Northern Beaches Council
Attention: Mr Tom Cotton
Sent via email: tom@insulshop.com.au

Greys Australia Pty Ltd
ABN 62 609 921 593

Transportation and Traffic Specialists

404, 7-11 Smith Street
Ryde NSW 2112 Australia

Phone: +61 2 9809 2299
Mobile: +61 456 789 047
Email:
info@greysconsulting.com.au

www.greysconsulting.com.au

9 August 2025

Dear Tom,

RE :DRIVEWAY ACCESS VARIATION REQUEST – FORWARD-IN / FORWARD-OUT REQUIRE– 31 COOK TERRACE, MONA VALE

1.0 INTRODUCTION

This letter has been prepared to support a request for a variation to the driveway access requirements of Northern Beaches Council's Pittwater Development Control Plan (DCP) Section B6.2 – Access and Parking, along with the relevant provisions of AS/NZS 2890.1:2004.

Under Section B6.2 of the DCP, where a residential driveway exceeds a gradient of 1 in 4 (25%), the design must provide for vehicles to enter and exit the site in a forward direction. At 31 Cook Terrace, Mona Vale (Lot 1 / DP 20983), the site's steeply sloping and naturally retained front yard, combined with the fixed garage level and structural retention of existing lower-ground walls, make it geometrically impossible to provide a compliant on-site turning area.

As a result, vehicles will only be able to exit in a forward direction if they reverse into the site on arrival. This operational arrangement reflects the long-standing current use, which has operated safely for many years without incident. The proposed works — converting a single garage into a double garage and widening the driveway — do not worsen this condition and, in fact, introduce several safety improvements.

Along with the non-compliance regarding the turning area, a short part of the proposed driveway exceeds the standard 1 in 4 (25%) grade limit. However, this 6.5 m section falls within the DCP's merit-based allowance of up to 1 in 3 (33.3%) for steep sites and has been verified through vertical clearance analysis to be safe for domestic vehicles.

This letter outlines the site context, relevant standards, and technical evidence to demonstrate that the variation to the forward-in / forward-out requirement can be justified based on merit, considering the safe operating history of the existing access, the site's physical constraints, and the proposed safety enhancements.

2.0 SITE CONTEXT AND EXISTING CONDITIONS

The subject property is located on the southern side of Cook Terrace, within a steeply sloping residential area of Mona Vale. The site falls sharply from the dwelling towards the street frontage, with a naturally retained front yard supported by existing retaining walls and landscaping.

2.1. Existing Driveway Arrangement

The current driveway is a narrow, steep concrete strip leading to a single garage at the lower ground-floor level. Based on level measurements and photographic evidence, the existing driveway includes a short section steeper than 25% (1 in 4). It has been in continuous use for many years without recorded safety or operational issues. Vehicles currently enter and exit via the existing crossing, with occasional reversing movements undertaken at low speed due to the driveway geometry.

Figure 1 illustrates the existing driveway configuration, which exhibits a similar or greater gradient than the proposed design. The photo demonstrates long-standing functional use without clearance or access issues.

Figure 1: Existing Steep Driveway Profile at 31 Cook Terrace (Pre-Development Condition)

2.2. Retention of Existing Structure

The proposed development retains substantial existing structural elements at the lower ground floor, including the external brick walls and much of the existing slab. The garage level remains unchanged, so the driveway profile maintains a similar alignment to the existing, with modifications made to widen it for dual-vehicle access and to improve the surface finish and drainage.

2.3. Geometric Constraints

Due to the steep front setback and existing retaining wall layout, there is no practical way to create a compliant turning area within the property boundaries. Any attempt to establish a turning bay would involve significant excavation into the retained slope, negatively affecting the dwelling and landscaping, and would be disproportionate to its functional benefit.

2.4. Local Street Context

Cook Terrace functions as a low-volume local access street within the surrounding residential network. The majority of vehicle movements in the area use Coronation Street, which connects directly to Pittwater Road via a signalised intersection. In contrast, the connection from Cook Terrace to Pittwater Road operates as a Left-In / Left-Out (LILO) arrangement, which significantly limits through-traffic and discourages non-local use.

Consequently, traffic volumes along Cook Terrace are naturally low, and the risk of vehicle-to-vehicle conflicts at the driveway is minimal. Sight lines from the driveway to the carriageway are unobstructed, further supporting safe access even in the event of occasional reversing movements.

3.0 APPLICABLE STANDARDS AND DCP REQUIREMENTS

The design of residential driveways in New South Wales is primarily regulated by AS/NZS 2890.1:2004 – Off-street Parking and the Northern Beaches Council Pittwater Development Control Plan (DCP), Section B6.2 – Access and Parking.

