## 77A Myola Road, Newport

Geotechnical Comments for Section 4.55

We have reviewed the existing geotechnical report, the original plans, the previous update letters, the plans used to carry out those letters, and the 7 amended plans by Network Design, drawing numbered 11/18/MYO, sheet numbered 3 is dated November 2018, and sheets numbered 1C, 2C, and 4C to 7C are Revision C, dated 13/10/22.

The changes are as follows:

- No longer Proposing to construct a new driveway for 77A Myola Road.
- No longer proposing a turning area on 77A Myola Road.

The changes are considered minor from a geotechnical perspective and do not alter the recommendations or the risk assessment in the original report carried out by this firm numbered J1182 and dated the 13th March, 2017.

White Geotechnical Group Pty Ltd.

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

## 77A Myola Road, Newport

Comments on Updates to Plans

We have reviewed the existing geotechnical report, the plans used to carry out the report, The previous update letter provided by this firm numbered J1182A, dated 17th May 2019, the plans used to carry out that letter, and the updated plans for DA shown on 11 drawings prepared by Network Design, drawing number 11-18-MYO, sheets numbered 1 to 7 and 9 to 12, dated November 2018.

The changes include:

- No longer proposing to extend the yard between the proposed carport and the house. Instead, rebuild the existing failing retaining wall in the same location.

The changes to the plans are minor from a geotechnical perspective. The changes do not alter the recommendations or the risk assessment in the report carried out by this firm numbered J1182 and dated the 13th March, 2017.

White Geotechnical Group Pty Ltd.

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

## 77A Myola Road, Newport

Comments on Updates to Plans

We have reviewed the existing geotechnical report, the plans used to carry out the report, and the updated plans for DA shown on 7 drawings prepared by Network Design, drawing number 11-18-MYO, sheets numbered 1 to 7, dated November 2018.

The changes include:

- No longer proposing the extension to the subfloor storage area.
- No longer proposing the first-floor addition.
- Constructing a new retaining wall in front of the old timber crib wall supporting the parking area fill.
- Relocating the proposed carport.
- Various other minor interior alterations.

The changes to the plans are minor from a geotechnical perspective. Removing the subfloor extension excavation reduces the overall geotechnical risk of the project. The risk assessment (Hazards 2 & 3) and recommendations in the report relating to the proposed extension no longer apply. The other changes do not alter the recommendations or the risk assessment in the report carried out by this firm numbered J1182 and dated the 13th March, 2017.

White Geotechnical Group Pty Ltd.

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

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

**Development Application for** _____
Name of Applicant

**Address of site** **77A Myola Road, Newport**

***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 14/3/17 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 $2million.
I have:

**Please mark appropriate box**

☒ 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

☒ I 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 paragraph 6.0 of the Geotechnical Risk Management Policy for Pittwater - 2009. I confirm the results of the risk assessment for the proposed development are in compliance with the Geotechnical Risk Management Policy fro 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 am of the opinion that the Development Application only involves Minor Development/Alterations that do not require a Detailed Geotechnical Risk Assessment and hence my report is in accordance with the Geotechnical Risk Management Policy for Pittwater – 2009 requirements for Minor Development/Alterations.

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

**Geotechnical Report Details:**

Report Title: Geotechnical Report **77A Myola Road, Newport**

Report Date: 13/3/17

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 **77A Myola Road, Newport**

*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 **77A Myola Road, Newport**

Report Date: 13/3/17

Author : BEN WHITE

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

**Please mark appropriate box**

☒ Comprehensive site mapping conducted 10/3/17 (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 10/3/17

☒ 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 & Additions at **77A Myola Road, Newport**

## 1. Proposed Development

**1.1** Construct a new carport on the W side of the house.

**1.2** Construct a new addition and deck on the downhill side of the house.

**1.3** Extend the subfloor storage area by excavating ~1.8m under the house.

**1.4** Construct a new first floor addition.

**1.5** Various internal and external modifications.

**1.6** Details of the proposed development are shown on 10 drawings prepared by Network Design, Drawing Number 09-16-MYO, sheets 1-7, with three sheets untitled, all sheets dated Sept 2016.

