Statement of Environmental Effects

S96 (1A) Application

884-896 Pittwater Road, 9-17 Howard Avenue, 14-16 and 28 Oakes Avenue, Dee Why

Concrete Slabs to excavation and associated works

6 October 2016

PREPARED BY

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MERITON

Contents

1 Introduction

This Statement of Environmental Effects (SEE) describes and considers a modification to Development Consent DA2015/0612 at 884-896 Pittwater Road, 9-17 Howard Street, 14-16 and 28 Oakes Avenue, Dee Why. The site is known as Dee Why Town Centre "Site B". The proposed works involves the construction of slabs to the excavated area to ensure the structural integrity of the excavated land for public safety and protection of buildings on adjoining land.

This Statement:

- Describes the site and its surrounding area;
- Details the nature of the proposed development; and
- Undertakes an assessment of the proposal under the heads of consideration in Section 79C (1) of the *Environmental Planning and Assessment Act, 1979*.

The conclusion is reached that the proposal is acceptable with regard to all relevant planning issues.

2 Site and Surroundings

2.1 The Site

2.1.1 Property Description

The site is known as 884-896 Pittwater Road, 9-17 Howard Street, 14-16 and 28 Oaks Avenue, Dee Why. **Figure 1** shows the general location of the site and **Figure 2** shows an aerial view of the site and its boundaries. The table below provides a list of the site details and a site survey is included at **Annexure 1**.

Land Title	Address
Lot 1, DP 307937	896 Pittwater Road, Dee Why
Lot 3, DP 307937	896 Pittwater Road, Dee Why
Lot A, DP 416469	894 Pittwater Road, Dee Why
Lot 1, DP 504212	892 Pittwater Road, Dee Why
Lot 10, DP 231418	890 Pittwater Road, Dee Why
Lot 11, DP 231418	888 Pittwater Road, Dee Why
Lot A, DP 339410	884 Pittwater Road, Dee Why
Lot 7, Section 16, DP 8172	9 Howard Avenue, Dee Why
Lot 1, DP 209503	11 Howard Avenue, Dee Why
Lot 1, DP 212382	15 Howard Avenue, Dee Why
Lot 2, DP 212382	17 Howard Avenue, Dee Why
Lot A, DP 371110	14 Oaks Avenue, Dee Why
Lot B, DP 371110	16 Oaks Avenue, Dee Why
Lot 3, DP 212382	28 Oaks Avenue, Dee Why

2.1.2 Existing Development

The site was previously occupied by a mix of non-residential buildings that have been demolished. Excavation of the site has now commenced.

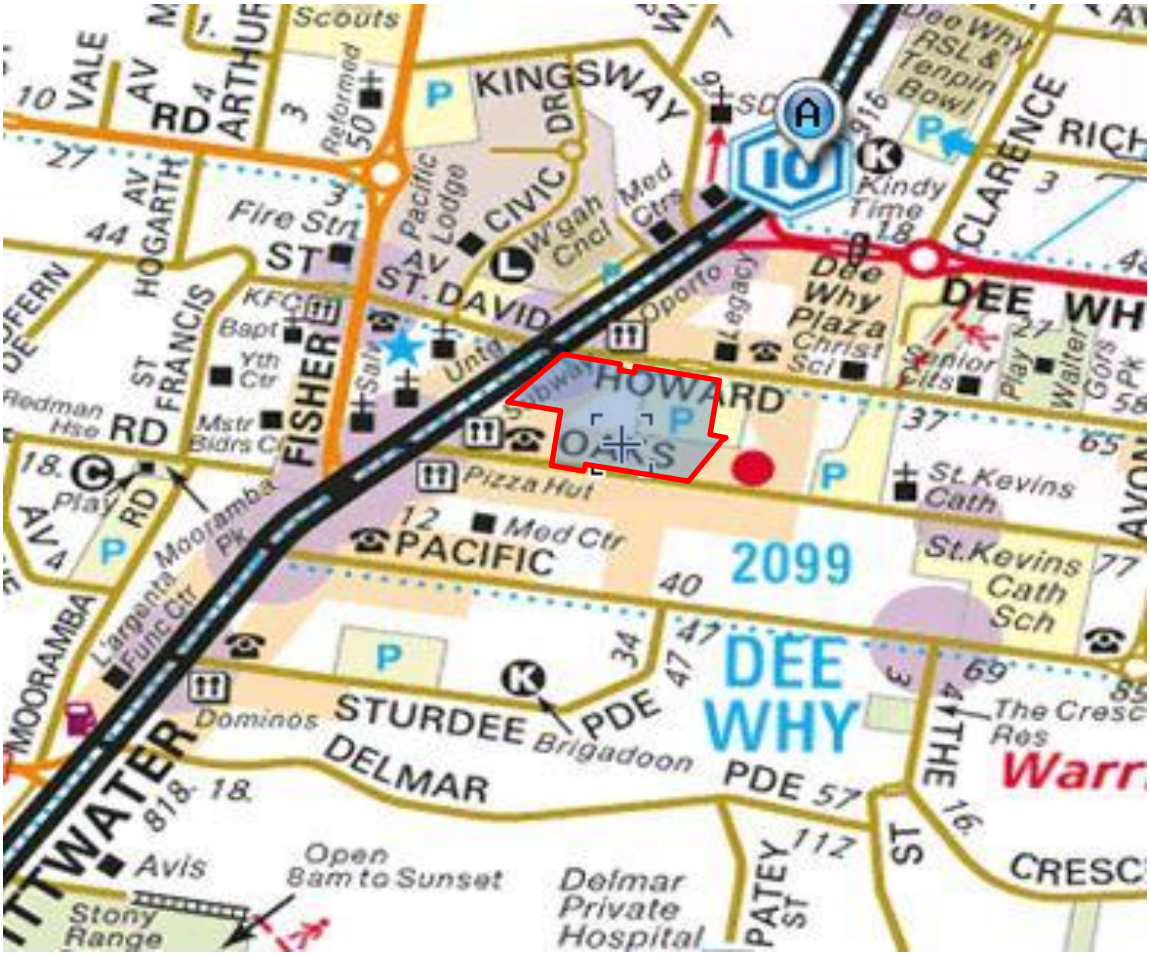

Figure 1: Location of subject site marked with red star

Figure 2: Aerial view of subject site - outlined in red

2.1.3 Planning History

Development consent (2015/0612) for excavation was granted by Council on the 22 December 2015.

Demolition approval (2014/0805) was issued by Warringah Council on the 9 September 2014.

2.1.4 Ground Conditions

It is relevant to note that a site auditor has been appointed to review all contamination aspects of the project.

2.2 Surroundings

The surrounding area comprises the Dee Why Town Centre. It consists of a mix of land uses with a focus on small scale retail and commercial development with newer residential flat buildings occurring on the western side of Pittwater Road.

3 Proposal

3.1 Relevant Background

3.1.1 Stage 1 DA Approval

On 26 February 2009, Council granted consent to DA2007/1249 for the following:

> *Stage 1 Development Application for a concept mixed use development comprising residential, retail and commercial uses, including 3 storey street front buildings to Oaks Avenue and part of Howard Avenue, an 8 storey commercial office building fronting Pittwater Road, 7 storey mid-rise residential buildings, two residential tower buildings (one part 15/part 18 storeys and one of part 14/part 17 storeys), a publicly accessible "town square" and north-south pedestrian link, 5 levels of car parking (4 basement levels and 1 above ground level), a bus bay and vehicular access.*

The site that is the subject of the above approval is shown in **Figure 6** below.

Figure 3: Site area of approval under DA2007/1249

The Stage 1 DA allows for "concept approval" only, further development applications are required for all physical works, including demolition and excavation, associated with the project.

3.2 Proposed Works

The proposed amendment is to lay the concrete slabs and associated works to ensure the hole from excavation is stabilised and there is no risk to adjoining residential flat buildings and shops.

Amended plans are provided at **Annexure 2** with appropriate soil and runoff management requirements proposed.

4 Environmental Planning Assessment

4.1 Section 79C(1)(a)(i): Environmental Planning Instruments

4.1.1 Warringah Local Environmental Plan 2011

Part 2 of the Warringah Local Environmental Plan 2011 (LEP) identifies that the subject site is zoned B4 Mixed Use.