3.1. AS/NZS 2890.1:2004 Requirements

- **Clause 2.5.3** sets a maximum desirable driveway grade of 1 in 4 (25%).
- **Clause 2.6.2** permits steeper grades for domestic driveways serving single dwellings where safe operation can be demonstrated, taking into account:
    - Surface treatment and traction
    - Drainage and stormwater management
    - Transition grades at crest and sag changes
    - Type of vehicles using the driveway and driver familiarity.
- The standard also requires grade changes to be limited to **12.5% for summit transitions and 15% for sag transitions**, or otherwise to incorporate a vertical transition curve to maintain vehicle clearance.
- Where steeper grades are adopted, they must be supported by engineering assessment confirming safe clearance for typical domestic vehicles (B85 design vehicle).

3.2. Pittwater DCP – Section B6.2

- **Maximum Grade**: Residential driveways are to be designed to a maximum gradient of 1 in 4 (25%).
- **Forward-In / Forward-Out Requirement** – For residential driveways with an internal grade steeper than **1 in 4 (25%)**, the DCP requires that vehicles must be able to enter and leave the site in a forward direction**.**
- **Merit-based Flexibility**:
    - Grades up to 1 in 3 (33.3%) may be considered where supported by a traffic engineering assessment and where safe operation is demonstrated.
    - For grades exceeding 1 in 4, the DCP requires that vehicles enter and exit the site in a forward direction.
- **Grade Transitions**: Grade changes must not exceed **11% over a 1.4** m transition length.
- **Surface Treatment**: Driveways on steep grades must have a slip-resistant finish to minimise loss of traction in wet or dry conditions.
- **Pedestrian Safety**: Where the driveway gradient is steep, consideration should be given to safe pedestrian access separated from the vehicular path.

3.3 Site-Specific Considerations

In the context of 31 Cook Terrace, the following points are relevant to the application of the above standards:

- The driveway includes a short 6.5 m segment at 31% (1 in 3.23), exceeding the nominal 25% limit but within the DCP's 33.3% merit allowance.
- Due to the steep, retained front yard and fixed garage level, it is geometrically impossible to accommodate a turning area that would allow forward exit without reversing into the site on arrival.
- Grade transitions comply with DCP and AS/NZS 2890.1 limits, and a slip-resistant surface with dedicated pedestrian edge stairs is proposed.
- The driveway is part of a low-volume local street environment with a LILO connection to Pittwater Road, reducing traffic conflict risk.

Accordingly, the primary variation sought relates to the DCP's forward-in / forward-out requirement for steep driveways, with the gradient exceedance addressed under the merit-based flexibility provisions.

4.0 DRIVEWAY DESIGN REVIEW

The proposed works involve replacing the existing narrow concrete driveway with a wider, regraded concrete surface to serve the upgraded double garage at lower ground level. The garage floor level remains the same, meaning the driveway profile maintains a similar vertical alignment to the current setup.

4.1 Geometry and Gradient

- The driveway reaches a **maximum gradient of approximately 31% (1 in 3.23)** over a short segment between chainage 3.00 m and 9.50 m.
- This section exceeds the standard 1 in 4 (25%) limit but remains within the DCP's 1 in 3 (33.3%) merit allowance for steep sites.
- The steep segment length (6.5 m) is well below the DCP's 20 m maximum for steep driveways.
- Grade transitions comply with Council's requirement that grade changes not exceed 11% per 1.4 m, minimising clearance risks.

4.2 Surface Treatment and Drainage

- The driveway will be constructed in **broom-finished concrete or equivalent slip-resistant surface**, consistent with AS/NZS 2890.1 Clause 2.6.2.
- Adequate cross-fall and longitudinal drainage will be provided, including grated drainage at the garage threshold, to prevent ponding and maintain surface traction.

4.3 Pedestrian Access

- Dedicated **pedestrian stairs** are proposed along the edge of the driveway to allow safe pedestrian movement independent of the vehicular path.
- This improves safety for residents and visitors, particularly in wet weather conditions.

4.4 Vehicle Movements

- The widened crossing improves entry alignment and visibility compared with the existing arrangement.
- Due to the constrained site geometry and steep retained frontage, vehicles cannot complete a forward-exit manoeuvre unless they reverse into the site on arrival.
- This arrangement mirrors the existing long-standing operational pattern and has functioned safely for many years without incident.
- Given the low-traffic environment and unobstructed sight lines, occasional reverse-out movements can be undertaken safely at low speed.

4.5 Street Connection

- The driveway connects to Cook Terrace, which is a local street with low traffic volumes due to its Left-In / Left-Out connection to Pittwater Road.
- Most through-traffic uses Coronation Street, which connects to Pittwater Road via a signalised intersection, further reducing potential conflict.

In summary, the design offers a more formalised and safer version of the existing access, with specific enhancements to width, surface finish, drainage, and pedestrian separation, while maintaining the longstanding functional profile of the driveway.

5.0 SAFETY AND OPERATION ASSESSMENT

A detailed operational review of the proposed driveway has been undertaken to confirm safe use under both ascending and descending movements, in accordance with AS/NZS 2890.1:2004 and Pittwater DCP B6.2.