## 2. Site Description

**2.1** The site was inspected on the 10th March, 2017.

**2.2** This residential property is on the high side the road and encompasses the S side of the crest of a W-trending ridgeline. At the road frontage, the slope rises along the ridgeline to the house under which the slope is a cross-fall, falling at moderate to steep angles to the S. The land surface above rises at gentle angles before falling over the ridgeline. The slope below the property continues at moderate to steep angles.

**2.3** At the road frontage, a concrete Right of Carriageway (ROW) runs up the slope along the ridgeline to a concrete parking area on the W side of the property (Photos 1 & 2). Between the parking area and the house is a near-level lawn covered fill. The fill for this lawn and for the parking area is supported by an old timber crib retaining wall reaching ~1.3m high (Photo 3). The timber has moved slightly in places as is typical for these types of walls. The wall can be seen to be backfilled with cobble sized sandstone and is well-drained. The wall is currently considered stable but to be prudent we recommend it be monitored by the owners on an annual basis and a photographic record of these inspections kept. Should further movement be observed a geotechnical consultant is to be engaged to re-assess the wall. Below the wall, competent medium strength sandstone outcrops and steps down on the neighbouring property (Photo 4). The top of

the outcrop approximates the lower common boundary. No significant geological defects were observed in the outcrop. The fill for the lawn is also supported by a stable mortared stack rock retaining wall ~1.0m high in the foundation space of the house. No significant signs of movement were observed in the supporting brick piers and sandstone block walls of the old, single storey sandstone block and timber framed and clad house (Photo 5). A cut and fill has been made in the slope to provide a level platform for the house. The cut is supported by a stable ~1.6m high concrete block retaining wall (Photo 6). The wall appears to have been tied back with steel rods and displays no signs of movement. Along the base of the wall is a low flagging wall that displays some movement. The fill at the SE corner of the house is partially unsupported on two sides underneath the deck in that location (Photo 7). The fill is supported by a stable ~1.0m high brick retaining wall on its S side. We recommend the fill be supported by retaining walls on all sides as part of the proposed works. A concrete driveway that runs past the E side of the subject property for the neighbouring property to the E has been cut into the slope (Photo 8). The cut for the driveway is battered to stable angles.

## 3. Geology

The Sydney 1:100 000 Geological sheet indicates the site is underlain by the Newport Formation of the Narrabeen Group. A band of sandstone was observed to be outcropping across most of the site. The sandstone band extends through the otherwise shale dominated profile.

## 4. Subsurface Investigation

Five Dynamic Cone Penetrometer (DCP) tests were put down to determine the relative density of the overlying soil and the depth to bedrock. 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. The results are as follows:

**DCP TEST RESULTS ON THE NEXT PAGE**

| 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** (~RL69.3) | **DCP 2** (~RL71.2) | **DCP 3** (~RL69.3) | **DCP 4** (~RL69.3) | **DCP 5** (~RL70.8) |
| 0.0 to 0.3 | 2 | 18 (Tree Root) | 48 | 37 | 5F |
| 0.3 to 0.6 | # | 9 | # | 20 | 11 |
| 0.6 to 0.9 | | 4 | | 6 | 5 |
| 0.9 to 1.2 | | # | | 10 | 16 |
| 1.2 to 1.5 | | | | 32 | 19 |
| 1.5 to 1.8 | | | | # | 15 |
| 1.8 to 2.1 | | | | | 13 |
| 2.1 to 2.4 | | | | | 23 |
| 2.4 to 2.7 | | | | | 30 |
| 2.7 to 3.0 | | | | | # |
| | Refusal on Rock @ 0.1m | Refusal on Rock @ 0.7m | Refusal on Rock @ 0.3m | Refusal on Rock @ 1.5m | End of Test @ 2.6m |

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

***DCP Notes:***

DCP1 – Refusal on rock @ 0.1m, DCP bouncing off rock surface, white to light brown sandstone fragments on dry tip. Sandstone exposed immediately below.

DCP2 – Refusal on rock @ 0.7m, DCP bouncing off rock surface, white and brown sandstone fragments on dry tip.

