APPENDICES

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29 June, 2011

Vogue Agency
4 Vuko Place, Warriewood

Our Reference: 2005136RP10.DOC

Attention: Mr S Mustaca

Dear Sam,

RE: PONDEROSA PARADE AND JUBILEE AVENUE, WARRIEWOOD

This letter report supplements previous reports dated February 2011 and 8 June 2011 for the development of a road to connect 120 Mona Vale Road, Warriewood.

This report addresses in more detail the following issue raised with a proposed road to 120 Mona Vale Road, Warriewood by Roy Mustaca.

1. *The Traffic Impact Report is deficient in that it does not consider the future traffic volumes of Jubilee Avenue and Ponderosa Parade that will exist when all development in the Valley is complete;*

On 25 June 2011 a meeting with Mr Paul Davis requested that the analysis be considered for 150 dwellings and that the forecast volumes are used from the Warriewood Valley Urban Lane Release Traffic and Transportation study.

Contact was made with an officer that contributed to the preparation of this document and an appropratie methodology was discussed to assess the impact of 150 dwellings which were not considered in the original study.

The study examined two future growth and network development scenarios which are:

Scenario 3 (S3) Future situation, when the area is developed with the existing road network including the new link between Ponderosa Parade and Mona Vale Road.

Scenario 4 (S4) Future situation, when the area is developed with the existing road network including the new link between Ponderosa Parade and Mona Vale Road and the closures of MacPherson Street at Narrabeen Creek and Jubilee Avenue, west of Warriewood Road.

Intersection turning movement surveys were recently conducted at the intersection of Ponderosa Parade and Jubilee Road, Warriewood and modelled using the intersection analytical program, SIDRA. These volumes were factored up in line with the Warriewood Valley Urban Land Release report forecasts for one-way directional flows at the intersection of Jubiee ave and Ponderosa Road.

To examine the impacts of 150 dwellings it was assumed that 100% of trips would leave the site in the AM peak and the reverse for the PM peak. The generated trips at the intersection of Ponderosa Parade and Jubilee Avenue were distributed as per existing patterns. The Roads and Traffic Authority provide generation rates of 0.85 trips per dwelling for single residential developments as seen in their publication, 'Guide to traffic generating developments'. Based on 150 dwellings it has been assumed that there would be 127 vehicles leaving the site in the AM peak and 127 returning in the PM peak.

Further analysis was undertaken to assess the impacts of upgrading the intersection from a single lane roundabout to a double lane roundabout and another option to provide two lane approaches on Jubilee Avenue (western approach) and Ponderosa Road (North approach), to include the additional lane as an exclusive left turn lane.

The assessment used an RTA adopted intersection analytical program SIDRA. The Warriewood study used another intersection program INTANAL which is no longer currently available however, the results compare favourably. SIDRA reports on the performance of intersections in terms of average delay (seconds per vehicle) and Level of Serevice (LOS). Table 1. sets out the criteria

Table.1 INTERSECTION LEVEL OF SERVICE CRITERIA

LOS	Average delay (secs/veh)	Traffic signals, roundabout	Give way and stop signs
A	Less than 14	Good.	Good.
B	15 to 28	Good, with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory, but accident study required.
D	43 to 56	Satisfactory, but operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity and incidents will cause excessive delays; roundabouts require other control mode.	At capacity and requires other control mode.
F	Greater than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

Adapted from RTA Guide to Traffic Generating Developments, 1993

SIDRA results for Jubilee Avenue/Ponderosa Road Lane for the existing situation and for the two scenarios are summarised in Table 2 and 3 and the AM and PM peaks.

Table 2 AM PEAK SIDRA RESULTS

Existing		***S3***		***S4***	
Ave Delay	*LOS*	*Ave Delay*	*LOS*	*Ave Delay*	*LOS*
10.1	*A*	*24.6*	*B*	*123*	*F*

Table 3 PM PEAK SIDRA RESULTS

Existing		***S3***		***S4***	
Ave Delay	*LOS*	*Ave Delay*	*LOS*	*Ave Delay*	*LOS*
10.2	*A*	*21.5*	*B*	*70.1*	*E*

The results show that S4 which includes the closure of MacPherson Street and Jubilee Avenue with no development at 120 Mona Vale Road could result in unsatisfactory operations at Ponderosa Parade and Jubilee Avenue.

Forecast generations from 120 Mona Vale Road were added to future development scenarios of S3 and S4 and modifications to the roundabout included in the assessment.

Table 4 AM PEAK SCENARIO 3 WITH 120 MONA VALE RD GENERATIONS

S3 + Development		***S3 + Development + Roundabout modifications***		***S3 + Development + 2 lane roundabout***	
Ave Delay	*LOS*	*Ave Delay*	*LOS*	*Ave Delay*	*LOS*
68	*E*	*12.7*	*A*	*12.3*	*A*

Table 5 PM PEAK SCENARIO 3 WITH 120 MONA VALE RD GENERATIONS

S3 + Development		***S3 + Development + Roundabout modifications***		***S3 + Development + 2 lane roundabout***	
Ave Delay	***LOS***	***Ave Delay***	***LOS***	***Ave Delay***	***LOS***
40.2	***C***	***31.6***	***C***	***11.7***	***A***

Tables 4 and 5 show that Levels of Service increase with the development however, with minor roundabout modifications, these levels of service change from B to A in the AM peak and B to C in the PM peak. The conversion from a single circulating lane to a double circulating lane roundabout allows Levels of Service to improve to A.

Table 6 AM PEAK SCENARIO 4 WITH 120 MONA VALE RD GENERATIONS

S4 + Development		***S4 + Development + Roundabout modifications***		***S4 + Development + 2 lane roundabout***	
Ave Delay	*LOS*	*Ave Delay*	*LOS*	*Ave Delay*	*LOS*
198	*F*	*28.6*	*B*	*28.0*	*B*

Table 7 PM PEAK SCENARIO 4 WITH 120 MONA VALE RD GENERATIONS

S4 + Development		***S4 + Development + Roundabout modifications***		***S4 + Development + 2 lane roundabout***	
Ave Delay	*LOS*	*Ave Delay*	*LOS*	*Ave Delay*	*LOS*
107.3	*F*	*36.2*	*C*	*14.0*	*A*

Notes: 1.S3 Roundabout modifcations inludes 2 laneson Jubilee Ease (Eastern Approach).

Scenario 4 which is more unlikely as it involves road closures but shows in Table 6 and 7, indicates that Levels of Service also increase with development generations however, with minor roundabout modifications these levels of service change from F to B in the AM peak and E to C in the PM peak. The conversion of the roundabout to two lane circulation improves Levels of Service to B in the AM peak and A in the PM peak.

CONCLUSION

The intersection of Ponderosa Parade and Jubilee Avenue has been re-assessed using forecasts contained within the Warriewood Valley Urban Land Release Traffic and Transportation study and a development size of 150 dwellings for 120 Mona Vale Road, as requested by Council.

Two future growth/network development scenarios for Warriewood Valley were included in the analysis which showed that the additional generations of 120 Mona Vale Road would have an impact on the roundabout of Jubilee Avenue and Ponderosa Parade. Whilst the impact is significant, the roundabout is still expected to operate at capacity.

Further analysis was undertaken to assess the impacts of minor modifications to the corner radius of the roundabout to allow two lane approaches on the western and northern sides to allow exclusive left turn lanes on the approaches. The results show highly favourable improvements to delay with operations similar to current levels.

On this basis, with minor modifications to the roundabout at Ponderosa Parade and Jubilee Avenue generations of 150 dwellings from 120 Mona Vale Road would be easily accommodated at full development of the Warriewood Valley area.

Yours sincerely,
for TAR Technologies Pty Ltd

Brett Morrison
Director MEngSc(*UNSW*), AITPM, ACEA

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8 June, 2011

Vogue Agency

4 Vuko Place, Warriewood

Our Reference: 2005136RP8.DOC

Attention: Mr S Mustaca

Dear Sam,

RE: PONDEROSA PARADE AND JUBILEE ROAD

In response to Councils question regarding the intersection of Ponderosa parade and Jubilee Road

1. The Traffic Impact Report is deficient in that it does not consider the future traffic volumes of Jubilee Avenue and Ponderosa Parade that will exist when all development in the Valley is complete;

To determine the intersection capacity of Ponderosa Parade and Jubilee Road, the development potential of Warriewood Valley must be known. As this is unavailable the existing and theoretical capacity of the intersection has been assessed and related back to trips per dwelling.

Intersection turning movement surveys were conducted at the intersection of Ponderosa Parade and Jubilee Road, Warriewood and modelled using the intersection analytical program, SIDRA. Traffic volumes were then incrementally applied using the program's sensitivity analysis procedure to achieve a practical capacity of 90 per cent.

The total existing peak hour morning and afternoon intersection volumes at this intersection were compared with the volumes where the roundabout reached a practical capacity of 90 per cent. The findings are shown in the table below.

Table 1.1 Comparison of existing and near capacity volumes at Ponderosa Parade and Jubilee Road

Scenario	AM	PM
Existing	1394	1381
90 per cent capacity	2091	2072
Difference	697	691

The analysis revealed that the roundabout is operating at a Level of Service A which offers ample capacity for future growth in the area. Furthermore, the roundabout could service an additional 691 trips per hour as shown in *Table 1.1*.

The Roads and Traffic Authority provide generation rates of 0.4 - 0.5 trips per dwelling for medium density residential developments as seen in their publication, 'Guide to traffic generating developments'. If the higher range is assumed, this equates to a limit of an additional 1382 dwellings. The subject site would be unlikely to provide more than ten per cent of this development size.

In summary the intersection of Ponderosa Parade and Jubilee Road has sufficient capacity to provide for any future growth that may occur from the proposed development.

Yours sincerely,
for TAR Technologies Pty Ltd

Brett Morrison
Director MEngSc(*UNSW*), AITPM, ACEA

Ref: 4034

29th June, 2011

REPORT ADDRESSING ROAD DESIGN ISSUES RAISED IN THE REPORT TO THE DEVELOPMENT UNIT OF PITTWATER COUNCIL DATED 9TH JUNE 2011

mepstead
& ASSOCIATES

B6.10 Transport and Traffic Management

Item 2. *The width of the proposed road does not comply with the width of a local road as defined in the Warriewood Valley Roads Master Plan (WVRMP) and as such is not acceptable.*

The design submitted with the original application was on the basis of the road being a private road. However given that Council now prefers that this be a public road we have re-designed the road to comply with the standards of the WVRMP. The road width has been reduced from the original design to comply with the criteria in the WVRMP. The overall road reserve width is now 16 metres, comprising a 7.5 metre carriageway with a 4.25 metre footway on either side. A footpath of 1.5 metres wide has been positioned 1 metre from the back of the kerb on the northern side of the proposed road. There is little need for a footpath on the southern side of the road, given that the church and the possible development to the west of boundary street would be the only people using the road at this point in time.

Item 3. *The maximum longitudinal grade of proposed roads exceeds the 15% maximum specified in the Austroad Standard to roads having the function of a local road and as such is not acceptable.*

A private driveway can have a grade of 20% however as there is now proposed to be a public road we have amended the design to show that a 15% grade is possible. To reduce the extent of cut required Council may consider a variation to the grade requirements. We have submitted an additional plan showing the result if an 18% grade is adopted.

Item 4. *The proposed road does not achieve the minimum traffic sight distances on the crest as specified in the Austroad Standard for roads having the function of a Local Road and as such is not acceptable.*

A 50 metre vertical curve has been designed between the 15 per cent grade and the 1 per cent grade heading further toward Boundary Road. The length of the curve satisfies the criteria for sight distances based on the difference in grade.

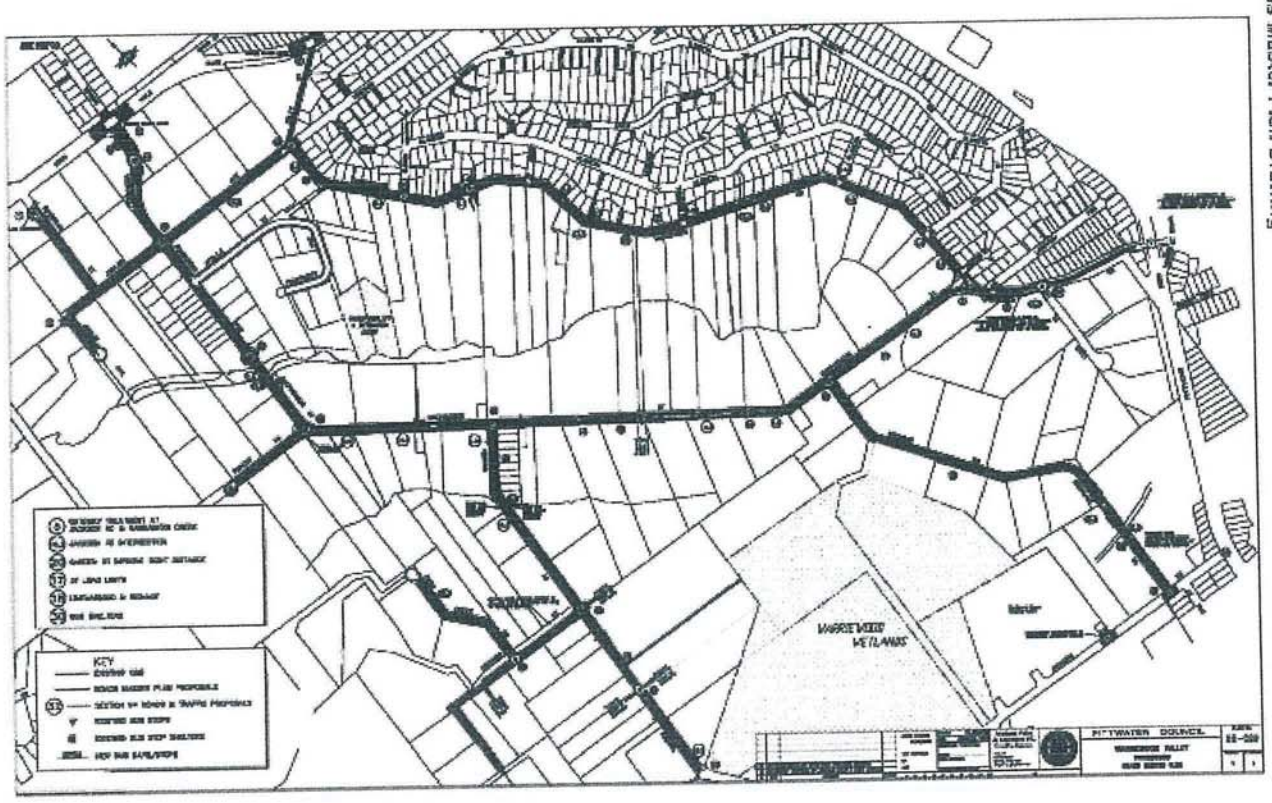
Item 5. *The proposed intersection design of the proposed road and Boundary Street is not acceptable.*

We understand that Council see most of the future traffic coming to and from the north along Boundary Street therefore the splay corner to the south is unnecessary. In addition the splay to the south would involve the removal of seven trees. Consequently we have amended the proposed road and shown construction ending at the property boundary to resolve this issue.

Item 6. *The proposed intersection design of the proposed road and Jubilee Avenue is not acceptable and does not reflect the design in the WVRMP.*

The WVRMP states that the bend of Jubilee Avenue (to the west of Daydream Street) is under its priority controls for intersections (section 3.7.1) and mentions that a layout for this bend is within the Roads Master Plan drawing (below).

Appendix J
Roads Master Plan Drawing



Council have supplied a CAD drawing to us showing Council's draft design for the amendment of the Jubilee Avenue intersection. We have incorporated the proposed changes into the intersection which include placement of two concrete traffic islands and repositioning of the kerb on the inner radius of this bend. The traffic islands will control the traffic entering and exiting the proposed road onto Jubilee Avenue establishing Jubilee Avenue as the dominant road. This will also improve the safety of the intersection by reducing the traffic speed. The kerb on the inner radius of the bend in Jubilee Avenue will be repositioned to increase the carriageway width creating a larger turning radius for trucks. This was part of the Council draft design.

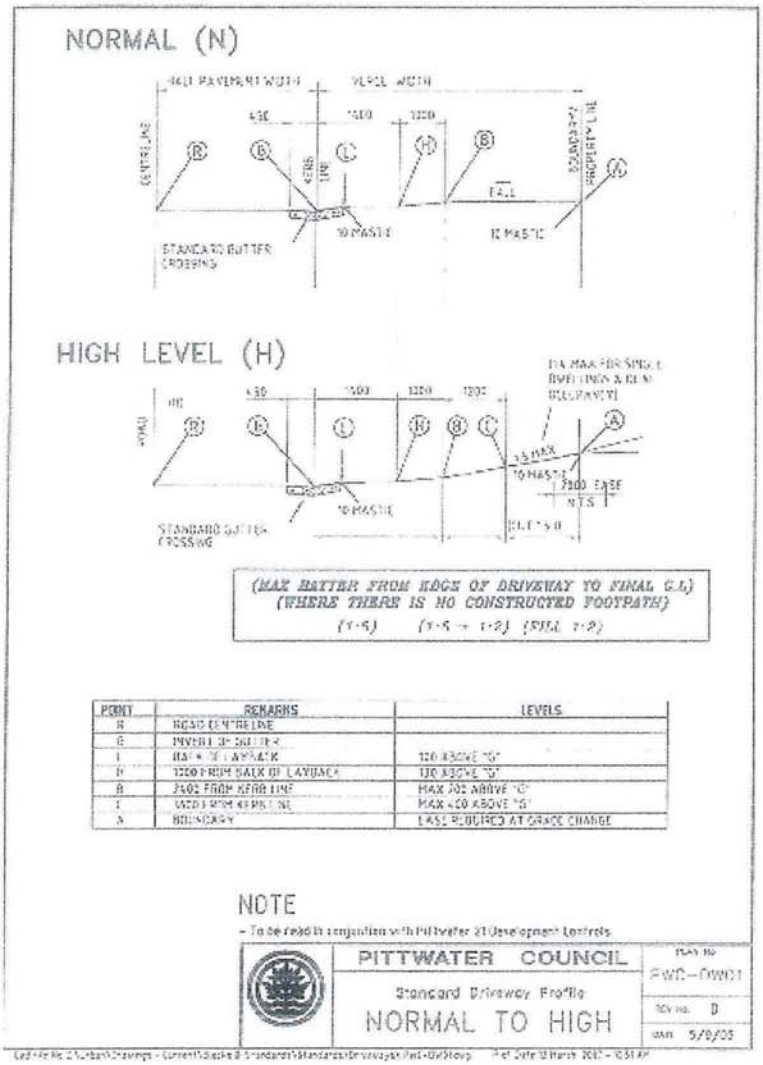
Item 7. *There is no provision of Street Lighting to Standard required by WVRMP and as such is not acceptable.*

An indication of proposed lighting has been shown on the plan. A 6.5m high 'Sylvania Urban' light extending 3 metres from its base toward the kerb has been proposed as street lights due to its likeness to other streetlights in the area and its appropriateness to the site. There is ample scope to alter or add to this preliminary design given that the design constraints are relatively minimal for this component of the proposed road.