5.1. Vertical Clearance Assessment

- A vertical swept path analysis was undertaken using the B85 design vehicle, representing a typical passenger car, based on the proposed driveway long-section.
- Both ascending (sag) and descending (summit) movements were assessed.
- No underbody contact or scraping occurred in either direction, with clearance maintained at front and rear overhang points throughout the critical transition areas.
- The steepest segment is relatively uniform in grade, avoiding abrupt vertical inflections that could compromise clearance.

The vertical swept path diagrams for both ascending and descending movements are provided in **Appendix A – Vertical Swept Path Analysis**.

5.2. Grade Transitions

- Transition segments meet Council's requirement that grade changes not exceed 11% over a 1.4 m length.
- The combination of smooth transitions and uniform gradient ensures driver comfort and reduces the potential for traction loss.

5.3. Manoeuvring and Forward-Exit Limitation

- Due to the site's steep, retained front yard and constrained frontage width, there is no geometrically feasible way to provide a compliant on-site turning area.
- As a result, vehicles cannot complete a forward-exit manoeuvre unless they reverse into the site on arrival.
- This arrangement reflects the longstanding operational pattern, which has operated safely for many years without incident.
- The low-volume nature of Cook Terrace, along with clear sight lines and slow approach speeds, means that occasional reverse-out movements do not pose a significant safety risk.

5.4. Surface Treatment and Slip Resistance

- The driveway will be finished with broom-finished concrete or an equivalent slip-resistant surface to minimise the risk of wheel slip in wet or dry conditions.
- Drainage measures, including a grated drain at the garage threshold, will prevent water pooling on the driving surface.

5.5. Pedestrian Safety

- Dedicated pedestrian stairs will be installed along the driveway edge, providing a safe, separated path for pedestrians between the house and the street.
- This design feature removes the need for pedestrians to walk along the vehicular path, particularly important on a steep grade.

5.6. Street Context and Conflict Risk

- Cook Terrace is a local access street with a left-in / left-out connection to Pittwater Road, which limits traffic volumes and reduces potential conflicts.
- Most traffic in the area uses Coronation Street, which connects to Pittwater Road via a signalised intersection.
- The mix of slow speeds, low volumes, and clear sight lines ensures a safe operational environment.

In summary, the operational assessment confirms that while forward-exit manoeuvring from within the site is not feasible without reverse entry, the driveway can operate safely given the low-risk street environment, unobstructed sight lines, and proposed safety improvements.

6.0 JUSTIFICATION FOR VARIATION

The proposed driveway exceeds the 1 in 4 (25%) gradient threshold over a 6.5 m segment at approximately 31% (1 in 3.23). Under Pittwater DCP Section B6.2, this triggers the requirement for forward-in / forward-out access. Due to the site's steep, retained front yard and fixed garage level, there is no geometrically feasible way to provide a compliant on-site turning area, meaning forward exit is only possible if vehicles reverse into the site on arrival.

A variation to this requirement is warranted and supportable for the following reasons:

1. Existing Use and Retention

- The proposed profile closely matches the existing driveway, which has operated safely for many years with occasional reverse-out operation
- The garage floor level, external brick walls, and much of the lower ground slab are kept, preserving the existing access layout.

2. Safety Enhancements

- Driveway to be finished with broom-finished slip-resistant concrete, featuring cross fall and grated threshold drainage to maintain traction and prevent ponding
- Dedicated pedestrian edge stairs provide safe, separated pedestrian access independent of the vehicular path
- Grade transitions comply with AS/NZS 2890.1 standards, with vertical swept path analysis confirming no issues with underbody clearance.

3. Traffic Context and Risk Mitigation

- Cook Terrace is a low-volume local street with a Left-In / Left-Out connection to Pittwater Road, inherently limiting traffic flow and conflict potential
- Most through-traffic uses Coronation Street via a signalised intersection, diverting the majority of vehicle movements away from Cook Terrace
- The combination of low traffic volumes, low approach speeds, and clear sight lines allows safe reverse-out manoeuvres when required.

4. Functional Practicality

- The driveway is short and direct, aiding driver control and awareness
- All users are residents familiar with the site and its operation
- The design formalises and improves an arrangement that has already proven safe over decades of use.

Based on this, the proposal aligns with AS/NZS 2890.1 Clause 2.6.2 and the DCP's merit-based provisions, demonstrating that the requested variation to the forward-in / forward-out requirement is both reasonable and safe for this site.

7.0 CONCLUSION

This application seeks a variation to the Pittwater DCP B6.2 forward-in / forward-out requirement caused by a short 31% gradient segment, recognising that a compliant on-site turning area cannot be provided due to the site's physical limitations.

Independent assessment confirms that the proposed driveway:

- Matches the existing long-standing access arrangement, which has operated safely for many years
- Incorporates new safety measures including slip-resistant surfacing, pedestrian separation, compliant grade transitions, and effective drainage
- Operates within a low-volume, low-speed local street environment with clear sight lines and limited conflict potential.

