

8 April 2024

New Plymouth District Council
Private Bag 2025
New Plymouth

Attention: Damien Morresey

1. Scope of Works

Armstrong Surveying and Land Development was initially engaged by the New Plymouth District Council (NPDC) to complete an independent review of documentation provided by others relating to the house under construction at 26 Woolcombe Terrace, New Plymouth. Following this review, we were then asked to complete an independent asbuilt survey of the aforementioned house.

The requested survey detail is listed below:

- Setback dimensions from the legal lot boundaries to the asbuilt building foundation
- Daylighting at Grid A – drawing A1.05a Rev A
- Daylighting at Grid B – drawing A1.05a Rev A
- Daylighting at Grid C – drawing A1.05a Rev A
- Daylighting at Grid D – drawing A1.05a Rev A
- Daylighting at Grid E – drawing A1.05a Rev A
- Daylighting at Grid F – drawing A1.05a Rev A
- Daylighting at Grid G – drawing A1.05a Rev A
- Ground Floor RL
- First Floor RL
- Ridge level – drawing A4.02 Rev C

All requested detail is shown on our set of plans attached as Appendix A.

2. Third Party Documentation

We were provided with the following documents;

- Boon Architects - NPDC Approved design house plans
- BTW Company – Ground Level Assessment
- Bland and Jackson – Report on asbuilt survey of house at 26 Woolcombe Terrace

- Original Topographic Site Survey completed by Geosync in 2019. Supplied in .dwg format.

3. Review of documentation

Our initial involvement in this project was to review, and provide feedback on, the ground level assessment prepared by BTW Company and the asbuilt house survey and associated report by Bland and Jackson Surveyors. My feedback to the NPDC is summarised below.

BTW report assessment

I agree with the methodology and the conclusions reached by BTW. In summary, I agree that the ground levels surveyed by Geosync in 2019 can be used to represent the ground levels along the boundary at time of original subdivision in 1924/1925.

BJSL report assessment

I agree with the approach taken by BJSL. The survey methods used follow good survey practice, and include measures to ensure the survey is in the same terms as earlier surveys by Geosync and BTW. I also note the limitations identified by BJSL, namely that they did not have access to the site to survey the asbuilt FFL and that they did not have access to the electronic survey data originally surveyed by Geosync.

4. Our survey and calculations

Horizontal definition

We independently calculated the underlying lot boundaries using xml data extracted from Land Information New Zealand, and the relevant survey plans. We note that BTW Company completed a redefinition survey of the rear boundary (SO 599934) in December 2023. This survey pegged the rear boundary corner of the eastern lot boundary between 26 and 28 Woolcombe Terrace. We agree with the BTW definition. We also checked our lot boundary definition against the one used by Geosync in the topographic survey by overlaying each in Civil3D software, and confirm that the boundaries are within a few mm of each other, and well within Class A cadastral tolerances.

The horizontal datum mark for our lot boundary calculations, and our survey itself, is **AP 1 DP 422203**. This is the same horizontal datum mark used by Geosync, BTW, and BJSL.

Given the above checks and redundancies, we are confident our survey is in the same horizontal terms as the earlier surveys completed by others.

Vertical Datum

The vertical datum mark used by Geosync, BTW and BJSI is **NPDC BM 193**, located approximately 450m from the site. The published RL for this mark is 17.413m, however the RL used by Geosync is **17.42m**. To keep in terms of the original survey by Geosync we chose to use the same value of 17.42m. We connected to this mark via Totalstation traverse using left and right face observations on each traverse leg.

Once we had established the vertical datum on site, we observed two telecommunications pit lids and one water toby lid, all of which were surveyed as part of the original Geosync topographic site survey. All three of our surveyed RL's for these features were within 5mm of the Geosync survey, which provided sufficient redundancy to confirm that our survey is in the same vertical terms as the original Geosync survey.

Our survey methodology

- Finished Floor Levels

We surveyed the finished floor levels of the Ground and First floors using a Leica 1203 Totalstation and observing to a pole and prism. The surveyed points were in the Living room on the Ground Floor, and the Kitchen Living Dining on the First Floor. The asbuilt levels are shown on Sheet 1 of our plans, **and do not agree with the design FFL's**.