Item 8. *The proposed intersection of the proposed road with the existing ROW to the Uniting Church needs to be designed in accordance with Pittwater 21 DCP, B6.2.*

The design requirements are:

- Safe and convenient access
- Restriction of visual impact of driveways is reduced.
- Pedestrian safety
- An effective road drainage system
- Maximise the retention of trees and native vegetation in the road reserve



CROZIER - *Geotechnical Consultants*

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Date: 15th April 2011.

Project No: 2011-040

REPORT ON GEOTECHNICAL INVESTIGATION FOR PROPOSED SUB-DIVISION AT 120 MONA VALE ROAD, WARRIEWOOD

1. INTRODUCTION:

This report details the results of a geotechnical investigation and risk assessment carried out for a proposed sub-division of the existing site at 120 Mona Vale Road, Warriewood. The investigation was undertaken at the request of Mr. Sam Mustaca of Opera Properties Pty Ltd.

It is proposed to sub-divide the existing large site into numerous residential house lots with access roads.

The investigation was carried out to provide information for Development Application purposes. The site has been classified under the Pittwater Council Interim Geotechnical Risk Management Policy 2009 as being within the H1 landslip hazard zone therefore the site requires a Geotechnical Landslip Risk Assessment to be conducted. The investigation comprised:

a) A detailed geological inspection and mapping of the entire site and adjacent land by a Senior Engineering Geologist.
b) Review of Ortho Photomaps and Aerial Photography of the site.
c) Drilling of boreholes to determine subsurface geology and depth to bedrock. The investigation was limited to hand equipment.

Details of the fieldwork are given in the report, together with comments relating to design and construction practice. The following plans and diagrams were supplied for this work;

- Site Survey by Mepstead & Assoc, Reference: 4034, Dated: 19/07/2004
- Concept Plan by Barry Rush and Assoc, Job No.: 0519, Dated: 06/10/2005.

2. SITE FEATURES:

2.1. Location:

The site is located on the low south side of Mona Vale Road, at the intersection with Boundary Road. It is located within moderately to steeply sloping topography at the western end of the Warriewood Valley in Warriewood, Sydney, N.S.W. (see Figure: 1).

2.2. Description:

The site includes Lot 1 DP 383009 and Lots 3, 4 and 5 DP 124602 within the address 120 Mona Vale Road. It is a large (83261m²) triangular shaped parcel of land formed with Mona Vale Road passing along its northern boundary, Boundary Road along its eastern boundary and Narrabeen Creek along half its southern boundary. The site is currently used in a semi-rural purpose with extensive undeveloped grassy areas used for grazing by various 'farm' animals along with glass houses for cultivation of vegetables. A residential house and numerous shed structures are located in the high north-west corner of the site.

Two separate ridge lines plunge through the site, separated by a small creek that passes through the site draining to the east. The southern two thirds of the site is formed with a steeply to very steeply sided, east plunging ridge with numerous sandstone outcrops and cliffs down its sides. This ridge is bound by Narrabeen Creek to the south and the smaller secondary creek to the north. This large ridge line extends to the east below Boundary Road and into the neighbouring properties. The northern third of the site is formed with a steeply sided, rounded convex ridgeline that plunges to the south-east down to the lower portion of the smaller creek gully. The site is formed with numerous varying slope segments and has been partly modified from its natural state. It has an approximate average slope of -20° towards the east-south-east.

2.3. Geology:

Reference to the Sydney 1:100,000 Geological Series sheet (9130) indicates that the site is located near the boundary between the Hawkesbury (Rh) Sandstone and underlying upper Narrabeen Group (Rnn) rocks. The Hawkesbury Sandstone rock unit typically comprises medium to coarse grained quartz sandstone with minor lenses of shale and laminite. The Newport Formation is the upper unit of the Narrabeen Group, it is of middle Triassic Age and typically comprises interbedded laminite, shale and quartz to lithic quartz sandstones and pink clay pellet sandstones.

The site investigation identified the contact between the weathered Hawkesbury Sandstone and Newport Formation rocks as passing at mid-slope level through the site. The Hawkesbury Sandstone occupies the upper elevations and is outcropping in numerous locations as cliffs, rock ledges and terraces. The upper unit of the Newport Formation is a fine grained sandstone, this unit was identified forming similar rock outcrops directly below the contact.

The lower third of the site is underlain by the Narrabeen Group rocks which are dominated by shales and thin siltstone beds with occasional sandstone units. These rocks tend to weather more deeply and often form rounded convex ridge tops with moderate angle (<20°) side slopes. These side slopes can be either concave or convex depending on local geology. Internally they comprise interbedded shale and siltstone beds with close spaced bedding partings that have either close spaced vertical joints or in extreme cases large space convex joints. The shale often forms deeply weathered silty clay soil profiles (medium to high plasticity) with thin silty colluvial cover.

2.4. Aerial Photogrammetry Assessment:

Air photographs of the site and adjacent land were acquired from the NSW Land and Property Management Authority for assessment of site conditions. Photo sets from 1982 and 2005 were compared along with various photos acquired from public utilities for evidence of changes in land form and indicators of previous instability that could be further investigated during site inspection.

The large scale photo sets acquired (1: 16000 and 1:25000) were enlarged to provide photos at 1:4000 and 1:6250 scale. These were viewed stereographically to identify distinct topographical features and assess changes in site conditions. The northern half of the site was cleared of vegetation between 1982 and 2005 however there were no other signs of significant changes to the site. There were no indicators of large scale instability within the soil slopes or rock outcrops.

3. FIELD WORK:

3.1 Method:

The field investigation comprised a walk over inspection of the site and adjacent properties on the 1st and 8th April 2011 by Senior Engineering Geologists and Geotechnical Engineer. It involved geological and geomorphological mapping of the site and adjacent land with examination of soil slopes, rock outcrops, drainage gullies, trees, and existing built structures for stability. It included the drilling of three hand auger boreholes to verify sub-surface geology.

3.2. Results:

3.2.1. Field Observations:

The results of the field mapping are shown on Figure: 2 with the main observations detailed below, traversing from the northern end of the site to the south.

3.2.1.1. Northern corner:

The northern corner of the site contains dirt access roads passing close to both the eastern and northern boundaries. The upper access road extends across slope along the boundary fence, near paralleling Mona Vale Road. It is formed via a shallow (<1.0m) cut into the hill slope on its upper side with the spoil fill forming an embankment to support the outer edge. The outer edge of the fill embankment is generally very steep and is up

to 1.5m in height. The lower access road is formed in a similar manner however it is located at the base of the slope within less steeply sloping topography therefore the cut and fill heights are significantly lower.
This northern corner of the site is generally covered in low grasses with small patches of dense fern undergrowth and occasional large eucalypt trees. The slope is formed with small drainage lines and terraces cut across it and occasional partially buried sandstone boulders or outcrops of bedrock.

A very shallow ephemeral drainage line cuts down from the northern boundary to northern side of the small secondary creek that separates the two main ridge lines within the site. An outcrop of the sandstone bedrock was identified within this shallow drainage path forming a 3-4m high cliff line. This outcrop is discontinuous to the north and south and appears exposed only due to erosion within the drainage path.

There were no signs of concentrated stormwater flow other than within existing drainage lines in this portion of the site. There were no signs of recent erosion of surficial soils or landslip instability. The shallow excavation and fill embankment for the upper access road have been in existence for at least 10 years and show only minor creep and erosion. The trunks of all trees showed no signs of significant basal curvature suggesting ongoing soil creep is minimal.

3.2.1.2. Secondary Creek Drainage Path:

A secondary drainage path enters from the adjacent land upslope, passing below Mona Vale Road. This small creek then strikes east through the site before turning north-east and passing below Boundary Road into the neighbouring property. The creek within this drainage path appears to be intermittent and of low flow volume other than what is discharged into it from a small dam at the crest of the site.

The upper portion of the drainage gully is wide and open however it appears modified from its natural condition for the construction of Mona Vale Road. The Mona Vale Road pavement is supported up to 10m above the level of the site via both a steep embankment and a stacked sandstone boulder retaining wall. The embankment contains numerous trees and is densely vegetated, whilst the boulder wall forms a steep embankment extending up from the property boundary fence. The boulder wall is approximately 15m wide at the crest. The majority of the wall and embankment were not visible due to extensive vegetation growth however where inspected they both appeared in a stable condition with no obvious deformation in the wall or erosion and instability in the embankment. A pipe and culvert allow drainage to continue below the road and embankment into the site.

Directly down slope from the boundary fence the gully steepens and narrows and is very densely overgrown with weed vegetation. Inspection of the gully sides identified a moderate level of fill soils have been placed around the gully. As the creek passes down slope it begins to flatten out in the centre of the site where a dirt access road passes across it. Below this road the gully is again very densely overgrown until the creek reaches a small deep pond formed close to the eastern property boundary. The creek then passes to the north-east via several shallow channels which appear to contain extensive fill material along with alluvial sediments before it passes into a culvert and below Boundary Road.

Inspection of the creek line was limited due to the very dense weed vegetation which fills the majority of the gully. However there were no signs of recent landslip instability or excess erosion of the gully banks. Inspection of the Mona Vale Road boulder wall and embankment were limited due to vegetation growth however they have been in existence for at least 30 years and show no major signs of instability. Inspection of the road pavement above this location noted that the pavement is relatively uncracked and shows signs of only minor deformation adjacent to the rock wall. The pavement has not been recently renewed or modified.

3.2.1.3. Main Ridge Line:

The ridge line passing through the southern two thirds of the property is the main geomorphological feature of the site. This ridge is extensively modified down its northern face via numerous tracks and fill terraces however only the upper edge of the southern face has been altered from its natural condition. The ridge is separated into three distinct units, an upper ridge crest that is generally gently sloping containing residential structures, a steep sided and east plunging relatively undeveloped portion and then a lower gently sloping unit containing agricultural development.

Upper Unit:

The upper unit contains a single storey brick residential house along with several steel sheds interspersed with lawns and gardens across the ridge crest. Several rock retaining walls up to 2.0m in height are located to the north of the house supporting gently sloping lawn terraces above an access driveway from Mona Vale Road. Another access road also extends from Mona Vale Road heading east through the northern side of this unit. The outer northern side of this access road and also another parking area terrace to the north are formed upon fill soils placed over the natural slope. A small dam is located along slope between the residential area and the northern access road. This dam is formed with a sandstone cliff along its southern face and an embankment up to 3.0m in height along its northern side, adjacent to the access road. It appears that the southern rock face may have been the result of previous quarrying, possibly related to the construction of Mona Vale Road. It exposes high strength Hawkesbury Sandstone bedrock with few bedding or joint defects.

The southern side of this upper unit is formed with a narrow grassed access track and lawn terraces that appear partially formed upon fill soils around their down slope edges. The southern edge of the access track is located directly above a sandstone outcrop and cliff that strikes east along the edge of the residential area. This cliff marks the edge of the developed portion. Another cliff then strikes north at the eastern end of this upper unit.

The entire upper unit is extensively modified from its natural condition with excavation and fill embankments noted throughout. The rock retaining walls are considered in a moderate condition and are showing signs of deformation and cracking. The embankment formed along the northern side of the dam is showing signs of ongoing seepage with a drain at its base collecting approximately 0.25L/s of seepage flow. The outcropping cliff face at the eastern end of this unit shows signs of previous excavation with the embankment directly below appearing to contain fill soils and sandstone boulders.

Central Unit:

The central unit of the main ridge line appears relatively undeveloped other than lawn terraces and access roads with numerous sandstone cliffs mapped terracing down its sides. The majority of the terraces appear formed as a result of excavation into the ridge crest and placement of fill soils over the sandstone cliff top terraces. The unit contains few trees, however the steep slopes are covered in dense fern vegetation. There were several small soggy areas identified suggesting ongoing ground water seepage in these locations.

Lower Unit:

The lower unit, forming the south-east corner of the site, occupies a saddle in the ridge crest between two separate drainage paths. This unit is generally gently sloping and contains large open grassed areas and numerous glass houses for crop cultivation. A large near level terrace is formed in the south-east corner of the site with grass covering. This terrace is filled around its southern and western edges and appears formed across another low south striking secondary ridge crest.

There were several areas of seepage noted however there are no signs of excess surface stormwater flow, erosion or landslip instability within this unit. The fill embankments have been in place for at least 30 years and show no sign of landslip instability other than minor creep.

3.2.1.4. Narrabeen Creek:

Narrabeen Creek drains from the land upslope to the south-west of the site and then below Mona Vale Road. The creek base then forms the western half of the southern property boundary. The creek then strikes south-east down through the adjacent land to the south of the site. The creek has formed a steep sided valley which appears relatively unmodified from its natural state. The valley sides form steeply south to south east sloping topography through the southern edge of the site. Both sides of the valley contain extensive outcrops of sandstone bedrock, including cliffs, along with detached sandstone boulders with trees and undergrowth throughout. The majority of the creek base was inaccessible however where it passes the upper corner of the site the valley walls contain numerous high (>3m) vertical cliffs whilst the base contains numerous sandstone boulders. A very large (12m) cliff is located upslope directly to the south-west corner of the site, forming a waterfall with overhang.

The natural Narrabeen Creek Valley faces are steeply sloping however a limited inspection did not reveal any signs of excess surface stormwater flow or erosion other than that related to the creek. There are no signs of landslip instability however there are numerous scattered boulders throughout the gully.

3.2.2. Site Testing:

Hand auger boreholes were used to confirm the geology within key locations across the site. The following summarises the results of site testing, detailed log sheets are included in Appendix: 1 and test locations are shown on Figure: 2.

Borehole 1 was drilled in the lower south-eastern corner of the site, adjacent to the filled embankment terrace. This bore intersected dark grey silty sand topsoil overlying dark brown, slightly clayey sand with sandstone gravel. From 0.35m depth yellow-brown sandy clay was intersected to 0.55m before stiff, light yellow brown

and grey sandy clay was encountered. This horizon was identified as extremely weathered sandstone before refusal occurred at 0.85m depth in very low strength interbedded siltstone and shale.

Borehole 2 was drilled on the low north-east side of the main ridge. This bore was attempted twice with borehole 2A intersecting a thin topsoil horizon overlying dark brown clayey sand with sandstone gravel to 0.50m Below this level dark yellow-brown, moist to wet, clayey sand/sandy clay was intersected which graded to light yellow-brown and grey with depth before hand auger refusal occurred at 0.68m depth on low strength sandstone. It could not be confirmed that this was bedrock.

Borehole 3 was drilled in the lower north-east corner of the site. This bore intersected topsoil and dark grey silty and clayey sand (colluvium) to 0.30m before dark yellow brown, slightly clayey sand with sandstone pebbles was intersected. Hand auger refusal occurred on what was interpreted as a sandstone cobble as it could not be determined if this was bedrock.

4. COMMENTS:

4.1. Geotechnical Assessment.

There were no signs of deep seated or large scale landslip instability identified within the site. Similarly there were no indicators of previous small scale landslip or excess erosion. However the site has been significantly modified from its natural condition and contains numerous filled embankments along with areas of ongoing groundwater seepage. The fill embankments appear to have been in place for at least 30 years and show signs of minor erosion and creep movement only, though these are generally located on the higher portion of the site which is underlain by geology considered naturally more stable.

Mapping of rock outcrops along with the results of the boreholes suggest that the upper portion of the site, above R.L. 64, is underlain by Hawkesbury sandstone bedrock with a thick sandstone unit of the Newport Formation below, extending down to approximate R.L. 58. Below this level the geology consists of interbedded sandstone, siltstone and laminites/shales of the Newport Formation, with at least one medium to high strength sandstone unit at R.L. 50.

The Hawkesbury and upper Newport Formation sandstone units are relatively massive and resistant to erosion with weathering producing shallow sandy soil profiles that are susceptible to erosion. As such landslip instability within these horizons will be very limited to shallow earth slides within the thin soils and rock topples/slides from exposed cliff lines. The Newport Formations interbedded siltstones, sandstones and laminites/shales identified below R.L. 58 are more susceptible to weathering and can form deeper clayey soil deposits. These clayey soils are more prone to landslip instability (earth slide/flow), especially on the southern faces of ridge lines, and when slopes are steepened above their natural angles through construction activities, as often seen throughout the Pittwater Council area.

The majority of the site is underlain by geology which generally has a low susceptibility to landslip instability (i.e. sandstone bedrock). Whilst the lower portion is considered more susceptible similar developments have occurred across the region successfully whilst maintaining the risk from landslip instability within 'Acceptable' levels. The site is therefore considered suitable for the proposed sub-division and subsequent residential development provided all works are undertaken with the implementation of proper engineering design and construction practices, especially those which are developed for use in landslip prone areas.

4.2. Slope Stability:

The contact between the upper sandstones and the lower interbedded units is known to result in significant levels of ongoing groundwater seepage. This is due to the groundwater flow along defects within the resistant sandstone being forced to surface by the low permeability of the more clay rich interbedded units below. This results in an increased risk of instability around this contact (approximate R.L. 58) due to saturation of the clayey soils below and undermining of the overlying rock horizons. A large volume of the seepage on the site is occurring near this contact however there were also numerous seepage points noted upslope on the main southern ridge line which appear related to the small dam constructed near the crest of the site.

The existing dam contains extensive leaks and is expected to be the cause of numerous groundwater seepage points down slope. This is due to the ongoing flow from leaks and pressure head of water it will be providing in both bedrock defects and at soil contacts. The embankment is relatively old and was likely poorly constructed resulting in its deterioration and significant leaking. The removal of this dam or its proper reconstruction would reduce the risk of instability within that area of the site and down slope.

The fill embankments provide a risk of small scale earth/debris slide landslip instability, though many of these existing embankments may be removed as part of the sub-division development. The seepage points noted on the lower slopes, especially on the southern side of the main ridge, also have the potential to result in small scale earth/debris slides or flows within both the fill and natural soil slopes. The risk of landslip in these locations will be relatively low however it may be increased through poor design and construction. The rock outcrops around the main southern ridge, also have the potential to provide rock topple/falls to lower portions of the site for the long term.

The proposed sub-division will result in extensive modifications to the existing site conditions therefore it is expected that the majority of the existing fill embankments will be removed or re-formed and contoured. However development works across these areas have the potential to result in the formation of new landslip hazards through poor excavation or earthworks practice. Excavations of cuts in the lower interbedded units (below R.L. 58) have the potential to result in shallow landslip instability whilst fill embankments will require proper preparation of foundations and control of both compaction and ongoing surface stormwater control.

Pittwater Councils Geotechnical Hazard Zone Map identifies the entire site as being subject to the H1 classification for landslip instability. Therefore development works on individual lots will be controlled by this zoning. Each building lot and the proposed development for that lot will require separate geotechnical

investigation and reporting to be submitted with Development Applications as per the Council Policy due to the potential for an increase in risk of instability through poor design and construction.

4.3. Landslip Hazards:

Based on our site mapping we have identified the following geological/geotechnical landslip hazards which need to be considered in relation to the existing site and the proposed development, these hazards are:

A. Earth/debris flow (<20m³) from fill embankments in upper portion of site related to existing dam and soil saturation.
B. Earth slide (<20m³) from fill embankments in upper portion of site
C. Rock topple/slide from cliff lines around southern ridge line.
D. Earth slide/flow from natural soil slopes in lower south-east corner of site.
E. Earth slide from fill embankments across lower portion of site.
F. Earth slide from natural slopes in northern half of site.

