GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1 – To be submitted with Development Application

Development Application for _____
Name of Applicant

Address of site 12 Corniche Road, Church Point

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk ***Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report***

I, Ben White *on behalf of* White Geotechnical Group Pty Ltd
(Insert Name) (Trading or Company Name)

on this the 21/9/21 certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009 and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least $10million.

I:
Please mark appropriate box

☒ have prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009

☒ am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009

☐ have examined the site and the proposed development in detail and have carried out a risk assessment in accordance with Section 6.0 of the Geotechnical Risk Management Policy for Pittwater - 2009. I confirm that the results of the risk assessment for the proposed development are in compliance with the Geotechnical Risk Management Policy for Pittwater - 2009 and further detailed geotechnical reporting is not required for the subject site.

☐ have examined the site and the proposed development/alteration in detail and I am of the opinion that the Development Application only involves Minor Development/Alteration that does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.

☐ have examined the site and the proposed development/alteration is separate from and is not affected by a Geotechnical Hazard and does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.

☐ have provided the coastal process and coastal forces analysis for inclusion in the Geotechnical Report

Geotechnical Report Details:

Report Title: Geotechnical Report **12 Corniche Road, Church Point**
Report Date: 21/9/21

Author: BEN WHITE

Author's Company/Organisation: **WHITE GEOTECHNICAL GROUP PTY LTD**

Documentation which relate to or are relied upon in report preparation:

Australian Geomechanics Society Landslide Risk Management March 2007.

White Geotechnical Group company archives.

I am aware that the above Geotechnical Report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council as the basis for ensuring that the Geotechnical Risk Management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature _____

Name Ben White

Chartered Professional Status MScGEOLAusIMM CP GEOL

Membership No. 222757

Company White Geotechnical Group Pty Ltd

GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1(a) - Checklist of Requirements for Geotechnical Risk Management Report for Development Application

Development Application for _____
Name of Applicant

Address of site 12 Corniche Road, Church Point

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

Geotechnical Report Details:

Report Title: Geotechnical Report **12 Corniche Road, Church Point**

Report Date: 21/9/21

Author: BEN WHITE

Author's Company/Organisation: WHITE GEOTECHNICAL GROUP PTY LTD

Please mark appropriate box

☒ Comprehensive site mapping conducted **2/9/21**
(date)

☒ Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)

☒ Subsurface investigation required
- ☐ No Justification _____
- ☒ Yes Date conducted **2/9/21**

☒ Geotechnical model developed and reported as an inferred subsurface type-section

☒ Geotechnical hazards identified
- ☒ Above the site
- ☒ On the site
- ☒ Below the site
- ☐ Beside the site

☒ Geotechnical hazards described and reported

☒ Risk assessment conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ☒ Consequence analysis
- ☒ Frequency analysis

☒ Risk calculation

☒ Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater - 2009

☒ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.

☒ Design Life Adopted:
- ☒ 100 years
- ☐ Other _____
specify

☒ Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified

☒ Additional action to remove risk where reasonable and practical have been identified and included in the report.

☐ Risk assessment within Bushfire Asset Protection Zone.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated, and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature _____

Name Ben White

Chartered Professional Status MScGEOLAusIMM CP GEOL

Membership No. 222757

Company White Geotechnical Group Pty Ltd

GEOTECHNICAL INVESTIGATION:

Alterations and Additions at **12 Corniche Road, Church Point**

1. Proposed Development

1.1 Widen the existing driveway and construct a new entry walkway.

1.2 Convert the existing carport into a car turntable.

1.3 Construct a new garage and install a new pool with spa requiring a stepped excavation. The lower, middle and upper steps reach maximum depths of ~2.5m, ~1.4m and ~2.4m respectively. The bench between the lower and middle step is ~3.4m wide. The bench between the middle and upper step is ~0.5m wide. The maximum combined excavation depth is ~5.3m.

1.4 Construct a suspended paved area above the proposed turntable and garage, and beside the proposed pool.

1.5 Construct a new lift by excavating to a maximum depth of ~2.8m.

1.6 Details of the proposed development are shown on 10 drawings prepared by JJ Drafting, job number 928/21, drawings numbered DA.01 to DA.10, dated July 2021.

2. Site Description

2.1 The site was inspected on the 2nd September, 2021 and previously on the 9th March 2021.

2.2 This residential property is on the high side of the road and has a NE aspect. It is located on the steeply graded middle reaches of a hillslope. The natural slope rises from the downhill property boundary to the uphill side of the house at an angle of ~19° before increasing in grade to a maximum angle of ~30° near the uphill property

boundary. The slope below the property gradually decreases in grade. The slope above the property continues at similar steep angles before some 100m before easing at the crest of the slope.

2.3 At the road frontage, a concrete driveway runs up the slope to a concrete carport cut into the slope (Photos 1 & 2). Low timber retaining walls supports terraced garden areas either side of the driveway. Fill provides a level platform for the carport. The fill is supported by a stable timber retaining wall ~1.5m high (Photo 3). The sandstone block, brick and timber clad house is supported by sandstone block walls, brick walls, brick piers and steel posts (Photos 1 & 4). The supporting walls, piers and posts stand vertical and show no significant signs of movement (Photo 5). A stable sandstone block retaining wall up to ~2.5m high supports the cut for the lower ground floor of the house (Photo 6). Stable rendered masonry and sandstone block retaining walls up to ~1.8m high support the cut for the carport and fill upslope (Photos 2 & 6). A timber retaining wall ~1.3m high supports another fill further upslope (Photo 7). The wall is bulging and is tilting downslope slightly, but will be demolished as part of the proposed works. A suspended timber clad studio with deck is located at the W side of the house (Photo 15). The steel posts and concrete pier supporting the studio and upper deck stand vertical.