Clause 6.2 requires the consent authority to consider the following matters:

The likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality.

No change to drainage patterns / soil stability will arise from the minor change.

The erosion and sediment control measures approved under the original consent remain and are contained in **Annexure 2**.

The effect of the proposed development on the likely future use or redevelopment of the land.

The proposed floor slabs and associated works within the excavated area will ensure the appropriate redevelopment of the land by encasing and stabilising the excavated area. The specialist engineer dealing with the excavation of the site has noted advise against leaving the excavation open for any extended period as this may exceed the design life of the temporary anchors and hence compromise the stability of the basement (refer to **Annexure 3**).

The effect of the proposed development on the existing and likely amenity of adjoining properties.

In terms of constructing the slabs and associated structural works, the amenity afforded to adjoining properties will be typical of a construction site. Hours of operation will be in accordance with the conditions of consent.

The source of any fill material and the destination of any excavated material.

Not applicable. There is no excavated material to be taken away for slab construction.

The likelihood of disturbing relics.

No change from the original DA approval. The potential for archaeological remains to be located within the site is considered to be low. The proposed development will take place on land that is highly disturbed. As a result there is considered to be little potential for archaeological findings.

Proposed works will occur after the site has been excavated and any potential for archaeological remains would have been identified during the excavation works.

The proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area.

Erosion and sediment control measures will continue to be implemented to manage water quantity and quality as required by the parent DA approval.

There are no other clauses of the LEP that are particularly relevant in the assessment of the proposal.

4.2 Section 79C(1)(a)(ii): Draft Environmental Planning Instruments

The site is not subject to a Planning Proposal to amend the existing site specific controls.

4.3 Section 79C(1)(a)(iii): Development Control Plans

4.3.1 Warringah Development Control Plan 2011

Warringah Development Control Plan 2011 applies to the subject site. An assessment of the proposal against the relevant provisions of the DCP is contained in the table below.

DCP Provision	Assessment
C5 Erosion and Sedimentation	
1. *Erosion and sedimentation prevention measures must be installed on all sites where some degree of soil erosion and sedimentation is likely to occur.*	No changes are proposed. On site measures will continue as required by the parent DA consent.
2. *Any erosion and sedimentation is to be managed at the source. Development that is likely to result in erosion and sedimentation is to be accompanied by a Soil and Water Management Plan which ensures minimum soil erosion and maintenance of the downstream water quality. The Plan is to be prepared in accordance with the Managing Urban Stormwater: Soils and Construction Handbook and is to provide details of the proposed method of on-site erosion and sediment control.*	Existing measures are in accordance with relevant guidelines.

4.4 Section 79C(1)(a)(iiia): Planning Agreements

No planning agreement is subject to the parent Excavation DA or this modification.

4.5 Section 79C(1)(a)(iv): Regulations

The modification has been made in accordance with the requirements contained in Clause 50(1A) of the *Environmental Planning and Assessment Regulation 2000*.

4.6 Section 79C(1)(b): Likely Impacts

The modification will not have any adverse impacts than considered by Council with the parent DA approval. The variation continues to satisfy the relevant standards and existing mitigation measures.

Noise from construction activities associated with the development shall continue to comply with the recommendations outlined in the acoustic report prepared by Acoustic Logic (refer to **Annexure 4**).

4.7 Section 79C(1)(c): Suitability of the Site

There are no environmental constraints on the site that would impede the modification or render it unsuitable for the site.

4.8 Section 79C(1)(d): Submissions

Council will consider submissions at the close of the exhibition period.

4.9 Section 79C(1)(e): The Public Interest

The excavated area relies on temporary anchors to hold up the piling walls of the excavated areas, and have been placed around the circumference of the site in agreement with adjoining private landowners, and public authorities. The nature of the anchors being temporary requires the excavated area to be made structurally sound quickly so as not to place load strain on the anchors that otherwise could fail if left with an open excavated area for an extended time. To remove risk it is therefore imperative in the public interest that the slabs and associated works be approved so the residents can enjoy their ongoing residential amenity without worry, and public road are not at risk of being effected.

For the reasons set out in this Statement, it is considered that the public interest would be best served by approval of the modification under consideration, to remove any risk to private or public land holdings.

5 Conclusion

The modification is to ensure the structural integrity of the excavated area by undertaking the slab levels and associated up to and include ground level to de-risk any impact on adjoining private and public land.

The proposal satisfies the relevant heads of consideration under Section 79(C) of the *Environmental Planning & Assessment Act, 1979*.

Accordingly, the application should be recommended for approval.

Annexure 1: Site Survey

JBW SURVEYORS PTY LTD

CLIENT: MERITON APARTMENTS
PROJECT: HOWARD AVENUE, OAKS AVENUE & PITTWATER ROAD, DEE WHY
AUTOCAD MODEL 124821 DETAIL & LEVELS M1.DWG - 1:1 SCALE IN METRES
ISSUED DATE: 17/04/14

REVISION : 1 :

MGA

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N:6263960-00 N:6263920-00 N:6263880-00

SYMBOLS

BD DENOTES BOLLARD
CWG DENOTES CYCLONE WIRE FENCE
EM DENOTES ELECTRICAL MAIN
GM DENOTES GAS MAIN
GR DENOTES STORMWATER GRATE
HY DENOTES HYDRANT
INV DENOTES INVERT OF KERB
KLF DENOTES KOPPERS LOG FENCE
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DENOTES THE APPROXIMATE SPREAD & TRUNK LOCATION OF A TREE

GENERAL NOTES

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THE BOUNDARIES SHOULD BE SURVEYED AND MARKED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WORK

IMPROVEMENTS AND FEATURES SHOWN ON OR NEAR THE BOUNDARIES ARE INDICATIVE ONLY

REFER TO THE SUBJECT CERTIFICATES OF TITLE AND DEPOSITED PLANS FOR THE LOCATION & NATURE OF ANY EASEMENTS, RESTRICTIONS OR COVENANTS

EASEMENTS SHOWN ARE THOSE ONLY AFFECTING/BENEFITING THE ADJOINING PROPERTIES TO THE OVERALL SITE.

THE RECORDS OF THE SERVICE AUTHORITIES HAVE NOT BEEN INVESTIGATED. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN SHOWN

THE RECORDS OF THE SERVICE AUTHORITIES SHOULD BE INVESTIGATED AS TO THE LOCATION OF SERVICES PRIOR TO THE COMMENCEMENT OF ANY DETAILED DESIGN OR CONSTRUCTION WORKS

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THE GRID SYSTEM SHOWN RELATES TO THE MAPPING GRID OF AUSTRALIA (MGA), THE ORIGIN OF WHICH IS:
PM 2838 E:343801-107 N:6263780-127 CLASS B ORDER 2
PM 2839 E:343909-834 N:6263765-053 CLASS B ORDER 2
AS SUPPLIED BY SCIMS DATED 13/01/2014

CONTOURS HAVE BEEN INTERPOLATED FROM SPOT HEIGHTS

(E1) DENOTES EASEMENT FOR SUPPORT 0-15 WIDE VIDE DEALING No- K607817
(E2) DENTOES EASEMENT FOR ENCROACHING STRUCTURE VARIABLE WIDTH VIDE DP1178758
(E3) DENOTES EASEMENT FOR OVERHANG VARIABLE WIDTH VIDE DP1178762
(E4) DENOTES EASEMENT TO DRAIN WATER 3-05 WIDE VIDE DEALING No- A333167
(E5) DENOTES PROPOSED ROAD WIDENING VIDE DP625802

SHEET 1
SHEET 2
KEYMAP

PITTWATER ROAD
HOWARD AVENUE
D.P. 307937
D.P. 416469
D.P. 504212
D.P. 231418
D.P. 339410
D.P. 389449
D.P. 209503
SEC. 16 D.P. 8172
D.P. 212382
S.P. 87279
S.P. 78355
A 71110
B 71110
BRICK COMMERCIAL BUILDING
CONCRETE & GLASS COMMERCIAL BUILDING WITH UNDERGROUND CARPARKING
RENDERED, GLASS & METAL RETAIL BUILDING
BRICK RETAIL BUILDING
MULTI-STOREY RESIDENTIAL & RETAIL BUILDING
CONCRETE, GLASS & METAL RETAIL BUILDING
BUILDING IN COURSE OF DEMOLITION
GROUND FLOOR WALL (UPPER FLOOR OVERHANG ABT 0-23)
98°19'45" 51.500
98°19'45" 15.240
98°19'45" 76.200
98°19'45" 15.240
49.010 98°19'45"
5.840 48°00'05"

ADJOINS SHEET 2

DATE	REVISION	AUTH.

