	all other units	Single Clear glazing with U-value 6.70 and SHGC 0.57 for Group A windows (awning, bifold, casement and tilt 'n' turn type windows/doors)
Aluminium frame ALM-002-01	all other units	Single Clear glazing with U-value 6.7 and SHGC 0.7 for Group B windows (double hung, fixed, louvres and sliding type windows/doors)
Aluminium frame ALM-003-01	unit 1	Double air-fill clear glazing with U-value 4.8 and SHGC 0.51 for Group A windows (awning, bifold, casement and tilt 'n' turn type windows/doors)
Aluminium frame ALM-004-01	unit 1	Double air-fill clear glazing with U-value 4.8 and SHGC 0.59 for Group B windows (double hung, fixed, louvres and sliding type windows/doors)
Aluminium frame ALM-004-03	unit 18, 21, 33, 37, 39	Double air-fill low-e glazing with U-value 4.3 and SHGC 0.53 for Group B windows (double hung, fixed, louvres and sliding type windows/doors)
Aluminium frame ALM-003-03	unit 21, 37, 39	Double air-fill low-e glazing with U-value 4.3 and SHGC 0.47 for Group A windows (awning, bifold, casement and tilt 'n' turn type windows/doors)

Downlights	
Downlight Covers	Approved fireproof downlight covers must be installed to all downlights in ceilings where insulation is installed.
Lighting specification	Dwelling is rated without downlight
Overshadowing details	Adjoining units calculated into model calculations

Site	
Orientation of nominal north elevation	As shown on plans

Energy

Hot water	Specification	Rating
Central system	Gas instantaneous	
Ventilation		
Bathroom exhaust	Individual fan, not ducted	
Control switch	Manual switch on/off	
Kitchen exhaust	Individual fan, not ducted	
Control switch	Manual switch on/off	
Laundry	Individual fan, not ducted	
Control switch	Manual switch on/off	
Cooling		
Individual systems - living areas	Ceiling fans + 1-phase airconditioning	EER 3.5 - 4.0
Individual systems - bedroom areas	Ceiling fans + 1-phase airconditioning	EER 3.5 - 4.0
Heating		
Individual systems - living areas	1-phase airconditioning	EER 3.5 - 4.0
Individual systems - bedroom areas	1-phase airconditioning	EER 3.5 - 4.0
Lighting		
Carpark	Light-emitting diode	Daylight sensor and motion sensor
Switch rooms	Light-emitting diode	Motion sensors
Garbage room	Light-emitting diode	Motion sensors
Plant/Service room	Light-emitting diode	Motion sensors
Hallway/Lobby	Light-emitting diode	Daylight sensor and motion sensor
Appliances		
Cooktop/oven	Electric cooktop & electric oven	
Ventilated fridge space	No	
Private outdoor clothes drying line	No	
Private Indoor or sheltered clothes drying line	No	
Zoned Air-conditioning	No	
Alternative Energy		
Photovoltaic System	50 kW	

LEGEND

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

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PROJECT :
PROPOSED NEW AFFORDABLE HOUSING PROJECT
at 1-5 Rainbow Road MITTAGONG NSW Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :
Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :
ENERGY REQUIREMENTS

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **as shown**
No. IN SET **22 of 32**
DATE **15.12.23**
SHEET NUMBER **DA-22P**
DRAWN BY **A J C**

SCALE 1:100 @ A2
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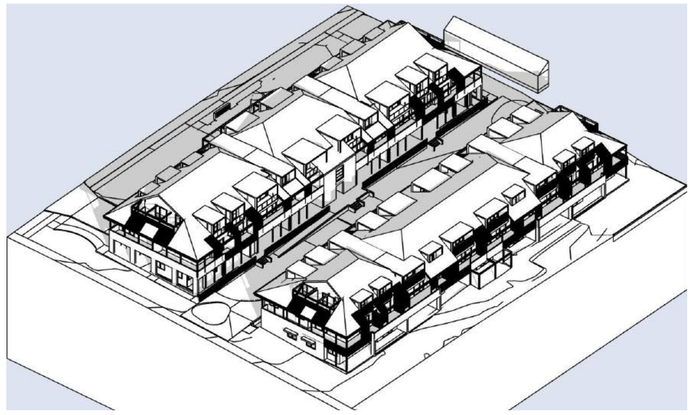
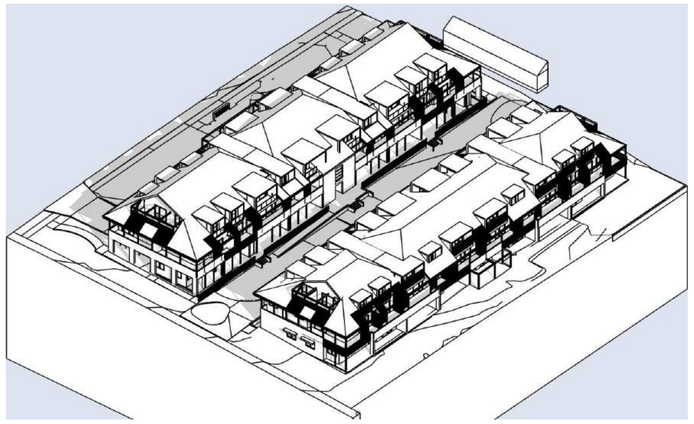
Print date 15/12/2023



AXONOMETRIC - JUNE 21ST 9AM



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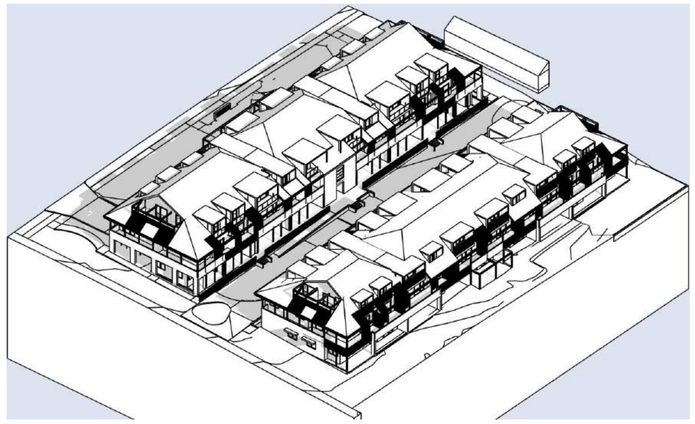

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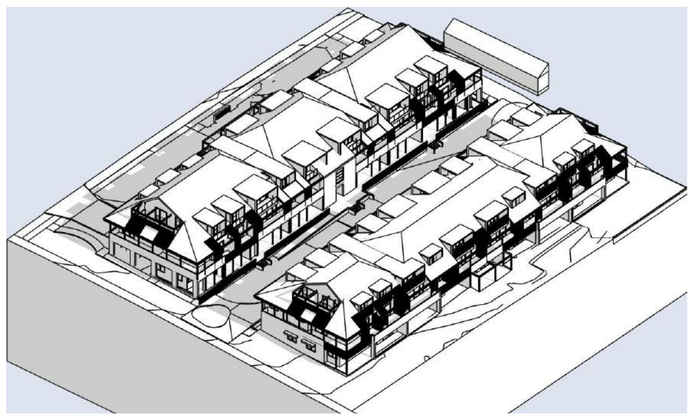

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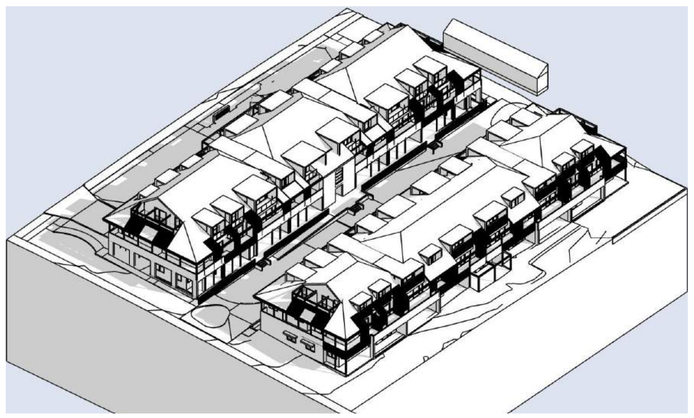

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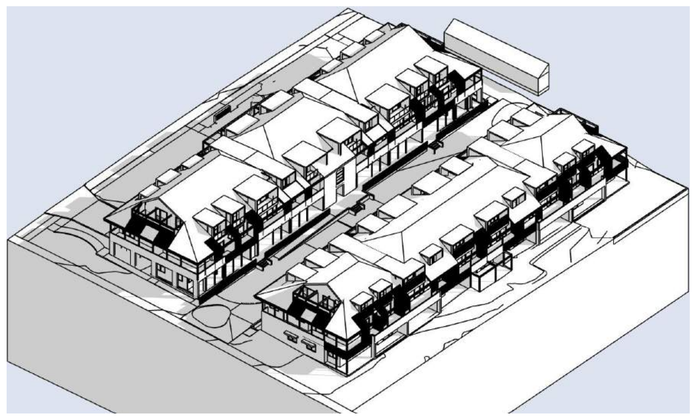

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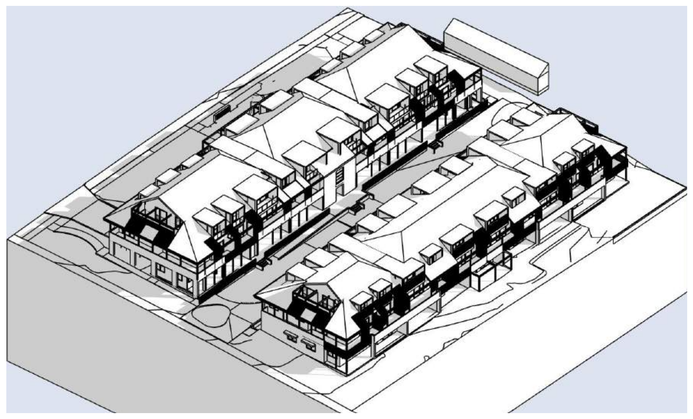

AXONOMETRIC - JUNE 21ST 3PM

NOTES

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Do not scale off this drawing. Only figured dimensions are to be used. Any discrepancy in the document is to be referred to the company for clarification before proceeding with any work.