A timber deck extends off the uphill side of the house (Photo 8). The cut for the deck is supported by terraced low timber retaining walls (Photo 9). A steep bank is located above the cut (Photo 10). An intermittent watercourse runs down the property near the SE common boundary (Photo 11). The creek has been lined with rocks on the uphill side of the property. The creek runs under the SE side of the house. A concrete-lined channel runs under the house where this occurs (Photo 12). Sandstone joint blocks are embedded in stable positions in the slope on the uphill side of the house (Photo 13). The steep slope near the uphill property boundary is thickly vegetated

(Photo 14). The adjoining neighbouring properties were observed to be in good order as seen from the street and subject property.

3. Geology

The Sydney 1:100 000 Geological sheet indicates the site is underlain by Hawkesbury Sandstone. It is described as a medium to coarse grained quartz sandstone with very minor shale and laminite lenses.

4. Subsurface Investigation

One hand auger hole (AH) was put down to identify the soil materials. Four Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to weathered rock. The locations of the tests are shown on the site plan. It should be noted that a level of caution should be applied when interpreting DCP test results. The test will not pass through hard buried objects so in some instances it can be difficult to determine whether refusal has occurred on an obstruction in the profile or on the natural rock surface. This may have occurred for DCP3. Due to the possibility that the actual ground conditions vary from our interpretation there should be allowances in the excavation and foundation budget to account for this. We refer to the appended "Important Information about Your Report" to further clarify. The results are as follows:

AUGER HOLE 1 (~RL40.8) **–** AH1 (photo 16)

Depth (m)	**Material Encountered**
0.0 to 0.9	**FILL**, soil and clay, dark brown and brown orange, damp, fine to medium grained.
0.9 to 1.1	**SILTY SAND**, grey brown, damp, fine to medium grained.
1.1 to 1.2	**CLAY**, orange, firm to stiff, damp.

End of Test @ 1.2m in firm to stiff clay. No watertable encountered.

DCP TEST RESULTS – Dynamic Cone Penetrometer				
Equipment: 9kg hammer, 510mm drop, conical tip.			Standard: AS1289.6.3.2 -1997	
Depth(m) Blows/0.3m	**DCP 1** (~RL35.8)	**DCP 2** (~RL40.0)	**DCP 3** (~RL40.9)	**DCP 4** (~RL43.5)
0.0 to 0.3	12	7	12	10
0.3 to 0.6	15	6	23	26
0.6 to 0.9	17	6	14	18
0.9 to 1.2	24	20	26	20
1.2 to 1.5	22	36	#	21
1.5 to 1.8	16	31		10
1.8 to 2.1	26	#		#
2.1 to 2.4	32			
2.1 to 2.7	24			
2.7 to 3.0	#			
	End of Test @ 2.7m	Refusal on rock @ 1.8m	Refusal on rock @ 1.1m	Refusal on rock @ 1.6m

#refusal/end of test. F=DCP fell after being struck showing little resistance through all or part of the interval.

DCP Notes:

DCP1– End of Test @ 2.0m, DCP still very slowly going down, white and orange brown rock fragments on dry tip.

DCP2 – Refusal on rock @ 2.5m, DCP bouncing off rock surface, orange rock fragments and orange clay on moist tip.

DCP3 – Refusal on rock @ 0.8m, DCP bouncing off rock surface, white rock fragments on dry tip.

DCP4 – Refusal on rock @ 1.2m, DCP bouncing off rock surface, white rock fragments and brown soil on moist tip.

5. Geological Observations/Interpretation

The slope materials are colluvial at the near surface and residual at depth. In the test locations, the ground materials consist of fill, topsoil and silty sand over firm to stiff clays. Fill

to a maximum depth of ~1.5m provides level lawn and garden areas across the property. The clays merge into the weathered zone of the under lying rocks at depths from between ~1.1m to ~2.1m below the current surface. The weathered zone of the underlying rock is interpreted as Extremely Low Strength Rock or better. See Type Section attached for a diagrammatical representation of the expected ground materials.

6. Groundwater

Normal ground water seepage is expected to move over the buried surface of the rock and through the cracks in the rock.

Due to the slope and elevation of the block, the water table in the location is expected to be many metres below the base of the proposed works.

7. Surface Water

It is expected that sheet wash will move onto the site from above the property during heavy down pours and will flow towards the watercourse and into the concrete channel that runs underneath the house (Photos 11 & 12). Due to the steep slope above this is expected to flow at high velocities. No water was observed to be flowing in the watercourse during the time of inspection.

8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed beside the property. The steep slope that falls across the property and continues above and below is a potential hazard (**Hazard One**). The proposed excavation is a potential hazard until retaining structures are in place (**Hazard Two**).