COUNCIL REF:
SUB'D. APP.:
ENGIN. APP.:

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CLIENT
MERITON APARTMENTS PTY LTD

PLAN SHOWING SELECTED DETAIL AND LEVELS OVER LOTS 1, 2 & 3 DP212382, LOT 1 DP209503, LOT 7, SEC- 16 DP8172, LOTS 1 & 3 DP307937, LOT A DP416469, LOT 1 DP504212, LOTS 10 & 11 DP231418, LOT A DP339410 & LOTS A & B DP37110
PROJECT: HOWARD AVENUE, OAKS AVENUE & PITTWATER ROAD - DEE WHY

LOCALITY: DEE WHY
LOCAL GOVERNMENT AREA: WARRINGAH

SCALE :	1:200
DATUM :	AHD
DATE :	06/02/14
AREA :	-

PLAN REF.
124821/SH1
SHEET 1 OF 2
DESIGNED: RC
DRAWN: BB

ADJOINS SHEET 1

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B D.P. 389419

D.P. 231418

A D.P. 371110

B D.P. 371110

D.P. 212382

S.P. 76335

S.P. 87279

COMMERCIAL BUILDING

RENDERED, GLASS & METAL RETAIL BUILDING

BRICK RETAIL BUILDING

BUILDING IN COURSE OF DEMOLITION

CONCRETE, GLASS & METAL RETAIL BUILDING

MULTI-STOREY RESENTIAL & RETAIL BUILDING

ONE & TWO STOREY BRICK RETAIL BUILDING

"DEE WHY MARKET" TWO STOREY CONCRETE RETAIL BUILDING ROOF CARPARK AREA

OAKS AVENUE

6263880-00

6263840-00

6263800-00

E 341320-00

E 341360-00

E 341400-00

E 341440-00

SHEET 1

SHEET 2

KEYMAP

JBW SURVEYORS PTY LTD

CLIENT: MERITON APARTMENTS
PROJECT: HOWARD AVENUE, OAKS AVENUE & PITTWATER ROAD, DEE WHY
AUTOCAD MODEL '124821 DETAIL & LEVELS M1.DWG' - 1:1 SCALE IN METRES
ISSUED DATE: 17/04/14

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PROJECT: HOWARD AVENUE, OAKS AVENUE & PITTWATER ROAD - DEE WHY

LOCALITY: DEE WHY

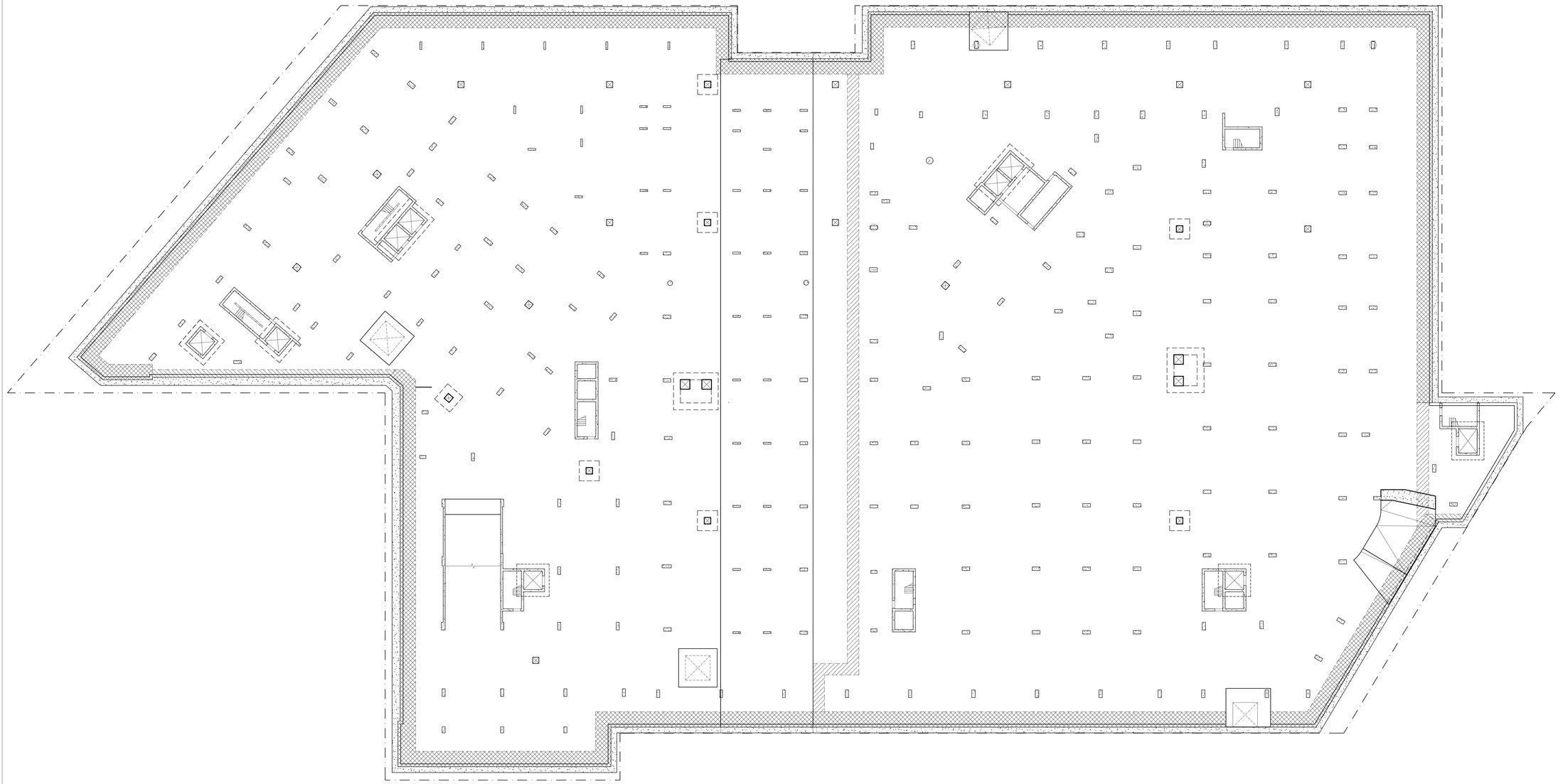
LOCAL GOVERNMENT AREA: WARRINGAH

SCALE : 1:200
DATUM : AHD
DATE : 06/02/14
AREA : -

PLAN REF.
124821/SH2
SHEET 2 OF 2

DESIGNED: RC
DRAWN: BB

Annexure 2: Modified Excavation Plans



PARKING LEVEL 3 STRUCTURAL PLAN

REFER TO INDIVIDUAL ZONE PLANS FOR GENERAL NOTES - SEE KEY PLAN

Rev	Description	Date	By	App
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P5	PRELIMINARY ISSUE	24.08.16	KS	
P4	PRELIMINARY ISSUE	09.06.16	KS	
P3	PRELIMINARY ISSUE	25.05.16	KS	
P2	PRELIMINARY ISSUE	18.03.16	KS	
P1	PRELIMINARY ISSUE	25.02.16	KS	

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Project Name: DEE WHY TOWN CENTRE
884-896 PITTWATER ROAD
DEE WHY, NSW 2099

Drawing Title: PARKING LEVEL 3
STRUCTURAL PLAN

PRELIMINARY

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Project Ref. 200152101S — Drawing No. S1100 — Rev P6