4.4. Risk Assessment:

There were no indicators of deep seated or large scale landslip instability within this site. The site has been assessed in accordance with the methods of the Australian Geomechanics Society (Landslide Risk Management, AGS Subcommittee, May 2002 and March 2007) and Pittwater Council's Interim Geotechnical Risk Management Policy for Pittwater – July 2009. The Australian Geomechanics Society Qualitative Risk Analysis Matrix is enclosed in Appendix 2 along with relevant AGS notes and figures.

The relatively small scale identified landslip hazards on the existing site each provided a Risk to Life of $\leq 10^{-6}$ and a Risk to Property of Low in their current condition and without remedial/stabilisation works being implemented. The risk associated with these existing landslip hazards is therefore considered 'Acceptable' against the Pittwater Council Risk Management Policy. However this risk level is based on the very low occupancy of the existing site. The risk associated with landslip hazards created by the proposed works is difficult to assess until final design and mark out have been completed, however based on our geotechnical assessment and experience, provided the proposed works are undertaken with engineering design and construction practices including geotechnical input as required by Pittwater Councils Policy then the risk of instability should remain within the 'Acceptable' level across this site.

4.5. Geological Model.

In an effort to understand the likely impact that the proposed changes may have on the site it is necessary to develop a Geological/Geotechnical Model for the site. This model is developed using a combination of architectural drawings, land survey, geological mapping and test bore data. The results are presented as several sections through the site within Figure: 3, enclosed in Appendix: 1.

4.6. Design & Construction Requirements:

The proposed design will require the construction of extensive pavements for access road construction as well as a stormwater drainage system prior to sub-division and development of the individual building lots. These preliminary works will involve extensive clearing of existing structures and the re-modification of the existing ground surface levels to achieve the design grades. A brief of recommendations for this work is outlined below.

4.6.1. Excavation:

The geotechnical engineer should be consulted regarding the suitability of any proposed excavation works on this site. Excavation to ≥1.0m depth in the upper portion of the site, above R.L. 58, is expected to encounter medium to high strength sandstone bedrock unless natural soils are overlain by fill material. The weathered profile in the lower portion of the site will be deeper therefore low strength interbedded sandstone/siltstone and laminite/shale bedrock may be located up to 3m depth below existing ground surface levels. However bedrock is outcropping at surface in numerous locations across the upper portion of the site and also in isolated locations across the lower half.

The excavation of medium to high strength sandstone bedrock will require the use of rock excavation equipment. Rock face instability is also possible in this material as is shallow soil instability in the weathered horizon. Any excavation through the interbedded sandstone, siltstone and laminite/shale units on the lower portion of the site will require low angle batters to reduce the potential for instability on the upslope side.

The excavation of soil and extremely weathered bedrock may be readily achieved using conventional earth moving equipment or hydraulic excavators with the assistance of ripping for the very low strength bedrock and thin ironstone bands. The geotechnical engineer should be consulted in regards to the suitability of any rock excavation equipment proposed for this site.

4.6.2. Earthworks:

Prior to placement of any new fill all surficial topsoil, organic material and any loose or saturated ground should be removed. Following removal of all unsuitable surficial material the exposed ground surface (sub-grade) should be proof rolled using a minimum 8 tonne roller during inspection by a geotechnical professional to identify areas of low strength or instability.

For filling purposes a granular material, such as crushed sandstone, may be placed in layers of ≤300mm loose thickness prior to compaction of each individual layer to achieve a density of ≥ 97 % standard compaction or to the engineers design requirements. Testing to confirm that the level of compaction is achieved should be undertaken as per the requirements of AS3798 to a minimum of Level 2 control.

4.6.3. New Footings:

The geology is variable across the site with levels modified from their existing conditions. Based on the identified geology the site classification for the upper portion of the site will generally either be Class 'A' or 'S' unless significant levels of fill soil are placed over the natural ground surface. The lower portion of the site is expected to vary between Class 'S' and 'M' however this will also be impacted by site variations. As such it is recommended that each individual building lot be re-classified as per AS2870 – 2011, 'Residential Slabs and Footings' as part of individual development applications.

Due to the underlying site conditions and steepness of the slope it is recommended that any new dwelling or retaining structures proposed for the site/s be founded off insitu bedrock of at least very low strength. The results of the site investigation suggest that extremely weathered bedrock is expected at ≤1.0m depth through the unmodified portions of the site and may be located at up to 3.0m depth where fill embankments have been previously constructed. Localised variations in these depths can be expected due to variability within natural geological processes and modifications to the land surface.

4.6.4. Drainage:

The existing site stormwater drainage system is primitive however this will be upgraded as part of the sub-division. The existence of the secondary drainage path and creek through the site will assist with stormwater design and control however to prevent an increase in risk of instability across the site once development has begun drainage easements should be provided for all building lots to allow for drainage of collected stormwater from hard surface areas.

4.7. Conditions Relating to Design and Construction Monitoring:

To comply with Councils conditions and to enable the completion of Form: 2 and 3 required as part of construction, building and post-construction certificate requirements of the Councils Interim Geotechnical Risk Management Policy 2009, it will be necessary for Geotechnical Consultants to;

1. review the structural design drawings for compliance with the recommendations of this and subsequent geotechnical reports,
2. confirm that adequate stormwater management systems are put in place,
3. inspect all new footings and excavations to confirm compliance to design assumptions with respect to allowable bearing pressure, basal cleanness and the stability of footings and excavation faces prior to the placement of steel or concrete.

This review and inspection procedure will be necessary for both the development of the sub-division and its infrastructure and within individual building lots as part of individual development applications.

4.8. Design Life of Structure:

We have interpreted the design life requirements specified within Councils Risk Management Policy to refer to structural elements designed to support the proposed developments, the adjacent slope, control stormwater and maintain the risk of instability within acceptable limits. Specific structures and features that may affect the maintenance and stability of the site in relation to the proposed and existing development are considered to comprise:

- stormwater and subsoil drainage systems,
- retaining walls and soil slope erosion and instability,
- maintenance of trees/vegetation on this and adjacent properties,

Man-made features should be designed and maintained for a design life consistent with surrounding structures (as per AS2870 – 1996 (50 years)). In order to attain a design life of 100 years as required by the Councils Risk Management Policy, it will be necessary for the structural and geotechnical engineers to incorporate appropriate design and inspection procedures during the construction period. Additionally the property owners and Council should adopt and implement a maintenance and inspection program.

If this maintenance and inspection schedule are not maintained the design life of the property cannot be attained. A recommended program is given in Table: 2 and should also include the following guidelines.

- The site is inspected 12 months after the works have been completed to verify that there have been no changes to site stability (during construction) by both the Structural Engineer and Geotechnical Consultant (at the same time, same day).
- The conditions on the block don't change from those present at the time this report was prepared, except for the changes due to this development.
- There is no change to the property due to an extraordinary event external to this site, and the property is maintained in good order and in accordance with the guidelines set out in;
    a) CSIRO sheet No. 10-91 1988
    b) The Australian Geomechanics "Landslide Risk Management" Volume 42, March 2007.
    c) AS 2870 – 2011, Australian Standard for Residential Slabs and Footings

Where changes to site conditions are identified during the maintenance and inspection program, reference should be made to relevant professionals (e.g. structural engineer, geotechnical engineer or Council).

It is assumed that Pittwater Council will carry out regular inspections and maintenance of road verges, stormwater systems and large trees on public land throughout the site so as to ensure that stability conditions do not deteriorate with potential increase in risk level to the site/s. Also individual Government Departments and service providers will maintain public utilities in the form of power lines, water and sewer mains to ensure they don't leak and increase either the local groundwater level or landslide potential.

5. CONCLUSIONS:

The existing site has been assessed as per the Pittwater Council Interim Geotechnical Risk Management Policy 2009 and achieves the 'Acceptable' risk criteria. The site is considered suitable for sub-division and can achieve the 'Acceptable' risk criteria provided any recommendations outlined in this report are followed and any future development works are undertaken as per the recommendations of this and any future geotechnical reports.

Troy Crozier
Senior Engineering Geologist
MEng.Sc., BSc (Geol)

Reviewed by
Peter Crozier
Principal

References:

1. Australian Geomechanics Society, March 2007, Titled "Landslide Risk Management" in the Journal and News of the Australian Geomechanics Society, Volume 42, No 1.
2. Pittwater Council DCP21, Appendix 5 – Interim Geotechnical Risk Management Policy for Pittwater 2009.
3. Geological Society Engineering Group Working Party 1972, "The preparation of maps and plans in terms of engineering geology" Quarterly Journal Engineering Geology, Volume 5, Pages 295 - 382.
4. E. Hoek & J.W. Bray 1981, "Rock Slope Engineering" by The Institution of Mining and Metallurgy, London.
5. C. W. Fetter 1995, "Applied Hydrology" by Prentice Hall.
6. V. Gardiner & R. Dackombe 1983, "Geomorphological Field Manual" by George Allen & Unwin.
7. Australian Standard AS 2870 – 2011, Residential Slabs and Footings.

Aargus

Environmental - Remediation - Engineering - Laboratories - Drilling

23rd July 2012

Sam Mustaca sam.mustaca@vogueagency.com.au
Cc: Charles Hill charleshill@optusnet.com.au

Dear Sam/Charles,

Re: Preliminary Geotechnical review of Master Plan concept

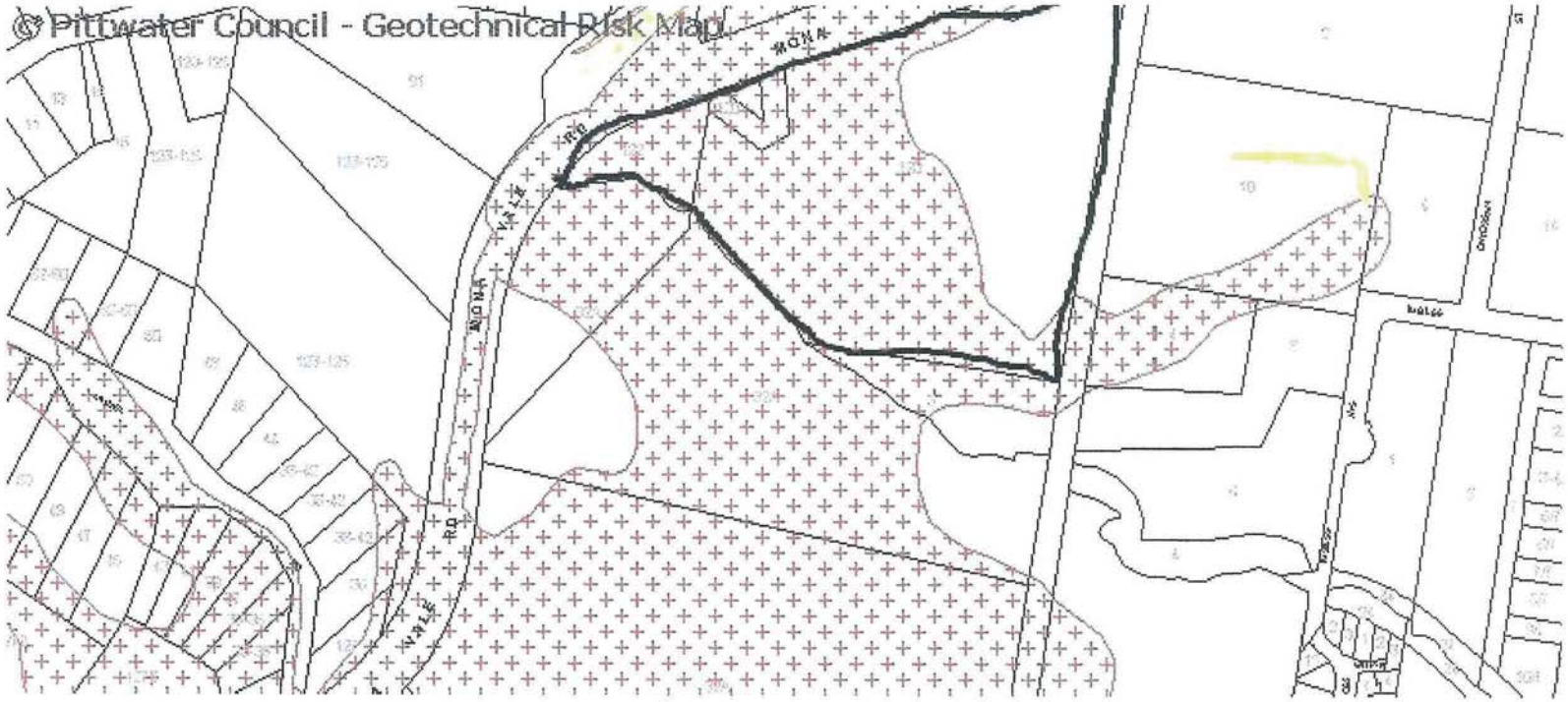
I refer to drawing number 2001-040 AW provided in draft form to Aargus on 23rd July 2012 in draft form and provide the following comments from a geotechnical perspective.

1. The western half of the site falls into the Pittwater Council Geotechnical Risk Map (H1) as high risk.
2. There have been no reported landslides in Warriewood as determined within the Australian Geomechanics Vol 42 No1 March 2007 Pittwater LGA Landslide Likelihood Assessment paper.
3. Lots within the proposed development area and in specific the high risk areas are capable of being built upon as long as the Geotechnical Risk Management Policy for Pittwater – 2009 and the AGS 2007 Guidelines are adhered to. The property is located on the upper escarpment where the Hawkesbury Sandstone geology is prevalent.
4. Grades proposed for lots and roads can be built upon but a geotechnical assessment will be required for each lot within a high risk area (~half).
5. Roads will have to be on cut.
6. Batters will have to be at safe batter angles or be appropriately retained.
7. Any retaining walls will have to be to an engineered design.
8. Dwellings on slope will be cut or founded to bedrock, fill will be retained by engineered design.
9. Fill height will be restricted in accordance with guidelines and generally retained to rock in high risk areas.
10. All completed works will need to be certified by a suitably qualified engineer.
11. All blocks in high risk areas will require pre and post risk assessments as per design requirements (AGS 2007) with any recommendations adopted and modified within dwelling designs.

We are happy to provide further aspects or comments regarding the proposed draft master plan and any associated geotechnical or environmental information as required.

For and on behalf of
Aargus Pty Ltd

Nick Kariotoglou
Managing Director


© Pittwater Council - Geotechnical Risk Map

PITTWATER COUNCIL

C7.1 N0052/11 - 4 Boundary Street & 10 Jubilee Avenue, Warriewood - Construction of a new private road to access 120 Mona Vale Road

Meeting: Council **Date:** 4 July 2011

STRATEGY: **LAND USE & DEVELOPMENT**

ACTION: Provide an effective development assessment and determination process

PURPOSE OF REPORT

To inform the Committee of the Development Unit's recommendation following consideration of Development Application N0052/11 - 4 BOUNDARY STREET, WARRIEWOOD (Lot 2 DP 816070), 10 JUBILEE AVENUE, WARRIEWOOD (Lot 10 DP 5055) Construction of a new private road to access 120 Mona Vale Road.

1.0 BACKGROUND

1.1 This matter was considered at the Council Meeting held on Monday, 20 June, 2011, and Council resolved to defer consideration of this matter to this Council Meeting. Cr Grace had expressed interest in this matter but was unable to attend the Meeting. He had requested deferral until such time as he could be present to take part in discussions.

1.2 The Development Unit, at its meeting held on Thursday, 9 June 2011 considered the Development Officer's report **(Attachment 1)** for determination of Development Application N0052/11 for the Construction of a new private road to access 120 Mona Vale Road.

2.0 REASON FOR REFERRAL TO COUNCIL

2.1 This item was called by Cr Grace.

3.0 DEVELOPMENT UNIT DELIBERATIONS

3.1 The owners, the applicants and their consultants addressed the Development Unit on the application and suggested that the road and roundabout could be provided to conform with Council's engineering and traffic requirements. The owner also raised issues concerning past decisions of the Council and financial concerns and sought at least "In-principle" support of the proposed road.

3.2 Development Unit members advised those present that it was not in the Development Unit's Charter to provide an in-principle support of any proposal, but could only determine the application that was before it based on the planning and engineering merits of the proposal.

3.3 Development Unit members suggested that the application was premature given that there was no overall strategy for the land proposed to be serviced by this road and that there were significant engineering and environmental issues relating to the construction of the road.

3.4 The Development Unit also advised that it considered the proposed road was prohibited under the PLEP 1993 as it was an ancillary component of a prohibited use of the land to which it was to service.

3.5 The owner and applicant were suggested to consider their options in light of comments made at the meeting and in particular the option of withdrawing the application at this time.

4.0 ISSUES

- Transport and traffic issues
- Environmental issues
- Scenic protection
- Prohibited development

5.0 SUSTAINABILITY ASSESSMENT

5.1 The relevant Environmental, Social and Economic issues have been addressed within the attached report.

6.0 EXECUTIVE SUMMARY

6.1 The application was considered by the Development Unit at its meeting held on 9 June 2011 and after hearing from the owners, applicants and their consultants and noting that there were no objectors present, endorsed the Assessing Officer's recommendation for refusal for the reason contained in the draft determination.

RECOMMENDATION

That the recommendation in the Development Officers Report be endorsed and Application N0052/11 - 4 Boundary Street, Warriewood (Lot 2 DP816070), 10 Jubilee Avenue, Warriewood (Lot 10 DP5055) for the construction of a new private road to access 120 Mona Vale Road, Warriewood be refused subject to the reasons for refusal contained in the Draft Determination.

Report prepared by

Warwick Lawrence
MANAGER ADMINISTRATION AND GOVERNANCE
and DEVELOPMENT UNIT CHAIRMAN

SUBJECT: N0052/11 - 4 BOUNDARY STREET, WARRIEWOOD (Lot 2 DP 816070), 10 JUBILEE AVENUE, WARRIEWOOD (Lot 10 DP 5055) Construction of a new private road to access 120 Mona Vale Rd.

Determination Level: Development Unit **Date:** 9 June 2011

SUMMARY OF RECOMMENDATION

REFUSAL

REPORT PREPARED BY:	Sophie Garland
APPLICATION SUBMITTED ON:	28/02/2011
APPLICATION SUBMITTED BY:	OPERA PROPERTIES PTY LTD 7 GRAYLIND CLOSE COLLAROY 2097
OWNER(S):	PLANET WARRIEWOOD PTY LTD (Own) UNITING CHURCH AUSTRALIA PROPERTY TRUST (Own)

1.0 DEVELOPMENT CONTROLS

The subject sites are zoned 1(b) Non-Urban pursuant to Pittwater Local Environmental Plan (PLEP) 1993. In terms of statutory permissibility, a private road can in various circumstances be considered a separate land use and therefore, not prohibited development under Clause 9 of PLEP 1993 within the 1(B) Non-Urban "B" zone.

In this instance, the primary purpose of the proposed private road is to support the future residential development of 120 Mona Vale Rd for urban land release purposes. Under the current zoning, this is neither permitted nor consistent with PLEP 1993.

In these circumstances, the road is considered to be a necessary and ancillary component of a prohibited use and is therefore prohibited under PLEP 1993.