LEGEND :

EGL	Existing Ground Line
RB	Rendered Brickwork
FB	Selected Face Brickwork
PFC	Painted Fibre Cement
WRC	Western Red Cedar Panelling
TB	Finished Timber
PER	Painted Timber Pergola
SKL	Fixed Skylight
DP	Colorbond Downpipe
EG	Colorbond Eaves Gutter
RWT	min. 3000L Rain Water Tank
PFD	Selected Panelfold Garage Door
AS	Aluminium Framed Windows
PAR	Selected Colorbond Paraline

SMOKE ALARM - LOCATION PER BCA CL 3.7.5.3

AMENDMENTS

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PROJECT :

PROPOSED NEW AFFORDABLE HOUSING PROJECT

at
1-5 Rainbow Road MITTAGONG Lot 32, DP 9299 & Lots 141-142, DP 531051

CLIENT :

Robsea Nominees Pty Ltd & Bilgola Beach Pty Ltd

DRAWING :

SHADOW DIAGRAMS - AXONOMETRIC JUNE 21ST

NOT FOR CONSTRUCTION

CSA JOB NO. : **610-21-561**

SCALES **AS SHOWN**

No. IN SET **24 of 32**

DATE **15.12.23**

SHEET NUMBER **DA-24P**

DRAWN BY **A J C**

Print Date: 15/12/2023

coble stephens architects

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SCALE 0 1.0 2.0 3.0 4.0 5.0

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A2 0 10 20 30 40 50 60 70 80 90 100

FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING
ALL DIMENSIONS TO BE CHECKED ON SITE

200

300mm ON ORIGINAL

LANDSCAPE DESIGN INTENT STATEMENT

The main objective of the landscape is to ensure the landscaped character of the area is protected while integrating the site into the local context. The vision is to create a development that enhances the tree canopies and maintains landscape corridors around the development site.

GUIDING PRINCIPLES

- Ensuring the proposed landscaping contributes to the landscape character of the area
- Providing high quality open spaces that are functional and responsive to the local environment
- Providing planting and open space that is appropriate to the scale and context of the development
- Retain significant trees where possible

Plant species selection has been carefully considered and based on environmental and design criteria. The planting has been selected on the basis of biodiversity being a mix of native and few hardy exotic plants that require minimal water as well as good aesthetic appearance. The selection adheres to the principle of minimising water by the use of low-water plant species. The plant selection is low maintenance requiring little pruning or fertiliser. The plants selected have been proven over time to handle tough conditions and are drought tolerant species that do not have thorns or prickly foliage, produce large fruit or cones. Species such as callistemon were chosen to provide a flowering small tree that maintains its form and tolerates extended dry periods and medium to heavy frosts. The westringia species have been selected for their extended flowering and grey foliage which provides colour contract against green plants. They are proven to be drought and frost tolerant and work well in both sandy and heavy clay soils. Appropriate plant species were chosen that are not poisonous, known to be weeds, toxic or a high allergy risk.

The planting of new canopy trees will replenishing the tree cover with species growing up to 8m high. The new trees will improve the micro-climate by providing shading and wind breaks throughout the site. Boundary setbacks ensures the leafy ambience for which the area is well know is maintained and ensuring the enjoyment of neighbouring land will not be determentally affected. The selection of native trees and understorey planting will encourage new wildlife corridors between adjacent sites and the new development.

The quality and amenity of the communal open space is increased with a central garden ensuring the establishment and healthy growth of the plants.The central internal courtyard is a place for residents and visitors to meet and provides a sense of well-being by encouraging social interaction. The planting of trees will 'green' the central courtyard and provide scale and separation between the buildings. Surface finishes will be hard-wearing and durable and suitable for purpose. Variations in finishes will define spaces for particular uses as well as announce arrival and transition zones.

The principles of safe design were key considerations within the design. Trees with low ground covers and grasses were used to maintain sight lines throughout the site and allow a visual connection from the street between ground floor areas. The trees will soften the buildings and provide additional shade along the pathway.

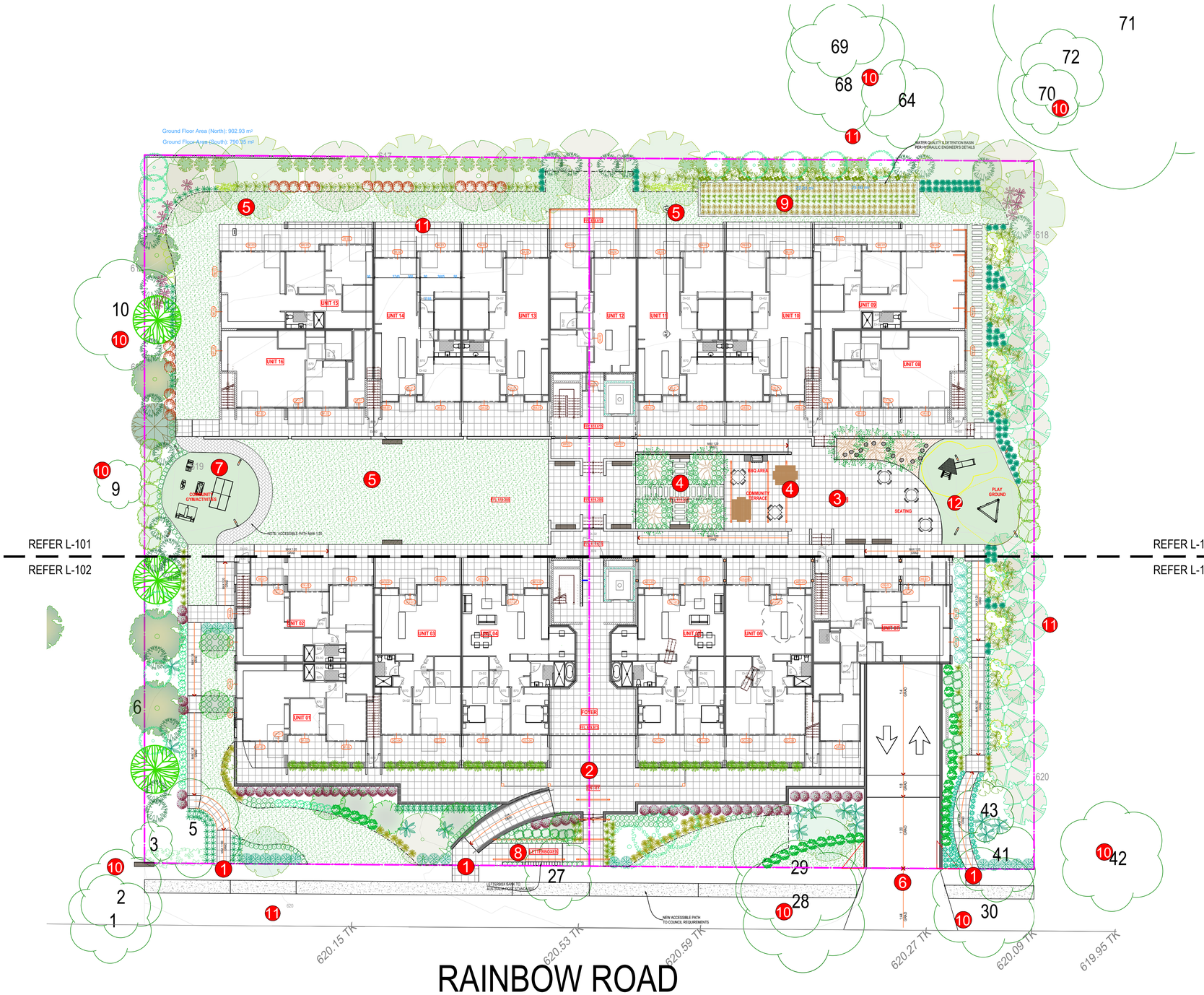
The proposed landscape contributes to the high quality development. It will improve the site by providing affordable housing with added biodiversity and additional canopy trees and thus achieving council's desired future character of the area.

LIST OF DOCUMENTS

L100	Landscape Masterplan
L101	Landscape - Zone A
L102	Landscape - Zone B
L103	Landscape Deep Soil Plan
L104	Landscape Specification & Details

LEGEND

1. Pedestrian entry
2. Entry foyer
3. Central courtyard
4. Communal seating area
5. Communal lawn area
6. Entry and exit to basement parking
7. Communal Outdoor Gym
8. Letterboxes
9. Rainwater detention basin
10. Existing trees to be retained
11. Existing trees to be removed
12. Communal Playground



REFER L-101
REFER L-102

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A	01/07/22	Preliminary Issue	AE
B	08/07/22	Preliminary Issue	AE
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D	16/09/22	DA Issue	AE
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PROJECT: New Affordable Housing
SITE ADDRESS: 1-5 Rainbow Road Mittagong NSW 2575
CLIENT: Robsea Nominees Pty Ltd Bilgola Beach Pty Ltd
DRN: Y.Chen (M.LArch)
SCALE: 1:200@A1
PROJECT NO: 221991

DRAWING TITLE: LANDSCAPE MASTER PLAN
DRAWING No: L-100
Rev: E

Ground Floor Area (South): 790.35 m²

WATER QUALITY & DETENTION BASIN
PER HYDRAULIC ENGINEER'S DETAILS

40.00 m²

29.00 m²

UNIT 16

UNIT 15

UNIT 14

UNIT 13

UNIT 12

UNIT 11

UNIT 10

UNIT 09

UNIT 08

FFL 618.615

FFL 619.295

COMMUNITY GYM/ACTIVITIES

BBQ AREA

COMMUNITY TERRACE

SEATING

PLAY GROUND

NOTE: ACCESSIBLE PATH MAX 1:20

MAX 1:20 GRAD

REFER L-102

REFER L-102

Bench seating

Outdoor table and chairs

Steppers in mulch

Bench seating

Outdoor table and chairs

Line of impact zone

Artificial turf

PROPOSED PLANT SCHEDULE - ZONE A

KEY	BOTANICAL NAME	COMMON NAME	QTY	MATURE HGT	POT SIZE
	TREES				
BP	BETULA PENDULA	SILVER BIRCH	1	8m	45Ltr
CM	CORYMBIA MACULATA	SPOTTED GUM	9	15m	45Ltr
EE	EUCALYPTUS ELATA	RIVER PEPPERMINT	6	20m	45Ltr
EM	EUCALYPTUS MELLIODORA	YELLOW BOX	6	25m	45Ltr
ES	EUCALYPTUS SCLEROPHYLLA	SCRIBBLY BARK	1	15m	45Ltr
ET	EUCALYPTUS TERETICORNIS	FOREST RED GUM	2	20m	45Ltr
WS	WATERHOUSIA FLORIBUNDA 'SWEEPER'	SWEEPER	7	10m	75Ltr
	SHRUB				
BM	BANKSIA MARGINATA	SILVER BANKSIA	8	3m	200mm
CS	CAMELLIA SASANQUA 'HIRYU'	HIRYU CAMELLIA	10	3m	250mm
CV	CALLISTEMON VIMINALIS 'SCARLET FLAME'	SCARLET FLAME BOTTLEBRUSH	21	1m	200mm
DA	DAPHNE ODORA	COMMON DAPHNE	12	1m	200mm
GN	GREVILLEA 'NED KELLY'	NED KELLY GREVILLEA	14	2m	200mm
LJ	LEPTOSPERMUM JUNIPERINUM	PRICKLY TEA-TREE	29	3m	200mm
	GRASS / GROUNDCOVERS				
AN	ANEMONE NEMOROSA	WOOD ANEMONE	12	0.2m	140mm
CA	CAREX APPRESSA	CAREX	78	1m	140mm
DC	DIANELLA CAERULEA 'LITTLE JESS'	LITTLE JESS	24	0.4m	140mm
DR	DIANELLA REVOLUTA	BLUEBERRY LILY	69	0.6m	140mm
GH	GOODENIA HEDERACEA	IVY GOODENIA	12	0.3m	140mm
HV	HARDENBERGIA VIOLACEA	PURPLE CORAL PEA	15	0.2m	140mm
JU	JUNCUS USITATUS	COMMON RUSH	156	0.8m	140mm
LL	LOMANDRA LONGIFOLIA	MAT RUSH	61	1m	140mm
LM	LIRIOPE MUSCARI 'JUST RIGHT'	JUST RIGHT LILY TURF	143	0.5m	140mm
LN	LOMANDRA LONGIFOLIA 'NYALLA'	NYALLA	18	0.8m	140mm
VH	VIOLA HEDERACEA	NATIVE VIOLET	252	0.1m	140mm
WM	WESTRINGIA FRUTICOSA 'MUNDI'	MUNDI WESTRINGIA	13	0.4m	140mm