- Asbuilt Foundation Horizontal position check

As the edge of the concrete foundation could not be surveyed directly due to cladding and decking, we surveyed the outside of the house cladding using Reflectorless Totalstation observations. We then applied a nominal offset of 70mm (being 50mm of plaster panel cladding and 20mm cavity) for all plaster cladding, and 40mm (20mm of weatherboard cladding and 20mm cavity) for the weatherboard cladding. The dimensions from the lot boundaries to the asbuilt foundation are shown in red on Sheet 1 of our plans, and **are consistent with design setbacks shown on A1.03 Proposed Site Plan**.

- Daylighting and Ridge Level

We surveyed the ridge lines at each end of the house using Reflectorless Totalstation observations. We also used Reflectorless observations to survey the walls and/or fascia, and the relevant rooflines. The point we used to determine the highest point of the building in relation to the daylight angle plane is the intersection of the outer face of the cladding or fascia and the roofline. The survey findings are shown on Sheets 2 and 3 of our plans, with Sheet 2 showing the Operative District Plan 2005 Daylight Angle Plane, and Sheet 3 showing the Proposed District Plan height in relation to boundary planes.

5. Survey Findings

Our survey findings are very similar to those detailed in the BJSI report. The minor differences (0 – 30mm) can be attributed to;

- Original ground level used in calculation, where BJSI had to interpolate ground levels, we had the electronic survey data available.
- Value used for vertical datum point, where BJSI used the published RL of 17.413m, we used the Geosync RL of 17.42m.
- Reflectorless measurement accuracy.
- Rounding of values.

Our survey findings are shown on our plans attached as Appendix A, and are summarised below.

Horizontal position in relation to eastern lot boundary

At Grid	Design setback from eastern lot boundary	Asbuilt setback from eastern lot boundary
A	2.680m	2.670m
E	2.680m	2.668m
G	2.730m	2.733m

Note: Although we have shown our asbuilt dimension to the nearest mm, there is certainly a margin of error that should be considered. The margin of error relates to the survey method used and the nominal width used for the cladding and building cavity. The asbuilt dimension, however, is so close to the design dimension that I am comfortable confirming that the asbuilt position in relation to the eastern lot boundary is consistent with the design position within acceptable Class A cadastral survey tolerances.

Maximum height of building

Surveyed Height	Operative District Plan 2005 Max Height (Rule Res 7)	Proposed District Plan Max Height (MRZ-S1)
9.28m	9m	11m

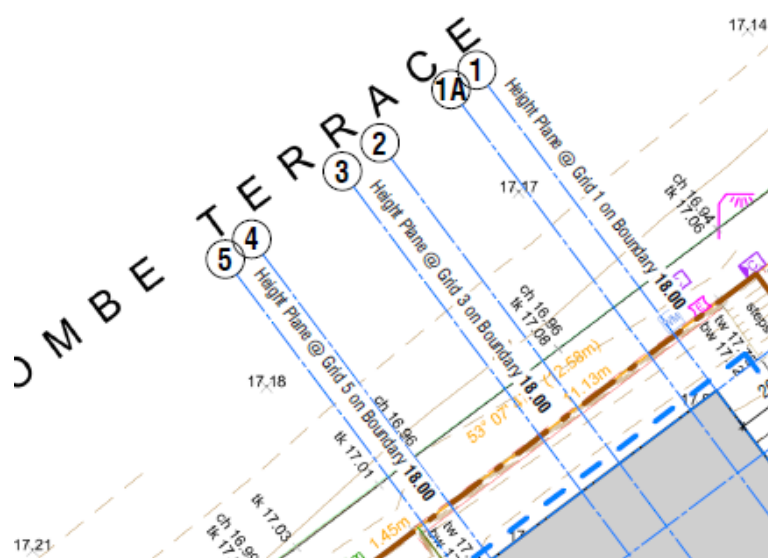
Height in relation to boundary

At Grid	Operative District Plan 2005 Daylight Angle vertical breach (Res 5)	Proposed District Plan Height in Relation to Boundary (MRZ-S3)	Proposed District Plan Alternative Height in Relation to Boundary (MRZ-S4)
A – BJSL Profile A	0.00m	0.62m	No breach
B – BJSL Profile B	0.09m	0.59m	No breach
BJSL Profile C	0.23m	0.72m	No breach
C	0.18m	0.68m	No breach
D	0.05m	0.55m	No breach
E	0.00m	0.50m	No breach
F – BJSL Profile D	0.23m	0.74m	No breach
G	0.00m	0.40m	No breach

Note: Building activities seeking to use MRZ-S4 as an alternative to the permitted MRZ-S3 are a restricted discretionary activity.