RISK ANALYSIS SUMMARY ON NEXT PAGE

Geotechnical Hazards and Risk Analysis - Risk Analysis Summary

HAZARDS	Hazard One	Hazard Two
TYPE	The steep slope that falls across the property and continues above and below failing and impacting on the property.	The proposed excavations for the garage, pool and lift collapsing onto the worksite, impacting the neighbouring properties and undercutting the subject decks and studio (Photo 15) during the excavation process.
LIKELIHOOD	'Unlikely' (10^{-4})	'Likely' (10^{-2})
CONSEQUENCES TO PROPERTY	'Medium' (12%)	'Medium' (25%)
RISK TO PROPERTY	'Low' (2×10^{-5})	'High' (2×10^{-3})
RISK TO LIFE	8.3×10^{-7}/annum	4.1×10^{-5}/annum
COMMENTS	This level of risk is 'ACCEPTABLE', provided the recommendations in **Section 16** are carried out.	This level of risk to life and property is 'UNACCEPTABLE'. To move the risk to 'ACCEPTABLE' levels, the recommendations in **Section 13** are to be followed.

(See Aust. Geomech. Jnl. Mar 2007 Vol. 42 No 1, for full explanation of terms)

9. Suitability of the Proposed Development for the Site

The proposed development is suitable for the site. No geotechnical hazards will be created by the completion of the proposed development provided it is carried out in accordance with the requirements of this report and good engineering and building practice.

10. Stormwater

The fall is to Corniche Road. All stormwater from the proposed development is to be piped to the street drainage system through any tanks that may be required by the regulating authorities.

11. Excavations

A stepped excavation is required to construct the proposed garage, pool and spa. The lower, middle and upper steps reach maximum depths of ~2.5m, ~1.4m and ~2.4m respectively. The bench between the lower and middle step is ~3.4m wide. The bench between the middle and upper step is ~0.5m wide. The maximum combined excavation depth is ~5.3m.

Another excavation to a maximum depth of ~2.8m is required to construct the proposed lift.

The excavations are expected to be through fill, topsoil, silty sand and clay, with Extremely Low Strength Rock or better expected at depths from between ~1.1m to ~2.1m below the current surface. Excavations through fill, soil, sand, clay and rock up to Low Strength can be carried out with an excavator and bucket.

12. Vibrations

Possible vibrations generated during excavations through fill, soil, sand, clay and rock up to Low Strength will be below the threshold limit for building damage.

13. Excavation Support Requirements

It is recommended, before the structural design commences for the project, exploration core drilling is to be carried out on the site to confirm to the rock quality and strength. This is to be arranged and supervised by the geotechnical consultant and should consist of a minimum of one cored bore hole taken to a depth of not less than 7.5m. The following ground support advice can be considered preliminary and will be reviewed on recovery of the drill core. It may change as a result of the assessment of the drill core.

As this job is considered technically complex and due to the depth of the excavations, we recommend it be carried out by builders and contractors who are well-experienced in similar work and can provide a proven history of completed work. We recommend a pre-construction meeting between the structural engineer, the builder, and the geotechnical consultant to

discuss and confirm the excavation plan and to ensure suitable excavation equipment will be on site.

A stepped excavation to maximum combined excavation depth is ~5.3m is required to construct the proposed garage, pool and spa. Another excavation to a maximum depth of ~2.8m is required to construct the proposed lift.

Allowing for backwall drainage, the setbacks are as follows:

- The garage and pool excavation comes close to flush with the NW common boundary. The upper step comes flush with steel posts and a concrete pier supporting NW side of the existing steps, deck and studio roof (Photo 15). The middle step is set back ~0.6m from these structures.
- The lift excavation comes flush with the lower deck on the downhill side of the studio and steel posts supporting the upper deck and studio roof (Photo 15).

The NW common boundary, deck, steel posts and concrete pier will be within the zone of influence of the excavation. In this instance, the zone of influence is the area above a theoretical 30° line through fill/soil/sand and a theoretical 45° line through clay/weathered rock from the base of the excavation or the top of Medium Strength Rock, whichever comes first, towards the surrounding structures and boundaries.

Due to the depths of the excavations and the proximity to the nearby structures and NW property boundary, all sides of the excavations will require ground support installed prior to the commencement of the excavations. See the Lower Ground Floor Plan attached for the minimum extent of the required shoring shown in blue.

A spaced pile retaining wall is one of the suitable methods of support. Pier spacing is typically ~2.0m but can vary between 1.6 to 2.4m depending on the design. As the excavation is lowered in 1.5m lifts infill sprayed concrete panels or similar are added between the piers to form the wall. Drainage is installed behind the panels. To drill the pier holes for the walls, a

pilling rig that can excavate through Medium to High Strength Rock will be required. The piers can be temporarily supported by embedment below the base of the excavation or with a combination of embedment and propping. The walls are to be tied into the garage floor slab, concrete pool shell above, pool coping slab and lift slab to provide permanent bracing after which any temporary bracing can be released.

The geotechnical consultant is to inspect the drilling process of the entire first pile and the ground materials at the base of all pier holes/excavations installed for ground support purposes.

Upslope runoff is to be diverted from the cut faces by sandbag mounds or other suitable diversion works. The excavations are to be carried out during a dry period. No excavations are to commence if heavy or prolonged rainfall is forecast.

All excavation spoil is to be removed from site following the current Environmental Protection Agency (EPA) waste classification guidelines.