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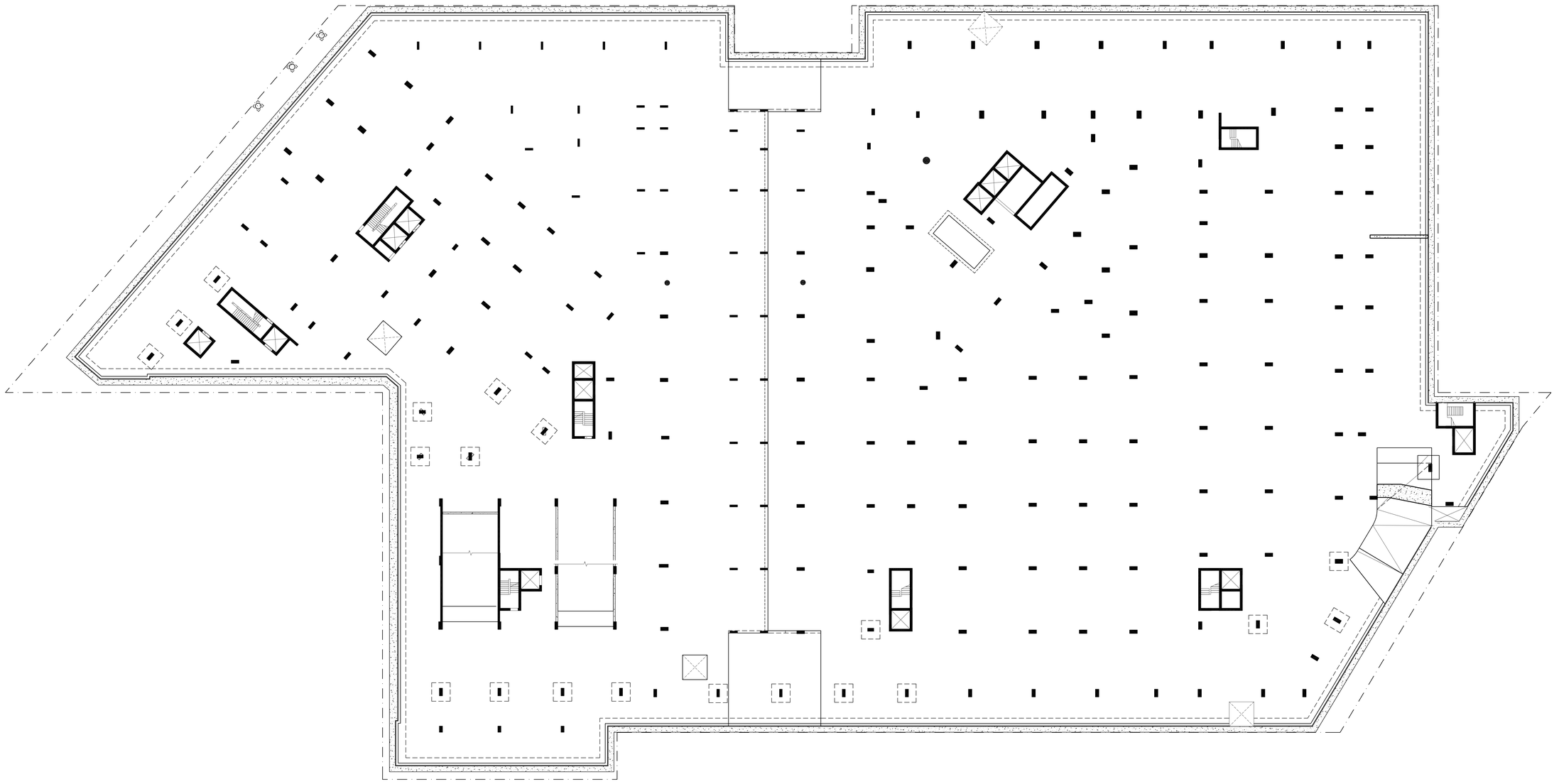

PARKING LEVEL 2 STRUCTURAL PLAN

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P2	PRELIMINARY ISSUE	18.03.16	KS	
P1	PRELIMINARY ISSUE	25.02.16	KS	

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Project Name: DEE WHY TOWN CENTRE
884-896 PITTWATER ROAD
DEE WHY, NSW 2099

Drawing Title: PARKING LEVEL 2
STRUCTURAL PLAN

PRELIMINARY

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Drawing No.: S1120
Rev: P5

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PARKING LEVEL 1 STRUCTURAL PLAN

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P4	PRELIMINARY ISSUE	09.06.16	KS	
P3	PRELIMINARY ISSUE	25.05.16	KS	
P2	PRELIMINARY ISSUE	18.03.16	KS	
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Project Name: DEE WHY TOWN CENTRE
884-896 PITTWATER ROAD
DEE WHY, NSW 2099

Drawing Title: PARKING LEVEL 1
STRUCTURAL PLAN

PRELIMINARY

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Rev: P5

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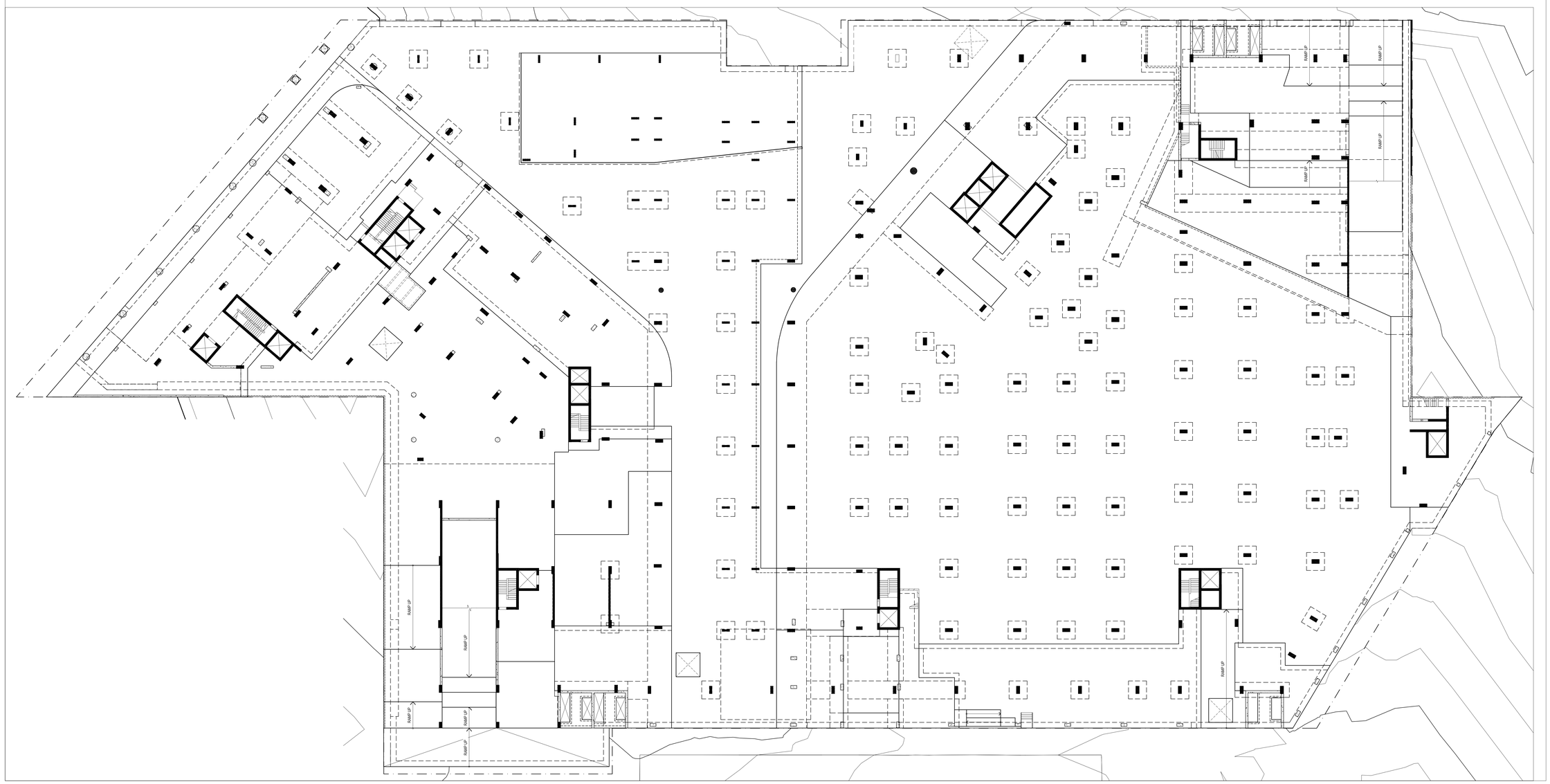