LEGEND

- BOUNDARY
- EXISTING CONTOURS (85.50)
- PAVING
- ALUMINIUM EDGE (AE)
- CONCRETE
- STEPPERS IN GROUND COVERS
- TURF
- ARTIFICAL TURF
- PLAYGROUND MULCH
- TREE TO BE RETAINED

CONCEPT IMAGES

SLIDE

STEPPERS IN MULCH

CLIMBING FRAME

PLAYGROUND NOTES:
All materials and workmanship shall be in accordance with the relevant standards.
- All outdoor play equipment must comply with the relevant Australian Standards including
  AS 4685.0:2017 Playground equipment and surfacing
  AS 4685:2014 Playground equipment: Safety requirements and test methods
  AS 4422:2016 Playground surfacing-specifications, requirements and test method
  AS 3533.4.2 Contained Play Facilities

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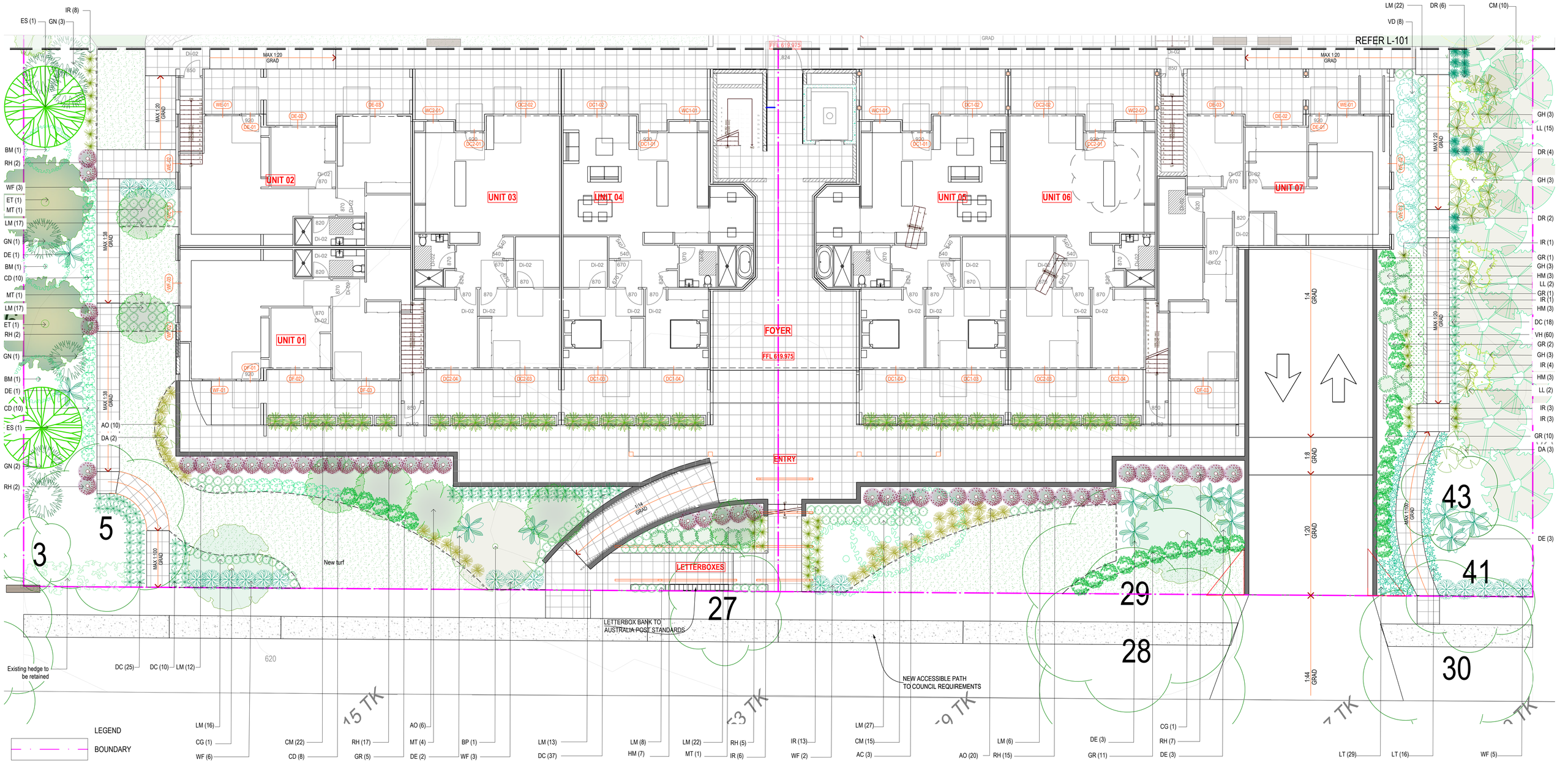
CLIENT: Robsea Nominees Pty Ltd Bilgola Beach Pty Ltd
DRN: Y.Chen (M.LArch)
SCALE: 1:100@A1
PROJECT NO: 221991

DRAWING TITLE: LANDSCAPE PLAN-ZONE A
DRAWING No: L-101 Rev: E



LEGEND

- BOUNDARY
- EXISTING CONTOURS (85.50)
- PAVING
- ALUMINIUM EDGE (AE)
- CONCRETE
- STEPPERS IN GROUND COVERS
- TURF
- ARTIFICAL TURF
- PLAYGROUND MULCH
- TREE TO BE RETAINED

PROPOSED PLANT SCHEDULE - ZONE B

KEY	BOTANICAL NAME	COMMON NAME	QTY	MATURE HGT	POT SIZE
	TREES				
AC	ACER PALMATUM 'SANGO KAKU'	RED CORAL BARK MAPLE	3	4m	45Ltr
BP	BETULA PENDULA	SILVER BIRCH	1	8m	45Ltr
CG	CERATOPETALUM GUMMIFERUM	NSW XMAS BUSH	2	7m	45Ltr
CM	CORYMBIA MACULATA	SPOTTED GUM	10	15m	45Ltr
ES	EUCALYPTUS SCLEROPHYLLA	SCRIBBLY BARK	2	15m	45Ltr
ET	EUCALYPTUS TERETICORNIS	FOREST RED GUM	2	20m	45Ltr
MT	MAGNOLIA GRANDIFLORA 'TEDDY BEAR'	TEDDY BEAR MAGNOLIA	7	3m	45Ltr
	SHRUB				
CD	CORREA 'DUSKY BELLS'	DUSKY BELLS CORREA	28	0.6m	200mm
DA	DAPHNE ODORA	COMMON DAPHNE	5	1m	200mm
DE	DORYANTHES EXCELSA	GYMEA LILY	13	1.5m	250mm
GR	GREVILLEA 'CRIMSON VILLEA'	CRIMSON VILLEA GREVILLEA	30	0.8m	200mm
HM	HYDRANGEA MACROPHYLLA 'PIAMINA'	DWARF HYDRANGEA	16	1.2m	200mm
RH	RHODODENDRON HYBRID 'AUTUMN TWIST'	EVERGREEN AZALEA	50	1.2m	250mm
VD	VIBURNUM 'DENSE FENCE'	DENSE FENCE	8	2m	250mm
WF	WESTRINGIA FRUTICOSA 'BLUE GEM'	NATIVE ROSEMARY	19	1.5m	200mm

PROPOSED PLANT SCHEDULE - ZONE B

KEY	BOTANICAL NAME	COMMON NAME	QTY	MATURE HGT	POT SIZE
	GRASS / GROUNDCOVERS				
AO	AGAPANTHUS ORIENTALIS 'QUEEN MUM'	AFRICAN LILY	36	1.2m	200mm
CM	CLIVEA MINIATA	CLIVEA	37	0.6m	200mm
DC	DIANELLA CAERULEA 'LITTLE JESS'	LITTLE JESS FLAX LILY	90	0.4m	140mm
DR	DIANELLA REVOLUTA	BLUEBERRY LILY	12	0.6m	140mm
GH	GOODENIA HEDERACEA	IVY GOODENIA	12	0.3m	100mm
IR	IRIS X GERMANICA	BEARDED IRIS	39	1m	140mm
LL	LOMANDRA LONGIFOLIA	MAT RUSH	19	1m	140mm
LM	LIRIOPE MUSCARI 'JUST RIGHT'	JUST RIGHT LILY TURF	160	0.5m	140mm
LT	LOMANDRA LONGIFOLIA 'TANIKA'	TANIKA	45	0.5m	140mm
VH	VIOLA HEDERACEA	NATIVE VIOLET	60	0.1m	140mm

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SCALE: 1:100@A1
PROJECT NO: 221991