14. Retaining Structures

For cantilever or singly propped retaining structures it is suggested the design be based on a triangular distribution of lateral pressures using the parameters shown in Table 1.

TABLE 1 ON NEXT PAGE

Table 1 – Likely Earth Pressures for Retaining Structures

Unit	Earth Pressure Coefficients			
	Unit weight (kN/m^3)	'Active' K_a	'At Rest' K_0	Passive
Fill, Topsoil and Silty Sand	20	0.40	0.55	N/A
Residual Clays	20	0.35	0.45	Kp = 2.0 ultimate
Extremely Low to Very Low Strength Rock	22	0.25	0.35	Kp = 2.5 ultimate
Low Strength Rock	24	0.20	0.35	1000kPa ultimate

For rock classes refer to Pells et al "Design Loadings for Foundations on Shale and Sandstone in the Sydney Region". Australian Geomechanics Journal 1978.

It is to be noted that the earth pressures in Table 1 assume a level surface above the structure, do not account for any surcharge loads and assume retaining structures are fully drained. No passive resistance should be assumed for the top 0.4m to account for any disturbance from the excavation. Passive pressures are 'ultimate' so should have a suitable safety factor applied. Rock strength and relevant earth pressure coefficients are to be confirmed on site by the geotechnical consultant.

A multi-propped or anchored shoring system can be designed using a rectangular lateral earth pressure distribution using a magnitude of 4H kPa for fill/soil/sand/clay and 3H kPa for rock up to low strength, where H is the depth of the excavation in metres (or to the top of competent medium strength rock). Where small movements are not tolerable, the wall can be designed using a magnitude of 6H kPa for fill/soil/sand/clay and 4H kPa for rock up to low strength.

All retaining structures are to have sufficient back-wall drainage and be backfilled immediately behind the structure with free draining material (such as gravel). This material is

to be wrapped in a non-woven Geotextile fabric (i.e. Bidim A34 or similar), to prevent the drainage from becoming clogged with silt and clay. If no back-wall drainage is installed in retaining structures then full hydrostatic pressures are to be accounted for in the retaining structure design.

15. Foundations

The proposed driveway extension can be supported off the natural surface after any organic matter has been stripped. A maximum allowable bearing pressure of 100kPa can be assumed for soil of the natural surface.

The proposed garage, pool and lift are expected to be seated in Extremely Low Strength Rock or better. This is a suitable foundation material. Any new foundations required for the downhill side of the suspended pavement can be supported on piers embedded into to Extremely Low Strength Rock or better. A maximum allowable bearing pressure of 600kPa can be assumed for footings supported on Extremely Low Strength Rock or better.

The foundations of the existing carport and house are currently unknown. Footings should be founded on the same footing material across the old and new structure. Where the footing material does change across the structure construction joints or similar are to be installed to prevent differential settlement, where the structure cannot tolerate such movement.

As the bearing capacity of weathered rock reduces when it is wet we recommend the footings be dug, inspected and poured in quick succession (ideally the same day if possible). If the footings get wet, they will have to be drained and the soft layer of weathered rock on the footing surface will have to be removed before concrete is poured.

If a rapid turnaround from footing excavation to the concrete pour is not possible a sealing layer of concrete may be added to the footing surface after it has been cleaned.

NOTE: If the contractor is unsure of the footing material required it is more cost effective to get the geotechnical professional on site at the start of the footing excavation to advise on

footing depth and material. This mostly prevents unnecessary over excavation in clay like shaly rock but can be valuable in all types of geology.

16. Ongoing Maintenance

Where slopes are steep and approach or exceed 30°, such as on this site, it is prudent for the owners to occasionally inspect the slope (say annually or after heavy rainfall events, whichever occurs first). Should any of the following be observed: movement or cracking in retaining walls, cracking in any structures, cracking or movement in the slope surface, tilting or movement in established trees, leaking pipes, or newly observed flowing water, or changes in the erosional process or drainage regime, then a geotechnical consultant should be engaged to assess the slope. We can carry out these inspections upon request.

The risk assessment in **Section 8** is subject to this ongoing maintenance being carried out.

17. Geotechnical Review

The structural plans are to be checked and certified by the geotechnical engineer as being in accordance with the geotechnical recommendations. On completion a Form 2b will be issued. This form is required for the Construction Certificate to proceed.

REQUIRED INSPECTIONS ON NEXT PAGE

18. Inspections

The client and builder are to familiarise themselves with the following required inspections as well as council geotechnical policy. We cannot provide geotechnical certification for the Occupation Certificate if the following inspections have not been carried out during the construction process.

- The geotechnical consultant is to inspect the ground materials while the first pier for the ground support is being dug to assess the ground strength and to ensure it is in line with our expectations.

- All finished pier holes for piled wall/excavations for ground support are to be inspected and measured before concrete is placed.

- All footings are to be inspected and approved by the geotechnical consultant while the excavation equipment and contractors are still onsite and before steel reinforcing is placed or concrete is poured.

White Geotechnical Group Pty Ltd.

Ben White M.Sc. Geol.,
AusIMM., CP GEOL.
No. 222757
Engineering Geologist.

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

Photo 15

Photo 16: AH1 – Downhole is from left to right.