DCP3 – Refusal on rock @ 0.3m, DCP bouncing off rock surface, white sandstone fragments on dry tip. Sandstone exposed ~2.0m to the E.

DCP4 – Refusal on rock @ 1.5m, DCP bouncing off rock surface, light brown sandstone fragments on dry tip. Sandstone exposed to the E and W.

DCP5 – End of test @ 2.6m, DCP still very slowly going down, yellow clayey sand on damp tip.

## 5. Geological Observations/Interpretation

Sandstone bedrock was observed to be outcropping across and below the site. This is an unusually thick sandstone bed within the Narrabeen Group of rocks. The surface features of the block are controlled by the outcropping and underlying sandstone bedrock that steps up the property forming sub-horizontal benches between the steps. Where the grade is steeper the steps are larger and the benches narrower. Where the slope eases the opposite is true. Where the rock is not exposed it is overlain by filling, sandy soils, and firm to stiff sandy clays that fill the bench step formation. In the test locations, the depth to rock ranged between 0.1 to 2.6m below the current surface, being deeper where filling has been placed for the house and due to the stepped nature of the rock. It is possible DCP 4 was over a joint (crack) in the rock as sandstone was observed to be outcropping on both sides of the test. It is interpreted from ground tests and observations of the retaining wall that DCP 5 passes through ~1.2m of fill before encountering a more typical shale profile. The outcropping sandstone on the property and immediately below is estimated to be medium strength sandstone or better and similar strength rock is expected to underlie most of the site. 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.

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

## 7. Surface Water

No evidence of surface flows were observed on the property during the inspection. The property encompasses the crest of the slope and as the catchment area for any of these flows is the property they are expected to be moderate

## 8. Geotechnical Hazards and Risk Analysis

No geotechnical hazards were observed above or beside the property. The moderate to steeply graded slope that falls across the property and continues below is a potential hazard (**Hazard One**). The vibrations from the proposed excavation are a potential hazard (**Hazard Two**). The proposed excavations undercutting the footings for the house are a potential hazard (**Hazard Three**).

**Risk Analysis Summary**

| HAZARDS | Hazard One | Hazard Two | Hazard Three |
|---|---|---|---|
| **TYPE** | The moderate to steeply graded slope that falls across the property and continues below failing and impacting on the proposed works and existing house. | The vibrations produced during the proposed excavation impacting on the supporting brick and sandstone block walls and piers of the house. | The proposed excavation undercutting the footings of the existing house and causing failure. |
| **LIKELIHOOD** | 'Unlikely' ($10^{-4}$) | 'Possible' ($10^{-3}$) | 'Possible' ($10^{-3}$) |
| **CONSEQUENCES TO PROPERTY** | 'Medium' (15%) | 'Medium' (15%) | 'Medium' (35%) |
| **RISK TO PROPERTY** | 'Low' ($2 \times 10^{-6}$) | 'Moderate' ($2 \times 10^{-4}$) | 'Moderate' ($2 \times 10^{-4}$) |
| **RISK TO LIFE** | $7.3 \times 10^{-7}$/annum | $5.3 \times 10^{-7}$/annum | $1.3 \times 10^{-6}$/annum |
| **COMMENTS** | This level of risk is 'ACCEPTABLE'. | This level of risk to property is 'UNACCEPTABLE'. To move risk to 'ACCEPTABLE' levels the recommendations in **Section 12** are to be followed. | This level of risk to life and property is 'UNACCEPTABLE'. To move 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 Myola Road below, however, the road edges are not guttered. There is also fall to Bungan Head Road (Via the concrete driveway to the E of the property). Roof water from the development is to be piped to the street drainage system for Bungan Head Road through any tanks that may be required by the regulating authorities.

## 11. Excavations.

An excavation to a maximum depth of ~1.8m is required to extend the storage room under the house. The excavation is expected to be through a sandy soil and firm to stiff sandy clay with medium strength sandstone expected near the base of the excavation. It is envisaged that excavations through sandy soil and sandy clays can be carried out by hand or with a bucket and excavations through rock will require grinding or rock sawing and breaking.

## 12. Vibrations.

Possible vibrations generated during excavations through sandy soil and sandy clays will be below the threshold limit for building damage. The base of the excavation may be through medium strength sandstone.