DRAWING TITLE: LANDSCAPE PLAN-ZONE B
DRAWING No: L-102
Rev: E

DEEP SOIL CALCULATIONS

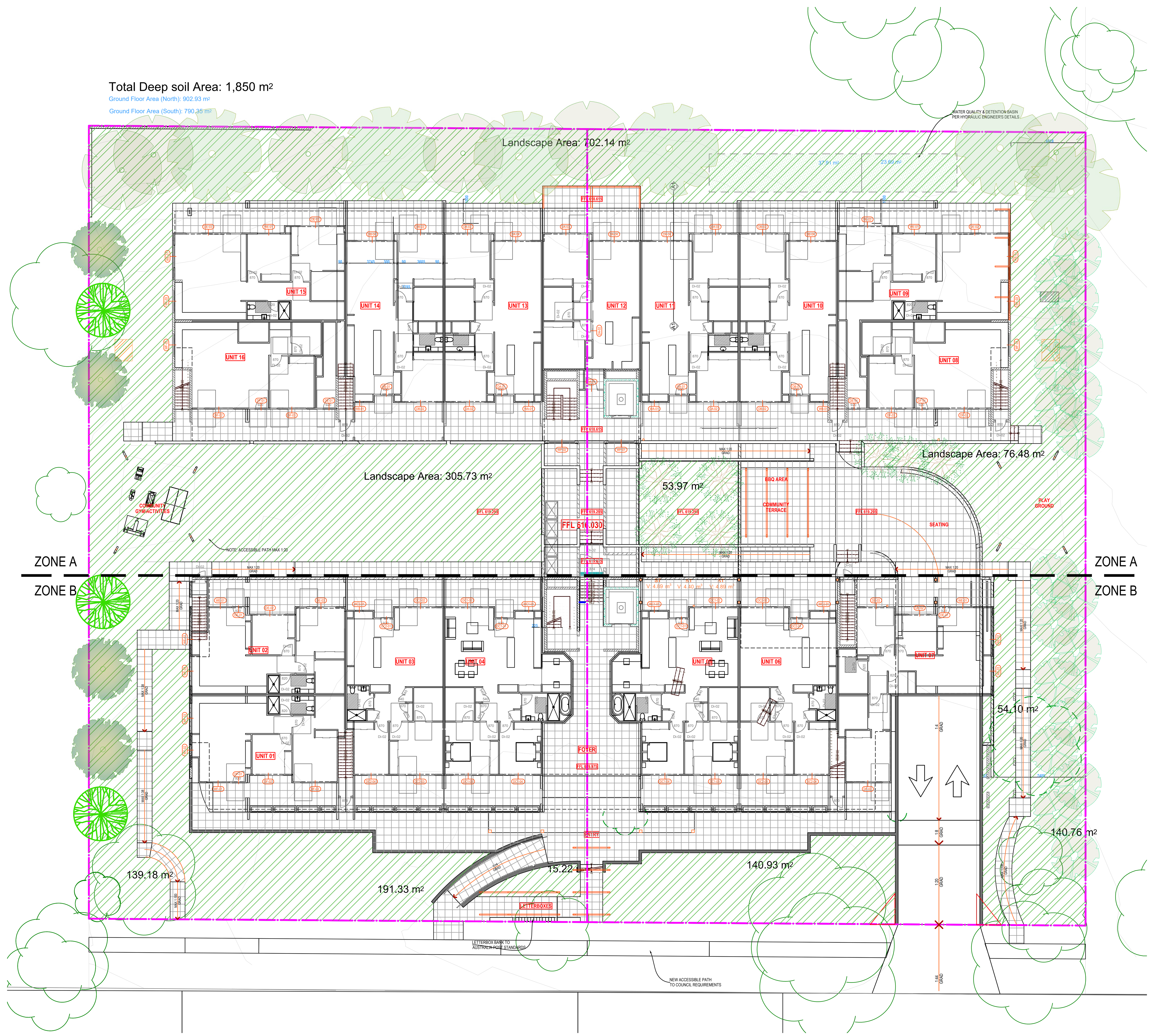
Deep Soil Area 1,850m²
Council requirement 1 large tree per 80m² 23 trees
Proposed large trees 45 trees

PROPOSED PLANT SCHEDULE - ZONE A						
	KEY	BOTANICAL NAME	COMMON NAME	QTY	MATURE HGT	POT SIZE
		TREES				
	BP	BETULA PENDULA	SILVER BIRCH	1	8m	45Ltr
^	CM	CORYMBIA MACULATA	SPOTTED GUM	9	15m	45Ltr
^	EE	EUCALYPTUS ELATA	RIVER PEPPERMINT	6	20m	45Ltr
^	EM	EUCALYPTUS MELLIODORA	YELLOW BOX	6	25m	45Ltr
^	ES	EUCALYPTUS SCLEROPHYLLA	SCRIBBLY BARK	1	15m	45Ltr
^	ET	EUCALYPTUS TERETICORNIS	FOREST RED GUM	2	20m	45Ltr
^	WS	WATERHOUSIA FLORIBUNDA 'SWEEPER'	SWEEPER	7	10m	75Ltr

^ Denotes Large trees

PROPOSED PLANT SCHEDULE - ZONE B						
	KEY	BOTANICAL NAME	COMMON NAME	QTY	MATURE HGT	POT SIZE
		TREES				
	AC	ACER PALMATUM 'SANGO KAKU'	RED CORAL BARK MAPLE	3	4m	45Ltr
	BP	BETULA PENDULA	SILVER BIRCH	1	8m	45Ltr
	CG	CERATOPETALUM GUMMIFERUM	NSW XMAS BUSH	2	7m	45Ltr
^	CM	CORYMBIA MACULATA	SPOTTED GUM	10	15m	45Ltr
^	ES	EUCALYPTUS SCLEROPHYLLA	SCRIBBLY BARK	2	15m	45Ltr
^	ET	EUCALYPTUS TERETICORNIS	FOREST RED GUM	2	20m	45Ltr
	MT	MAGNOLIA GRANDIFLORA 'TEDDY BEAR'	TEDDY BEAR MAGNOLIA	7	3m	45Ltr

^ Denotes Large trees



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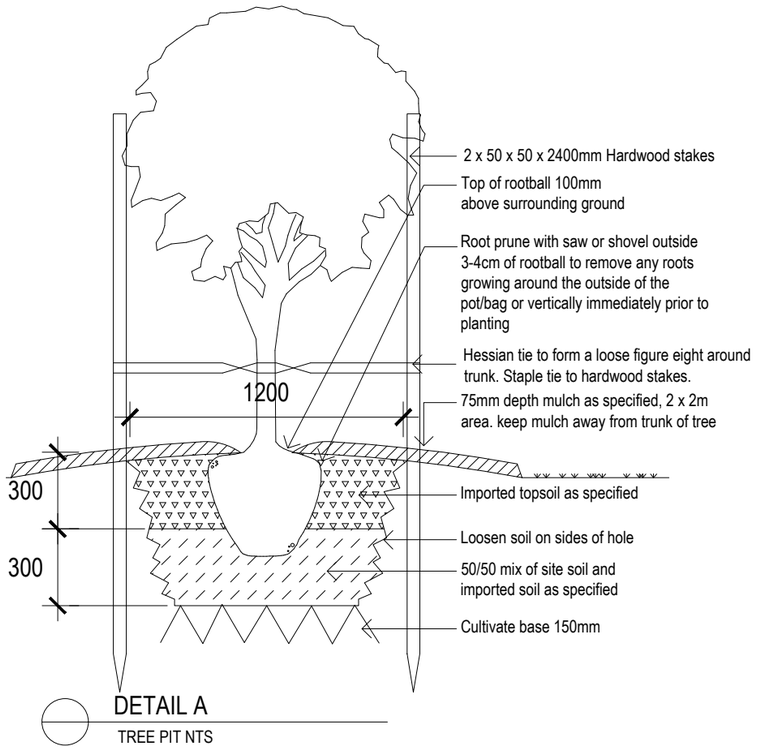
CLIENT: Robsea Nominees Pty Ltd Bilgola Beach Pty Ltd
DRN: C.Wallace (B.LArch)
SCALE: 1:100@A1
PROJECT NO: 221991

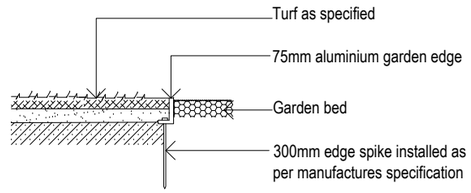
N

DRAWING TITLE: LANDSCAPE DEEP SOIL PLAN
DRAWING No: L-103
Rev: A



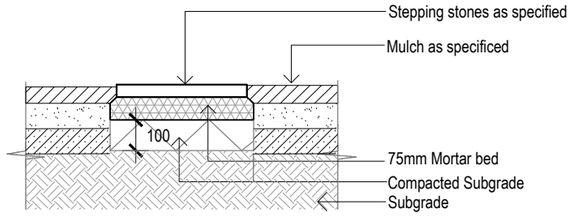
DETAIL A

TREE PIT NTS



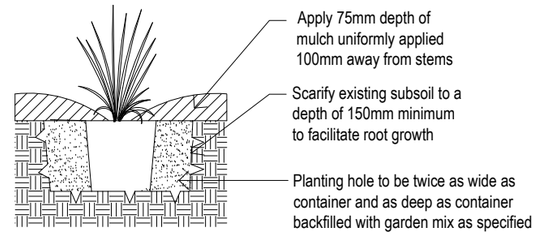
DETAIL D

ALUMINIUM EDGE DETAIL N.T.S



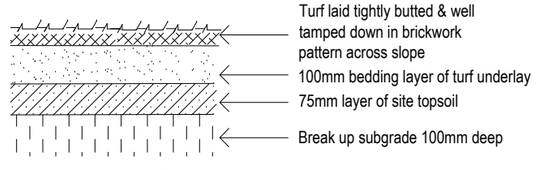
DETAIL E

TYPICAL STEPPING STONE SCALE N.T.S.



DETAIL B

SHRUB PLANTING DETAIL N.T.S



DETAIL C

TURF DETAIL N.T.S

LANDSCAPE SPECIFICATION NOTES

SITE PREPARATION

Locate any underground and overground services & ensure no damage occurs. Levels on plan are nominal only & all dimensions to be checked on site prior to commencement. Final structural integrity of all items shall be the sole responsibility of landscape contractor.

WORKMANSHIP AND MATERIAL QUALITY

Materials and workmanship are to conform to the current applicable Australian Standard Specifications and Codes. Any work or materials, which, in the opinion of the Site Manager do not meet appropriate industry standards should be rejected. **PROTECTION OF EXISTING TREES:**

Prior to construction, the builder shall erect tree protection fencing to the drip line of existing trees to be retained. The fence shall be constructed of star pickets at 2.4m spacings and connected by three strands of 2mm wire at 300mm spacings to a minimum height of 1500mm. Protect all trees affected by demolition & construction. Take necessary precautions to protect the Structural Root Zone(SRZ) as per AS 4970-2009 Australian Standard for Protection of Trees on Development Sites.Tree protection measures shall remain intact until the completion of all construction works. Prohibited Works or material storage within the TPZ as per AS 4970-2009 except with approval of council:

- entry of machinery or storage of building materials, parking of any kind of vehicle
- erection or placement of site facilities, removal or stockpiling of soil or site debris, disposal of liquid waste including paint & concrete wash
- excavation or trenching of any kind (including irrigation or electrical connections).
- attaching any signs or any other objects to the tree, placement of waste disposal or skip bins
- pruning and removal of branches, other than those by a qualified Arborist

REMOVAL OF EXISTING TREES

All trees to be removed shall be carried out by a qualified arborist and work shall conform to the provisions of AS4373-2007 Australian Standards for The Pruning of AmenityTrees.