Important Information about Your Report

It should be noted that Geotechnical Reports are documents that build a picture of the subsurface conditions from the observation of surface features and testing carried out at specific points on the site. The spacing and location of the test points can be limited by the location of existing structures on the site or by budget and time constraints of the client. Additionally, the test themselves, although chosen for their suitability for the particular project, have their own limiting factors. The testing gives accurate information at the location of the test, within the confines of the test's capability. A geological interpretation or model is developed by joining these test points using all available data and drawing on previous experience of the geotechnical consultant. Even the most experienced practitioners cannot determine every possible feature or change that may lie below the earth. All of the subsurface features can only be known when they are revealed by excavation. As such, a Geotechnical report can be considered an interpretive document. It is based on factual data but also on opinion and judgement that comes with a level of uncertainty. This information is provided to help explain the nature and limitations of your report.

With this in mind, the following points are to be noted:

- If upon the commencement of the works the subsurface ground or ground water conditions prove different from those described in this report, it is advisable to contact White Geotechnical Group immediately, as problems relating to the ground works phase of construction are far easier and less costly to overcome if they are addressed early.

- If this report is used by other professionals during the design or construction process, any questions should be directed to White Geotechnical Group as only we understand the full methodology behind the report's conclusions.

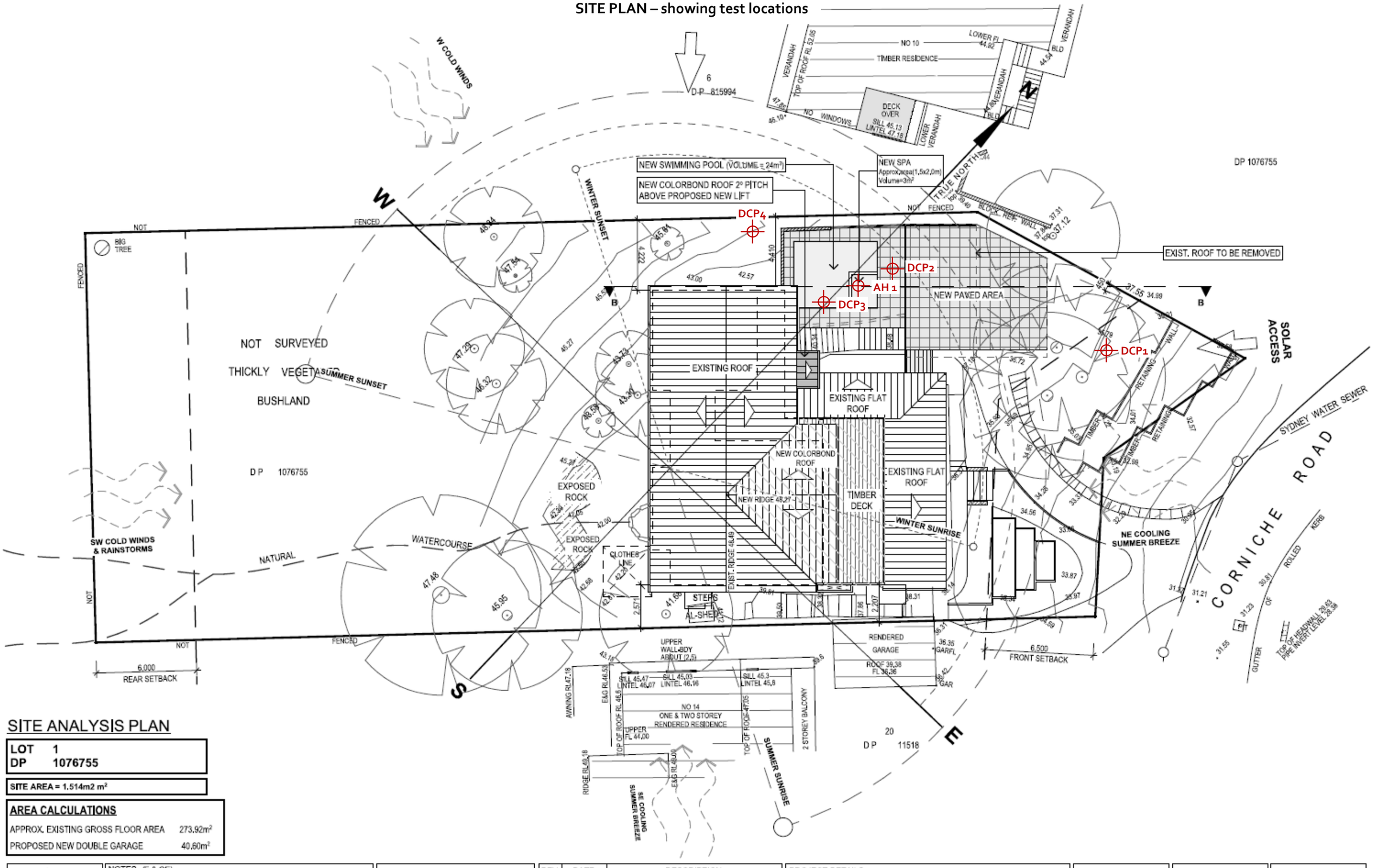
- The report addresses issues relating to your specific design and site. If the proposed project design changes, aspects of the report may no longer apply. Contact White Geotechnical if this occurs.

- This report should not be applied to any other project other than that outlined in section 1.0.