GROUND FLOOR STRUCTURAL PLAN

REFER TO INDIVIDUAL ZONE PLANS FOR GENERAL NOTES - SEE KEY PLAN

Rev	Description	Date	By	App
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P3	PRELIMINARY ISSUE	02.05.16	KS	
P2	PRELIMINARY ISSUE	18.03.16	KS	
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Project Name: DEE WHY TOWN CENTRE
884-896 PITTWATER ROAD
DEE WHY, NSW 2099

Drawing Title: GROUND FLOOR
STRUCTURAL PLAN

PRELIMINARY

Designed	PC
Drawn	KS
Scale	1:200
Date	
Sheet	A0

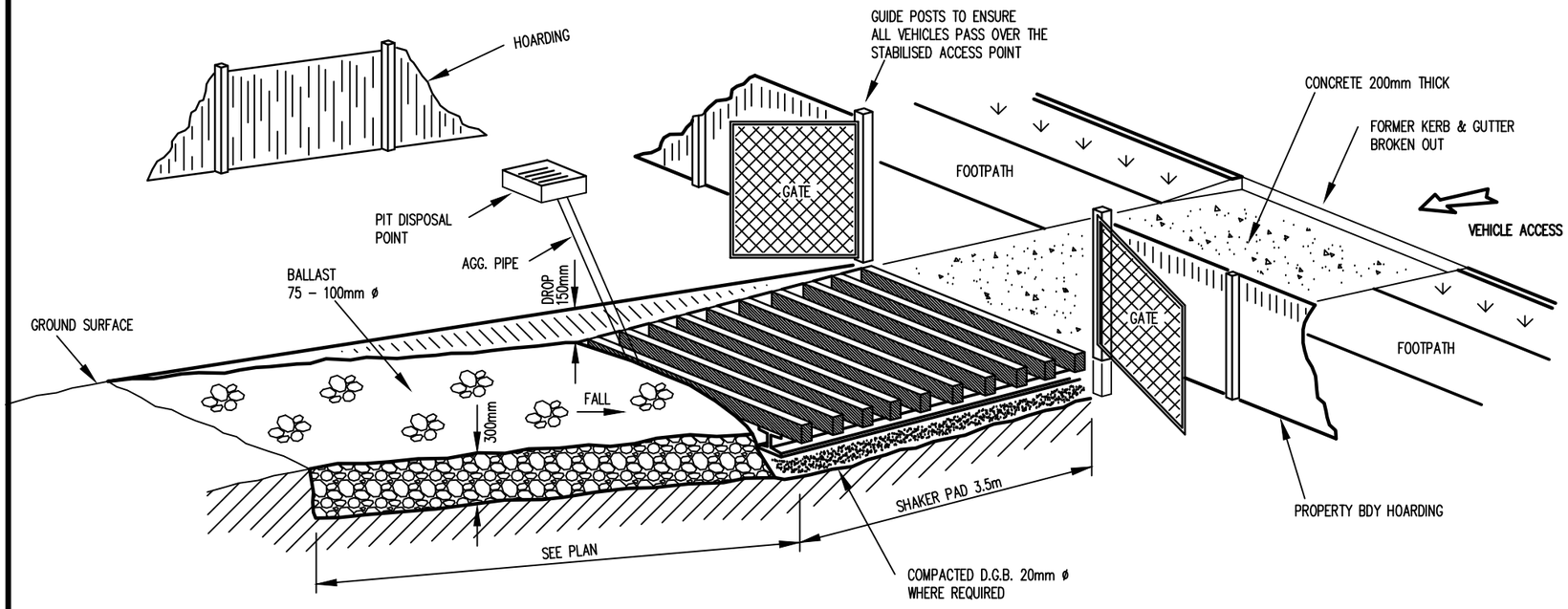
Project Director Approved | Date | North

Project Ref: 200152101S | Drawing No.: S1160 | Rev: P6

A0

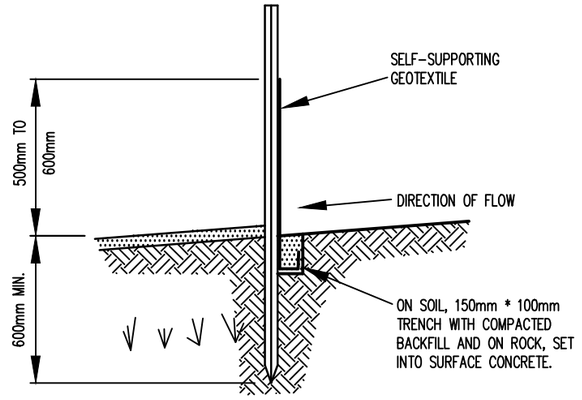
GENERAL CONSTRUCTION NOTES

1. CONSTRUCT FILTER FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND,3m APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UP SLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UP SLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERL



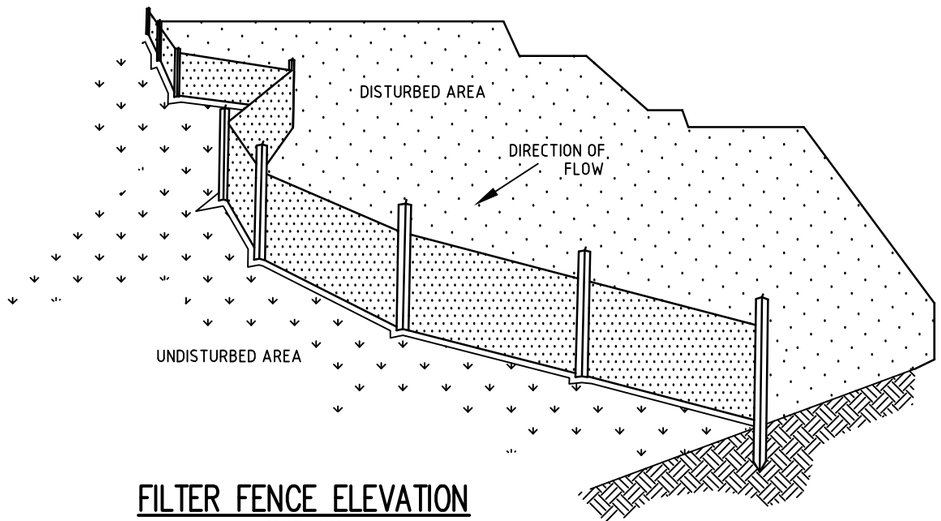
TEMPORARY CONSTRUCTION EXIT

SCALE : NTS



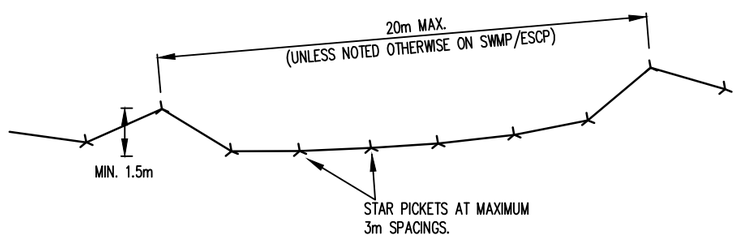
TYPICAL SECTION THRU' FENCE

SCALE : NTS



FILTER FENCE ELEVATION

SCALE : NTS



FILTER FENCE PLAN

SCALE : NTS

DO NOT SCALE

USE FIGURED DIMENSIONS AT ALL TIMES. IF IN DOUBT CHECK WITH MERITON APARTMENTS PTY. LTD. CONTRACTOR/S TO CHECK AND VERIFY ALL LEVELS, DATUMS AND DIMENSIONS ON SITE AND SHALL REPORT ANY DISCREPENCIES OR OMMISSIONS TO MERITON APARTMENTS PTY. LTD. PRIOR TO COMMENCEMENT OF WORK AND DURING THE CONSTRUCTION PHASE.