2.0 NOTIFICATIONS

43 property owners notified
1 submission in support of the application

3.0 ISSUES

- B5.7 Stormwater Management - On-Site Stormwater Detention
- B5.9 Stormwater Management - Water Quality - Other than Dwelling House, Dual Occupancy and Secondary Dwellings
- B5.10 Stormwater Discharge into Public Drainage System
- B6.4 Internal Driveways - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy
- B6.10 Transport and Traffic Management - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy
- B4.18 Heathland/Woodland Vegetation
- B8.1 Construction and Demolition - Excavation and Landfill
- D16.12 Landscaping
- D14.1 Character as viewed from a public place
- D14.2 Scenic protection - General

4.0 COMPLIANCE TABLE

T - Can the proposal satisfy the technical requirements of the control?
O - Can the proposal achieve the control outcomes?
N - Is the control free from objection?

Control	Standard	Proposal	T	O	N
REF - Development Engineer					
B3.1 Landslip Hazard			Y	Y	Y
B3.22 Flood Hazard - Flood Category 3 - All Development			-	-	-
B5.4 Stormwater Harvesting			-	-	-
B5.5 Rainwater Tanks - Business, Light Industrial and Other Development			-	-	-
B5.6 Rainwater Tanks - Water Supply			-	-	-
B5.7 Stormwater Management - On-Site Stormwater Detention			N	N	Y
B5.9 Stormwater Management - Water Quality - Other than Dwelling House, Dual Occupancy and Secondary Dwellings			N	N	Y
B5.10 Stormwater Discharge into Public Drainage System			N	N	Y
B5.12 Stormwater Drainage Systems and Natural Watercourses			-	-	-
B5.14 Stormwater Drainage Easements (Public Stormwater Drainage System)			-	-	-
B6.2 Access Driveways and Works on the Public Road Reserve- All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy			N	N	Y
B6.4 Internal Driveways - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy			N	N	Y
B6.6 Off-Street Vehicle Parking Requirements - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy			-	-	-
B6.9 On-Street Parking Facilities - All Development other than Dwelling Houses, Secondary Dwellings and Dual Occupancy			-	-	-
B6.10 Transport and Traffic Management - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy			N	N	Y
B8.1 Construction and Demolition - Excavation and Landfill		The amount of the excavation to accommodate the proposed road construction is considered to result in unacceptable environmental impacts.	N	N	Y
B8.2 Construction and Demolition - Erosion and Sediment Management			Y	Y	Y
B8.3 Construction and Demolition - Waste Minimisation			Y	Y	Y
B8.4 Construction and Demolition - Site Fencing and Security			Y	Y	Y

Control	Standard	Proposal	T	O	N
B8.5 Construction and Demolition - Works in the Public Domain			Y	Y	Y
C6.4 Flood - Warriewood Valley Land Release Area Residential Sectors			Y	Y	Y
C6.18 Utilities and services - Warriewood Valley Land Release Area			Y	Y	Y
REF - Bushfire					
B3.2 Bushfire Hazard		The application was not referred to the NSW RFS. It has been confirmed with the RFS that a referral is not required as no additional dwellings are proposed. It was noted that the proposed road would inevitably improve access to the sites in Boundary St and Mona Vale Rd.	Y	Y	Y
REF - Natural Resources					
B1.4 Aboriginal Heritage Significance			Y	Y	Y
B3.5 Acid Sulphate Soils			Y	Y	Y
B4.18 Heathland/Woodland Vegetation		Proposed road will result in the removal of significant canopy trees and native vegetation.	N	N	Y
D16.12 Landscaping			N	N	Y
REF - Planner					
EPA Act Section 147 Disclosure of political donations and gifts			Y	Y	Y
3.1 Submission of a Development Application and payment of appropriate fee		Owners consent has been provide from the owners of both 4 Boundary St and 10 Jubilee Ave.	Y	Y	Y
3.2 Submission of a Statement of Environmental Effects			Y	Y	Y
3.3 Submission of supporting documentation - Site Plan / Survey Plan / Development Drawings			Y	Y	Y
3.4 Notification		14 day notification	Y	Y	Y
3.5 Building Code of Australia			Y	Y	Y
3.7 Designated Development			-	-	-
4.1 Integrated Development: Water Supply, Water Management and Water Activity			-	-	-
4.4 Integrated Development: Bushfire			-	-	-
4.5 Integrated Development: Aboriginal Objects and Places			-	-	-
4.6 Integrated Development - Protection of the Environment			-	-	-
4.7 Integrated Development - Roads			-	-	-
5.1 Referral to the Roads and Traffic Authority under SEPP (Infrastructure) 2007			-	-	-
5.2 Referral to the NSW Police Service			-	-	-
5.3 Referral to NSW Department of Environment and Climate Change (DECC)			-	-	-

Control	Standard	Proposal	T	O	N
A1.7 Considerations before consent is granted		The proposal includes provision of access to future lots at 120 Mona Vale Rd currently zoned 1(A) Non-Urban 'A'. No formal application has been received by Council to rezone this land and the proposal to therefore, proposing to provide a road to service a development, which is currently prohibited under the zoning.	N	N	Y
B1.3 Heritage Conservation - General			-	-	-
B3.2 Bushfire Hazard		The application was not referred to the NSW RFS. It has been confirmed with the RFS that a referral is not required as no additional dwellings are proposed. It was noted that the proposed road would inevitably improve access to the sites in Boundary St and Mona Vale Rd.	Y	Y	Y
B3.6 Contaminated Land and Potentially Contaminated Land			Y	Y	Y
B5.1 Water Management Plan		Comments provided regarding water management. Urban Infrastructure has advised that there is lack of evidence provided that demonstrates adequate drainage of the road.	N	N	Y
B5.2 Wastewater Disposal			Y	Y	Y
B5.3 Greywater Reuse			-	-	-
B5.12 Stormwater Drainage Systems and Natural Watercourses			-	-	-
C1.14 Separately Accessible Structures			-	-	-
C2.14 Commercial Swimming Pools			-	-	-
C5.1 Landscaping			-	-	-
C5.2 Safety and Security			-	-	-
C5.4 View Sharing			-	-	-
C5.5 Accessibility			-	-	-
C5.7 Energy and Water Conservation			-	-	-
C5.8 Waste and Recycling Facilities			-	-	-
C5.9 Business Identification Signs			-	-	-
C5.10 Protection of Residential Amenity			-	-	-
C5.11 Advertisements			-	-	-
C5.14 Car/Vehicle/Boat Wash Bays			-	-	-
C5.15 Undergrounding of Utility Services			-	-	-
C5.16 Building Facades			-	-	-
C5.18 Public Road Reserve - Landscaping and Infrastructure			-	-	-
C5.19 Food Premises Design Standards			-	-	-
C5.20 Liquor Licensing Applications			-	-	-
C5.21 Plant, Equipment Boxes and Lift Over-Run			-	-	-
D14.1 Character as viewed from a public place		The proposal is expected to result in detrimental visual impact with the significant removal of existing trees and vegetation.	N	N	Y
D14.2 Scenic protection - General		The proposal will result in unacceptable visual impact to the Escarpment when viewed from the surrounding area due to the significant removal of native vegetation and canopy trees.	N	N	Y

Control	Standard	Proposal	T	O	N
D14.3 Building colours and materials			-	-	-
D14.4 Height - General			-	-	-
D14.7 Front building line			-	-	-
D14.8 Side and rear building line			-	-	-
D14.14 Site coverage - Non Urban					
D14.16 Fences - Flora and Fauna Conservation Areas			-	-	-
D14.17 Construction, Retaining walls, terracing and undercroft areas			Y	Y	Y
Other State Environmental Planning Policies (SEPPs)			Y	Y	Y

*Issues marked with an **x** are discussed later in the report.
Issues marked with a - are not applicable to this Application.

5.0 SITE DETAILS

The sites subject to the proposed application are known as 4 Boundary St, Warriewood (Lot 2 DP 816070) and 10 Jubilee Ave, Warriewood (Lot 10 DP 5055). The site at 10 Jubilee Ave is currently occupied by the Uniting Church and contains a number of buildings including the Church, a recreation complex and childcare as well as associated car parks. Access to this site is currently provided via a private access driveway from Jubilee Ave with a right of carriageway by the terms of a Section 88B Instrument benefiting Council in away that allow it to provide for access to existing properties in Boundary St. The site 4 Boundary St is a clear area with a horse exercise area as well as a dwelling house and ancillary structure located in the southeastern corner. The areas of the site proposed for the road construction contain significant vegetation and canopy trees with sections of the sites sloping steeply. The sites are identified as being bushfire prone and subject to land slip.

6.0 PROPOSAL IN DETAIL

The proposal seeks approval for the construction of a new private road to be created on two adjoining lots: 4 Boundary St and 10 Jubilee Rd. The proposed road will provide vehicular access from Jubilee Ave to Boundary St as well as access to the allotment at 120 Mona Vale Rd. The proposal will involve the construction of retaining walls to accommodate the road construction located within the fringe of the right of carriage way once created required. The proposed road is 227m in length with a gradient as steep as 20% for approximately 100 metres.

7.0 BACKGROUND

The application was lodged on 28th February 2011 and notified for 14 days in accordance with Council's Notification policy. During this time, one submission was received in support of the proposal. The application was referred to the Warriewood Valley Strategic Land Release Team who made comments regarding roads and traffic, drainage, natural resources as well as the strategic framework of the Warriewood Valley land release area.

8.0 STATE ENVIRONMENTAL PLANNING POLICY NO. 1 - DEVELOPMENT STANDARDS (SEPP No. 1)

The application of SEPP NO. 1 is not required.

9.0 EXISTING USE RIGHTS

Does the proposal rely on Existing Use Rights? No

10.0 DISCUSSION OF ISSUES

- **B5.7 Stormwater Management - On-Site Stormwater Detention, B5.9 Stormwater Management - Water Quality - Other than Dwelling House, Dual Occupancy and Secondary Dwellings & B5.10 Stormwater Discharge into Public Drainage System**

The following comments have been provided by Council's Urban Infrastructure Department:

The proposal has submitted does not address/satisfy the following matters as required by the Pittwater 21 DCP:

1. *Demonstration of an adequate 20 year (Average Recurrence Interval) ARI road drainage system to control and drain the proposed road;*
2. *The lack of any proposed inter-allotment drainage systems to legally drain stormwater across neighbouring properties;*
3. *The lack of any proposed on-site detention systems to control flows off the proposed road to achieve pre-development discharges up to the 100 year ARI event;*
4. *The lack of any proposed water quality facilities to control and to clean up poor quality stormwater runoff from road generated runoff.*

- **B6.10 Transport and Traffic Management - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy & B6.4 Internal Driveways - All Development other than Dwelling Houses, Secondary Dwelling and Dual Occupancy**

The proposed road is intended to service a large number of new private properties to the west and as such it intended to fulfill the purpose of a public road. Therefore, it should be assessed under the criteria relating to a public road not the criteria relating to a private access way servicing a small number of properties. In the absence of the application including any meaningful information as to how the proposed private road would legally provide access to fulfill a range of functions otherwise provided by a public road as well as services (water, sewer and emergency access), the application should not be approved.

The following critique has been provided by Council's Urban Infrastructure Department:

1. *The Traffic Impact Report is deficient in that it does not consider the future traffic volumes of Jubilee Avenue and Ponderosa Parade that will exist when all development in the Valley is complete;*
2. *The width of the proposed road does not comply with the width of a local road as defined in the Warriewood Valley Roads Master Plan (WVRMP) and as such is not acceptable;*
3. *The maximum longitudinal grade of proposed roads exceeds the 15% maximum specified in the Austroad Standard to roads having the function of a Local Road and as such is not acceptable;*
4. *The proposed road does not achieve the minimum traffic sight distances on the crest as specified in the Austroad Standard for roads having the function of a Local Road and as such is not acceptable;*
5. *The proposed intersection design of the proposed road and Boundary Street is not acceptable;*
6. *The proposed intersection design of the proposed road and Jubilee Avenue is not acceptable and does not reflect the design in the WVRMP;*
7. *There is no provision of Street Lighting to Standard required by WVRMP and as such is not acceptable;*
8. *The proposed intersection of the proposed road with the existing ROW to the Uniting Church needs to be designed in accordance with Pittwater 21 DCP, B6.2.*

The list above highlights a number of deficiencies with the proposal compared to relevant standards. This would result in a less safe outcome for road users. The standards need to be adhered to to achieve the required road outcomes.

Adjusting the road design to meet the required standards will result in deeper and wider cuts and hence further hillside disturbance that will also exacerbate other concerns.

Given the above comments, the proposed construction of a private road does not provide for a satisfactory outcome in terms of safety and is deficient in information. Therefore, the application is recommended for refusal.

- **B1.4 Aboriginal Heritage Significance**

Council's Natural Resources officer provided the following comments:

A shelter has been recorded in the adjacent No. 3 Boundary Road, however this property is largely undisturbed with different topography and vegetation type. The subject site had no apparent signs of any heritage objects however, subsurface articles cannot be ruled out.

- **B4.18 Heathland/Woodland Vegetation & D16.12 Landscaping**

Council Natural Resource officer provided the following comments:

The properties contain areas of natural bushland and modified paddocks in a rural landscape.

The proposed works involve the construction of a new private road through properties known as 4 Boundary Street and 10 Jubilee Avenue. The proposed road is presumably to enable access to an area for which an application to subdivide and provide new dwellings will be lodged in the future. As the proposed road will be located in an area containing open forest and indigenous vegetation (mainly on 10 Jubilee Avenue), a Flora and Fauna Assessment (Footprint Green Pty Ltd 29th January 2011) has been provided. A total of 63 native and indigenous flora species were observed in the flora survey, as well as a number of exotic and weed species. 33 fauna species were observed, with a further 17 recorded within the DECCW Wildlife Atlas as being probable in the locality, some of which are listed as endangered or vulnerable under the Threatened Species Conservation Act 1995. Due to this, 7-part tests of significance were undertaken for two threatened flora species, eight threatened fauna species and one threatened fauna population.

Based upon the assessment criteria, it was considered that the proposed development would not have a significant impact on threatened species, subject to the adoption of several recommendations listed on Page 60 of the report. All discussion and recommendations within the report are supported. However, the report makes no mention of the potential impact of road kill caused by the expected increase in traffic on the proposed road which will bisect the forested area. The report has determined that 1670m² of Sydney Sandstone Gully Forest/Ridgetop Woodland will require removal as well as 2265m² of modified (exotic grass with scattered indigenous trees) habitat.

A separate Arboricultural Impact Assessment (Footprint Green Pty Ltd 21st January 2011) has also been provided. This report assessed a total of 114 trees that were deemed to be potentially impacted by the proposed roadway.

The majority of these trees are located on the subject sites of 2-4 Boundary Road and 10 Jubilee Avenue, however a small number of trees assessed (9) are located within the Boundary Road reserve. Trees were assessed on the basis of their significance in the landscape, as well as the impact of the proposed roadway and whether they could be retained or require removal. A total of 88 trees were determined to require removal to accommodate the proposed road. Of these, only three (3) are species exempt from Council's Tree Preservation Order. Of the trees requiring removal, 17 are considered to have significant landscape significance, and 19 to have High landscape significance, with the remainder having Moderate or Low landscape significance. However, six (6) trees in total are deemed unstable and therefore do not have any safe useful life expectancy (SULE). The remaining 26 trees assessed can be safely retained if tree protection measures are adopted as specified.

The assessment and determinations of the arborist report are supported, however there are a number of issues. The loss of 85 protected trees from the area is considered to be a significant impact, particularly with the high proportion of trees of either Significant or High landscape significance.

Seven (7) trees are recommended for removal from the Council road reserve on Boundary Street which are located south and west of the proposed new road where it meets the existing Boundary Street, and it is unclear as to why this is necessary. Discussions with Council's Road and Traffic Engineer have come to the same conclusion that this small section of road heading south from the intersection is unnecessary and unjustified at this point in time, therefore the removal of the seven trees in this area is unnecessary.

The Council engineers have also indicated the proposed road should be required to be designed to the local road specifications of the WVRMP and adjust the levels of the intersection. The cuts will therefore be around 5.5 m deep and overall width of area directly impacted by construction works (not including significant trees outside this area whose roots would be affected and maybe necessitate their removal , maybe another 6 m either side of the road) would be approximately 25 m . They would not be able to narrow down the WVRMP dimensions to stay within the 20m road reserve as currently proposed. Therefore the overall impact on canopy trees is unknown however is highly likely to be greater than that currently indicated by the arborist report which bases its assessment on the 20m road width.

In terms of visual impact, the proposal is considered to cause a highly detrimental visual impact with a long straight swathe of vegetation and tall canopy trees removed. This combined with the required cut to attain the necessary road gradient will leave a massive empty corridor with high steep embankments which cannot be effectively screened and this will be prominent from a landscape perspective particularly when viewed from Jubilee Avenue.

Due to the significant impact on canopy trees and 1670 square metres of open forest habitat, and potential disturbance to local wildlife, as well as detrimental visual impact for a proposed road that does not appear to be totally justified, the recommendation from a natural resource and landscape perspective is that the proposed works in the current form should be refused.

- **A1.7 Considerations before consent is granted**

The following comments have been provided by Council's Principal Planner- Land Release:

The subject DA is for the construction of a private road that traverses 10 Jubilee Avenue and 4 Boundary Street, Warriewood. The proposed road is for the purpose of providing '...adequate access to the site known as 120 Mona Vale Road, Warriewood.' (as stated in the submitted Statement of Environmental Effects prepared by Glendinning Minto & Associates Pty Ltd 2011 for this DA).

Neither of the properties that are the subject of the current DA are within the Warriewood Valley Urban Land Release area. Additionally, 120 Mona Vale Road, Warriewood (for which the proposed road intends to provide future access) is not formally within the Warriewood Valley Urban Land Release area (as identified in the NSW Government's Metropolitan Development Program).

Nonetheless, a number of Council decisions made in relation to 120 Mona Vale Road, Warriewood are currently outstanding and have not been rescinded. It is in this context that the following comments, limited to a land release/strategic perspective, are provided.

At its meeting of 7 April 2008, Council resolved inter alia:

> *'3. That Council encourage the applicant, the Uniting Church, the RTA and owners of the sites fronting Boundary Street including 120 Mona Vale Road to further discuss possible alternate access from 120 Mona Vale Road to Daydream Street for the purposes of a potential future subdivision of 120 Mona Vale Road'*

The current DA is for the purpose of accommodating vehicular access to 120 Mona Vale Road, Warriewood.

That 2008 resolution reiterates Council's decision of 18 April 2006 where Council resolved:

> *'A. 1) That 120 Mona Vale Road, Warriewood, be included in the Warriewood Land Release for the purpose of residential development.*
>
> *2) That the applicant his advisors and Council staff consult as to the land capability, the potential yield and the securing of adequate access for the site.*
>
> *3) That following 2 above that the applicant be invited to submit a formal Masterplan application*
>
> *B. That in accordance with Clause 16 of the Council's adopted Code of Meeting Practice the reasons for the deviation from the staff recommendation in relation to this application are as follows:-*
>
> *To facilitate a development scenario for the site given the present constraints of the property, including aspects of land capability.'*

To date, no formal application for rezoning 120 Mona Vale Road, Warriewood has been lodged/considered by Council. No development consent has been issued by Council regarding the Council's resolutions for 120 Mona Vale Road, Warriewood.