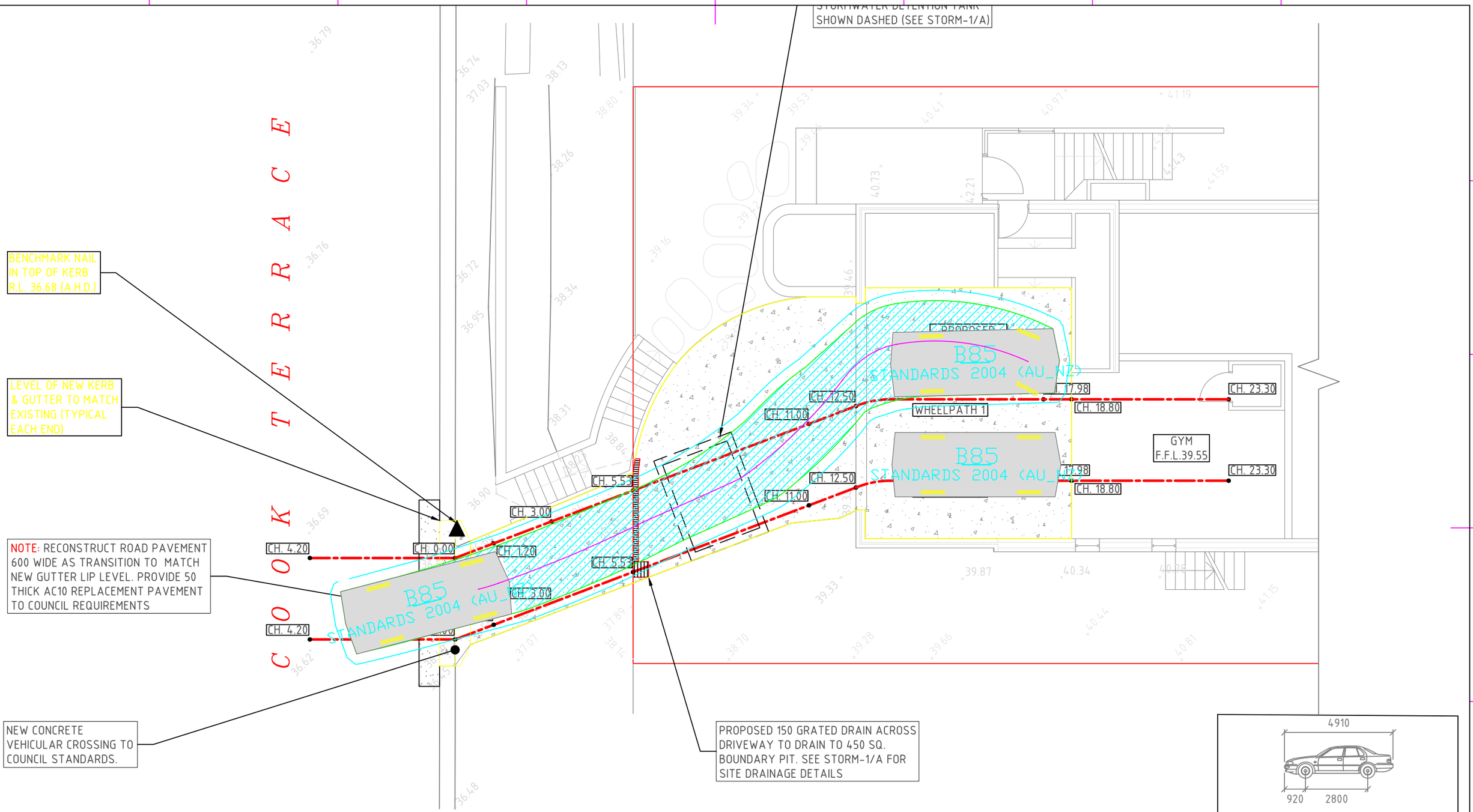
The proposal aligns with the intent of AS/NZS 2890.1 Clause 2.6.2 and the merit-based provisions of the DCP, showing that the variation is reasonable, safe, and suitable for the context. It is therefore recommended that Council approve the requested variation to enable the driveway to be constructed as proposed.

Yours faithfully

Alex Grey
FIEAust, CPEng, NER(3652338), RPEQ, NSW PE (PRE0001115)
Principal Traffic Engineer
GREYS CONSULTING