- This report is to be read in full and should not have sections removed or included in other documents as this can result in misinterpretation of the data by others.

- It is common for the design and construction process to be adapted as it progresses (sometimes to suit the previous experience of the contractors involved). If alternative design and construction processes are required to those described in this report, contact White Geotechnical Group. We are familiar with a variety of techniques to reduce risk and can advise if your proposed methods are suitable for the site conditions.

SITE PLAN – showing test locations



SITE ANALYSIS PLAN

LOT	**1**
DP	**1076755**

SITE AREA = 1.514m2 m²

AREA CALCULATIONS

APPROX. EXISTING GROSS FLOOR AREA	273.92m²
PROPOSED NEW DOUBLE GARAGE	40.60m²

TRUE NORTH:

NOTES (E & OE)
- All structures including stormwater & drainage to engineer's details.
- Do not obtain dimensions by scaling drawings.
- All dimensions are to be checked on site prior to starting work.
- These drawings are to be read in conjunction with all other consultant's drawings and specifications.
- All workmanship & materials shall be in accordance with the requirements of current editions including amendments of the National Construction Code, relevant Australian Standards & local council requirements.
- New materials are to be used throughout unless otherwise noted.
- Concrete footings, slab, structural beams or any other structural members are to be designed by a practicing engineer.

JJ Drafting
174 Garden St, North Narrabeen, NSW, 2101
PO Box 687, Dee Why, NSW, 2099
Mob. 0414 717 541
Email. jjdraft@tpg.com.au
www.jjdrafting.com.au

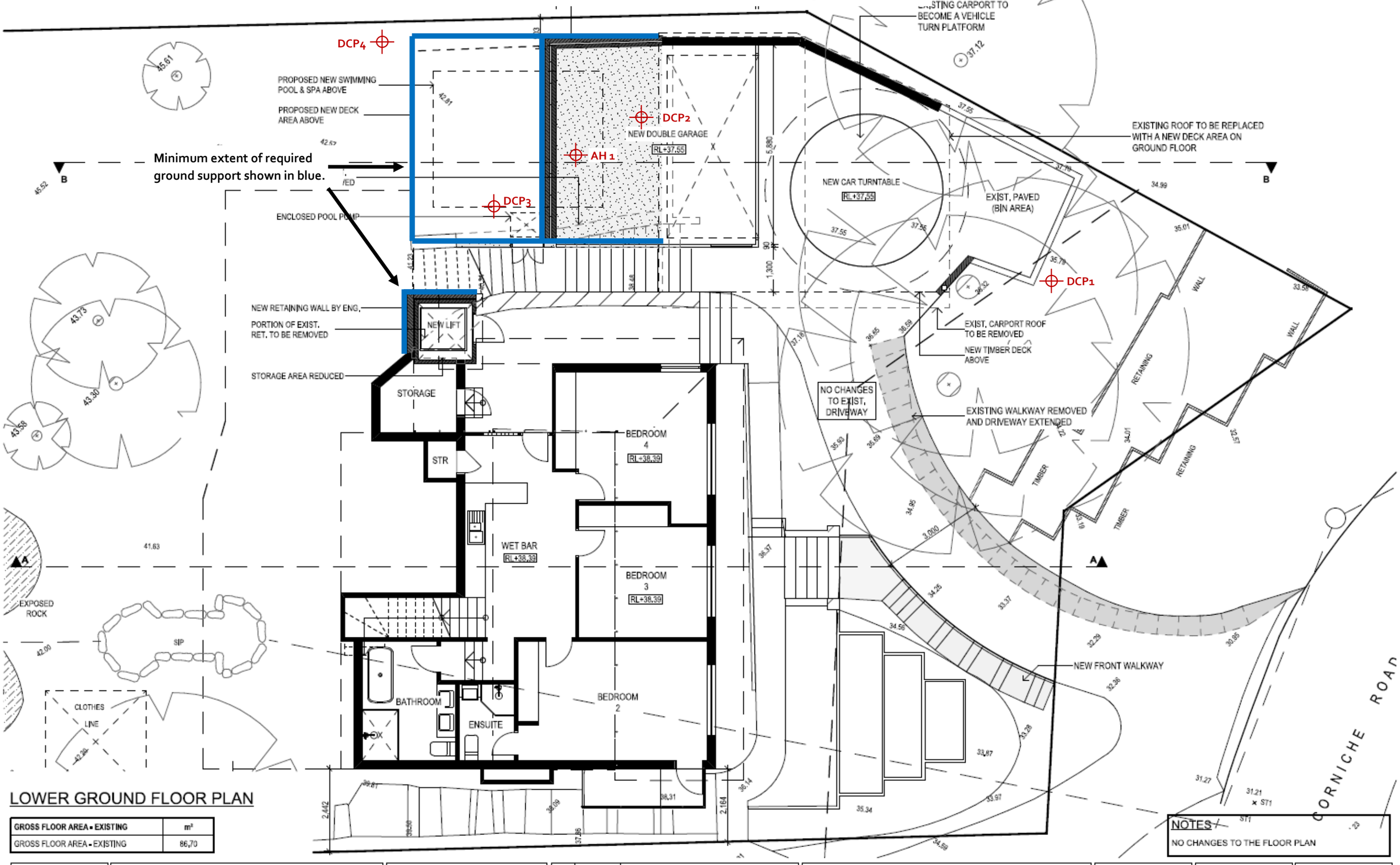
REV:	DATE:	DESCRIPTION:

PROJECT DETAILS:
PROPOSED ALTERATIONS AND ADDITIONS
12 CORNICHE ROAD - CHURCH POINT 2105

DRAWING TITLE:
SITE ANALYSIS PLAN

DATE:	DRAWN BY:	SCALE:
JULY,21	LB	1:200 @ A3
JOB No:	**CHECKED BY:**	**DRAWING No:**
928/21	JJ	**DA.01**

LOWER GROUND FLOOR PLAN – showing test locations



LOWER GROUND FLOOR PLAN

GROSS FLOOR AREA • EXISTING	m²
GROSS FLOOR AREA - EXISTING	86.70

NOTES
NO CHANGES TO THE FLOOR PLAN

TRUE NORTH:

NOTES (E & OE)
- All structures including stormwater & drainage to engineer's details.
- Do not obtain dimensions by scaling drawings.
- All dimensions are to be checked on site prior to starting work.
- These drawings are to be read in conjunction with all other consultant's drawings and specifications.
- All workmanship & materials shall be in accordance with the requirements of current editions including amendments of the National Construction Code, relevant Australian Standards & local council requirements.
- New materials are to be used throughout unless otherwise noted.
- Concrete footings, slab, structural beams or any other structural members are to be designed by a practicing engineer.

JJ Drafting
174 Garden St, North Narrabeen, NSW, 2101
PO Box 687, Dee Why, NSW, 2099
Mob. 0414 717 541
Email. jjdraft@tpg.com.au
www.jjdrafting.com.au

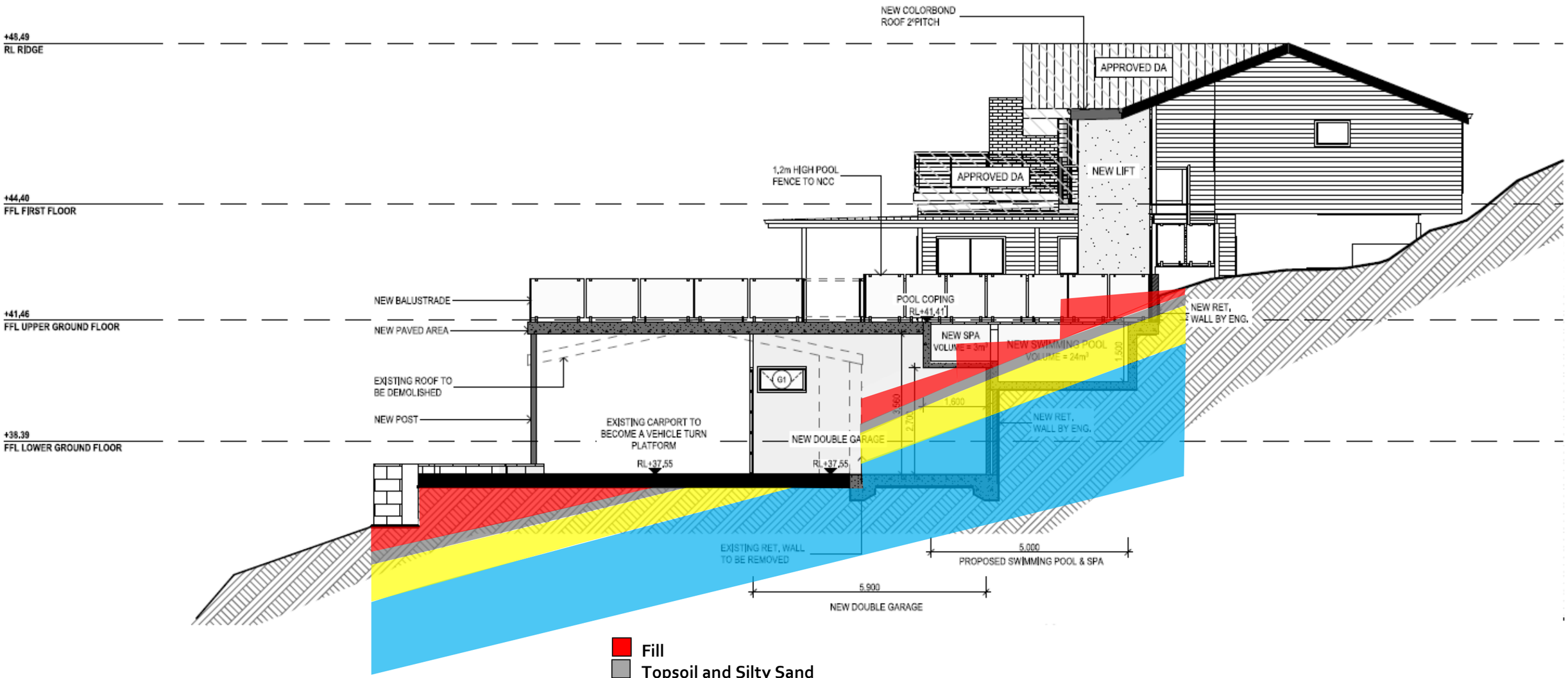
REV:	DATE:	DESCRIPTION:

PROJECT DETAILS:
PROPOSED ALTERATIONS AND ADDITIONS
12 CORNICHE ROAD - CHURCH POINT 2105

DRAWING TITLE:
LOWER GROUND FLOOR PLAN

DATE:	DRAWN BY:	SCALE:
JULY,21	LB	1:100 @ A3
JOB No:	CHECKED BY:	DRAWING No:
928/21	JJ	DA.02

TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials



- Fill
- Topsoil and Silty Sand
- Clay
- Extremely Low Strength Rock or better.