Excavations through rock should be carried out to minimise the potential to cause vibration damage to the existing house on the subject property. The supporting brick piers and sandstone block walls of the subject house will be located immediately beside the proposed excavation. Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Excavation methods are to be used that limit peak particle velocity to 5mm/sec at the supporting brick piers and sandstone block walls of the house. Vibration monitoring will be required to verify this is achieved.

If a milling head is used to grind the rock or hand tools are used such a jack hammers or similar, vibration monitoring will not be required. If a machine is used, rock sawing is carried out around the perimeter of the excavation boundaries in not less than 1.0m lifts, a rock hammer up to 300kg could be used to break the rock without vibration monitoring. Peak particle velocity will be less than 5mm/sec at the supporting brick walls and piers of the house or the common boundaries using this method provided the saw cuts are kept well below the rock to broken.

It is worth noting that vibrations that are below thresholds for building damage may be felt by the occupants of the house.

## 13. Excavation Support Requirements

The proposed excavation for the level under the house will be located immediately beside the supporting brick piers and sandstone block walls of the subject house.

It is expected the footings of the subject house are supported on medium strength sandstone however this to be confirmed with small pits dug by the builder beside the structures to expose the footing material. Upon completion, the pits are to be inspected by the geotechnical consultant to confirm the footing material. If these structures are founded on medium strength sandstone no additional support is required. If any of the structures are not founded on medium strength sandstone and are within the excavation's zone of influence they are to be underpinned to medium strength sandstone. In this instance the zone of influence is the area above a theoretical 30$^{o}$ line from the top of medium strength sandstone towards the surrounding footings. The house is to be adequately supported with propping or additional beams as required before any excavations commence.

If underpinning is required, it is to follow an underpinning sequence as specified by the structural engineer. In no circumstances is the bulk excavation to be taken to the edge of the house wall or footing and then underpinned. The underpins are to be carried out in drives pushed forward from beyond the zone of influence following the underpinning sequence. Under pins should not exceed 0.6m in width. Allowances are to be made for drainage through the underpinning to prevent a build-up of hydrostatic pressure. Underpins that are not designed as retaining walls are to be supported by retaining walls. The void between the retaining walls and the underpinning is to be filled with free draining material such as gravel.

Excavations through medium strength sandstone will stand at vertical angles unsupported subject to approval by the geotechnical consultant.

Excavation spoil may be used for landscaping on site provided it is battered permanently at 1.0 Vertical to 2.0 Horizontal (26°) or be supported by engineered retaining walls.

## 14. Retaining Walls

Retaining walls supporting fill, sandy soil, and sandy clays can be designed for a lateral earth pressure coefficient $K_a$ of 0.3 and assume a bulk density of 20kN/m$^3$. It should be noted that this lateral earth pressure coefficient assumes the surface above the wall is near level. Cuts through medium strength sandstone will exert no earth pressure subject to the inspection of the cut face by the geotechnical consultant to ensure no wedges or other defects are present.

Any surcharge loads that may act on the proposed retaining walls (such as those from the car parking area) are to be accounted for in the design.

All retaining walls are to have sufficient back wall drainage and be backfilled immediately behind the wall 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 walls likely hydrostatic pressures are to be accounted for in the retaining wall design.

## 15. Foundations

A concrete slab supported directly off medium strength sandstone is a suitable footing for the proposed storage area under the house. This material is expected to be exposed across most of the base of the excavation. Where it is not exposed shallow piers will be required to maintain a uniform bearing material. A maximum allowable bearing pressure of 1.2MPa can be assumed for footings on medium strength sandstone.

The proposed car port is to be supported on piers taken to medium strength sandstone so that no load is transferred to the retaining wall immediately below. This material is expected at a maximum depth of ~1.3m. A maximum allowable bearing pressure of 1.2MPa can be assumed for footings on medium strength sandstone.

Naturally occurring vertical cracks known as joints commonly occur in sandstone. These are generally filled with soil and are the natural seepage paths through the rock. They can extend to depths of several metres and are usually relatively narrow but can range between 0.1 to 0.8m wide. If a pad footing falls over a joint in the rock the construction process is simplified if with the approval of the structural engineer the joint can be spanned or alternatively the footing can be repositioned so it does not fall over the joint.