20 10 0 10 20 30 40 50 70mm

NORTH:

KARIMBLA
CONSTRUCTION SERVICES (NSW)
PTY LIMITED
Level 11, 528 Kent Street, Sydney NSW 2000
Tel: (02) 9287 2888 Fax: (02) 9287 2777
Email: info@design.meriton.com.au
Internet: http://www.meriton.com.au

PROJECT:

DEE WHY TOWN CENTRE
884-896 PITTWATER ROAD
DEE WHY, NSW 2099

DRAWING TITLE:

SEDIMENT CONTROL PLAN

PROJECT No.	DATE:	DRAWING No:	REV:
-	SEPT 16	E-3000-CS	A
DRAWN BY: RIF	SCALE: AS SHOWN		

CAD FILE: S:\DEE WHY-PITTWATER ROAD\CONSULTANTS\BONACCI\for Walter\SEDIMENT-CONTROL.dwg

A3

Annexure 3: Geotechnical Advice

KELLER FOUNDATIONS PTY LTD

Level 1, 4 Burbank Place, Baulkham Hills NSW 2153
PO Box 7986 Baulkham Hills NSW 1755
Telephone (02) 8866 1100
www.kellerfoundations.com.au

Meriton Group
Level 11, Meriton Tower
528 Kent Street
Sydney 2000

Ref: 3013/IR/IR/002

Date: 02 Sept 2016

Attention: Mr Angus Nguyen

Dee Why Town Centre – Retaining Walls

Following our recent discussions, we confirm the following:

1) The shoring system comprises the piled wall, jet grout infill, anchors and props. The anchors and props provide temporary support. In the permanent condition, the temporary anchor and prop support is replaced by the basement slabs. Thus, the basement slabs must be constructed to provide permanent support.

2) The temporary anchors extend beyond the property boundary and so encroach onto neighbouring property. These anchors put active stresses into soils of the neighbouring property. These stress can only be released after the basement and ground floor slabs have been constructed.

3) Vibropile advise against leaving the excavation open for any extended period as this may exceed the design life of the temporary anchors and hence compromise the stability of the basement.

We trust that the above has adequately addressed your concerns in regard to this matter, please do not hesitate to contact the undersigned should you require further information.

Yours faithfully

Iain Robertson
Special Projects Manager
i.robertson@kellerge.com.au

Annexure 4: Acoustic Report

Dee Why Town Centre Development

Excavation Works - Noise and Vibration Impact Assessment

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DOCUMENT CONTROL REGISTER

Project Number	20141016.2
Project Name	Dee Why Town Centre Development
Document Title	Excavation Works - Noise and Vibration Impact Assessment
Document Reference	20141016.2/3107A/R1/YK
Issue Type	Email
Attention To	Karimbla Constructions Services (NSW) Pty Limited Mr Walter Gordon

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	31/07/2015	20141016.2/3107A/R0/YK	YK		TT
1	18/08/2016	20141016.2/3107A/R1/YK	YK		TT

TABLE OF CONTENTS

1 INTRODUCTION

Acoustic Logic has been engaged to assess potential noise and vibration impacts on nearby developments arising from the proposed excavation and piling works as part of the Dee Why Town Centre development project.

We note that a detailed program for the excavation and construction of the development is not available at this stage (this is not typically undertaken prior to project approval) and as such, a detailed noise and vibration impact assessment cannot be undertaken at this stage.

As such, this report presents an “in principle” analysis of potential noise and vibration impacts, and identified activities with the greatest risk to adversely impact nearby development. This should be developed in greater detail once a construction program is finalised.

2 SITE DESCRIPTION / AFFECTED PROPERTIES

The subject site is located at the corner of Pittwater Road and Howard Avenue.

The site is bounded by Pittwater Road to the west, Howard Avenue to the north and Oaks Avenue to the south.

It is proposed to develop this portion of land into a mixed-use residential and commercial precinct, consisting of four residential towers, with two podium levels of retail and commercial tenancies, and four levels of basement car parking.

This assessment relates to the noise and vibration impacts resulting from the proposed excavation works on site, which will primarily include bulk earthworks and shoring activities to enable the development of two basement levels.

Acoustic Logic is instructed that the ground is predominantly sand and hence no rock hammering or sawing operations are envisaged. The proposed works are expected to occur across the entire site (refer Figure 2 below), over an approximate 6 – 8 month period.

The nearest potentially affected receivers within the vicinity of the site are as follows;

- Multi-storey mixed-use development to the east, at 23 Howard Avenue;
- Multi-storey mixed-use developments to the north and south, across Howard Avenue and Oaks Avenue respectively. These developments generally comprise of ground level retail areas with upper level of residential tenancy;
- Dee Why Post Office to the east, at 32-34 Oaks Avenue.

Figure 1 below illustrates the location of subject site, nearest potentially affected properties and unattended noise monitor.

Figure 1 – Site Description (source: SixMaps)

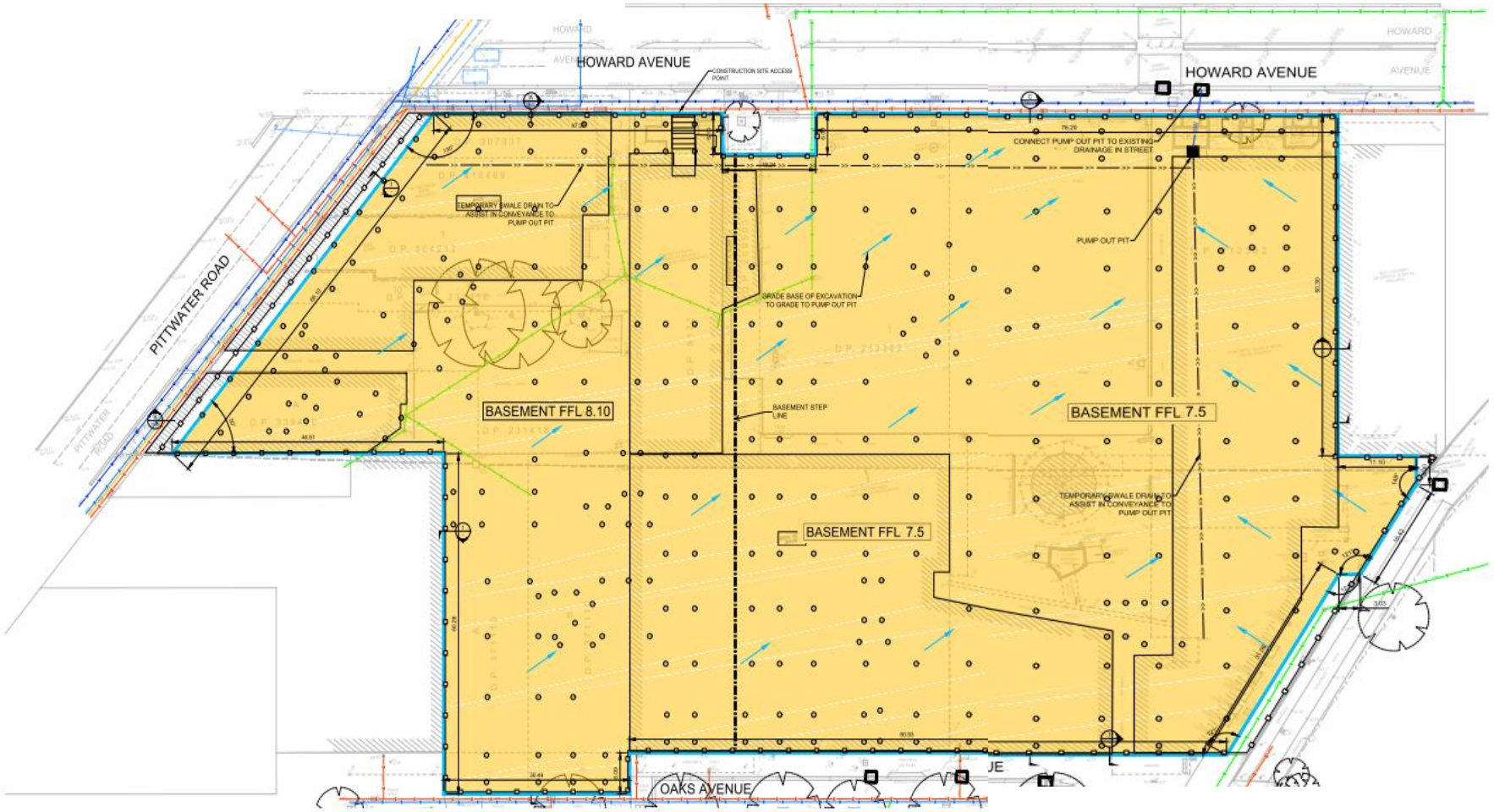

Figure 2 – Proposed Early works, Bulk Earthworks & Shoring Area Plan

3 AMBIENT NOISE MONITORING

Unattended long term noise monitoring was previously conducted by this office at the subject site, to gauge the existing ambient levels. The noise monitor was installed adjacent to the mixed-use receiver at 30 Howard Avenue (refer Figure 1), away from the heavy traffic noise from Pittwater Noise and commercial activities of Oaks Avenue. Monitoring was conducted from the 5th to 11th December 2014, using an Acoustic Research Laboratories noise monitor. The logger was programmed to record in an A-weighted fast response mode, storing 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted.