ELIMINATE WEEDS

Remove all existing weeds by hand, wiping or spraying with a glyphosate based herbicide. Weed control shall never be performed by mechanical cultivation or by scraping. Herbicide spraying is to be used to eliminate all existing weeds 30 days prior to planting.

EXCAVATION & SUB SOIL PREPARATION

Excavate garden beds to the depth required and rip or scarify base & sides of pit to a minimum depth of 150mm.

SUB SOIL DRAINAGE

Install drainage layer where there is surface water runoff draining into garden bed areas & where the existing sub-soil has more than 50% clay composition & there is a risk of subsurface water ponding. Install perforated corrugated ag. line 75-100mm Dia. with geotextile filter sock & backfill to a minimum 200mm using free draining material, reclaimed/recycled where available. Direct flows at a minimum 0.5% fall to SW system. In areas isolated from stormwater system excavate & backfill an appropriate water dispersion pit.

REUSE EXISTING TOPSOIL

Existing site topsoil should be salvaged & appropriately stockpiled where possible.

IMPORTED TOPSOIL

All construction must comply with AS 4419-2003 Soils for Landscaping and Garden Use. Turf Areas: 'Turf Underlay', Tree Pit and Shrub Planting: 'Premium Garden Mix' as supplied by, ANL p: 02 9450 1444 or approved alternative. Spread the topsoil on the prepared subsoil and grade evenly, making allowances, if appropriate, for the following:

- Required finished levels and contours after light compaction.
- Compact lightly and uniformly in 150 mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:
- Finished to design levels, smooth and free from stones or lumps of soil. Graded to drain freely, without ponding, to catchment points. Grade evenly into adjoining ground surfaces ready for planting.

- PLANTING AREA

Remove weeds, rubbish, mulch and other debris. Do not disturb tree roots or services and if necessary cultivate these areas by hand. Spread topsoil on the prepared subsoil and grade evenly, making the necessary allowance to permit the required finished levels and contours after a light compaction. Spread topsoil to the typical depth of 300mm. Feather edges into adjoining undisturbed ground.

TREE STOCK

Tree stock to be supplied by production nurseries in accordance with AS 2303:2018 Tree Stock for Landscape Use. Health & Vigour: Supply plants with foilage size, texture & colour consistent with that shown in healthy specimens of the species. Balance of Crown: Supply plants with max. variation in crown bulk on opposite sides of stem axis, +/- 20%. Stock selection should also be based on NATSPEC Guide *Specifying Trees: a Guide to Assessment of Tree Quality.*

STAKING

Install 2 x 2400mm x 50mm x 50mm hardwood timber stakes with hessian ties to all trees. Provide appropriate support considering exposure to prevailing winds. Stakes and hessian ties to be removed as soon as the tree is self supporting.

ALUMINIUM GARDEN EDGING

Supply and install Link Edge 75mm as per Landscape Plan with safety top and flush to ground. Compact and level the base in the required area as indicated on Landscape Plan. Half hammer spikes into prepunched holes (approx 4 spikes every 3m length) starting from the first hole in the end of the Link Edge. Use spike washers supplied by manufacturer.Half hammer subsequent spikes in pivotal areas along the length. (Especially at points where a curve is required). Connect lengths together by using fish-plate connectors supplied by manufacturer. Check position of Link Edge is correct before hammering spikes firmly into ground.

MULCHING

All landscaping must comply with AS 4454-2003 Compost, soil conditioners and mulches. All planting areas to receive 50-75mm of garden Mulch, Droughtmaster, ANL p: 02 9450 1444 or approved alternative. Keep mulch 100mm away from plant stem & form a well to stop excessive water runoff. Finish flush with adjacent surfaces.

TURFING

New turf- Kikuyu. Excavate / grade all areas to be turfed to 120mm below finished levels. Ensure that all surface runoff is directed away from buildings. Ensure that no pooling or ponding will occur. Further rip the subgrade to 150mm. Install 100mm of imported turf underlay. Rolls to be closely butted and laid in a brickwork pattern. Fill any small gaps with topsoil and water thoroughly.

WATERING

Water in immediately after plant installation & allow for soil settlement. Watering program: Minimum 3 complete waterings, soaking to a depth of 150 mm at fortnightly intervals for the first 6 weeks of plant establishment irrespective of natural rainfall. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between waterings.

STEPPING STONES

Install each stepping stone on a 75mm thick mortar bed and space according to plan. Stones to finish 10mm above adjacent surface. Fill gaps as specified.

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CLIENT: Robsea Nominees Pty Ltd
Bilgola Beach Pty Ltd

DRN: Y.Chen (M.LArch)

SCALE: 1:100@A3

PROJECT NO: 221991

N

DRAWING TITLE: LANDSCAPE SPECIFICATIONS & DETAILS

DRAWING No: L-104

Rev: C

ENVIRONMENT & NATURAL RESOURCE SOLUTIONS

TBG Constructions Pty Ltd
(ABN: 50 094 053 513)
Bowral, NSW, 2576

Date Issued: 24th November 2023
Project Number: ENRS2956
Status: Revision 1

Att: Andrew Reeves <blissettgroup77@gmail.com>

SUBJECT: HYDROGEOLOGICAL REVIEW – CHALYBEATE SPRING, RAINBOW ROAD, MITTAGONG.

1 Introduction

1.1 Background

Environment & Natural Resource Solutions (ENRS Pty Ltd) were commissioned as independent groundwater consultants by TBG Construction Pty Ltd (the Client) to conduct a review of the hydrogeological setting at 1-5 Rainbow Road, Mittagong (herein referred to as the Site) to support assessment of the potential for a proposed basement construction to tap/disturb the aquifer/s which feed the Chalybeate Spring

ENRS understands this hydrogeological review was required to support a heritage and landscape assessment request for additional information by Wingecarribee Shire Council (WSC) for development application number 23/1070.

The Site proposal is to excavate and construct a basement carpark for ~79 parking spaces to support an overlying three storey residential building. The Spring is situated approximately 60 metres east-northeast from the boundary of the proposed basement, as annotated in **Figure 6-1**, and comprises an area with upwelling groundwater within a public park.

1.2 Objectives

The objective of this report was to review the hydrogeological setting in context of the proposed basement construction to consider the degree of hydrological connection between the spring and groundwater which may be intersected at the Site based on the results of previous groundwater studies and supplementary groundwater laboratory analysis, including isotopes and major ion chemistry.

1.3 Scope of Work

The scope of work for the project comprised the following tasks:

- Review the site proposal and previous groundwater reports including results for groundwater quality, water levels, hydraulic conductivity and groundwater flow regime;
- Water quality sampling from the spring, groundwater bores, surface water and rainwater;
- NATA laboratory analysis of major ion chemistry and stable isotopes;
- Compile the investigation results with a review of the water chemistry to consider the degree of connection between the water samples, the relative level of the groundwater table in context of the proposed excavation depth and the direction of the groundwater flow regimes and anticipated flow rates, with recommendations for Site management, if required.

2 Previous Reports

The project Site was recently the subject of detailed geotechnical and groundwater studies by JK Geotechnics. It is recommended this letter report be read in conjunction with the Site Hydrology Report (JK, 2023). The following section summarises the key outputs from the previous studies:

2.1 Site Hydrology Report (JK, 2023b)

Three (3) groundwater monitoring wells were installed within the Site as part of the geotechnical investigation, at the locations of BH101, BH102 and BH104 as shown in **Figure 6-1**. Automated groundwater level loggers were installed to monitor water levels between 8th March and 14th June 2023. The results summarised in **Table 2-1**, document the maximum groundwater level at the site was 618 mAHD in MW104, and the groundwater gradient was down towards the south-east. The groundwater gradient was noted to be in contrast with the topographic gradient which is towards the north. The results indicate the groundwater table in the area is the piezometric pressure head where the groundwater may be confined or semi-confined. This is consistent with the observed Spring water which was upwelling from the ground surace.

Table 2-1: Summary of Groundwater Levels

MW ID	Minimum (RL / Depth)	Maximum (RL / Depth)	Average (RL / Depth)	Median (RL / Depth)
101	RL617.5m / 1.5m	RL617.9m / 1.1m	RL617.7m / 1.3m	RL617.7m / 1.3m
102	RL616.6m / 3.6m	RL616.8m / 3.4m	RL616.7m / 3.5m	RL616.7m / 3.5m
104	RL617.9m / 1.7m	RL618.0m / 1.6m	RL617.9m / 1.7m	RL617.9m / 1.7m

Given the floor level of the proposed basement will be positioned at approximately 615.155 mAHD, JK conducted permeability testing and modelling to estimate dewatering rates. The results of permeability testing and modelling reported an estimated dewatering rate of 580 Litres per day or 0.2 M/L per year, with allowance for inflows of approximately 1 ML/yr if the excavations encounter extensive vertical jointing throughout the rock mass. JK concluded the estimated groundwater inflows are less than 3 ML/year which will not require a Water Access Licence (WAL) given the volume is below the exemption threshold within the Water Management (General) Regulation 2018. The report recommends that a detailed dewatering management plan (DMP) should be prepared, which includes the required monitoring to be carried out during construction, such as groundwater level monitoring, groundwater quality monitoring, survey monitoring, etc.

3 Geochemistry

During this scope of work, water samples were obtained from the existing Monitoring Wells previously installed by JK, the Spring, Iron Mines Creek immediately below the Spring, and rainwater. Samples were submitted under Chain of Custody for NATA accredited laboratory analysis of major ion chemistry and stable isotopes. Water samples were collected in general accordance with NSW EPA (2022) Approved methods for the sampling and analysis of water pollutants in NSW and with reference to AS5667.1-1998.

Table 3-1: Water Sample Locations

ID	Coordinates	RL Surface	Installed Depth	Stickup	Water entry
MW101	-34.448926, 150.439699	~619.0mAHD	5.8m (613.2mAHD)	0.6m	2.8-5.8m

ID	Coordinates	RL Surface	Installed Depth	Stickup	Water entry
MW102	-34.449285, 150.439655	~620.2mAHD	6.85m (613.15mAHD)	0.5m	3.85-6.85m
MW104	-34.449121, 150.438860	~619.6mAHD	5.75m (613.85mAHD)	0.72m	2.75-5.75m
Spring	-34.448632, 150.440341	N/A	N/A	N/A	N/A
Iron Mines Creek	-34.448644, 150.441134	N/A	N/A	N/A	N/A

3.1 Major Ion Chemistry

Upon receipt the results were tabulated for comparison and charting, refer to piper diagram provided in **Figure 6-2**. The proximity of the sample locations on the diagram provides an indication of the degree of chemical similarity between samples, which may infer the degree of hydrogeological connection.

In general, the Spring water is plotted in a similar domain to the groundwater from monitoring wells MW101 and MW102. Whilst MW104 presents a notably different composition to the other groundwater Wells and is located near the western margin of the Site. The rainwater and surface water from Iron Mines Creek is also notably different from the groundwaters and the Spring water.