The Traffic Management Report (however provides an indicative concept plan of the intended land use and future density for 120 Mona Vale Road, Warriewood, which has not been subject to any formal application to, or considered/determined by, Council.

The two subject properties are zoned 1(b) Non-urban "B" and the adjoining 120 Mona Vale Rd, Warriewood is zoned 1(a) Non-urban "A". Any intensification of development, including the road (the subject of this DA) would, on the basis of the concept plan, need to be assessed in terms of permissibility or otherwise against the zone.
The indicative future detail of the development proposed at 120 Mona Vale Rd, as discussed within the submitted Traffic Report (TAR Technologies February 2011) is an intensification of development on a site not described on the DA form. The road, as proposed, is contemplating to service a future development opportunity that is currently prohibited under the zone.

The proposal to construct a road to service a development, which at current only exists in concept and is prohibited under the zoning of 120 Mona Vale Rd, is unreasonable, especially given the significant environmental impacts. As discussed above, the site 120 Mona Vale Rd has not been included, as part of this development application and no formal rezoning application has been made to develop the land which the proposed road is intended to service.

Under Section 5 (ii) of the Environmental Planning and Assessment Act 1979, development is to facilitate an orderly planning process in the developing land which allows for a coordinated approach to development of land. The application is a departure from an orderly planning process which has been established in Warriewood Valley Land Release Area in that the construction of the road as it stands is to service a development which has not been applied for nor is it permissible under the current 1(a) Non- Urban "A" zoning of 120 Mona Vale Rd and is recommended for refusal.

- **D14.1 Character as viewed from a public place & D14.2 Scenic protection - General**

- The proposed construction of a private road is considered to result in an unacceptable visual impact when view from the lower areas of Warriewood Valley particularly Jubilee Avenue. Control D14.2 makes particular reference to minimizing visual impact on the natural environment when view from public areas such as road, waterways and public reserves. The proposed road will result in the removal of significant native vegetation and canopy trees, which currently line the escarpment and can be viewed as travelling along Mona Vale Rd. The proposed road construction is adjacent to a large area of bushland, will result in the character of the rural escarpment area being compromised by the road, and associated construction.

The site was included in the Ingleside and Warriewood Valley visual impact study, which classified the proposed area of development in the highest level of visual significance, being part of the Warriewood Escarpment. Under the study, the area is considered to be essential for retention to conserve or enhance the visual characteristics and landscape values of the area unless a further specific study indicates that retention and conservation is not warranted. The visual impact of the proposal would be entirely inconsistent with the classification and recommendations of this study.

The proposal is considered to be inconsistent with the character of the Locality and does not respond to the surrounding features of the natural environment. In particular, the tree canopy area around the escarpment is noted as being protected as an area of environmental significance to the Warriewood Locality and has not been protected under the proposed development. The application is deficient in providing a development which complements the natural bushland environment and is significantly out of character for the Locality. It is therefore recommended that the application be refused.

11.0 CONCLUSION

The Development Application has been assessed in accordance with the provisions of Section 79C of the Environmental Planning and Assessment Act 1979, Pittwater Local Environmental Plan 1993, draft Pittwater 21 LEP and Pittwater 21 DCP and other relevant Council policies.

The proposed construction of a private road is considered to be an unreasonable proposal which will have significant impacts on the surrounding natural environment. The proposal is intended to service a site, which has not been included within the subject application, and no formal application has been made to rezone the site at 120 Mona Vale Rd as required for such an intensification of development. Insufficient information has been provided as to the construction of the proposed road and compliance with relevant standards and traffic management. As detailed in the draft determination, the proposal is not supported and is recommended for refusal.

RECOMMENDATION OF DEVELOPMENT OFFICER / PLANNER

That Council as the consent authority pursuant to Section 80 of the Environmental Planning and Assessment Act 1979 refuse development application N0052/11 for the proposed construction of a private road at 4 Boundary Street and 10 Jubilee Avenue subject to the reasons outlined within the draft refusal.

Report prepared by

Sophie Garland
SENIOR PLANNER

DRAFT DETERMINATION

REFUSAL
ENVIRONMENTAL PLANNING & ASSESSMENT ACT, 1979 (AS AMENDED)
NOTICE TO APPLICANT OF DETERMINATION OF A DEVELOPMENT APPLICATION

Applicants Name and Address:
OPERA PROPERTIES PTY LTD
7 GRAYLIND CLOSE
COLLAROY 2097

Being the applicant in respect of Development Application No **N0052/11**

Pursuant to section 80(1) of the Act, notice is hereby given of the determination by Pittwater Council, as the consent authority, of the Development Application for:

Construction of a new private road

At: 4 BOUNDARY STREET, WARRIEWOOD (Lot 2 DP 816070), 10 JUBILEE AVENUE, WARRIEWOOD (Lot 10 DP 5055)

Decision:

The Development Application has been refused for the following reasons:

1. The proposed private road is prohibited under PLEP 1993 as it is a necessary and ancillary component of a prohibited use (being the future development of presently non-urban zoned land for urban purposes at 120 Mona Vale Rd)

2. The application is premature and not consistent with the objections of the Environmental Planning and Assessment Act 1979 for orderly development. The application is a departure from an orderly planning process which has been established in the Warriewood Valley Land Release Area in that the construction of the road is to service a development which has not been applied for nor is it permissible under the current 1(a) Non- Urban "A" zoning of 120 Mona Vale Rd.

3. Inadequate information as to how the proposed private road would legally provide access for the full range of functions otherwise provided by a public road (water, sewer and emergency services).

4. The design of this road results in a significant loss of open forest habitat and likely to adversely impact on local wildlife these impacts are unreasonable in circumstances of existing access arrangements and the premature nature of the application and the prohibited nature of the proposal.

5. The resultant adverse visual impact on the Escarpment due to the significant extent of cut required for the road combined with the significant amount of vegetation and tall canopy trees required to be removed in the present circumstance of availability of access and prohibited nature of the development.

6. The design and location of the road does not comply with the relevant Australian Standards WVRMP in the following area:

    i. The maximum longitudinal grade of proposed roads exceeds the 15% maximum specified in the Austroad Standard to roads having the function of a Local Road and as such is not acceptable;

ii. The proposed road does not achieve the minimum traffic sight distances on the crest as specified in the Austroad Standard for roads having the function of a Local Road and as such is not acceptable;

iii. The proposed intersection design of the proposed road and Boundary Street is not acceptable;

iv. The proposed intersection design of the proposed road and Jubilee Avenue is not acceptable and does not reflect the design in the WVRMP;

v. There is no provision of Street Lighting to Standard required by WVRMP and as such is not acceptable;

vi. The proposed intersection of the proposed road with the existing ROW to the Uniting Church needs to be designed in accordance with Pittwater 21 DCP, B6.2.

7. The information submitted is deficient to enable a proper assessment of likely impacts on:

   i. The future traffic volumes on Jubilee Avenue and Ponderosa Parade that will exist when the Warriewood Valley Urban Land Release project is complete; and

   ii. How water will be managed to achieve pre-development discharges up to the 100-year ARI event, how impact on adjoining properties will be minimised, and how pollution will be minimised as a result of the proposed road.

8. The proposed Road and its intended provision of alternative access to existing development upon 120 Mona Vale Road, is not sufficiently justified given:

   - the cost of development given the scope of works; and,
   - the resultant environmental impact; and,
   - the adequacy of the existing legal and physical access arrangements to both Jubilee Avenue and Mona Vale Road; and,
   - the proposed width of carriageway which is excessive

NOTES:

1. This determination was taken under delegated authority on behalf of the elected Council pursuant to Section 377 of the Local Government Act 1993.

2. An applicant may under Section 82A of the Act, apply to council to review this determination.

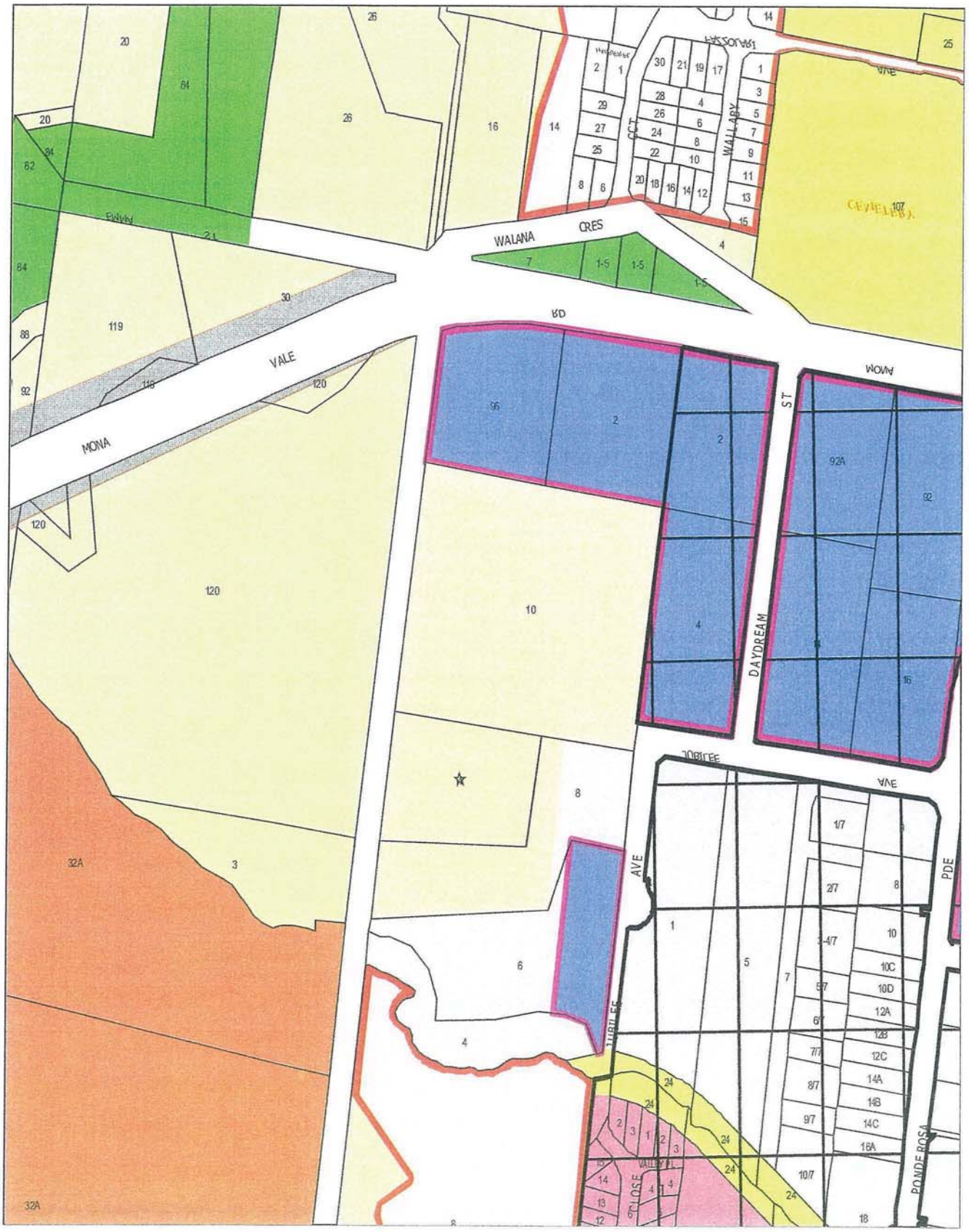
3. Section 97 of the Act confers on the applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land & Environment Court exercisable within 12 months after receipt of this notice.

4. Any person who contravenes this notice of determination of the abovementioned development application shall be guilty of a breach of the Environmental Planning & Assessment Act, 1979, and shall be liable to a monetary penalty and for a restraining order which may be imposed by the Land and Environment Court.

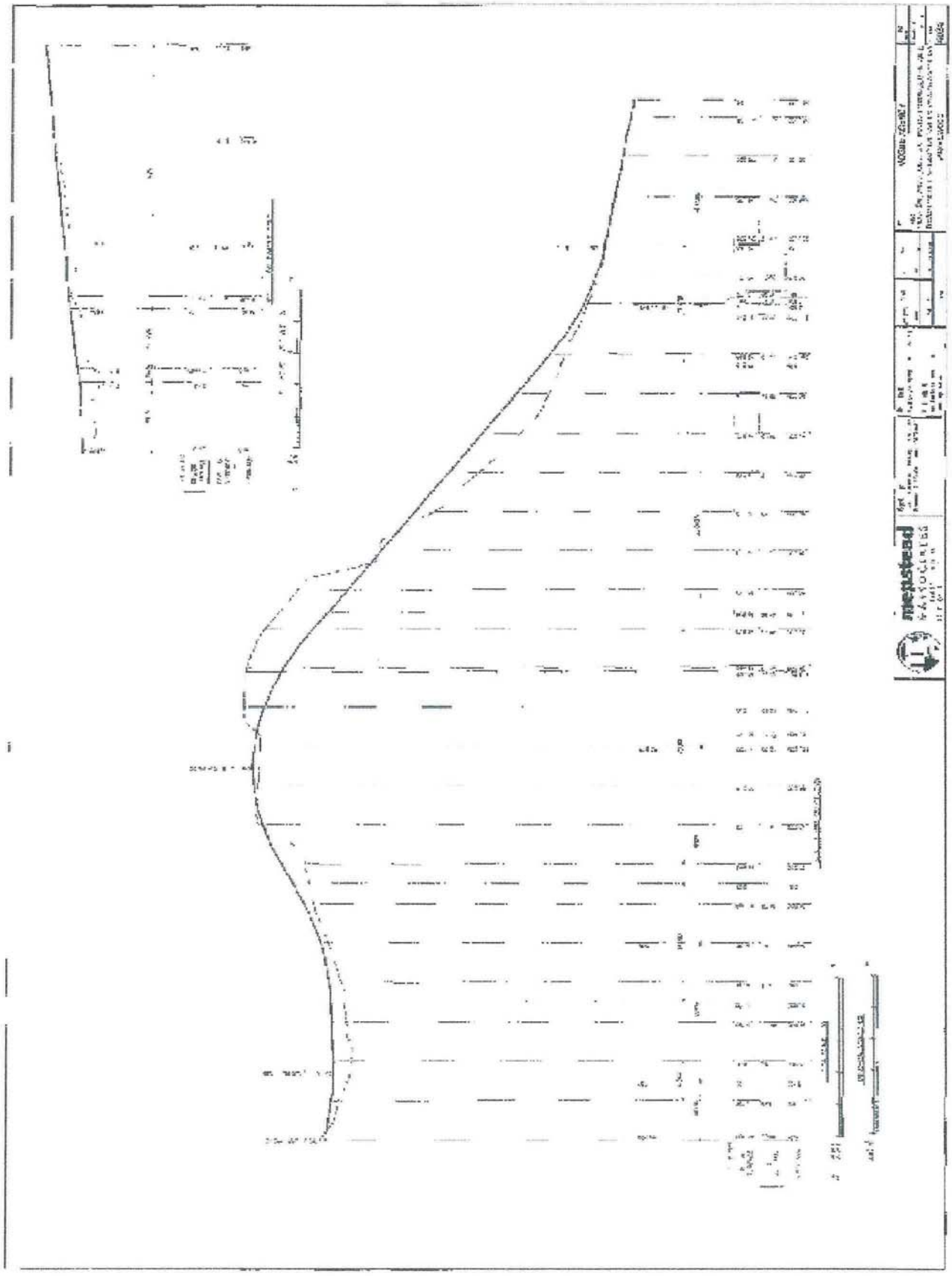
Mark Ferguson
GENERAL MANAGER

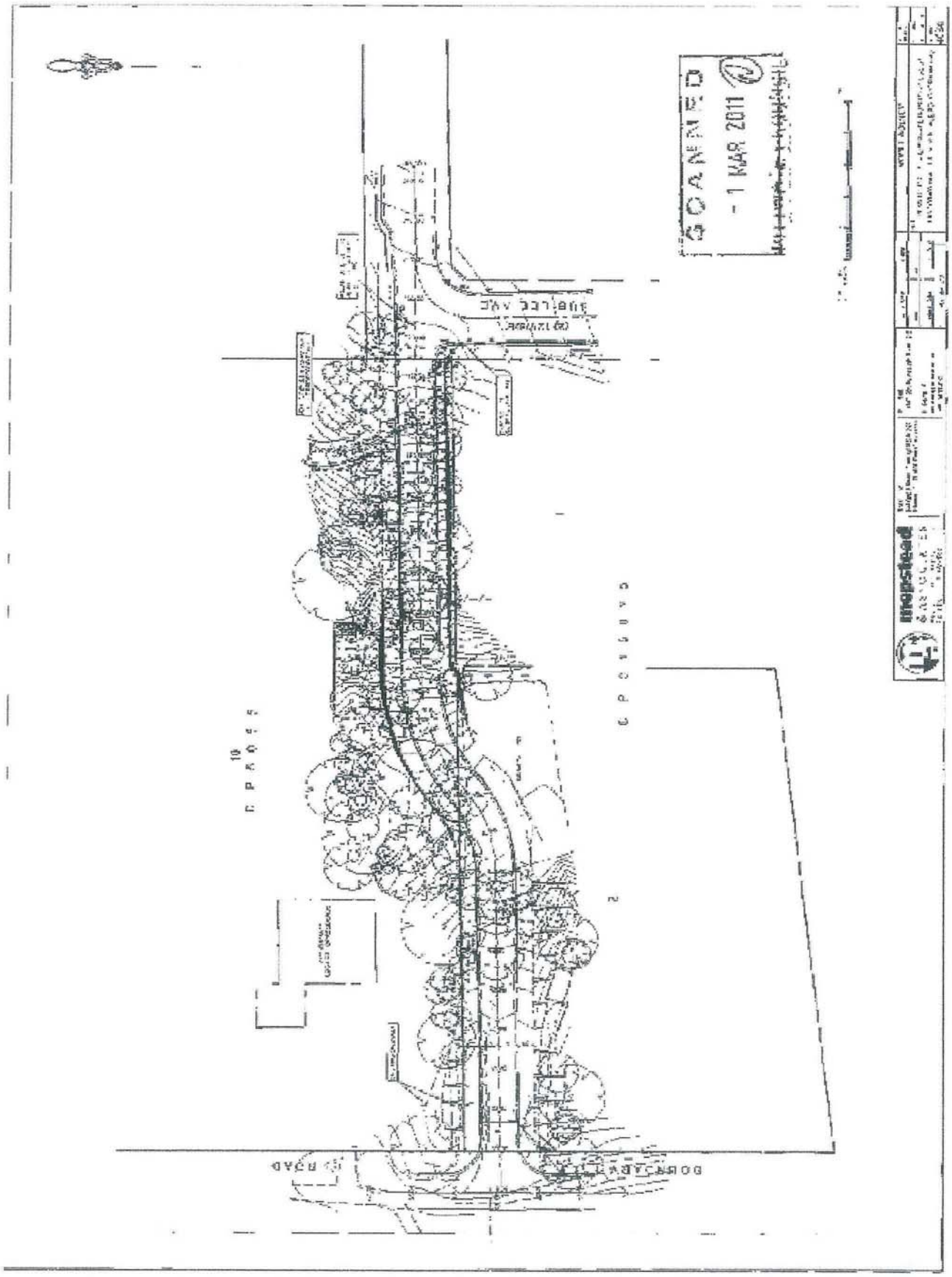
Per:
Date -

LOCALITY MAP



NOTIFICATION PLANS




SCANNED
- 1 MAR 2011

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Newport NSW 2106

120-122 MONA VALE ROAD, WARRIEWOOD

Traffic Report

For:
OPERA PROPERTIES PTY LTD

September 2012
2010326RP26

Report No. 2010326RP26

This report has been prepared in accordance with the scope of services described in the contract or agreement between TAR Technologies Pty Ltd ACN 099 564 995 (TAR) and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and TAR accepts no responsibility for its use by other parties.