Measured background noise levels at this location will be representative of the lowest background noise levels at the nearest affected sensitive receivers. Refer to Appendix 1 for detailed noise monitoring data.

Table 1 – Measured Background Noise Levels

Location	**Background noise level dB(A)$L_{90(15minutes(}$**		
	Daytime (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
Monitor Location (figure 1)	50	50	43

4 PROPOSED HOURS OF WORK

Section 2.2 of the EPA's Interim Construction Noise Guideline (ICNG) recommends the following standard hours of construction. Certain activities can be performed outside of these hours, and these are detailed in section 2.3 of the ICNG.

Table 2 – Recommended Standard Hours of Construction Work

Work Type	Recommended standard hours of work
Normal construction	Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays and Public Holidays

5 ASSESSMENT CRITERIA

In the absence of there being any construction noise guidelines in the Warringah Council DCP excavation and construction noise and vibration impacts will be assessed with reference to the following guidelines:

- NSW Environmental Protection Authority (EPA) *Interim Construction Noise Guideline* (ICNG);
- NSW EPA *Assessing Vibration: a technical guideline*;
- German Standard DIN 4150-3 '*Structural Vibration: Effects of Vibration on Structures'*; and
- Australian Standard 2435-2010 '*Guide to noise and vibration control on construction, demolition and maintenance sites*'.

5.1 NOISE IMPACTS

Noise impacts resulting from the bulk excavation and shoring activities will be assessed against the provisions of the NSW EPA ICNG and AS 2436-2010.

5.1.1 EPA Interim Construction Noise Guideline

This guideline nominates acceptable levels of noise emissions above the background noise level. For projects within the recommended standard hours, the guideline recommends a noise level of 10 dB(A) above the background for surrounding affected residential properties. This level is referred to as the "Management Level". Additionally, section 4.1.3 of this guideline also nominates acceptable external noise levels for commercial and industrial receivers and is presented below.

Table 3 – Noise Emission Goal – Residential Properties

Time of Day	Measured Background Noise Level dB(A)L_{90}	Management Level = Background Level + 10dB(A)$L_{eq(15min)}$
Day (7am-6pm)	51*	61

***This level has been determined based on daytime on-site noise measurements.**

Table 4 – Noise Emission Goal – Other Land Uses

Type of Land Use	Management Level dB(A)$L_{eq(15min)}$
Offices and Retail Outlets	70

Where noise from the construction works is above the "management level", the proponent should apply any feasible and reasonable work practices to minimise noise.

If noise emissions are likely to exceed 75 dB(A)$L_{eq(15min)}$ at the boundary of surrounding affected residential receivers, the receiver is deemed to be "highly noise affected". Introduction of

management controls such as scheduling of noisy periods, or respite periods is then recommended.

5.1.2 Australian Standard 2436-1981 "*Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*"

The Australian Standard AS2436 states that where all reasonable and available measures have been taken to reduce construction noise, mitigation strategies may be put in place to reduce levels noise levels to within a reasonable and acceptable level.

For the control and regulation of noise from construction sites, AS 2436:1981 nominates the following:

a. That reasonable suitable noise criterion is established,

b. That all practicable measures be taken on the building site to regulate noise emissions, including the siting of noisy static processes to locations of the site where they can be shielded, selecting less noisy processes, and if required regulating construction hours, and

c. The undertaking of noise monitoring where non-compliance occurs to assist in the management and control of noise emission from the construction site.

The guideline reflects on feasible and reasonable mitigation strategies, management controls and public liaising in the effort to reach realistic comprises between construction sites and potential noise affected receivers.

Based on these criteria the following procedure will be used to assess noise emissions:

- Predict noise levels produced by typical construction activities at the sensitive receivers.
- Adopt management conditions as per AS 2436 in the event of a non-compliance.

5.2 VIBRATION

Vibration caused by construction should be limited to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures; and*
- For human exposure to vibration (amenity), the evaluation criteria presented in the NSW EPA's *Assessing Vibration: a technical guideline* document.

The criteria and the application of this standard are discussed in separate sections below.

5.2.1 Structure Borne Vibrations

German Standard DIN 4150-3 (1999-02) provides a guideline for acceptable levels of vibration velocity in building foundations, to assess the effects of vibration on structures. The table give guidance on the maximum accepted values of velocity at the foundation and in the plane of the highest floor of various types of buildings, to prevent any structural damage.

The table below lists the peak particle velocity, which is the maximum absolute value of the velocity signals for the three orthogonal components. This is measured as a maximum value of any of the three orthogonal component particle velocities when measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 5 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms^{-1})			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

5.2.2 Assessing Amenity – Human Comfort

The NSW EPA's *Assessing Vibration – a technical guideline* is based on the guidelines contained in British Standard BS 6472-1992 '*Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz*'. This guideline provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings.

The recommendations of this guideline should be adopted to assess and manage vibration from the site. Where vibration exceeds, or is likely to exceed, the recommended levels then an assessment of reasonable and feasible methods for the management of vibration should be undertaken.

Table 6 – BS 6472 Vibration Criteria

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	**Time**	**Preferred**	**Maximum**	**Preferred**	**Maximum**	**Preferred**	**Maximum**
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices	Day or night-time	0.02	0.04	0.4	0.8	0.56	1.1
Workshops		0.04	0.08	0.8	1.6	1.1	2.2
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices	Day or night-time	0.64	1.28	13	26	18	36
Workshops		0.64	1.23	13	26	18	36

6 COMMENT / ASSESSMENT

Potential noise and vibration impacts are reviewed below.

6.1 NOISE IMPACTS

6.1.1 Analysis

Noise impacts on nearby development will be dependent on the activity and where on the site the activity is undertaken.

As the subject land is predominantly sand, no hammering or sawing operations are proposed. Piling operations associated with the excavation works will be the loudest typical activity. Work close to the eastern boundary of the site (predominantly along the north-east boundary) will have greatest impact on the adjoining residential receivers at 23 Howard Avenue.

Initial analysis indicates:

- Excavators (dozers with buckets) and Piling rigs will typically be the loudest plant/equipment.
- The following Sound Power Levels are typical for the plant/equipment;
    - Piling –Sheet piling approx. 115 – 20 dB(A)L_{eq} & CFA piling approx. 108 dB(A). We have been informed by the client that sheet piling only proposed in the central part of site.
    - Excavators (no hammer or saw attachments) – approx. 110 dB(A)L_{eq}.

- Piling:
    - Noise levels of upto 81 dB(A) will potentially be generated at the façade of the adjoining multi-storey development at 23 Howard Avenue, from CFA operations when operating within 10m of the site boundary. This will drop to <75 dB(A) for pilling operations approx. 15m from this receiver. Typically, noise levels between 63 – 75 dB(A) can be expected from CFA operations.
    - Noise levels of upto 73 dB(A) can be expected from the sheet piling operations, at the façade of the adjoining multi-storey development at 23 Howard Avenue. This type of piling is only proposed across the central part of the site. Typically, noise levels between 60 – 73 dB(A) can be expected form sheet piling activities
- General Excavation Works – Noise levels of upto 81 dB(A) will potentially be generated at the façade of the adjoining multi-storey development at 23 Howard Avenue, when excavation works occur within 20m of the site boundary. This will drop to <75 dB(A) for pilling operations approx. 25m from this receiver.