APPENDIX A

VERTICAL SWEPT PATH ANALYSIS



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

DRIVEWAY PLAN

SCALE 1:100

SHOWING EXTENT OF PROPOSED DRIVEWAY

ALL DIMENSIONS IN MM

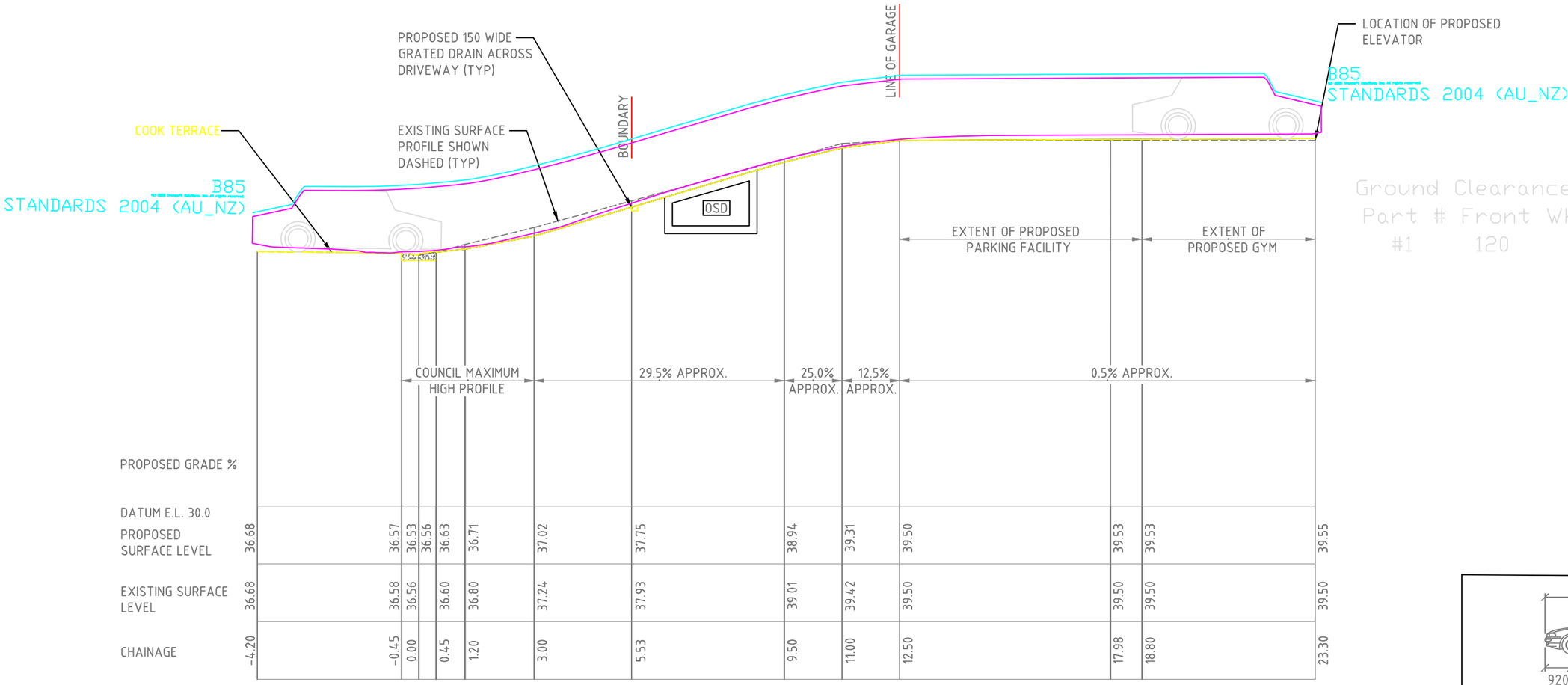
Ref. #	P/N:P2131 Cook Tce Mona Vale Driveway Design Compliance Check			
Designed by AG	Checked by AG	Approved by - date 09/08/25	File name P2131.002D	Scale 1:100

This drawing and design is the property of Greys Consulting.
It may not be used for any purpose other than by the owner.
Greys Consulting does not authorize the reproduction or conveyance of any information contained herein without prior written permission.

Greys Consulting
404/7-11 Smith Street Ryde NSW 2112

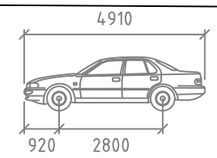
DRAWING:B85.ACCESS.SWEPT.PATH

TOM.COTTON | Revision 2 | Sheet 1/5



Ground Clearance (units: mm)