The results indicate the shallow groundwater in the west of the Site (MW104) is dissimilar to MW101, MW102 and the Spring, and therefore unlikely to be in strong hydraulic connection with the eastern area of the site and the Spring.

Salinity as Electrical Conductivity (EC) is also lower in the Spring (250 µS/cm) water than the groundwaters MW101 (390 µS/cm) and MW102 (390 µS/cm) which indicates the shallow groundwater in MW101 and MW102 is not in direct connection with the Spring aquifer.

3.2 Stable Isotopes

Samples were analysed by ANSTO for stable isotopes Hydrogen ($\delta^{2}H$) Oxygen ($\delta^{18}O$) and Dissolved Organic Carbon (DIC conc.) to support further assessment of the degree of connection between the water sources. The results charted in **Figure 6-3** report the rainwater and surface water is dissimilar to the groundwater, which echoes the major ion chemistry results.

The groundwater and spring water results imply the waters are somewhat related, however the results are not an exact match. The results reflect the groundwater interaction with the host geology which may indicate groundwater in the area is associated with deeper dual porosity aquifers systems below the depth of the proposed basement.

4 Discussion

Based on the information reviewed during this scope of works the following key points and observations may be made:

- The Spring is located approximately 60 metres northeast of the proposed basement Site which is also upgradient of the Site in relation to the documented groundwater gradient, down to the south-east. As the Spring is positioned upgradient, the proposed shallow basement works are considered unlikely to intercept the Spring aquifer which is upwelling beyond the site boundary;
- No springs, seeps or groundwater discharge were observed in the proposed basement area, and the rate of recharge in monitoring Wells was low, which indicates low potential groundwater yields commensurate with the modelled inflows to the basement less than 1ML/year;

- The geochemistry results indicate the Spring water and groundwater share similar characteristics likely due to the host geology. However, there are differences, and the results are not an exact match which indicates the Spring is not in direct hydraulic connection with the shallow groundwater sampled from the Site.
- In general, the weight of evidence from the previous hydrology study (JK, 2023) and the laboratory results reviewed herein, indicate the proposed basement area is unlikely to intercept the Spring aquifer and hence not adversely affect the Spring;
- It is recommended the Dewatering Management Plan (DMP) incorporate requirements for monitoring the Spring and consider options for managing groundwater if conditions are encountered which differ from those outlined in the Site Hydrology Report (JK, 2023).
- This report must be read in conjunction with the Statement of Limitations.

Rohan Last (MSc, BSc)

Hydrogeologist & Environmental Scientist

5 References

AS/NZS 5667.1:1998 Water quality-Sampling

JK Geotechnics (2023a) Preliminary Groundwater Quality Screening. 1-5 Rainbow Road, Mittagong, NSW. 2nd May 2023

JK Geotechnics (2023b) Site Hydrology Report. 1-5 Rainbow Road, Mittagong, NSW. 2nd August 2023

JK Geotechnics (2023c) Geotechnical Investigation. 1-5 Rainbow Road, Mittagong, NSW. 2nd August 2023

NSW EPA (2022) Approved methods for the sampling and analysis of water pollutants in NSW

6 Limitations

This report and the associated services performed by ENRS are in accordance with the scope of services set out in the contract between ENRS and the Client. The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to Site.

ENRS derived the data in this report primarily from visual inspections, and, limited sample collection and analysis made on the dates indicated. In preparing this report, ENRS has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while ENRS believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

Limitations also apply to analytical methods used in the identification of substances (or parameters). These limitations may be due to non-homogenous material being sampled (i.e. the sample to be analysed may not be representative), low concentrations, the presence of 'masking' agents and the restrictions of the approved analytical technique. As such, non-statistically significant sampling results can only be interpreted as 'indicative' and not used for quantitative assessments.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of Site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, ENRS shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between ENRS and the Client. ENRS accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

FIGURES

Figure 6-1: Site Plan

Source: adapted from JK (2023b) Figure 2.

Figure 6-2: Piper Diagram

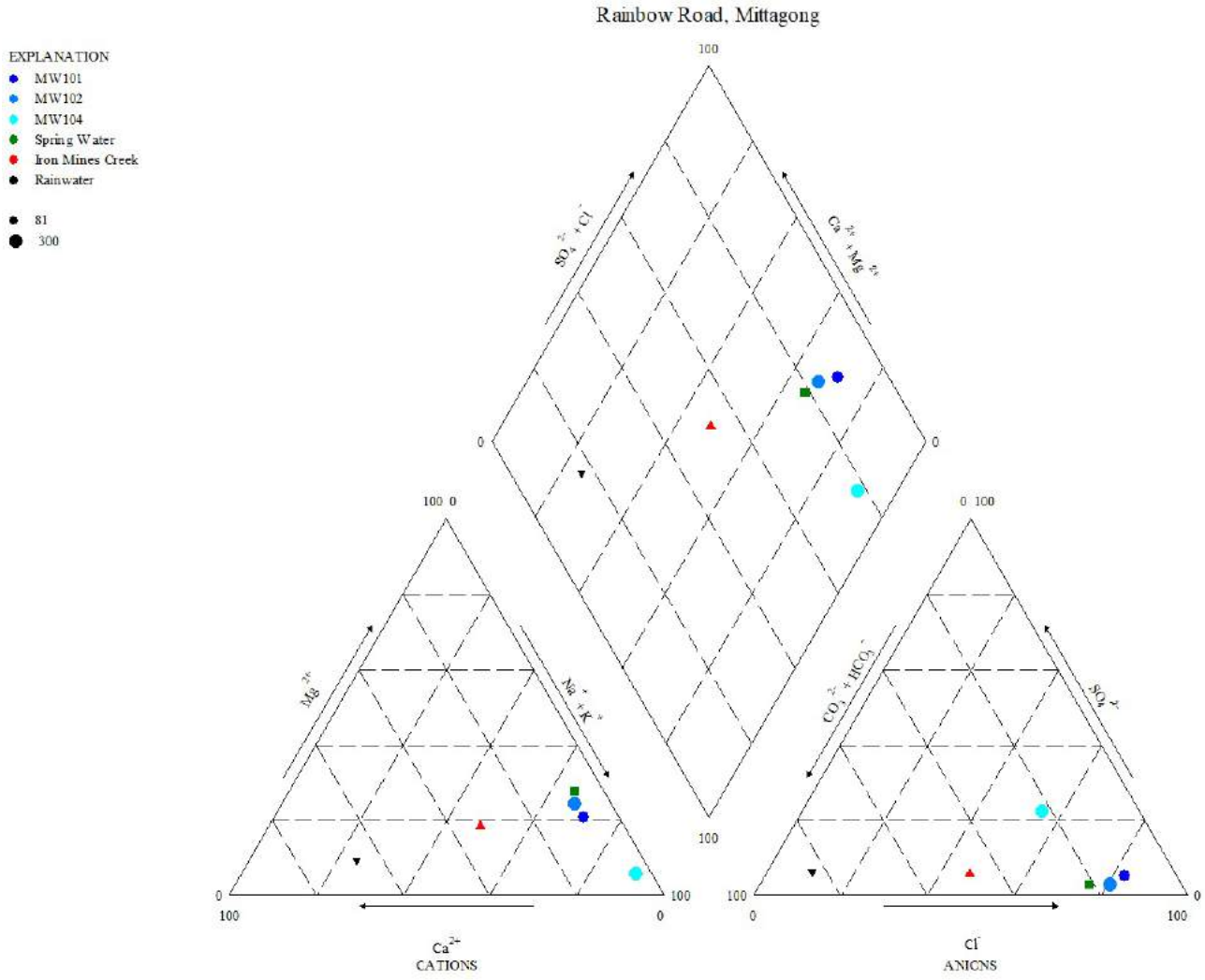

Figure 6-3: Stable Isotope results chart

ID	δ18/16O VSMOW (‰)	δ2H VSMOW (‰)
MW101	-6.45	-37.1
MW102	-6.72	-39.4
MW104	-6.65	-38.8
SPRING WATER	-6.85	-39.6
IRON MINES CK	-5.04	-28.0
RAIN WATER	-1.61	-6.3

APPENDICES

Appendix A:
Laboratory Results (Major Chemistry)

COC: 20/10/23, 1130

CHAIN OF CUSTODY FORM

ENVIROLAB GROUP
National phone number 1300 424 344

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02 9910 6200 | sydney@envirolab.com.au
Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au
Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au
Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
07 3266 9532 | brisbane@envirolab.com.au

Company:	ENRS Pty Ltd
Contact Person:	Rohan Last (0401518443)
PM / Sampler:	RL
Address:	108 Jerry Bailey Rd, Shoalhaven Heads, NSW, 2535
Phone:	02 4448 5729
Email Results to:	lab@enrs.com.au
Email Invoice to:	accounts@enrs.com.au

Client Project Name/Number/Site etc (ie report title): ENRS2956 Rainbow Road Mittagong
PO No. ENRS2956 Envirolab Quote No. :
Date results required:
TAT: ☐ Same day ☑ Std ☐ 1 day ☐ 2 day ☐ 3 day
Additional report format: ☐ Esdat ☐ Equis
Lab Comments:

Sample information | Tests Required | Comments

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Major & Minor Ions: Sodium	Potassium	Calcium	Magnesium	Chloride	Sulphate	Sulphide	Bicarbonate	Carbonate	Nitrite (as N)	Nitrate (as N)	Iron (Total)	Iron (Dissolved)	Manganese	Hardness	pH	EC	TDS	Comments
1	MW101	-	19/10/2023	Groundwater	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
2	MW102	-	19/10/2023	Groundwater	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
3	MW104	-	19/10/2023	Groundwater	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
4	Spring Water (SP)	-	19/10/2023	Spring Water	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
5	Iron Mines Creek (CK)	-	19/10/2023	Surface Water	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
6	Rain Water (RW)	-	19/10/2023	Rain Water	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	unfiltered
☐ Tick to include sediment in bottles in extraction/analysis				TOTAL No.	6	6	6	6	6	6	6	6	6	6	6	5	5	5	6	6	6	6	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 335822
Date Received: 20/10/23
Time Received: 1205
Received by: KW
Temp: Cool/Ambient / Icepack 10°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company):	ENRS Pty Ltd	Received by (Company):	ELS SYD
Print Name:	ROHAN LAST	Print Name:	Kathy Wayne
Date & Time:	20/10/2023	Date & Time:	20/10/23 1205
Signature:		Signature:	

Lab Use Only
Job number: 335822
Temperature: 10°C
Cooling: Ice / Ice-pack / None
Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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CERTIFICATE OF ANALYSIS 335822

Client Details

Client	ENRS
Attention	Rohan Last
Address	25 River Rd, Shoalhaven Heads, NSW, 2535

Sample Details

Your Reference	**ENRS2956, Rainbow Road Mittagong**
Number of Samples	6 Water
Date samples received	20/10/2023
Date completed instructions received	20/10/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	27/10/2023
Date of Issue	27/10/2023