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

TAR Technologies Pty Ltd (TAR) has been commissioned by Roy Mustaca to report on the impacts of providing approximately 79 lots for single dwellings over approximately 28 acres on vacant non-urban 1(a) zoned land at 120-122 Mona Vale Road, Warriewood.

Extensive studies regarding the development and liaison between Pittwater Council and Mr Roy Mustaca OAM has already occurred. This report further addresses Council's concerns about access in and out of the site and the potential impact of increased traffic on the surrounding local streets.

In response, various access arrangements, including a new deceleration lane off Mona Vale Road combined with use of the existing local road, or the construction of a new road from Jubilee Lane into the site have now been examined and are described in detail in Chapter 4.

The report references the Roads and Traffic Authority's (RTA) *Guide to Traffic Generating Developments*.

Chapter 2

SITE LOCATION

The site is triangular in shape and bounded on the north by Mona Vale Road, to the east by Boundary Street and the west by Narrabeen Creek bushland. The site area comprises approximately 28 acres falls and falls steeply to the east to Boundary Street. Boundary Street is currently closed at Mona Vale Road with vehicular access to the property available from Jubilee Parade a common access laneway also used by Pittwater Uniting Church.

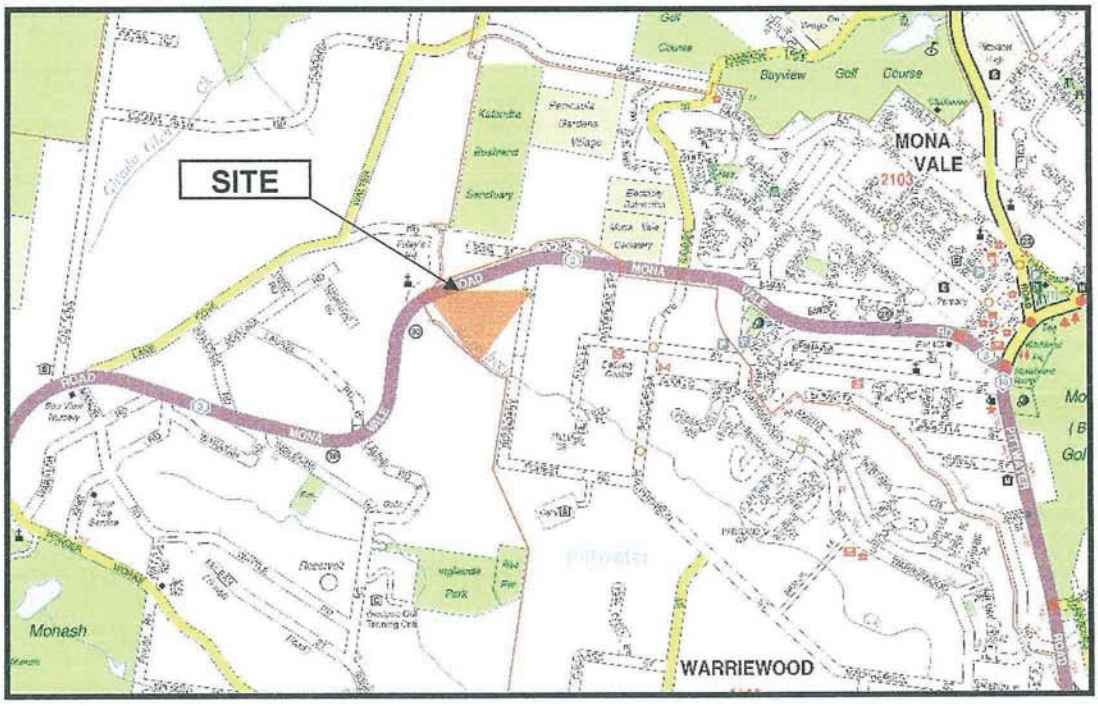

Figure 2.1 Site location

The site in relation to the surrounding area is shown in Figure 2.1. The site is approximately 500 metres from Mona Vale Road which provides a major link to the city and westwards to Parramatta. Jubilee Avenue itself connects to Ponderosa Parade linking Mona Vale Road, and Pittwater Road via Vineyard Street and MacPherson Street.

Chapter 3

EXISTING CONDITIONS

3.1 ROAD NETWORK

The local traffic routes that would be used by the site are:

- Mona Vale Road;
- Pittwater Road;
- Ponderosa Parade;
- Jubilee Avenue;
- Vineyard Street;
- Boundary Street;
- MacPherson Street; and
- Jubilee Lane

These routes are described in detail below:

Mona Vale and Pittwater roads are major arterial roads linking the western areas of Sydney to the east and suburbs to the north and south along the beaches.

Ponderosa Parade, Jubilee Avenue, Vineyard Street and MacPherson Street are local roads that service a light industrial area near the site. Road widths vary from 13.2 metres in width in Ponderosa Avenue to 11.5 metres in wide in Jubilee Avenue.

Jubilee Lane is a six metre wide road that serves Pittwater Uniting Church and pre-school, and a sport and recreation centre. The lane has 90 degree angle parking and connects to Boundary Street. Jubilee Lane has a 10km/h speed limit which is self enforcing with a number of speed humps.

Boundary Street runs north south and currently meets Jubilee Lane at right angles. The road is undulating and narrow with no connection to Mona Vale Road and providing access to a single dwelling to the south.

3.2 BASE TRAFFIC NETWORK OPERATION

To establish the future base case reference to Pittwater Council's 'Warriewood Valley Traffic and Transportation Study' as supplied by Council on 25 June 2011 was used. The growth projections in this report were applied to the critical intersection to the subject development site at Jubilee Avenue and Ponderosa Avenue.

Chapter 4

DESCRIPTION OF PROPOSAL

4.1 GENERAL

120-122 Mona Vale Road is triangular in shape covering approximately 11.33 hectares with vehicular access to the property currently only available from Jubilee Lane. The site is currently zoned non-urban 1(a) under Pittwater Local Environmental Plan 1993.

The current proposal is the rezoning of land for the provision of 79 single dwelling allotments (option 1) or 77 single dwelling allotments (option 2). Indicative layouts containing both options for the site for re-development are shown in *Appendix A.*

The development considers two options which are summarised in *Table 4.1*

Table 4.1 Dwelling allotment options

	OPTION 1	OPTION 2
>2000 sqm:	4	4
1000-2000 sqm:	21	23
700-800 sqm:	5	5
400 - 650 sqm:	49	45
TOTAL	79	77

Access arrangements are different for each option. They are summarised below and further explored in section 4.2:

General access for all lots excluding four at the northern top end of the development is planned for Boundary Street, via an access lane catering exclusively for residential traffic and non-commercial vehicles.

Access option 1: Left in and left out of Mona Vale Road without the road through No. 4 Boundary Street.

Access option 2: With the road through No.4 Boundary Street and no access from Mona Vale Road except for four lots at the top of the site.

4.2 ACCESS

The proposal has thoroughly considered vehicular access and aims to minimise the impact of the development on existing local roads surrounding the area.

Current vehicular access to the property at Boundary Street is available from Jubilee Lane via Jubilee Parade. This access will not be available to the proposed development.

Two access options have been investigated and are described below.

Option 1: Mona Vale Road deceleration/acceleration lane – turning left from Mona Vale Road into Boundary Street and left out of Boundary Street onto Mona Vale Road. The new lane can be accommodated within the confines of Mona Vale Road and adjacent land reserves.

The deceleration/acceleration lane includes a pedestrian link to a nearby bus stop on Mona Vale Road and also accommodates landscaping.

It must be noted the left in/left out access option lane on Mona Vale Road replaces the need to construct a new access road through No. 4 Boundary Street DP 816070, which forms Option 2 access. The main access point for the development would be via Mona Vale Road onto Boundary Street, with no alternative access options. A cul-de-sac constructed at the south-east corner of the development would provide access into lots at this location. Access to the south requires residents to travel north, right turn into Lane Cove Road and then performing a U-turn back to Mona Vale Road.

The existing driveway onto Mona Vale Road at the northwest corner would be retained to service four new lots.

Option 2: Construction of a new road from Jubilee Avenue (through the Pittwater Uniting Church land Lot 10 (DP5055) and land owned by the developer) up to No. 4 Boundary Street. This new road would begin at the junction of Jubilee Avenue and Jubilee Lane and traverse directly west to connect with Boundary Street.

Under this option only four large lots situated at the north–west corner of the site would be able to directly access the development from Mona Vale Road.

See Appendix B for a copy of the plans prepared by GMU.

Existing access: The existing road, Jubilee Lane that services Pittwater Uniting Church, a pre-school and a sports and recreation centre that connects to Boundary Street would not allow access to Boundary Street.

The existing road is potentially capable of accommodating traffic entering the development site as well as the services nearby. These services do not generate significant traffic amounts at peak travel times on weekdays. For example, the church traffic peaks on Sundays, which is when traffic generated from the development site would be at its lowest.

Since traffic generated by the proposed development is likely to peak on weekdays at peak travel times (AM and PM, see section 4.3), and not correspond with peak traffic times of the nearby amenities, Jubilee Lane could possibly be considered as another access option.

4.3 TRIP GENERATION AND DISTRIBUTION

Based on the RTA Guide to Traffic Generating Developments (2002) the potential traffic generation of the proposed development has been estimated to be 68 trips per weekday peak hour, based on 0.85 trips per dwelling for 79 lots (possibly lower to 73 dwellings reducing trip numbers even further).

Traffic generation associated with the rezoning to allow 79 lots has been based on the assumption that 100 per cent of all trips leaving the site in the morning would travel in an easterly direction and 100 per cent of all trips in the afternoon would travel along Jubilee Avenue in a westerly direction.

There may be occasions where a small proportion of trips would travel against the peak direction however, for the purposes of the assessment the worst case scenario has been assessed, that is, 100 per cent.

Based on existing traffic patterns the forecast 68 trips would be distributed as follows:

- 24 per cent to the west via Mona Vale Road
- 23 per cent to the north along Ponderosa Parade
- 30 per cent to Jubilee Avenue east and
- 23 per cent to Ponderosa Parade south.

It is expected that traffic leaving and entering the site would generally in the peak of 7:00- 8:00am to allow commuters sufficient time to arrive at their destination before 9:00am. Similarly the arrival time to the site would occur between 6:00pm - 7:00pm.

Consequently these times are generally outside the existing activities of the pre-school which operates between 9:00am - 3:00pm Monday - Friday as well as the activities of the sport centre and church.

4.4 INTERSECTION PERFORMANCE

To assess the future operation of the roundabout at Ponderosa Avenue and Jubilee Avenue the SIDRA model has been re-run incorporating the additional traffic generated by the development with traffic generations that are expected to occur with Warriewood Valley at full development.

The study examined a future growth and network development scenarios when the area is developed with the existing road network, **Scenario 3 (S3)**.

Intersection turning movement surveys were recently conducted at the intersection of Ponderosa Parade and Jubilee Avenue, Warriewood and modelled using the intersection analytical program, SIDRA. These volumes were factored up in line with the Warriewood Valley Urban Land Release report forecasts at the intersection of Jubilee Avenue and Ponderosa Road.

To examine the impacts of 79 dwellings it was assumed that 100 per cent of trips would leave the site in the AM peak and the reverse for the PM peak. The generated trips at the intersection of Ponderosa Parade and Jubilee Avenue were distributed as per existing patterns. The Roads and Traffic Authority provide generation rates of 0.85 trips per dwelling for single residential developments as seen in their publication, 'Guide to traffic generating developments'. Based on 79 dwellings it has been assumed that there would be 68 vehicles leaving the site in the AM peak and 68 returning in the PM peak.

The assessment used an RTA adopted intersection analytical program, SIDRA. The Warriewood study used another intersection program, INTANAL which is no longer available however, the results compare favourably. SIDRA reports on the performance of intersections in terms of average delay (seconds per vehicle) and Level of Service (LOS). *Table 4.1* sets out the criteria.

Table.4.2 INTERSECTION LEVEL OF SERVICE CRITERIA

LOS	Average delay (secs/veh)	Traffic signals, roundabout	Give way and stop signs
A	Less than 14	Good.	Good.
B	15 to 28	Good, with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory, but accident study required.
D	43 to 56	Satisfactory, but operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity and incidents will cause excessive delays; roundabouts require other control mode.	At capacity and requires other control mode.
F	Greater than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

Adapted from RTA Guide to Traffic Generating Developments, 1993

SIDRA results for Jubilee Avenue/Ponderosa Parade for the existing situation and for the two scenarios are summarised in Table 4.2 and 4.3 and the AM and PM peaks.

Table 4.3 AM WARRIEWOOD VALLEY AND DEVELOPMENT FLOWS

S3 Base		***S3 with 120-122 Mona Vale Road development***	
Average delay (s/v)	*Level of service*	*Average delay (s/v)*	*Level of service*
21.9	*B*	*30.6*	*C*

Table 4.4 PM WARRIEWOOD VALLEY AND DEVELOPMENT FLOWS

S3 Base		***S3 with 120-122 Mona Vale Road development***	
Average delay (s/v)	*Level of service*	*Average delay (s/v)*	*Level of service*
19.8	*B*	*22.8*	*B*

The results show that the 79 lots proposed for 120-122 Mona Vale Road, Warriewood can be accommodated within the Warriewood Valley road network at full development.

Whilst the analysis indicates that the traffic from the proposed development can be accommodated satisfactorily at the intersection of Ponderosa Parade and Jubilee Avenue, in the event that development of the Warriewood Valley exceed forecasts, there is the potential to improve the capacity of the roundabout (as seen in Appendix C).

Chapter 5

CONCLUSIONS

- This traffic study examined the impacts of rezoning 120-122 Mona Vale Road from non-urban (1A) to residential. The assessment has been carried out in accordance with generations contained within the RTA's Guide to Traffic Generating Developments. The findings of the study are summarised below:

- The proposal includes the development options with either 77 or 79 single dwelling residential allotments.

- The development proposal presents two access options: Option 1: Left in and left out of Mona Vale Road, no new road through No. 4 Boundary Street and option 2: new road through No.4 Boundary Street linking to Jubilee Avenue and no access from Mona Vale Road except for four lots at the top of the site.

- Retention of an existing driveway providing access for four lots at the northern perimeter of the site.

- The expected additional traffic generated by the proposal is 68 trips per hour during the morning and afternoon commuter peak periods (based on the development of 79 single dwelling residences which could be further reduced in the event only 77 residences are constructed).

- The impact of traffic generated by the development on the surrounding road network has been assessed for the AM and PM peak hour periods under a future scenario for when the Warriewood Valley is fully developed. Results indicate the additional traffic will have a negligible impact on the critical intersection near the development site; Ponderosa Parade and Jubilee Avenue.

In summary, the assessment shows that the additional traffic impacts are negligible and can be easily accommodated within the Warriewood Valley road network at full development.

Appendix A

SITE LAYOUT

OPTION 1


MONA VALE ROAD
BOUNDARY ROAD
RFS Subdivision Compliance Line
Riparian
30m buffer zone
19m
20m
25m
10m
10.5m
Edge of vegetation
1516sqm
1101sqm
1014sqm
1030sqm
1107sqm
1242sqm
1365sqm
1352sqm
1064sqm
1470sqm
1430sqm
1488sqm
1503sqm
627sqm
428sqm
500sqm
434sqm
405sqm
892sqm
A
748sqm
669sqm
688sqm
661sqm
499sqm
461sqm
435sqm
403sqm
427sqm
408sqm
404sqm
402sqm
400sqm
402sqm
405sqm
410sqm
411sqm
409sqm
5817sqm
4015sqm
4767sqm
708sqm
607sqm
433sqm
2117sqm
1624sqm
1303sqm
1580sqm
1065sqm
1132sqm
471sqm
409sqm
653sqm
1068sqm
1034sqm
548sqm
417sqm
423sqm
547sqm
452sqm
495sqm
573sqm
624sqm
461sqm
5552sqm
OSD Tank (Underground)
Onsite Detention and Water Quality
Existing Building On-site
RFS Subdivision Compliance Line
0
15
30
45
60
75m

OPTION 2


MONA VALE ROAD
BOUNDARY ROAD
RFS Subdivision Compliance Line
Riparian
30m buffer zone
19m
20m
25m
10m
Edge of vegetation
1516sqm
1101sqm
1014sqm
1030sqm
1107sqm
1242sqm
1365sqm
1352sqm
1064sqm
1470sqm
1430sqm
1488sqm
1503sqm
627sqm
428sqm
500sqm
434sqm
405sqm
892sqm
A
748sqm
669sqm
688sqm
661sqm
499sqm
461sqm
435sqm
403sqm
427sqm
408sqm
404sqm
402sqm
400sqm
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409sqm
5817sqm
4015sqm
4767sqm
708sqm
607sqm
433sqm
2117sqm
1624sqm
1303sqm
1580sqm
1065sqm
1132sqm
471sqm
409sqm
653sqm
1068sqm
403sqm
417sqm
548sqm
1034sqm
413sqm
423sqm
1505sqm
1417sqm
429sqm
438sqm
4363sqm
OSD Tank (Underground)
Onsite Detention and Water Quality
Existing Building On-site
RFS Subdivision Compliance Line
0
15
30
45
60
75m

Appendix B

MONA VALE RD ACCESS DETAIL

TYPICAL SECTION
MONA VALE ROAD

Scale 1:100 (A1) Scale 1:200 (A3) 0 2 4 6 8 10 metres

TYPICAL SECTION
BOUNDARY ROAD

Scale 1:100 (A1) Scale 1:200 (A3) 0 2 4 6 8 10 metres

NOTE :

1. ALL LANE MARKINGS ARE TO BE IN ACCORDANCE WITH RMS STANDARDS. A SEPARATE LINE MARKING PLAN WILL BE PROCUCED TO PART OF THE FINAL DOCUMENTATION.