Part #	Front	Wheelbase	Rear
#1	120	120	120



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

DRIVEWAY WHEEL PATH 1 LONG-SECTION

SCALE 1:100

ALL DIMENSIONS IN MM

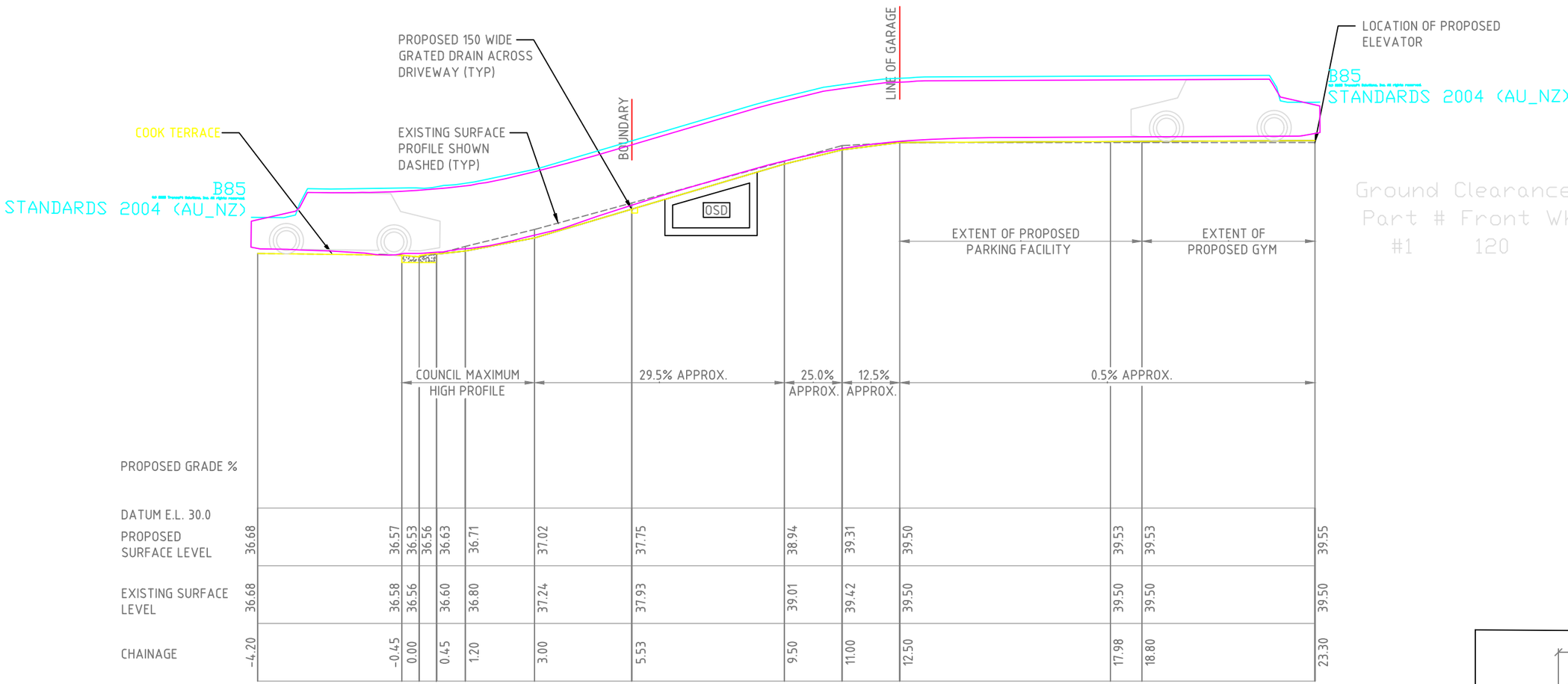
Ref. #	P/N:P2131 Cook Tce Mona Vale Driveway Design Compliance Check			
Designed by AG	Checked by AG	Approved by - date 09/08/25	File name P2131.002D	Scale 1:100

This drawing and design is the property of Greys Consulting.
It may not be used for any purpose other than by the owner.
Greys Consulting does not authorize the reproduction or conveyance
of any information contained herein without prior written permission.

Greys Consulting
404/7-11 Smith Street Ryde NSW 2112

DRAWING:B85.VERTICAL.SWEPT.PATH1.ASCENDING

TOM.COTTON	Revision 2	Sheet 2/5



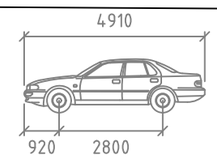
PROPOSED GRADE %														
DATUM E.L. 30.0														
PROPOSED SURFACE LEVEL	36.68	36.57	36.53	36.56	36.63	36.71	37.02	37.75	38.94	39.31	39.50	39.53	39.53	39.55
EXISTING SURFACE LEVEL	36.68	36.58	36.56		36.60	36.80	37.24	37.93	39.01	39.42	39.50	39.50	39.50	39.50
CHAINAGE	-4.20	-0.45	0.00		0.45	1.20	3.00	5.53	9.50	11.00	12.50	17.98	18.80	23.30

Ground Clearance (units: mm)