***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.

**REQUIRED INSPECTIONS ARE ON THE NEXT PAGE**

## 16. 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 owner or the regulating authorities if the following inspections have not been carried out during the construction process.

- The geotechnical consultant is to inspect any exploration pits that may be required to expose the foundation materials of the house.

- All footings are to be inspected and approved by the geotechnical consultant while the excavation equipment is 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*

## 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 tests 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 professional. 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

BUNGAN HEAD ROAD

MULTI-LEVEL HOUSE NO. 58

ROOF 67.88

ROOF 66.15

ROOF 71.41

GUTTER 69.61

MULTI-LEVEL HOUSE NO. 60

TERRACE RL 59.49

GUTTER 63.74

RIDGE 65.91

GUTTER 64.97

RL 62.33

SRA

COVERED TERRACE

ROOF 64.85

RL 62.33

x62.84

x62.85

x53.68

x54.10

x66.96

x67.06

x68.97

x68.14

x70.82

x71.06

x71.48

x71.60

x70.43

x70.98

x69.26

x70.82

x71.13

66.92

67.82

69.77

69.35

69.27x

67.75

71.44x

70.68

0.655 BDY.

7735 BDY.

67 065 BDY.

94 520 BDY.

EXISTING DRIVEWAY TO MYOLA ROAD

DCP1

DCP2

DCP3

DCP4

DCP5

NEW CARPORT RL 74.90

LAWN

LAWN

NEW ROOFING

ROOF 74.45

NEW GRD. FL DECK

40 645 BDY.

COVERED BALCONY

RL 79.04

FIRST FLOOR ADDITION RL 79.42

GUTTER 77.82

NEW GROUND FL. DECK

ROOF 74.45

900 MIN.

GRD. FL. INFILL ADDITION

NEW ROOFING

900

14 490 BDY.