SECTION BB

NOTES (E & OE)
- All structures including stormwater & drainage to engineer's details.
- Do not obtain dimensions by scaling drawings.
- All dimensions are to be checked on site prior to starting work.
- These drawings are to be read in conjunction with all other consultant's drawings and specifications.
- All workmanship & materials shall be in accordance with the requirements of current editions including amendments of the National Construction Code, relevant Australian Standards & local council requirements.
- New materials are to be used throughout unless otherwise noted.
- Concrete footings, slab, structural beams or any other structural members are to be designed by a practicing engineer.

JJ Drafting
174 Garden St, North Narrabeen, NSW, 2101
PO Box 687, Dee Why, NSW, 2099
Mob. 0414 717 541
Email. jjdraft@tpg.com.au
www.jjdrafting.com.au

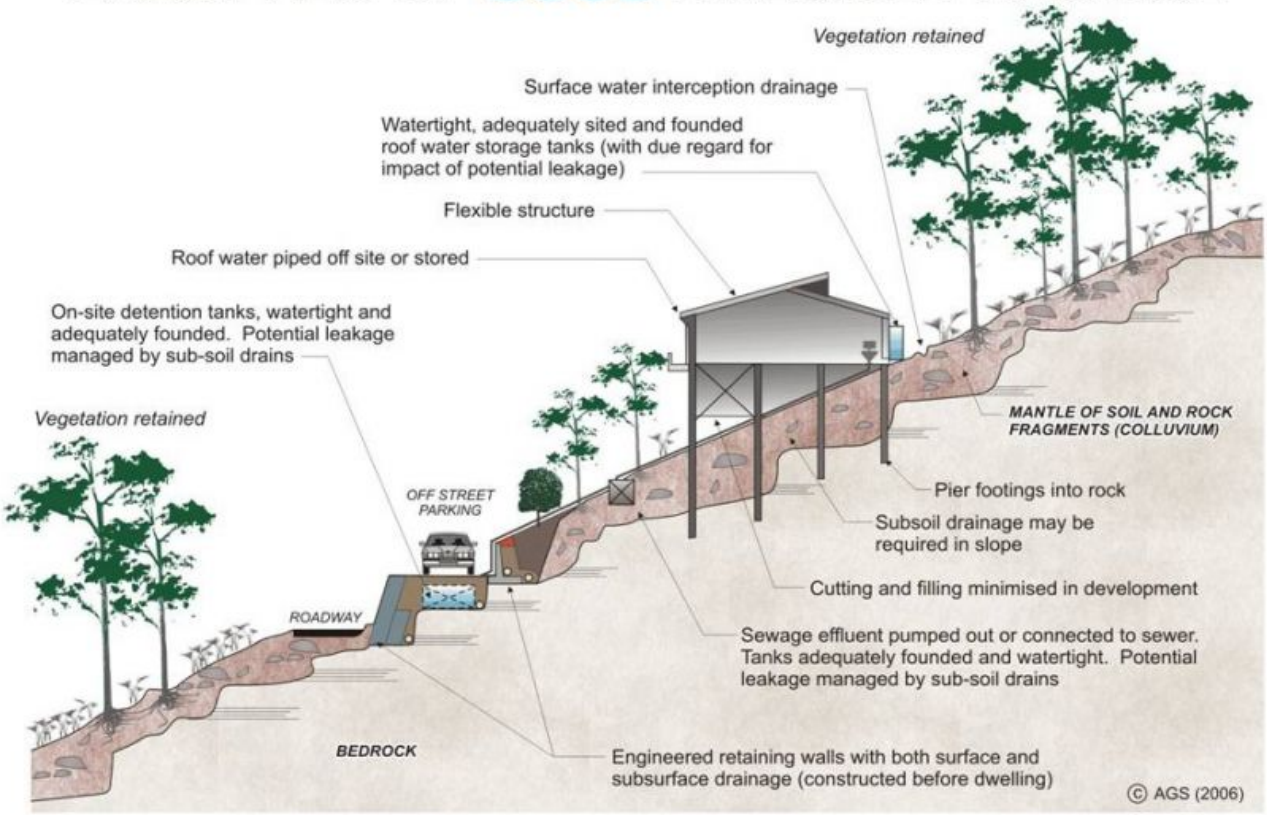
REV:	DATE:	DESCRIPTION:

PROJECT DETAILS:
PROPOSED ALTERATIONS AND ADDITIONS
12 CORNICHE ROAD - CHURCH POINT 2105

DRAWING TITLE:
SECTION BB

DATE:	DRAWN BY:	SCALE:
JULY,21	LB	1:100 @ A3
JOB No:	CHECKED BY:	DRAWING No:
928/21	JJ	DA.10

EXAMPLES OF **GOOD** HILLSIDE PRACTICE



EXAMPLES OF **POOR** HILLSIDE PRACTICE