Part #	Front	Wheelbase	Rear
#1	120	120	120

DRIVEWAY WHEEL PATH 1 LONG-SECTION

SCALE 1:100



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

ALL DIMENSIONS IN MM

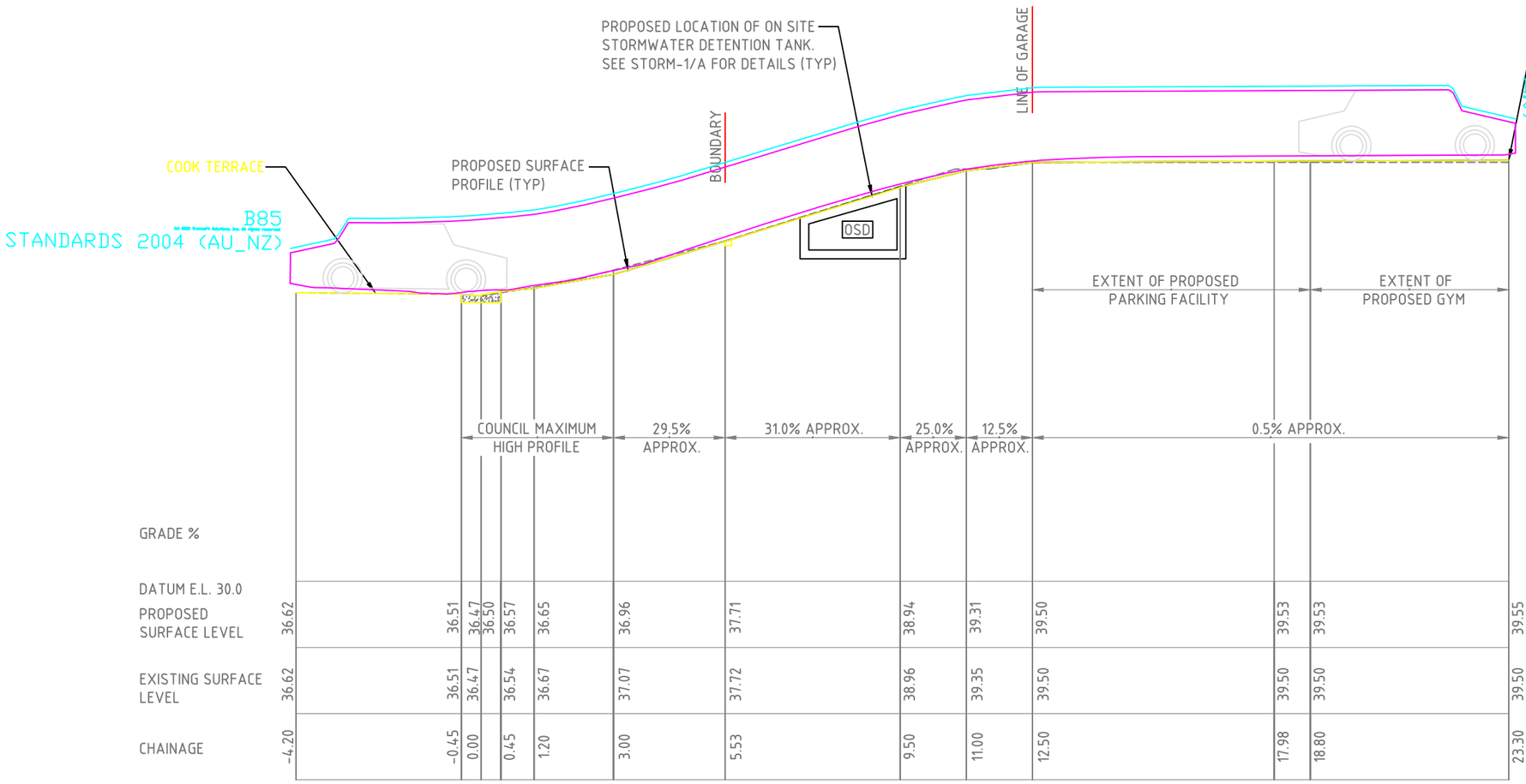
Ref. #	P/N:P2131 Cook Tce Mona Vale Driveway Design Compliance Check			
Designed by AG	Checked by AG	Approved by - date 09/08/25	File name P2131.002D	Scale 1:100

This drawing and design is the property of Greys Consulting.
It may not be used for any purpose other than by the owner.
Greys Consulting does not authorize the reproduction or conveyance
of any information contained herein without prior written permission.

Greys Consulting
404/7-11 Smith Street Ryde NSW 2112

DRAWING:B85.VERTICAL.SWEPT.PATH1.DESCENDING

TOM.COTTON	Revision 2	Sheet 2/5



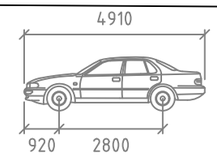
Ground Clearance (units: mm)

Part #	Front	Wheelbase	Rear
#1	120	120	120

GRADE %																							
DATUM E.L. 30.0																							
PROPOSED SURFACE LEVEL	36.62			36.51	36.47	36.50	36.57	36.65	36.96	37.71		38.94	39.31	39.50			39.53	39.53			39.55		
EXISTING SURFACE LEVEL	36.62			36.51	36.47		36.54	36.67	37.07	37.72		38.96	39.35	39.50			39.50	39.50			39.50		
CHAINAGE	-4.20			-0.45	0.00		0.45	1.20	3.00	5.53		9.50	11.00	12.50			17.98	18.80			23.30		