  Lower noise levels of between 65 – 70 dB(A) can be expected from excavation operations at all other areas of the site.
- The multi-storey mixed use properties to the north (across Howard Avenue) and south (across Oaks Avenue) will not be as severely impacted as the property at 23 Howard Avenue. The followings levels are predicted;
    - Sheet or Bored Piles – 69 to 75 dB(A)L_{eq}.
    - CFA Piling – 58 to 63 dB(A)$L_{eq.}$
    - Excavation Works – 60 to 65 dB(A)L_{eq}.

  Noise levels at these residences are predicted to be below 75dB(A)L_{eq}.

Noise impacts can be minimised using the following:

- Selection of equipment and process.
- Location of static plant as far as possible from residences.
- Use of screens or enclosures (typically only feasible for static plant).
- Scheduling of noisy activities and provision of respite periods.

Detailed construction noise planning is typically undertaken after engagement of a builder and a construction program is prepared (i.e. – after DA stage) and therefore, detailed planning is not possible at this stage.

6.1.2 Recommendations

In light of the above, we recommend:

- On completion of the construction program, acoustic review of proposed construction activities and plant/methods should be undertaken to identify work items likely to exceed EPA guidelines.

- Use of continuous flight auger piling (CFA) in place of sheet or bored piling, if practicable.

- For those activities likely to generate high noise levels (typically, excavation and piling within 30m of property boundaries) the analysis should identify where on the site are the areas likely to result in high noise levels. This will then assist in determining the likely time period for which high noise levels will occur.

- Identify feasible acoustic controls or management techniques (use of hoardings to provide screening, scheduling of noisy works, notification of adjoining land users) when exceedance of Noise Management Levels are predicted.

- For activities where acoustic controls and management techniques still cannot guarantee compliance with "Highly Noise Effected" targets, implement a notification process whereby nearby development is made aware of the time and duration of noise intensive construction processes.

- In the event of complaint, use of respite periods or similar should be considered. (Typically respite periods should be implemented as a last resort given that they will extend the excavation/shoring time period and in the event that the respite period occurs in the middle for the day, they will serve to prolong the noisy period while providing respite when the majority of residents will not be home in any event.

Through adoption of the above, noise impacts on nearby development can be suitably managed to prevent excessive impacts.

6.2 VIBRATION IMPACTS

Sheet piling operations within the 10-15m of the eastern (north-east) and western (south-western) boundaries of the site, will have potential to impact on the amenity of adjoining land uses. Figure 3 below illustrates these locations.

Excavation in sand (using dozer with bucket) and augured piling is unlikely to generate significant levels of vibration until within 5m of a residential building.

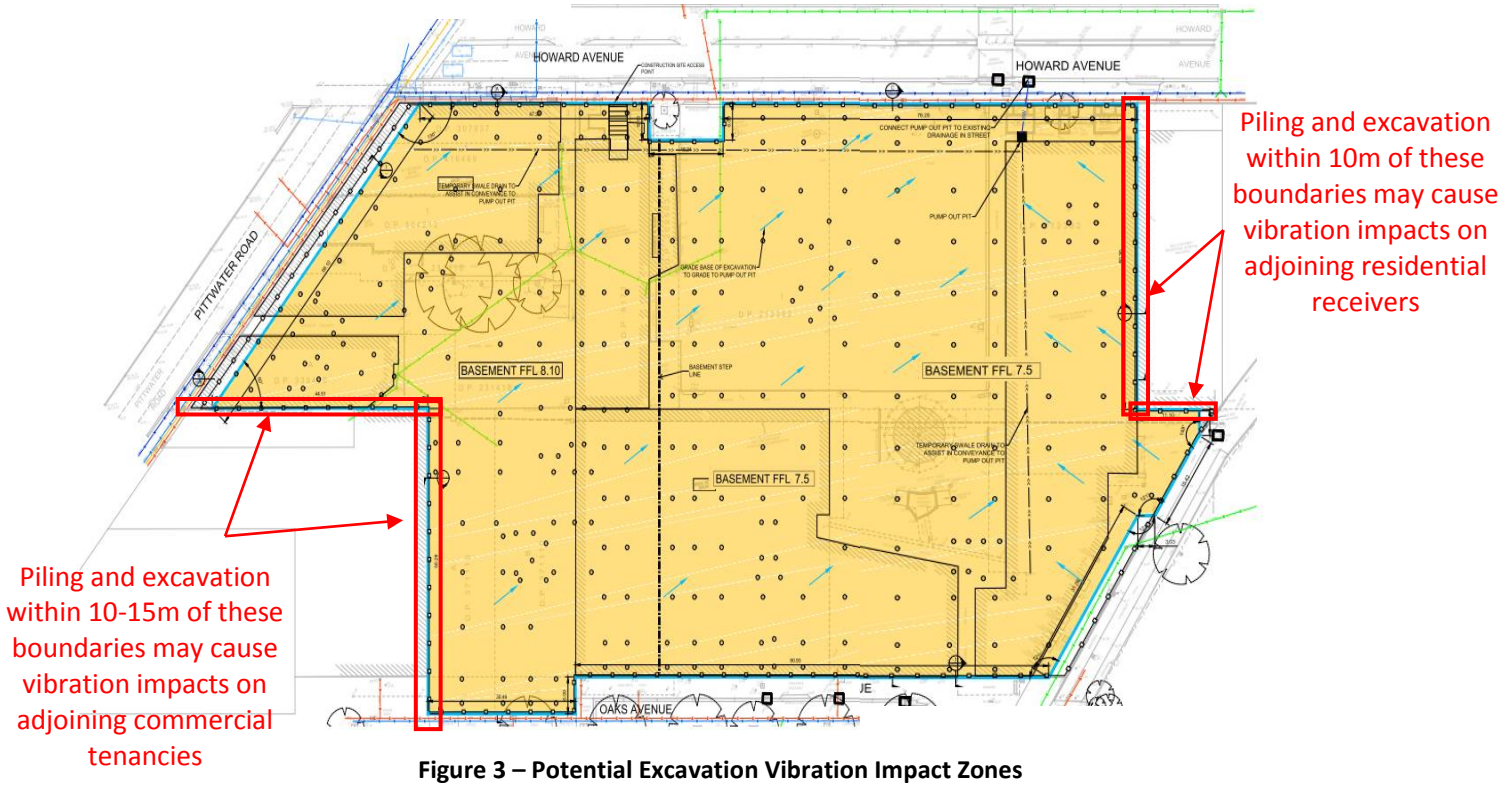

Figure 3 – Potential Excavation Vibration Impact Zones

We recommend:

- For at least the initial stages of excavation and piling, vibration monitoring should be undertaken at the adjoining properties at 23 Howard Avenue and 876A & 878 Pittwater Road, to ensure excessive vibration is not generated from the works. Any monitoring system should allow for rapid feedback to the contractor (for example, SMS notification) in the event that excessive levels are reached.

- Use of continuous flight auger piling (CFA) in place of sheet or bored piling wherever practicable.

Adoption of the above will provide a framework to ensure that appropriate systems for monitoring and management of vibration can be implemented.

7 CONCLUSION

Acoustic Logic has conducted an analysis of noise and vibration impacts as a result of proposed excavation and piling works at the Dee Why Town Centre development.

As with any large scale development, the site has the potential to create noise and vibration impacts on nearby development is not managed, particularly given the proximity to the nearest residences.

We note that bulk excavation (being primarily in sand) will have comparatively small noise and vibration impacts. Shoring works, particularly if sheet piling is proposed, has the potential to create noise and vibration impacts close to or exceeding EPA guidelines. The potential need for noise/vibration mitigation, in particular monitoring of vibration, has been recommended in section 6 of this report.

Detailed analysis of potential noise and vibration impacts, particularly the likely duration of any period when a nearby residence will be significantly impacted, should be determined once a construction program for the excavation process is finalised to determine which of the treatments outlined above is the most practicable at the site.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Yogendra Kalkunte