2. PROPOSED BOUNDARY ROAD CONSTRUCTION TO CONSIST OF

- FORMATION TO DESIGN LEVELS EXCLUDING EASTERN FOOTPATH
- CONCRETE BARRIER KERB
- PAVEMENT

SEE NOTES

KATANDRA BUSHLAND SANCTUARY

PROPOSED CONCRETE STRIP 60m LONG 0.30m WIDTH

SF KERB

SA KERB

BB LANE

ROAD

CENTRE LINE

3.1m

4.0m

NEW LANE MARKING TO CONNECT TO EXISTING LANE MARK

MAKE SMOOTH JOIN WITH NEW KERB & GUTTER

ADJUST EXISTING DRAINAGE PIT TO SUIT NEW KERB

20m

R=10m

REMOVE EXISTING POWER POLE & RELOCATE IT TO THE FOOT PATH

CYCLE LANE 2 WIDE

3.20m

2.1m

3.0m

VALE

CONTINUITY LINE

TRANSITION LINE

MONA

CENTRE LINE

60m

135m

75m

CYCLE LANE 2 WIDE

R=10m

DP 124602

DP 5055

STREET

BOUNDARY

6.36m

7.4m

6.36m

SIGNAGE LEGEND

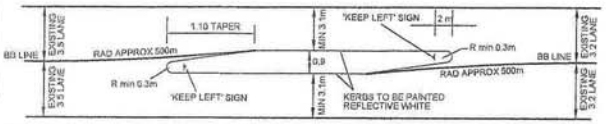
ITEM	SIGNAGE	DIMENTION /SIGN NAME
①	R 2-209	150 X 1000 KEEP LEFT
②	ONLY R2-14(L)	600 X 800 TURN LEFT
③	NO THROUGH ROAD G9-18	600 X 400 NO THROUGH ROAD
④	LEFT LANE ENDS W 4-9	600 X 600 LEFT LANE ENDS
⑤	FORM 1 LANE G 9-15	600 X 600 FORM ONE LANE
⑥	W2-4 (L)	600 X 600 SIDE ROAD JUNCTION

LINE TYPES

MEANING	DIMENTIONS
CONTINUITY LINE	1000mm, 3000mm, 1200mm, 100 mm
TRANSITION LINE	90m, 80 mm
BB LINE	80 mm

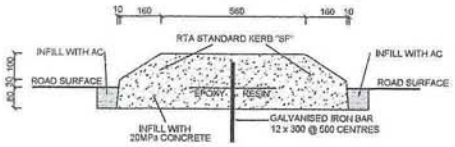
DECELERATION LENGTH (DL)
R_{KERB} = 15m,
CROSS FALL = 3%
$V_{SIGNPOSTED}$ = 25kph
UPGRADE % $_{APPROACHING}$ = 10% , F_{DL} =0.8
DL = 0.8 X 45 = 40 m

ACCELERATION LENGTH (AL)
R_{KERB} = 15m,
CROSS FALL = 3%
$V_{SIGNPOSTED}$ = 25kph
UPGRADE % $_{APPROACHING}$ = 10% , F_{AL} =1.5
DL = 1.5 X 90 = 135 m



MEDIAN STRIP TREATMENT
NOT TO SCALE

Scale 1:250 (A1) Scale 1:500 (A3) 0 5 10 15 20 25 metres



MEDIAN STRIP DETAIL
NOT TO SCALE

No.	AMENDMENT DESCRIPTION	BY	DATE
A	ADD CYCLE LANE	S.W.	27.09.12

mepstead & ASSOCIATES
REGISTERED SURVEYORS AND DEVELOPMENT CONSULTANTS

Sydney
10/4 Central Avenue, Thornleigh N.S.W. 2120
Phone 02 9875 4500 Fax 02 9875 4533

Postal
PO BOX 208, Fennell Hills N.S.W. 1715

Internet
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www.mepstead.com.au

Designed: Z.H	Scale: AS SHOWN	Principal: PLANET WARRIEWOOD PTY LTD	Drg. No. 4034-RD-WD_A
Drawn: Z.H	Datum: A.H.D	Project: PLAN OF PROPOSED ENTRY AND EXIT LANES AT MONA VALE ROAD & BOUNDARY ST, WARRIEWOOD	Sheet No. 1 of 3 sheets
Checked: D.M	Date: 26.06.12		Our Ref 4034
L.G.A: PITTWATER COUNCIL	A1		

APPENDIX C

OPTIONAL ROUNDABOUT UPGRADE

mepstead
& ASSOCIATES
REGISTERED SURVEYORS AND
DEVELOPMENT CONSULTANTS

Ref: 4034

26th July, 2012

SERVICES AVAILABITY FOR DEVELOPMENT OF 120 MONA VALE ROAD, WARRIEWOOD

The site is currently connected to potable water at the north east corner of the site. This would be extended throughout the proposed streets in the development. If upsizing is required as a result of the increased load this will be subject to Sydney Water requirements.

The site is not currently connected to sewer with the existing dwellings having individual sewerage treatment structures. There is a Sydney Water sewer main on the opposite side of Mona Vale Road and within the development along Jubilee Avenue. There would possibly be a lead in sewer line required to service the site which would be at the developer's expense if no other properties benefitted from the extension. Following an application for a Section 73 Certificate in the event of a subdivision application the Notice of Requirement would set out any additional major works which Sydney Water require.

Overhead electricity is currently available along Mona Vale Road. Some of the poles may be relocated as a result of any road widening works within Mona Vale Road or for a change in the intersection with Boundary Road. It is intended that all electricity supplying the new lots will be provided underground.

Stormwater and water quality is the subject of a separate report relating specifically to the guidelines set out in the Warriewood Valley Strategic Review Hydrology Study.

Stella Walter
Registered Surveyor
Mepstead & Associates Pty Ltd

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Mepstead and Associates Pty Ltd ABN 14 003 280 242

glendinning minto & associates p/l
planning & development control consultants abn 68 091 465 271

REQUEST FOR INCLUSION IN WARRIEWOOD LAND RELEASE FOR RESIDENTIAL DEVELOPMENT

120 MONA VALE ROAD, WARRIEWOOD

Prepared For
Planet Warriewood

May 2006

visit our new website at www.glendinningminto.com.au
address: 6/265-271 pennant hills road, thornleigh postal address: po box 225 thornleigh 2120
telephone: 9875 4788 facsimile: 9875 4799 e-mail: planning@glendinningminto.com.au

REQUEST FOR INCLUSION IN WARRIEWOOD LAND RELEASE FOR RESIDENTIAL DEVELOPMENT

at

120 Mona Vale Road, Warriewood

Prepared under instructions from
Planet Warriewood

Glendinning Minto & Associates Pty Ltd ABN 68 091 465 271
Planning & Development Control Consultants
6/265-271 Pennant Hills Road
Thornleigh NSW 2120
Tel: (02) 9875 4788
Email: planning@glendinningminto.com.au

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

This report has been prepared by Glendinning Minto & Associates P/L in conjunction with Douglas Sanger P/L at the request of Planet Warriewood P/L in respect of land situated at 120 Mona Vale Road, Warriewood. In this regard a preliminary assessment has been undertaken of the potential for the subject land to be included in the Warriewood Land Release Area in order that a rezoning application can subsequently be lodged to change the zoning from a Non Urban zoning to a Residential zoning.

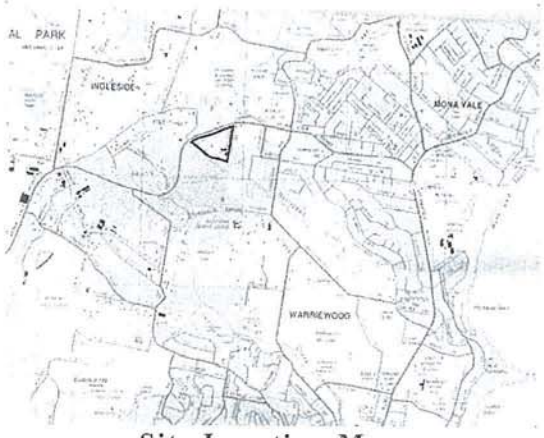
The report identifies the site and its surrounding environment including landforms, structures and zonings. The report also identifies key issues which it is considered are fundamental in determining the suitability of the site for residential purposes. Those issues include:

- Vegetation;
- Slope;
- Riparian Corridors;
- Potential Bushfire Impacts;
- Traffic Management;
- Visual Impacts; and
- Water and Sewerage Management.

It is considered that the findings of this report demonstrate that the land is suitable for residential purposes.

It is therefore requested that Council consider inclusion of this area within the Warriewood land release on the basis that it is potentially suitable for rezoning for residential purposes.

On favourable consideration by Council the applicant would then commission all of the necessary studies and reports required to accompany a formal rezoning application. It is to be noted that this report is not a formal rezoning application but rather as previously identified a preliminary submission to Council as to the rezoning potential of the subject site.

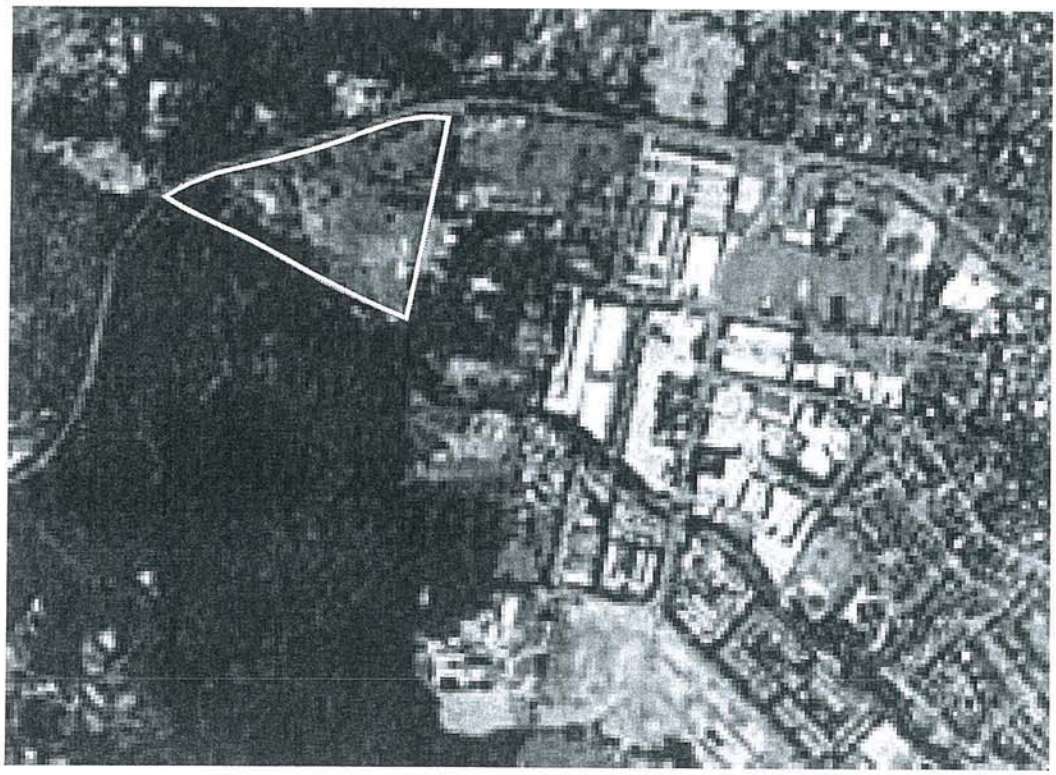


Site Location Map

2. THE SITE

The subject property is currently identified as Lot 1 in DP 383009 and Lots 3, 4 & 5 in DP 124602 and is known as 120 Mona Vale Road, Warriewood. The property has a total area of 83,261m^2. The property is located on the corner of Boundary Road & Mona Vale Road, although noting that Boundary Street has recently been closed at its intersection with Mona Vale Road.

The subject property is in single ownership, being owned by Anka Urlich. The written consent of the property owner for the making of this request has been provided and is included as an appendix to this report. The fact that the property is in single ownership is considered to assist with its potential rezoning.



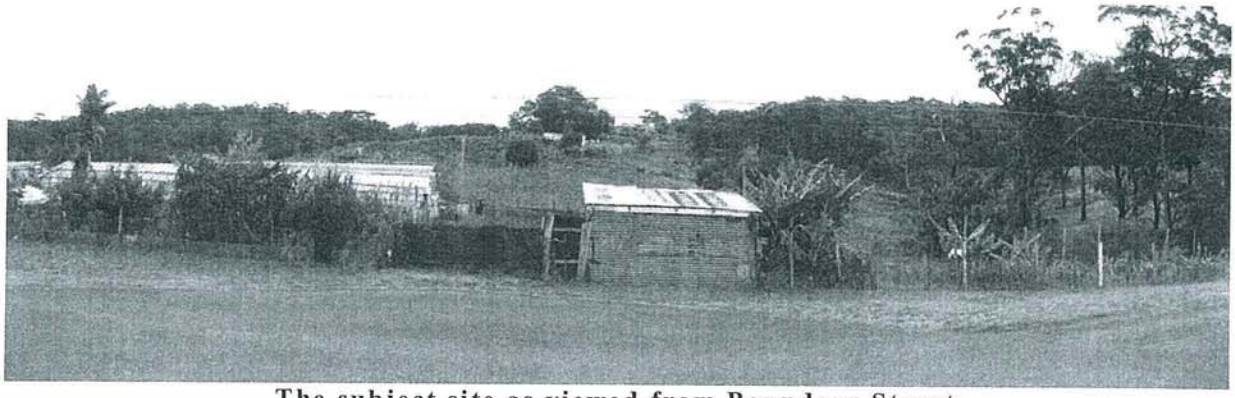
An aerial view of the subject site

Access to the property is currently available from both Mona Vale Road and Boundary Street.

In this regard a right of carriageway over the Uniting Church land on the opposite side of Boundary Street gives access from Boundary Street to Jubilee Avenue. The terms of the right of carriageway are detailed in the relevant Section 88B instrument, a copy of which is included as an Appendix to this report.

The subject property is currently zoned 1(a) Non Urban under the Pittwater LEP.

The property comprises of sloping land of varying grades and is largely cleared although the property does support a number of stands of significant trees. These trees are mainly located around the sites perimeter together with a portion of dense vegetation in the sites south west corner. The property also includes a natural drainage channel which is located in the northern half of the property and which runs from Mona Vale Road through to Boundary Road. A separate watercourse also forms part of the sites south western boundary.

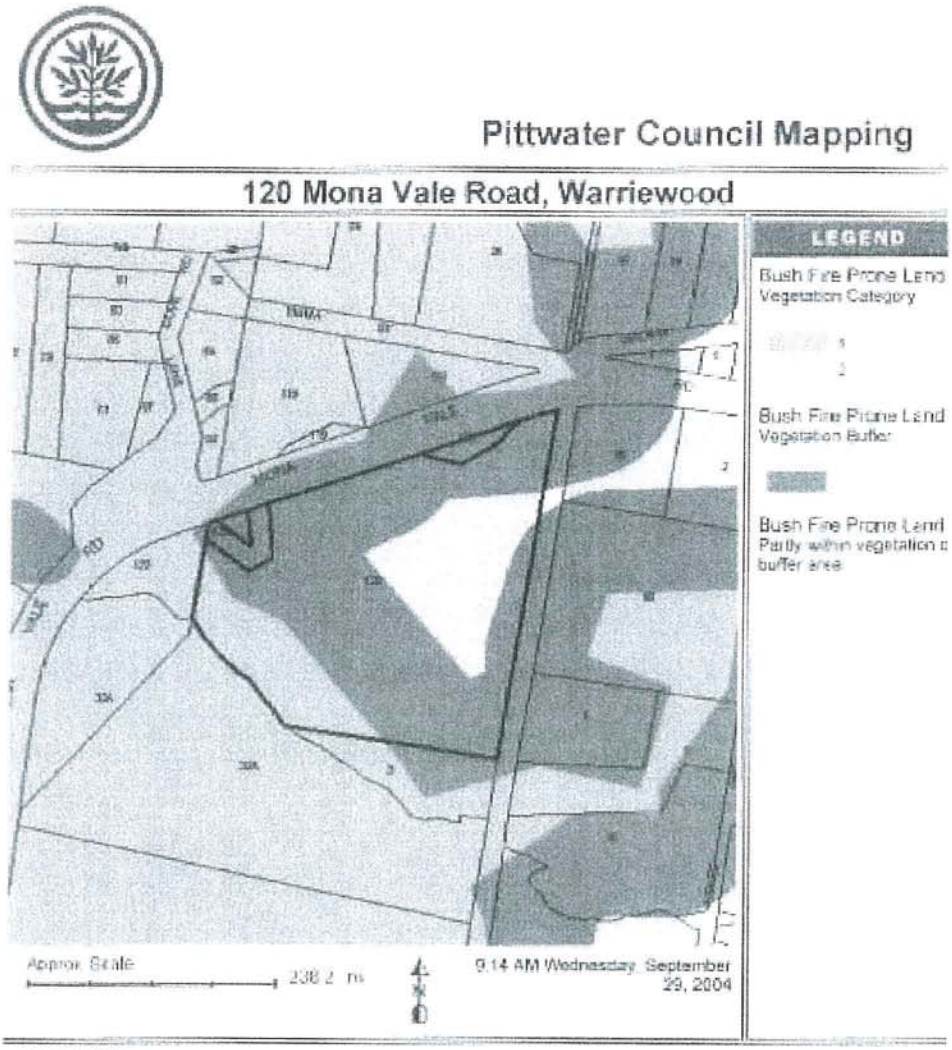


The subject site as viewed from Boundary Street

Structures currently erected upon the property include:

1. A single storey brick and tile dwelling house on Lot 3
2. A number of shed structures on Lot 5; and
3. A row of glass houses on Lot 5 adjacent to Boundary Road.

The subject site is bushfire affected with the extent of affectation detailed on the accompanying extract from Council's Bushfire Prone Land Map. The significant feature of the bushfire map is that the bulk of the threat is located up slope of the subject site.



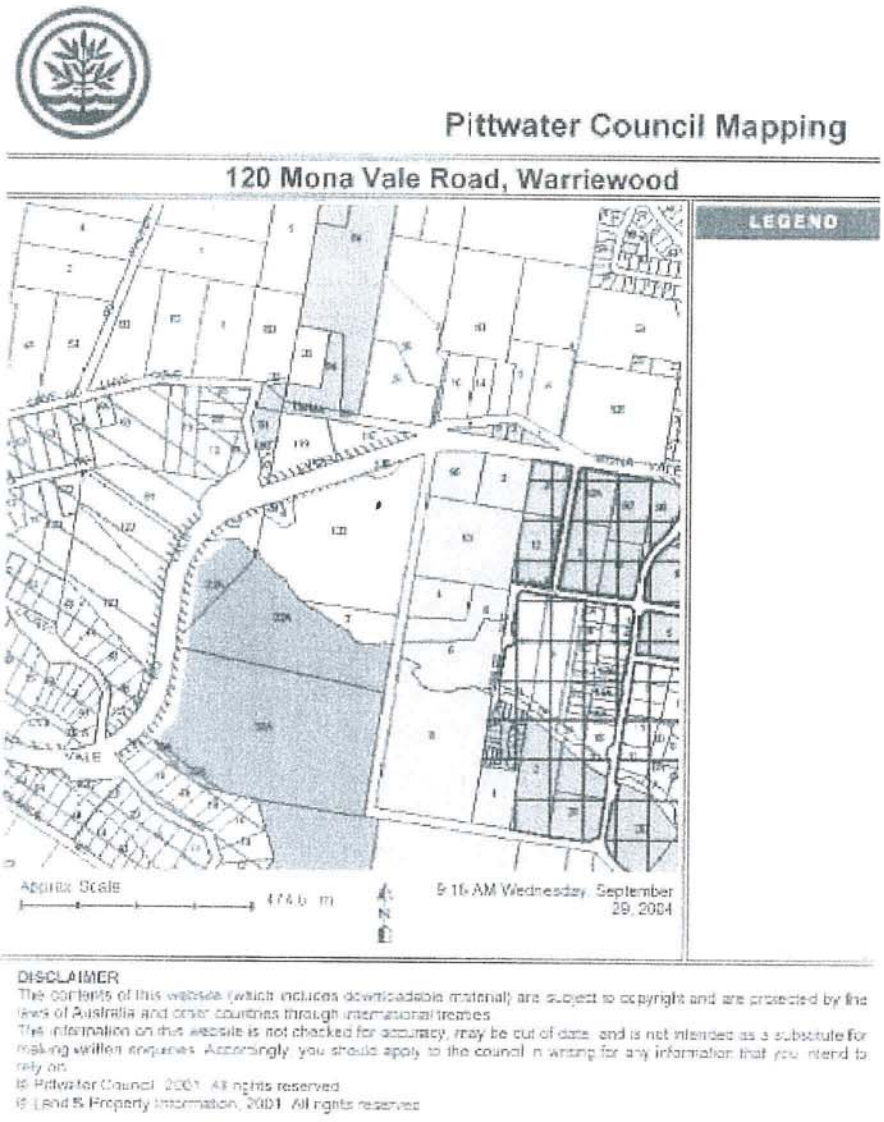
Extract from Council's Bushfire Prone Land Map

3. THE SURROUNDING ENVIRONMENT

The area surrounding the subject site as detailed on the attached extract from Council's Zoning Map comprises a range of land uses. Those land uses are generally as follows:

North	1(a) Non Urban
West	1(a) Non Urban
South	Environment Protection
East	1(b) Non Urban directly adjoining with light industrial and commercial uses beyond

Of additional note is that further to the south east of the site exist a number of existing and proposed small lot housing estates.