71.56x

1600

3050 BDY.

15250 BDY.

900

1950

DRIVEWAY

TOP OF WALL 64.16

POOL

ROOF 71.26

PARAPET 70.22

GUTTER 70.42

MULTI-LEVEL HOUSE NO.64

69.00x

BALCONY

CARPORT WITH STUDIO OVER

RL 76.98

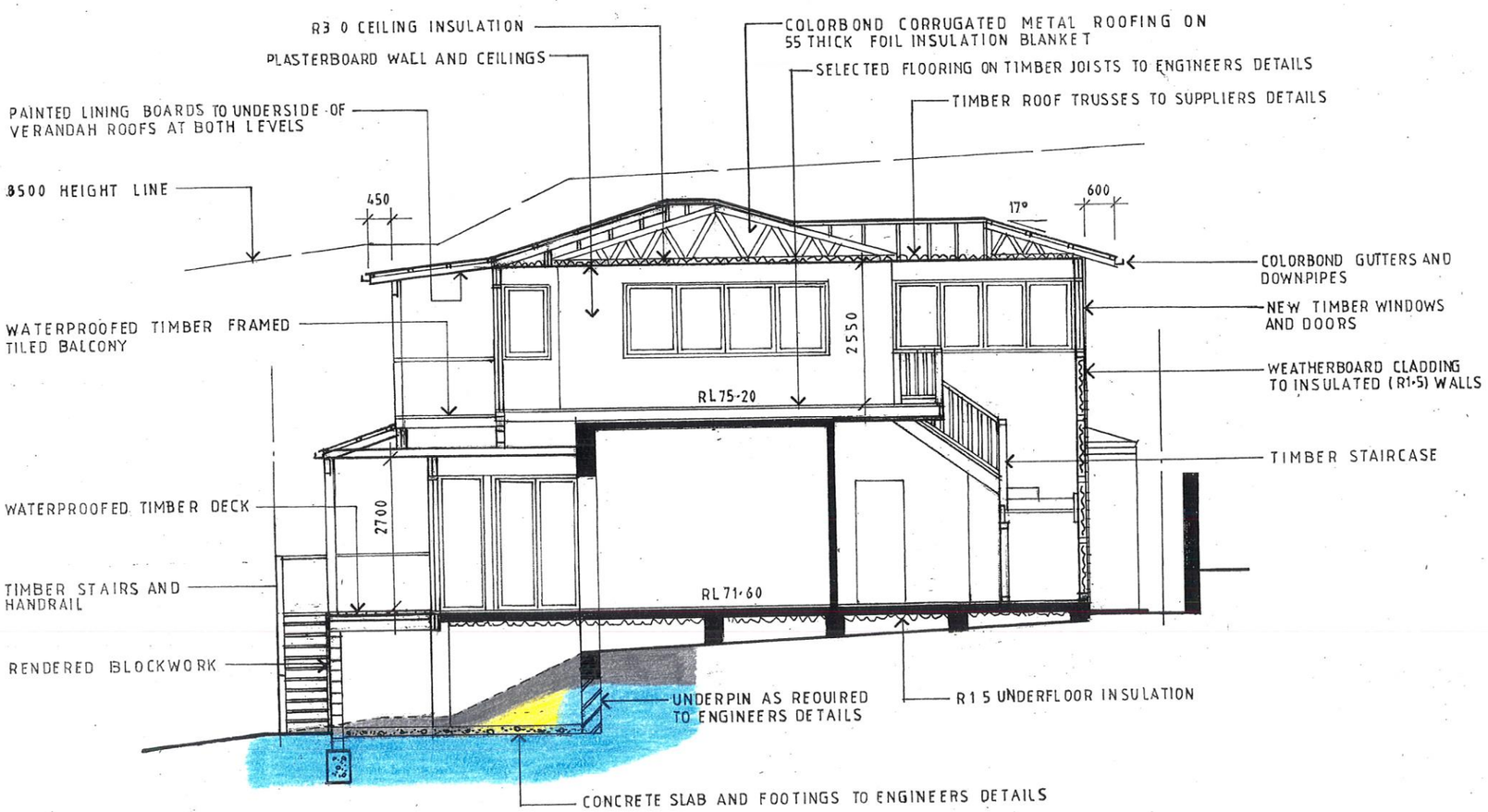
TN


NETWORK DESIGN
a.b.n.52 957 985 118
37 McKillop Road Beacon Hill 2100
M. 0417 459 596
alwayswright@optusnet.com.au


ALTERATIONS & ADDITIONS
77 MYOLA ROAD, NEWPORT
for Jon Milligan LOT 1 DP715601

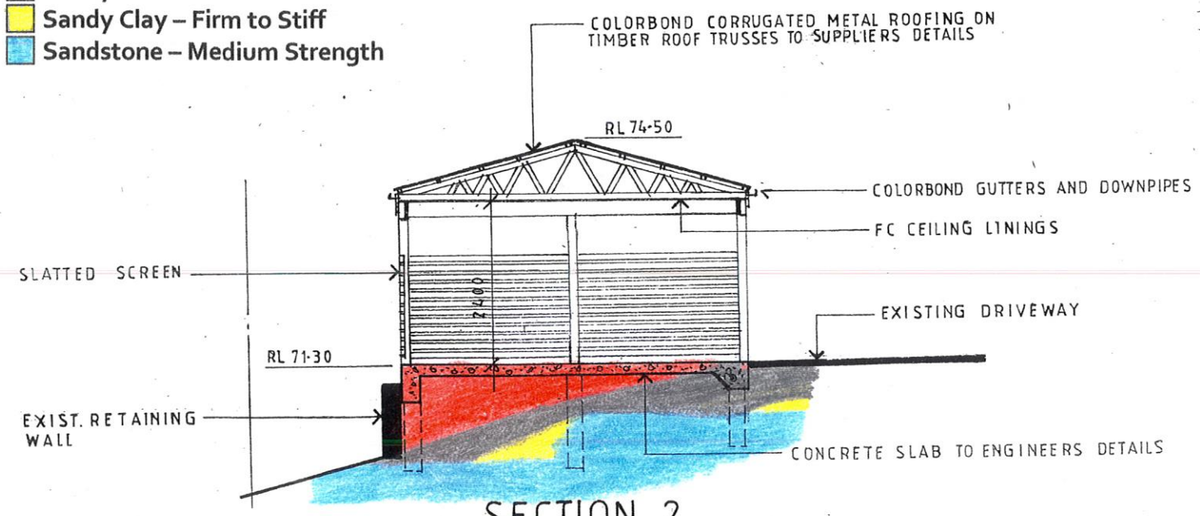
| SITE PLAN AND CALCULATIONS | | | DRG. NO. 09-16-MYO |
|---|---|---|---|
| DATE SEPT. 2016 | DRAWN J. WRIGHT | SCALE 1:200 | SHEET NO. 7 |