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Results Approved By
Hannah Nguyen, Metals Supervisor
Loren Bardwell, Development Chemist
Priya Samarawickrama, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

HM in water - dissolved						
Our Reference		335822-1	335822-2	335822-3	335822-4	335822-5
Your Reference	UNITS	MW101	MW102	MW104	Spring Water (SP)	Iron Mines Ccreek (CK)
Date Sampled		19/10/2023	19/10/2023	19/10/2023	19/10/2023	19/10/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Date analysed	-	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Iron-Dissolved	µg/L	100	9,100	<10	<10	420

HM in water - dissolved		
Our Reference		335822-6
Your Reference	UNITS	Rain Water (RW)
Date Sampled		19/10/2023
Type of sample		Water
Date prepared	-	24/10/2023
Date analysed	-	24/10/2023
Iron-Dissolved	µg/L	<10

HM in water - total						
Our Reference		335822-1	335822-2	335822-3	335822-4	335822-5
Your Reference	UNITS	MW101	MW102	MW104	Spring Water (SP)	Iron Mines Ccreek (CK)
Date Sampled		19/10/2023	19/10/2023	19/10/2023	19/10/2023	19/10/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Date analysed	-	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Iron-Total	µg/L	40,000	24,000	2,800	100,000	1,800
Manganese-Total	µg/L	1,500	2,000	1,200	1,200	630

HM in water - total		
Our Reference		335822-6
Your Reference	UNITS	Rain Water (RW)
Date Sampled		19/10/2023
Type of sample		Water
Date prepared	-	24/10/2023
Date analysed	-	24/10/2023
Iron-Total	µg/L	30
Manganese-Total	µg/L	<5

Miscellaneous Inorganics						
Our Reference		335822-1	335822-2	335822-3	335822-4	335822-5
Your Reference	UNITS	MW101	MW102	MW104	Spring Water (SP)	Iron Mines Ccreek (CK)
Date Sampled		19/10/2023	19/10/2023	19/10/2023	19/10/2023	19/10/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/10/2023	20/10/2023	20/10/2023	20/10/2023	20/10/2023
Date analysed	-	20/10/2023	20/10/2023	20/10/2023	20/10/2023	20/10/2023
pH	pH Units	5.6	5.8	6.4	5.8	7.2
Electrical Conductivity	µS/cm	390	400	570	250	280
Total Dissolved Solids (grav)	mg/L	160	260	300	130	180
Nitrite as N in water	mg/L	<0.010	<0.005	<0.005	<0.005	<0.010
Nitrate as N in water	mg/L	<0.02	<0.005	<0.005	0.01	<0.02
Sulphide	mg/L	<0.5	0.8	<0.5	<0.5	<0.5

Miscellaneous Inorganics		
Our Reference		335822-6
Your Reference	UNITS	Rain Water (RW)
Date Sampled		19/10/2023
Type of sample		Water
Date prepared	-	20/10/2023
Date analysed	-	20/10/2023
pH	pH Units	7.7
Electrical Conductivity	µS/cm	150
Total Dissolved Solids (grav)	mg/L	81
Nitrite as N in water	mg/L	<0.005
Nitrate as N in water	mg/L	<0.005
Sulphide	mg/L	<0.5

Ion Balance						
Our Reference		335822-1	335822-2	335822-3	335822-4	335822-5
Your Reference	UNITS	MW101	MW102	MW104	Spring Water (SP)	Iron Mines Ccreek (CK)
Date Sampled		19/10/2023	19/10/2023	19/10/2023	19/10/2023	19/10/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/10/2023	20/10/2023	20/10/2023	20/10/2023	20/10/2023
Date analysed	-	20/10/2023	20/10/2023	20/10/2023	20/10/2023	20/10/2023
Calcium - Dissolved	mg/L	4	4	3	2	12
Potassium - Dissolved	mg/L	1	1	1	1	2
Sodium - Dissolved	mg/L	40	37	91	22	19
Magnesium - Dissolved	mg/L	6.2	7.1	3	5	4
Hardness	mgCaCO 3 /L	35	38	21	26	46
Bicarbonate Alkalinity as $CaCO_3$	mg/L	22	34	71	26	75
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Sulphate, SO4	mg/L	9	5	59	3	7
Chloride, Cl	mg/L	110	110	110	65	46

Ion Balance		
Our Reference		335822-6
Your Reference	UNITS	Rain Water (RW)
Date Sampled		19/10/2023
Type of sample		Water
Date prepared	-	20/10/2023
Date analysed	-	20/10/2023
Calcium - Dissolved	mg/L	11
Potassium - Dissolved	mg/L	3
Sodium - Dissolved	mg/L	3
Magnesium - Dissolved	mg/L	0.9
Hardness	mgCaCO 3 /L	30
Bicarbonate Alkalinity as $CaCO_3$	mg/L	65
Carbonate Alkalinity as $CaCO_3$	mg/L	<5
Sulphate, SO4	mg/L	4
Chloride, Cl	mg/L	5

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C. NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:- TDS = EC * 0.6
Inorg-051	Sulphide determined titrimetrically based on APHA latest edition 4500 S2- F. Note, the Sulphide is termed as Total Sulphide given any Sulphide contained in any sediment present is also included in the determination.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Salt forms (e.g. FeO, PbO, ZnO) are determinined stoichiometrically from the base metal concentration.

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/10/2023	1	24/10/2023	24/10/2023		24/10/2023	[NT]
Date analysed	-			24/10/2023	1	24/10/2023	24/10/2023		24/10/2023	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	1	100	110	10	106	[NT]

QUALITY CONTROL: HM in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			24/10/2023	[NT]	[NT]	[NT]	[NT]	24/10/2023	[NT]
Date analysed	-			24/10/2023	[NT]	[NT]	[NT]	[NT]	24/10/2023	[NT]
Iron-Total	µg/L	10	Metals-022	<10	[NT]	[NT]	[NT]	[NT]	103	[NT]
Manganese-Total	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/10/2023	1	20/10/2023	20/10/2023		20/10/2023	[NT]
Date analysed	-			20/10/2023	1	20/10/2023	20/10/2023		20/10/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	5.6	5.6	0	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	390	390	0	104	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	1	160	[NT]		102	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.010	<0.010	0	108	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.02	<0.02	0	95	[NT]
Sulphide	mg/L	0.5	Inorg-051	<0.5	1	<0.5	[NT]		89	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	6	20/10/2023	20/10/2023		[NT]	[NT]
Date analysed	-			[NT]	6	20/10/2023	20/10/2023		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	6	7.7	[NT]		[NT]	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	[NT]	6	150	[NT]		[NT]	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	[NT]	6	81	[NT]		[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	6	<0.005	[NT]		[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	6	<0.005	[NT]		[NT]	[NT]
Sulphide	mg/L	0.5	Inorg-051	[NT]	6	<0.5	<0.5	0	[NT]	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	335822-2
Date prepared	-			20/10/2023	1	20/10/2023	20/10/2023		20/10/2023	20/10/2023
Date analysed	-			20/10/2023	1	20/10/2023	20/10/2023		20/10/2023	20/10/2023
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	4	[NT]		96	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	1	[NT]		91	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	40	[NT]		97	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	6.2	[NT]		97	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	35	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	22	21	5	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	<5	0	[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	9	9	0	109	110
Chloride, Cl	mg/L	1	Inorg-081	<1	1	110	110	0	103	87

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Samples received in good order: Incorrect Preservation

MISC_INORG: no2 po4 PQL has been raised due to matrix interferences from analytes (other than those being tested) in the sample/s. Samples were diluted and reanalysed however same results were achieved.

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

Chloride by IC: # Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Appendix B:
Laboratory Results (Isotopes)

Isotope Tracing in Natural Systems

Stable Isotope Analysis Report

Client Details

Company Name: Environment & Natural Resource Solutions (ENRS Pty Ltd)
Address: 108 Jerry Bail Rd, Shoalhaven Heads, NSW, 2535
Contact Name: Rohan Last
Tel: +61 401 518 443
Email: LAB@ENRS.com.au

Portal No. 13802

Sample Details

Number: 6
Material: Groundwater, Surfacewater, Rainwater

Sample Tracking

LIMS Batch Number: 2023/0383O, 2023/0383P
Registration Date: 20-Oct-2023

Analysis Details

Isotope(s) : $\delta^{2}H$
$\delta^{18/16}O$
$\delta^{13/12}C_{DIC}$

Method(s): $\delta^{2}H$ by CRDS
$\delta^{18/16}O$ by CRDS
$\delta^{13/12}C_{DIC}$ by Equilibration

Name: Narelle Hegarty

Signature:

Date: 07-Nov-2023

Analysis of δ^2H and δ^{18}O

This report contains determinations of relative difference of isotope ratios, δ, of (^{2}H/^{1}H) and (^{18}O/^{16}O), herein referred to as δ^2H and δ^{18}/^{16}O respectively. The values will be reported as parts per thousand (‰ or per mil).

Samples were analysed using an established Picarro Cavity Ring-Down Spectroscopy (CRDS) method.

In brief, water samples are introduced into the septum port of the Picarro vaporizer with a Picarro Autosampler, 1.85 µL of water is injected into the vaporizer at 110ºC where it is vaporized. The gas species are then introduced into the optical cavity which contains 3 reflective mirrors. A beam from a laser diode enters the cavity. When the photon detector reaches its threshold, the laser beam is turned off. The light within the cavity continues to bounce off the mirrors until it decays ("rings down") to zero. The gas molecules in the cavity inhibit the laser beam from bouncing off the mirrors, therefore decreasing the amount of time the light in the cavity takes to decays. The CRDS measures this "ring-down" and calculates the concentration of the absorbing substances in the gas mixture in the cavity. Samples and standards are analysed 8 times with the first 2 injections rejected.

The data will be reported on scales normalized such that δ2H and δ^{18}/^{16}O values of SLAP2 are –427.5 and –55.50 ‰relative to VSMOW2, i.e.:

$$\delta^2H = \delta(^{2H/1H})_{P/VSMOW2\_SLAP2} = \frac{R(^2H/1H)_P - R(^2H/1H)_{VSMOW2}}{R(^2H/1H)_{VSMOW2}}$$

$$\delta^{18/16}O = \delta(^{18}O/16O)_{P/VSMOW2\_SLAP2} = \frac{R(^{18}O/16O)_P - R(^{18}O/16O)_{VSMOW2}}{R(^{18}O/16O)_{VSMOW2}}$$

where the P represents the specimen having its delta values determined.

Results are accurate to +/- 1 ‰ for δ^2H and +/- 0.15 ‰ for $\delta^{18/16}$O.