6. Alternative site benchmark

When arranging access to the 26 Woolcombe Terrace site and house I liaised with Chris Bell of Chris Bell Construction, being the primary contractor on the job. Chris then met us on site and identified what he understood to be the alternate vertical benchmark for the site following the destruction of the original site benchmark during installation of a soakage pit. The mark that Chris identified was a small nail in the concrete footpath on the northern side of Woolcombe Terrace. Chris believed that this nail had an RL of 17.18m, and was labelled on the site plan (see snip below). He also pointed out 2 other nails along the footpath that approximately lined up with other RL's shown on the plan (being 17.21 and 17.17m).



As part of our survey we surveyed the nail, however our surveyed RL was 17.42m, being 240mm higher than what Chris believed it to be. When we checked the four marks in the original topo survey data from Geosync, we found they were actually spot heights within the Woolcombe Terrace carriageway, approximately 6 metres away from the footpath, and in no way related to the nails.

The difference in height between the asbuilt ground floor level and the nail believed to be the alternate site benchmark is 1.60m. So, if the RL of the nail was in fact 17.18m, the ground floor FFL would be 18.78m, as per the design plans.

We have not sought to find out how this apparent misunderstanding surrounding the alternate benchmark transpired.

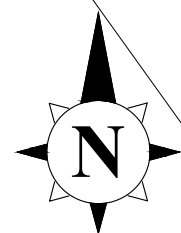
7. Summary

- Our survey shows that the asbuilt house foundation horizontal position is **consistent** with the design position shown on *Drawing A1.03 Proposed Site Plan*, within expected Class A cadastral tolerances.
- The asbuilt ground and first floor RL's are **245mm higher** (Ground floor design RL = 18.775m vs 19.02m asbuilt) and **225mm higher** (First floor design RL = 21.895m vs 22.12m asbuilt) than shown on *A3.02 Proposed Elevations*.
- There are **breaches of the Operative District Plan 2005 Daylight Angle plane** at various points along the eastern boundary. The maximum breach is 230mm, which is a similar magnitude as the difference between the design and asbuilt floor levels.
- There is a **breach of the maximum permitted building height under the Operative District Plan 2005**, where the asbuilt ridge of the northern end of the roof is **9.28m** above the original ground level as surveyed by Geosync.
- Our survey findings are consistent with those provided by Bland and Jackson Surveyors Limited, within expected tolerances. We have no dispute with their findings.



Dave Armstrong
Licenced Cadastral Surveyor
021 231 0231

Appendix A – Asbuilt Survey Plans



WOOLCOMBE TERRACE

DISTANCES SHOWN TO BOUNDARY:
IN BLACK - FROM FACE OF CLADDING
IN RED - FROM FOUNDATION USING
NOMINAL WIDTH FOR CLADDING & CAVITY

APEX RL: 27.22
2019 ORIGINAL GROUND RL: 17.94

233°07'47"
1.45
1.763

233°07'47"
11.13

GROUND FLOOR RL: 19.02
FIRST FLOOR RL: 22.12

Part Lot 1
DP 4522
452m²
961499 TN110/182

Part Lot 1
DP 5012
452m²
961499 TN127/164

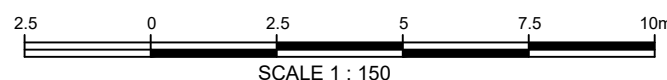
APEX RL: 27.37
2019 ORIGINAL GROUND RL: 18.88

FACE OF CLADDING OF
DWELLING UNDER
CONSTRUCTION

NOTE: PROFILES A-G WERE ALIGNED TO THE ASBUILT FOUNDATION BY ALIGNING GRID LINE G
WITH THE EDGE OF FOUNDATION AS PER PLAN A2.05 REV B AND USING THE SPACING
BETWEEN GRID LINES AS SHOWN ON PLAN A2.03 REV C.
GRIDLINES DO NOT EXACTLY REFLECT THE PROFILE LOCATIONS OF BJSI CONFORMANCE SURVEY,
DIFFERENCES AS FOLLOWS:
AT GRID A - BJSI PROFILE A IS 93mm TO NW ALONG BDY
AT GRID B - BJSI PROFILE B IS 108mm TO NW ALONG BDY
AT GRID F - BJSI PROFILE D IS 148mm TO NW ALONG BDY