## TYPE SECTION – Diagrammatical Interpretation of expected Ground Materials




SECTION 1

- Fill
- Sandy Soil
- Sandy Clay – Firm to Stiff
- Sandstone – Medium Strength




SECTION 2

## Ground Floor Window & Door Schedule

All windows and doors to be timber framed

| Legend | Height | x | Width | Description |
|---|---|---|---|---|
| D1 | 2400 | x | 3100 | Bifold glass doors |
| W2 | 1400 | x | 950 | Casement window |
| D3 | 2400 | x | 2500 | Bifold glass doors |
| D4 | 2400 | x | 3600 | Bifold glass doors |
| D5 | 2400 | x | 1800 | Sliding glass doors |
| W6 | 900 | x | 2400 | Glass louvre/fixed/louvre window |
| W7 | 1500 | x | 2400 | Sliding windows |
| W8 | 1500 | x | 2700 | Sliding windows |
| W9 | 800 | x | 2400 | Sliding windows |
| W10,11 | 1500 | x | 2100 | Sashless windows |
| D12 | 2400 | x | 5900 | Bifold glass doors |
| D13 | 2400 | x | 2700 | Bifold glass doors |
| W14,16,17 | 2400 | x | 850 | Fixed windows |
| D15 | 2400 | x | 6000 | Bifold glass doors |

### Glazing Note

All windows and doors **except W7& W10** to be glazed with single clear glass to achieve a total system U-value: 5.71, SHGC: 0.66 . W7 & W10 to be glazed with single pyrolytic low-e glass to achieve a total system U-value:3.99,SHGC:0.40

## Floor Window & Door Schedule

All windows and doors to be timber framed

| Legend | Height | x | Width | Description |
|---|---|---|---|---|
| W18 | 1350 | x | 3600 | Casement windows |
| W19 | 1350 | x | 2850 | Casement windows |
| W20 | 1350 | x | 3020 | Casement windows |
| W21 | 1350 | x | 3150 | Fixed windows |
| W22 | 1350 | x | 1500 | Fixed windows |
| W23 | 750 | x | 3540 | Glass louvre/fixed/louvre window |
| W24 | 900 | x | 3200 | Casement windows |
| W25 | 1350 | x | 3600 | Fixed/casement window |
| D26 | 2250 | x | 4680 | Stacking glass doors |
| W27 | 1350 | x | 850 | Casement window |
| D28,29 | 2250 | x | 4100 | Stacking glass doors |
| W30 | 1350 | x | 930 | Casement window |
| W31 | 1350 | x | 1320 | Casement window |

### Glazing Note

All windows and doors to be glazed with single clear glass to achieve a total system U-value: 5.71, SHGC: 0.66 .

## Notes

1. All dimensions to be checked on site by builder prior to the commencement of works. Do not scale drawing. All dimensions in millimetres unless shown otherwise.
2. All concrete works to be in accordance with AS3600 and Engineers plans and specifications.
3. All timber framing to AS1684 & 1720 and Engineers details where shown.
4. All steelwork to AS4100
5. All brickwork or blockwork to be in accordance with AS3700.
6. All new glazing to be in accordance with AS1288. Windows and doors to be installed in accordance with manufacturers specifications. Flashing details to comply with relevant exposure condition for each window or door.
7. All new gutters and downpipes to be connected to the stormwater system draining to the street.
8. All works generally to be in accordance with local council bylaws and the Building Code of Australia.
9. All work to be left in a safe and stable condition at the end of each day.