Extract from Council's Land Use Mapping System

4. ZONING & DEVELOPMENT CONTROLS

The following is an assessment of the proposal against the relevant provisions of the Environmental Planning and Assessment Act and of the relevant planning instruments and policies of Pittwater Councill that currently apply to the site. It is anticipated that were the site to be rezoned that it would be subject to controls similar to those that currently apply to the Warriewood Valley Urban Land Release.

4.1 Pittwater Local Environmental Plan 1993

The subject property is currently zoned 1(a) Non Urban under the Pittwater LEP. Subdivision of the land is currently restricted to allotments having a minimum allotment size of 2 ha.

It is therefore necessary that for the subject land to be used for residential purposes beyond the existing dwelling entitlements it would need to be rezoned.

5. PRELIMINARY CONSIDERATIONS

In assessing the suitability of the subject site for residential purposes it was determined that the following matters were fundamental precursors in determining if there was merit in pursuing the inclusion of the land area within the Warriewood land Release Area and a subsequent application for the rezoning of the land. Those matters include but are not necessarily limited to:

- Potential Bushfire Impacts;
- Traffic Management;
- Visual Impacts; and
- Water and Sewerage Management.

It is acknowledged that were it deemed by Council that the subject site was potentially capable of being rezoned for residential purposes that a comprehensive assessment of the site and its surroundings together with potential impacts would need to be undertaken.

The following is a summary of the preliminary findings made in respect of each of the above matters.

Bushfire

As previously identified the subject site is bushfire affected in that it contains both Category 1 Bushfire Prone Vegetation and Bushfire Prone Land Vegetation Buffer. The extent of the affectation of each of the above is reflected in the extract from Council's Bushfire Prone Land Map contained within Section 2 of this Report.

In order to determine the suitability of the site for residential purposes having regard to the bushfire hazards detailed above a preliminary bushfire hazard assessment was undertaken by Building Code and Bushfire Hazard Solutions. Their report is attached as an Appendix to this document.

Their report correctly identifies the site together with its features including topography and vegetation and also makes reference to the Council's Bushfire prone Land Map. The report then goes on to provide an assessment as to the likely required Asset Protection Zones that would apply to the site, together with likely construction requirements for future dwellings and access provisions.

It is acknowledged that the Bushfire Report at Page 5 under the heading – Moving Forward, does identify additional work which is required to be undertaken in the form of environmental assessments and geotechnical considerations in order to determine the final dimensions of the asset protection zones as well as maintenance regimes. It is understood that the outcomes of these additional studies will not result in the conclusions of the preliminary bushfire assessment being dramatically altered.

In this regard it is important to note the conclusion of the report which states:

> *Residential development within the property is possible and can comply with the legislated requirements of Planning for Bushfire Protection – 2001 with respect to bushfire mitigation matters. The application for rezoning to allow resident use should therefore receive concurrence from the NSW Rural Fire Service.*

It is therefore our opinion that on the basis of this report that issues relating to bushfire would not prevent the site from being rezoned for residential purposes.

Traffic Management

The subject site, were it to be redeveloped for residential purposes would be subject to a number of specific traffic management issues. Access to the site would most likely not be available from Mona Vale Road due to the nature and traffic conditions associated with this frontage of the site. In addition the site's remaining road frontage is to Boundary Street which has recently been closed to Mona Vale Road, resulting in the only currently remaining access to the site being via Jubilee Lane which runs perpendicular off Boundary Road.

The intersection of Jubilee Lane and Boundary Street

Jubilee Lane exists as a right-of-carriageway over land owned by the Pittwater Uniting Church and currently serves the church, a preschool and a sports and recreation centre together with existing residential properties fronting Boundary Street. It has a width of 6m with 90° angle parking and a speed limit of 10km/h and which is self enforcing with a number of speed humps.

An assessment of the environmental capacity (a measure of road safety and amenity) of Jubilee Lane has been undertaken by TAR Technologies.

Their report has been prepared on the assumption of a residential development comprising of approximately 104 allotments and in accordance with traffic generations contained within the Roads and Traffic Authority's Guide to Traffic Generating Developments.

The findings of their assessment as contained within the conclusion to the report in part state:

- *The impact of traffic generated by the development on the surrounding road network has been assessed for the AM and PM peak hour periods. The results indicate the additional traffic will have a negligible impact on the existing operation of Ponderosa Parade and Jubilee Avenue.*
- *The site is to use a shared access way, Jubilee Lane, which currently serves Pittwater Uniting Church and associated activities that would operate outside of the main travel time from a residential estate.*

- *The environmental capacity, which is a measure of road safety and amenity, has been considered in the study for Jubilee Lane and Jubilee Avenue. The results show that future traffic volumes are within the roads environmental capacity, which is acceptable.*

In summary it is considered by the traffic report that there are no significant traffic issues that would preclude the change of the site to a residential use.

Were it deemed that Jubilee Lane was not a suitable means of accessing a redevelopment of the subject site then it is considered that two other options potentially exist. Those options are:

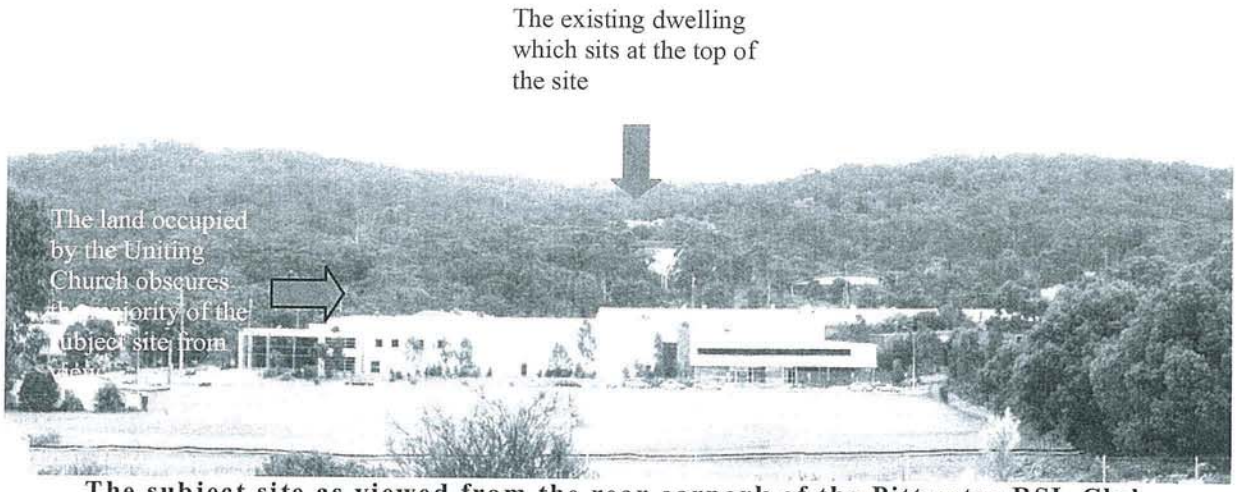
1. To create a slip road running parallel with Mona Vale Road which runs from either Ponderosa Parade or Daydream Avenue through to Boundary Street and which is located within the existing road reserve; or

2. To create a new road over the land located opposite the subject site and which also fronts Boundary Street. This new road could provide access from Boundary Street through to Daydream Avenue.

Visual Impacts

It is our understanding from discussions with Council officers that one of the reasons that the subject site had not previously been rezoned was through a concern relating to the visual impact that redevelopment may have on the Warriewood escarpment.

Our preliminary investigations show that the Warriewood escarpment, being the ridge line visible from within Warriewood Valley, sits above and beyond the subject site. In this regard the subject site is largely screened by intervening landforms and structures together with vegetation located both on and adjoining the subject site.



The subject site as viewed from the rear carpark of the Pittwater RSL Club

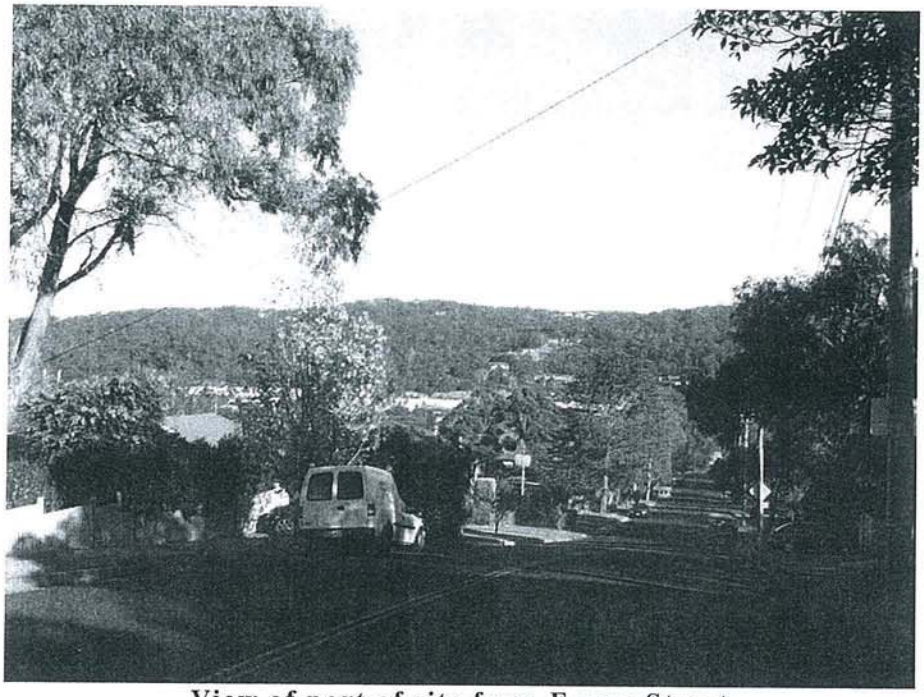
The above photo was taken from the Pittwater RSL Club carpark being the most prominent public vantage spot having a view towards the site. It is apparent from that photo that the vast majority of the site is obscured from view by the intervening landform and vegetation.

The other main vantage point of the site from the public domain is when the site is viewed from Mona Vale Road. In such a circumstance it is noted that vehicles would at all times be moving with there being no opportunity for stopping. From this perspective save for a gap towards the sites north eastern corner the frontage of the site is obscured by either vegetation or the rock excavation caused by the roadway.

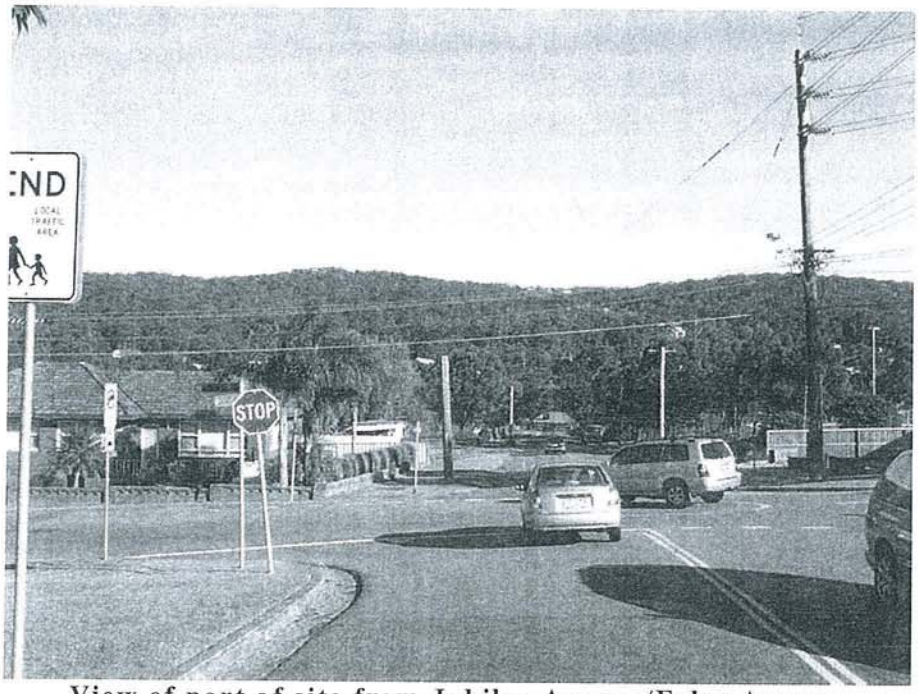
More distant views of the upper portion of the subject site are available from the following locations:

1. Emma Street
2. Warriewood Road/MacPherson Street
3. Jubilee Avenue/Foley Avenue

Photos of the view from these locations are shown below.



View of part of site from Emma Street



View of part of site from Jubilee Avenue/Foley Avenue

Based upon our preliminary assessment it is our opinion that the subject site could be developed for the purpose of residential development without unreasonably impacting upon the Warriewood escarpment.

Water and Sewerage Management

A formal request was made to Sydney Water to determine the availability of water supply and sewage disposal services for the subject site. A copy of Sydney Water's response is included as an Appendix to this report. It is apparent from that advice that given the existing zoning of the land that Sydney Water will only provide written comments at the written request of Council.

It is therefore not possible to provide any formal indications as to the capacity of the existing system at this time.

6. PRELIMINARY LAND CAPABILITY ASSESSMENT

In response to concerns raised by Council regarding the level of information provided in respect of the original submission, including justification as to why the land should be considered for rezoning for residential purposes a preliminary land capability assessment was undertaken. This assessment involved the preparation of a number of overlays each prepared in response to those matters previously identified as being key determinates for demonstrating the suitability of land for residential purposes.

This approach is similar to that adopted by Council in its assessment of the land capability of the land associated with the Warriewood Valley Land Release.

The preparation of the preliminary land capability assessment overlays was undertaken by Douglas Sanger of Douglas Sanger P/L.

The matters that were taken into consideration in each of the overlays are:

1. Vegetation
2. Access
3. Slope
4. Riparian Zones
5. Bushfire
6. Visibility
7. Available Development Areas

The following is a brief description of the methodology behind the formulation of each overlay and which are included as Appendices to this report.

Vegetation

The purpose of this assessment was to identify existing areas of natural vegetation located upon and adjoining the property. This assessment was undertaken using aerial photographs and ground trouping.

This overlay identifies the dense vegetation along the southern boundary, which is within the valley side slope of Narrabeen Creek, plus the scattered trees in the north-eastern sector of the land. The central and southern sectors are cleared and support the existing horticultural activities.

Access

This assessment involved identifying suitable locations for vehicular access to the site. It involved reviewing applicable planning controls and a visual assessment of existing road conditions and the topography of the area so as to determine sight lines.

In this regard the overlay identifies that the property has a long frontage to Mona Vale Road, with existing accesses to the present house and at other points. This diagram notes that it might be possible to retain access to the existing house, via a service/slip road, whilst all the other entry/exit points will be terminated.

The second street frontage is to Boundary Street, which is now accessed by means of a right-of-way, since the intersection at Mona Vale Road was closed.

It is considered that the most appropriate access point to the site is in the vicinity of the existing intersection of Boundary Street with Jubilee Lane.

Slope

This assessment involved identifying those portions of the site that because of excessive slope (greater than 1 in 3 would be unsuited to conventional building. This assessment relied upon the detailed survey plan of the site together with cadastral maps of the locality.

This overlay identifies that the landform which is readily shown by the contour pattern, comprises a sloping plane descending from north-west to south-east, as a part of the foot of the escarpment.

The plane is traversed by the southern Narrabeen Creek valley and an internal watercourse, both of which run west to east, forming the main area into a sloping tongue/spur.

The main part of the land is reasonably evenly graded, but formed into 3 sloping terraces (for horticulture). In the north-east sector the land is relatively steep, with scattered trees, such that any risk of soil movement needs to be determined.

Riparian Zones

This overlay identifies existing watercourses located on or adjoining the property and provides for a 20m riparian zone on either side of the watercourse. The overlay also notes existing dams on the land.

Bushfire

This overlay identifies that portion of the land which would be affected by bushfire restrictions including Asset Protection Zones. It was formulated by relying upon the preliminary bushfire assessment undertaken for the site by Building Code and Bushfire Hazard Solutions and which also accompanies this report.

From the bushfire advice this diagram first notes that the Narrabeen Creek valley side exceeds 1in3 (18%). It then shows the provision of a fire trail along the top of that slope, plus a 20 metres wide Asset Protection Zone of which the eastern half "may be developed subject to the modification of the existing gradients".

Visibility

This overlay was prepared so as to demonstrate those portions of the site that are visible within the surrounding visual catchment area and which were identified in Section 5 of this report. This assessment was prepared utilising the site contours, cadastral maps of the locality and a physical inspection of the surrounding locality.

The over lay demonstrates that the eastern, lower part of the land (below contour 60.00) is not visible from the Warriewood Valley, due to high land and trees to the east.

Between contour 60.00 and 70.00 the land is only visible from distant, high land close to the RSL.

Thus only the part of the land above contour 80.00 (around the existing house) is visible from the Warriewood Valley.

Upon completion of the individual overlays a comprehensive overlay was prepared for the site whereby all of the findings were consolidated onto a single sheet. It is my opinion that this sheet provides a reasonably accurate assessment of the opportunities and constraints that apply to the site in terms of any future residential development.

The land capability overlays are included as an Appendix to this report.

8. CONCLUSION

In conclusion it is our opinion that based upon the findings of this preliminary report that the subject site is suitable for residential development. It is acknowledged that a far more comprehensive assessment of the site and its surroundings would be required together with the preparation of a formal rezoning application for a definitive decision to be made.

However in respect of those matters deemed to be fundamental to the redevelopment of the property for residential purposes, particularly issues relating to bushfire, visual impact and vehicular access, it is our opinion that a rezoning of the site for residential purposes would not result in any unreasonable impacts or issues.

It is therefore requested that Council consider inclusion of this land in the Warriewood Land Release Area.

Andrew Minto
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