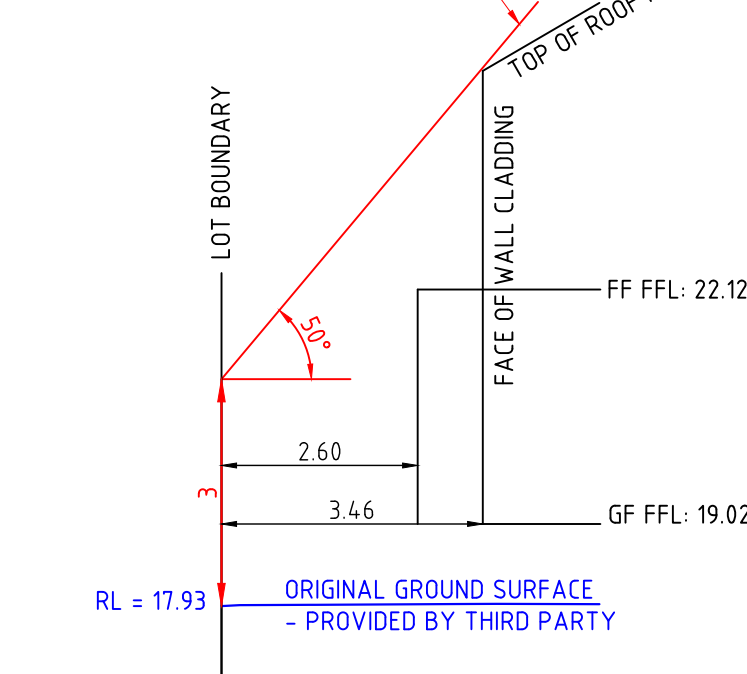
Notes:

- The survey was completed using Total Station. Heights are accurate to ±10mm.
- Origin of heights - NPDC BM 193, RL: 17.42 (as per Geosync 2019 topographic survey)
- Origin of coordinates - AP 1 DP 422203 387295.535mE 809285.087mN
- Any queries phone: 021 231 0231

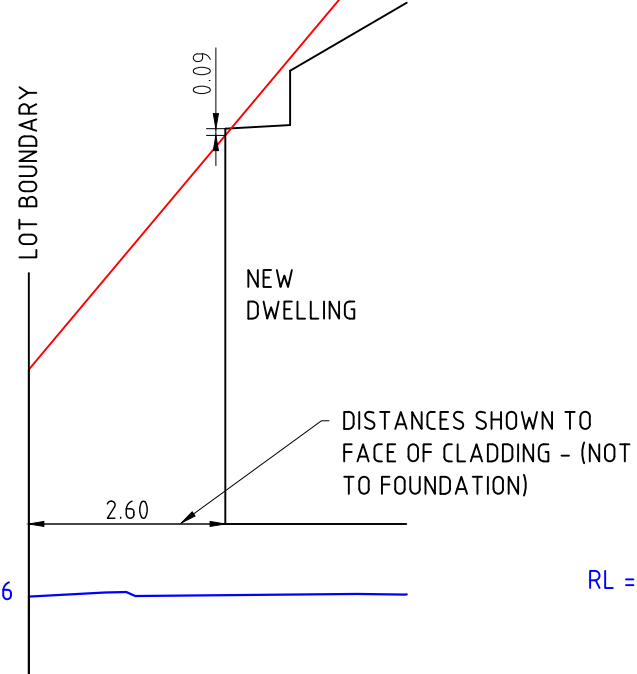


			Drawn By	S Armstrong	Territorial Authority: New Plymouth District Council Title Ref: 961499 Drawing Title 26 Woolcombe Terrace New Dwelling Asbuilt Location Sheet 1 - Plan View	Surveyor: D Armstrong		
			Job Reference	24027		Signature: 		
			Date Surveyed	27 March 2024		Property Address: 26 Woolcombe Terrace, New Plymouth		
			Hor Datum	Taranaki 2000		Date: 1 April 2024		
			Vert Datum	Taranaki 1970		Rev 1		
1	First Issue	01/04/24	Scale	1:150 (A3)		Sheet 1 of 3		
Rev	Description	Date						