Picarro 2011, Picarro Inc., Santa Clara, California, viewed 5 September 2011, http://www.picarro.com/technology/what_is_crds

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Analysis of $\delta^{13}C_{DIC}$ in water on Delta V Advantage Isotope Ratio Mass Spectrometer

This report contains determinations of relative difference of isotope ratios, δ, of ($^{13}C/^{12}C$) of Dissolved Inorganic Carbon (DIC), elsewhere referred to as $\delta^{13}C_{DIC}$. The isotopic values will be reported as parts per thousand (‰ or per mil). The DIC concentration is measured and reported in mmol/L.
Samples were run using an established equilibration method on Gas Bench II coupled to continuous-flow Delta V Advantage Isotope Ratio Mass Spectrometer (IRMS).

Preparation of samples and blanks:
Exetainers are flushed with Helium gas for approximately 8min. 1ml or 5ml (depending on the expected DIC concentration of sample) of sample is then manually sampled and introduced into the flushed Exetainer. The original sample containers are purged with Argon gas to replace the volume of sample withdrawn from the container.

Preparation of standards:
Solid standard is weighed into the Exetainer and flushed with Helium gas for approximately 8min. 1ml or 5ml (depending on the expected DIC concentration of sample) of DIC free water is then manually introduced into the flushed Exetainer.
0.1 ml or 0.5ml of phosphoric acid is then added to both sample and standard Exetainers. The gas/liquid and acid/water ratios are kept constant for the entire batch of samples and standards i.e. for 1ml of injected water; 0.1ml of H_3PO_4 is added.
All Exetainers are then shaken and equilibrated for 18 hrs at room temperature (21 ± 1 ºC).
The data reported relative to IAEA secondary standards that have been certified relative to VPDB for carbon. A two point calibration is employed to normalise the data, utilising standards that bracket the samples being analysed. Quality control references are also included in each run.
Results are accurate to +/- 0.3 per mil for $\delta^{13}C_{DIC}$.

$$\delta^{13}C_{DIC\,(sample)} = \left(\frac{\left({}^{13}C/{}^{12}C\right)_{sample}}{\left({}^{13}C/{}^{12}C\right)_{std,VPDB}} - 1 \right) \text{x } 10^3 \text{ ‰}$$

Assayag, N. Rivé, K. Ader, M. Jézéquel, D. and Agrinier, P. (2006). Improved method for isotopic and quantitative

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LIMS Number	Client Identification	Sampling date	Hydrogen Data: Result $\delta^{2}H_{VSMOW}$ (‰)	Hydrogen Data: Uncertainty $\delta^{2}H_{VSMOW}$ (‰)	Oxygen Data: Result $\delta^{18/16}O_{VSMOW}$ (‰)	Oxygen Data: Uncertainty $\delta^{18/16}O_{VSMOW}$ (‰)	Sample Comments
2023/0383O-1	MW101	19/10/2023	-37.1	1.0	-6.45	0.15	Picarro_ML23Oct23
2023/0383O-2	MW102	19/10/2023	-39.4	1.0	-6.72	0.15	Picarro_ML23Oct23
2023/0383O-3	MW104	19/10/2023	-38.8	1.0	-6.65	0.15	Picarro_ML23Oct23
2023/0383O-4	SPRING WATER	19/10/2023	-39.6	1.0	-6.85	0.15	Picarro_ML23Oct23
2023/0383O-5	IRON MINES CK	19/10/2023	-28.0	1.0	-5.04	0.15	Picarro_ML23Oct23
2023/0383O-5(2)	IRON MINES CK	19/10/2023	-27.9	1.0	-5.07	0.15	Picarro_ML23Oct23
2023/0383O-6	RAIN WATER	19/10/2023	-6.3	1.0	-1.61	0.15	Picarro_ML23Oct23

The following Standard Reference Materials (SRM) were used for hydrogen and oxygen data normalisation.

SRM	$\delta^{2}H_{V\text{-}SMOW}$ (‰)	$\delta^{18/16}O_{V\text{-}SMOW}$ (‰)
AILS-006	32.3 ± 0.6	7.61 ± 0.05
AILS-008	-174.0 ± 0.5	-22.15 ± 0.06
AILS-009	-17.9 ± 0.7	-3.83 ± 0.08
AILS-012	-1.3 ± 0.9	-1.25 ± 0.11
AILS-013	-50.6 ± 0.7	-9.87 ± 0.06
AILS-014	-33.9 ± 0.7	-8.34 ± 0.06

AILS are ANSTO Isotope Laboratory Standards, standardised against VSMOW2-SLAP2

QC CHECKS

SRM	Result $\delta^{2}H_{VSMOW}$ (‰)	S.D. $\delta^{2}H_{VSMOW}$ (‰)	Result $\delta^{18/16}O_{VSMOW}$ (‰)	S.D. $\delta^{18/16}O_{VSMOW}$ (‰)
CERTIFIED VALUES for AILS-012	-1.3	0.9	-1.25	0.11
Picarro_ML23Oct23	-0.7	0.3	-1.30	0.09
Average	-0.7		-1.30	
Diff from Actual	0.6		-0.05	

CERTIFIED VALUES for AILS-013	-50.6	0.7	-9.87	0.06
Picarro_ML23Oct23	-50.9	0.2	-9.90	0.05
Average	-50.9		-9.90	
Diff from Actual	-0.3		-0.03	

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The following Standard Reference Materials (SRM) were used for carbon data normalisation.

SRM	$\delta^{13/12}C_{VPDB}$ (‰)
AILS-105	-47.5 ± 0.1
AILS-103	-2.8 ± 0.1
AILS-111	-5.0 ± 0.1

AILS are ANSTO Isotope Laboratory Standards, standardised against NBS-19 and LSVEC

QC CHECKS - DIC Analysis

RUN NO.	ID	n	$\delta^{13/12}C_{V\text{-}PDB}$‰	$\delta^{13/12}C_{V\text{-}PDB}$‰ SD
CERTIFIED VALUES for AILS-111			-5.0	0.10
NH23Nov03	AILS-111	5	-5.0	0.2
AVERAGE			-5.0	
Difference from Actual			0.0	

LIMS Number	Client Identification	Sampling date	Result $\delta^{13/12}C_{DIC(VPDB)}$ (‰)	Uncertainty $\delta^{13/12}C_{DIC(VPDB)}$ (‰)	Sample Comments
2023/0383P-1	MW101	19/10/2023	-18.4	0.3	NH23Nov03
2023/0383P-2	MW102	19/10/2023	-17.2	0.3	NH23Nov03
2023/0383P-3	MW104	19/10/2023	-13.1	0.3	NH23Nov03
2023/0383P-4	SPRING WATER	19/10/2023	-17.2	0.3	NH23Nov03
2023/0383P-5	IRON MINES CK	19/10/2023	-13.3	0.3	NH23Nov03
2023/0383P-6	RAIN WATER	19/10/2023	-9.9	0.3	NH23Nov03

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APPENDIX B

HERITAGE LISTINGS

State Heritage Inventory Report

Item Details

Name

Chalybeate Spring Site

Other/Former Names

Mineral Springs; Spring House Site

Address

14 Rainbow Road MITTAGONG NSW 2575

Local Govt Area	Group Name
Wingecarribee	

Item Classification

Item Type	Item Group	Item Category
Built	Parks, Gardens and Trees	Other - Parks, Gardens & Trees

Statement Of Significance

The Chalybeate or Mineral Springs site is significant as a natural spring site which has significance to new settlers and traditional owners.

Assessed Significance Type	Endorsed Significance	Date Significance Updated
	Local	1/6/2012

Listings

Listing Name	Listing Date	Instrument Name	Instrument No.	Plan No.	Gazette Page	Gazette Number
Local Environmental Plan	10/0/2017	Wingecarribee Local Environmental Plan 2010	I576			
Heritage study						

Heritage Item ID	Source
2680576	Local Government

Location

Addresses

Records Retrieved: 1

Street No	Street Name	Suburb/Town/Postcode	Local Govt. Area	LALC	Parish	County	Electorate	Address Type
14	Rainbow Road	MITTAGONG/NSW/2575	Wingecarribee	Unknown			Unknown	Primary Address

Description

Designer **Builder/Maker**

Construction Year Start & End **Circa** **Period**

N0 Unknown

Physical Description **Updated**

A large irregular corner site adjoining residential and commercial precincts. A large dam is fenced and surrounded by trees. Site is undulating and turfed and features exotic trees, several stands of mature eucalypts and shrubs at corner include conifers and a gravel path winds through the site and an unmade driveway accessed c.1987, community building former Mineral Springs Centre. Some small brick BBQ pavilion and picnic tables. Several old lamp posts and ironstone cairn and retaining wall.

Physical Condition **Updated**

Modifications And Dates

Further Comments

History

Historical Notes or Provenance **Updated**

The Chalybeate or Mineral Springs at Mittagong were first reported in the early 1830s when the Great South Road through Berrima was being surveyed and constructed. In 1849, when the Governor of NSW, Sir Charles FitzRoy visited the Ironworks in Mittagong, the springs were officially named the Lady Mary FitzRoy Spring after the Governor's wife. A sample of the water was taken back to Sydney for analysis, and was fiound to have properties considered by many to have medicial and therapeutic value. Both local people and visiting tourists came to "take the waters" and used the crystal clear water from the spring, rich in iron and other trace elements, for many years. A pipe from a rough rounded cairn of ironstone about one metre high gave a constant flow ofwater. This source was covered by a rotunda during the early 1900s and the area surrounded by a timber fence to enclose a picnic area. The spring water gained something of a reputation as a general tonic, beneficial for invalids, and was endorsed by several medical men. The Mineral Springs Educational Centre was opened in 1987 following community funding but closed in 1988. The spring has been capped but apparently it is possible for it to be tapped once more.

Historic Themes

Records Retrieved: 0

National Theme	State Theme	Local Theme
No Results Found		

Assessment

Criteria a)		
Historical Significance	**Include**	**Exclude**
Criteria b)		
Historical Association Significance	**Include**	**Exclude**
Criteria c)		
Aesthetic/Technical Significance	**Include**	**Exclude**
Criteria d)		
Social/Cultural Significance	**Include**	**Exclude**
Criteria e)		
Research Potential	**Include**	**Exclude**
Criteria f)		
Rarity	**Include**	**Exclude**
Criteria g)		
Representative	**Include**	**Exclude**

Integrity/Intactness **Updated**

References

References

Records Retrieved: 1

Title	Author	Year	Link	Type
The Chalybeate Springs, Mittagong	Linda Emery	2006		Written

Heritage Studies

Records Retrieved: 1

Title	Year	Item Number	Author	Inspected By	Guidelines Used
Wingecarribee Heritage Study	1991	2680576	JRC Planning Services		Yes

Procedures / Workflows / Notes

Records Retrieved: 0

Application ID / Procedure ID	Section of Act	Description	Title	Officer	Date Received	Status	Outcome
No Results Found							

Management

Management

Records Retrieved: 0

Management Category	Management Name	Date Updated
No Results Found		

Management Summary

END OF REPORT