NETWORK DESIGN
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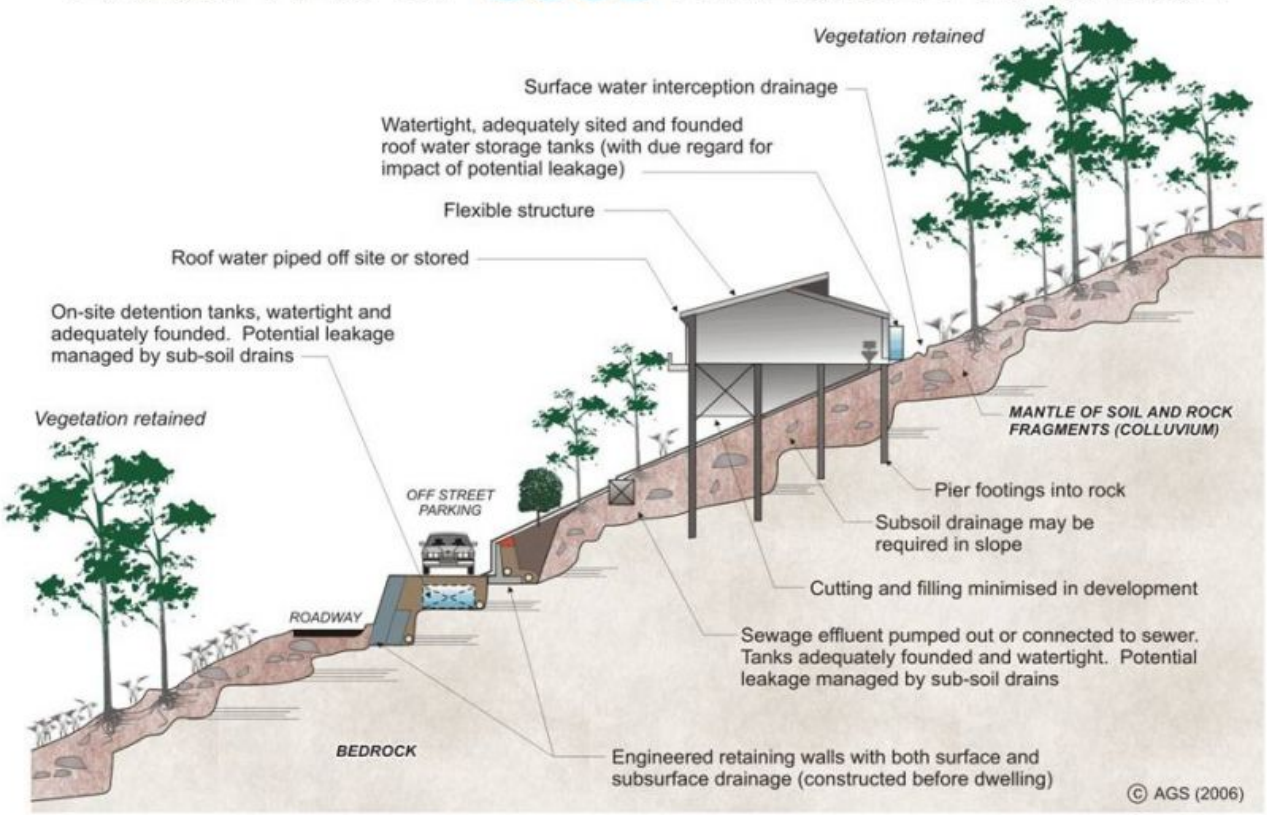
37 McKillop Road Beacon Hill 2100
M. 0417 459 596
alwayswright@optusnet.com.au

ALTERATIONS & ADDITIONS
77 MYOLA ROAD, NEWPORT
for Jon Milligan LOT 1 DP715601

| SECTIONS AND WINDOW SCHEDULE | | | DRG. NO. 09-16-MYO |
|---|---|---|---|
| DATE SEPT. 2016 | DRAWN J. WRIGHT | SCALE 1:100 | SHEET NO. 6 |

# EXAMPLES OF **GOOD** HILLSIDE PRACTICE




# EXAMPLES OF **POOR** HILLSIDE PRACTICE