DRIVEWAY WHEEL PATH 2 LONG-SECTION

SCALE 1:100



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

ALL DIMENSIONS IN MM

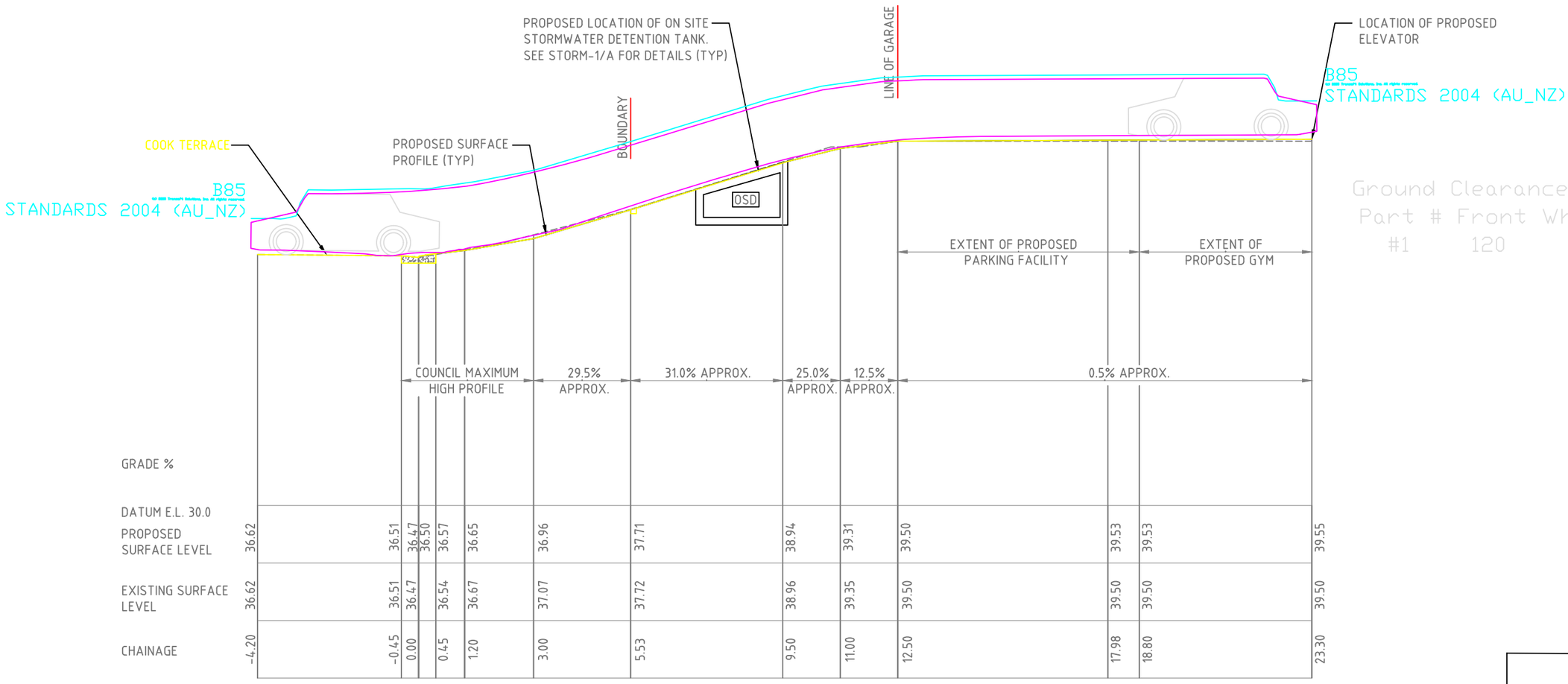
Ref. #	P/N:P2131 Cook Tce Mona Vale Driveway Design Compliance Check			
Designed by AG	Checked by AG	Approved by - date 09/08/25	File name P2131.002D	Scale 1:100

This drawing and design is the property of Greys Consulting.
It may not be used for any purpose other than by the owner.
Greys Consulting does not authorize the reproduction or conveyance
of any information contained herein without prior written permission.

Greys Consulting
404/7-11 Smith Street Ryde NSW 2112

DRAWING:B85.VERTICAL.SWEPT.PATH2.ASCENDING

TOM.COTTON	Revision 2	Sheet 4/5



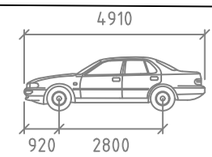
Ground Clearance (units: mm)

Part #	Front	Wheelbase	Rear
#1	120	120	120

GRADE %																
DATUM E.L. 30.0																
PROPOSED SURFACE LEVEL	36.62	36.51	36.47	36.50	36.57	36.65	36.96	37.71	38.94	39.31	39.50	39.53	39.53	39.55		
EXISTING SURFACE LEVEL	36.62	36.51	36.47		36.54	36.67	37.07	37.72	38.96	39.35	39.50	39.50	39.50	39.50		
CHAINAGE	-4.20	-0.45	0.00		0.45	1.20	3.00	5.53	9.50	11.00	12.50	17.98	18.80	23.30		

DRIVEWAY WHEEL PATH 2 LONG-SECTION

SCALE 1:100



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

ALL DIMENSIONS IN MM

Ref. #	P/N:P2131 Cook Tce Mona Vale Driveway Design Compliance Check			
Designed by AG	Checked by AG	Approved by - date 09/08/25	File name P2131.002D	Scale 1:100

This drawing and design is the property of Greys Consulting.
It may not be used for any purpose other than by the owner.
Greys Consulting does not authorize the reproduction or conveyance
of any information contained herein without prior written permission.

Greys Consulting
404/7-11 Smith Street Ryde NSW 2112

DRAWING:B85.VERTICAL.SWEPT.PATH2.DESCENDING

TOM.COTTON	Revision 2	Sheet 5/5