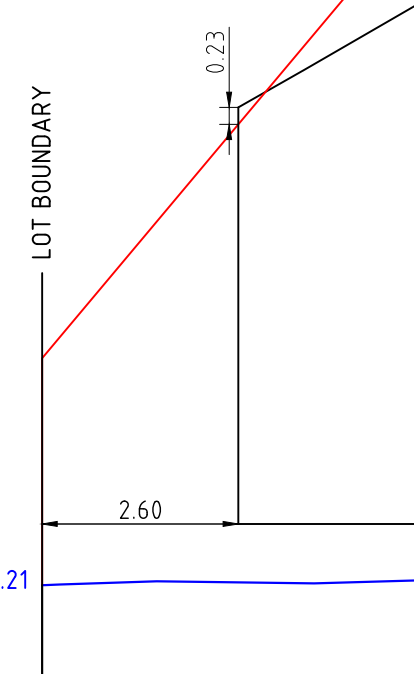
NP OPERATIVE DISTRICT PLAN (2005)
DAYLIGHTING ENVELOPE



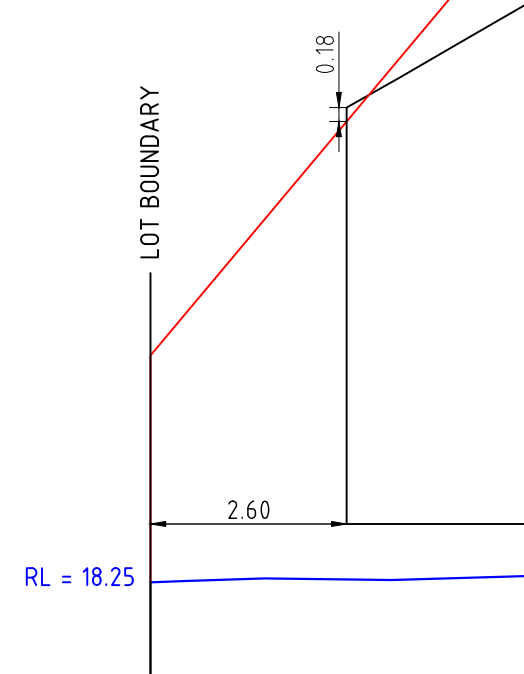
GRID A - BJSI PROFILE A



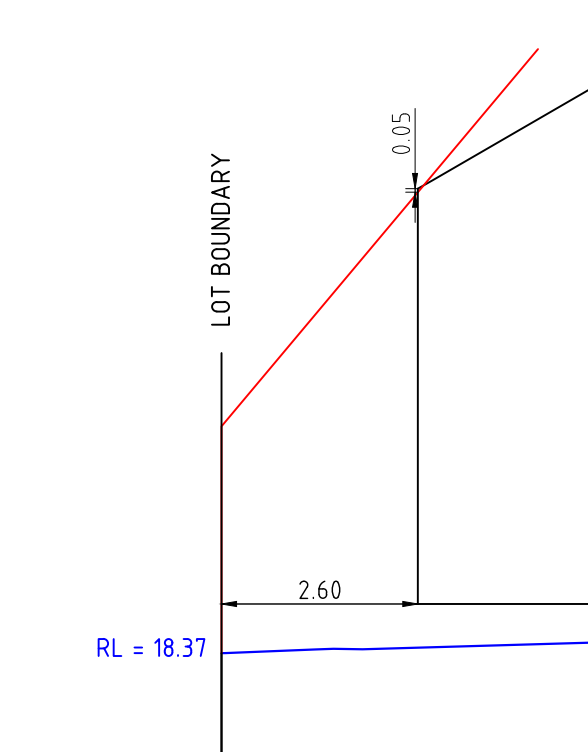
GRID B - BJSI PROFILE B



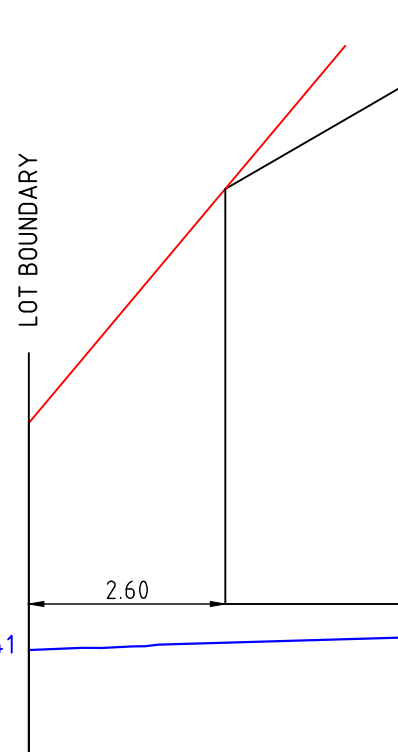
BJSI PROFILE C



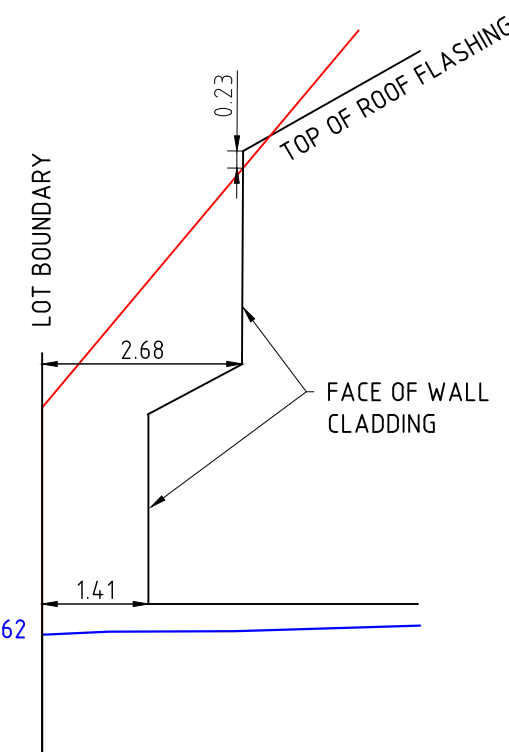
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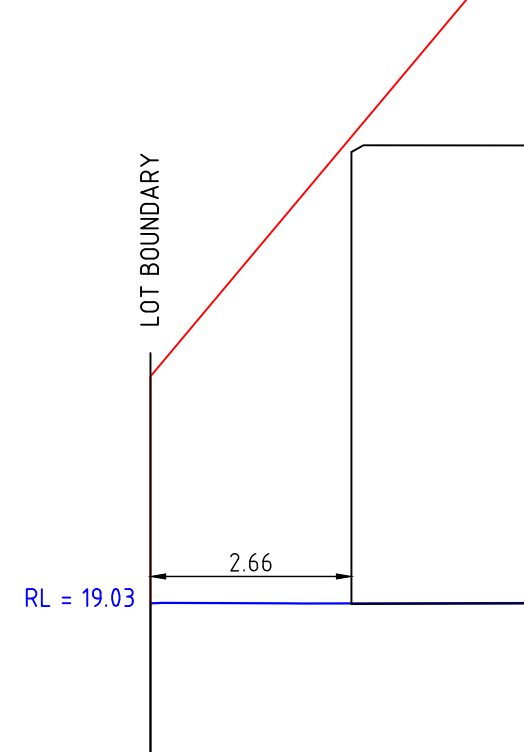
GRID D



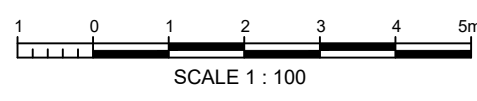
GRID E



GRID F - BJSI PROFILE D



GRID G



Notes:
1. The survey was completed using Total Station. Heights are accurate to ± 10 mm.
2. Origin of heights - NPDC BM 193, RL: 17.42 (as per Geosync 2019 topographic survey)
3. Origin of coordinates - AP 1 DP 422203 387295.535mE 809285.087mN
4. Any queries phone: 021 231 0231

1	First Issue	01/04/24	Drawn By	S Armstrong
Rev	Description	Date	Job Reference	24027
			Date Surveyed	27 March 2024
			Hor Datum	Taranaki 2000
			Vert Datum	Taranaki 1970
			Scale	1:100 (A3)

Territorial Authority: New Plymouth District Council
Title Ref: 961499
Drawing Title
26 Woolcombe Terrace
New Dwelling Asbuilt Location
Sheet 2 - Section View ODP 2005

Surveyor: D Armstrong
Signature: [Signature]
Property Address: 26 Woolcombe Terrace, NP
Date: 1 April 2024
Rev: 1
Sheet: 2 of 3

