

total earth care

**Terrestrial Biodiversity Report &
Assessment of Significance (5-Part Test)**

88 Addison Road, Manly NSW 2095

Total Earth Care Pty Ltd
July 19



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Table of Contents

1	INTRODUCTION	1
1.1	Background	1
1.2	Subject Site and Study Area	1
1.3	Proposed Development	1
1.4	Statutory Context	1
1.4.1	NSW Legislation	1
1.4.2	Local Government Legislation – Northern Beaches Council	1
1.5	Aims and Objectives	2
	Map 1. Property Boundaries	3
2	METHODS	4
2.1	Desktop Assessment and Site Survey	4
2.2	Limitations	4
3	SITE DESCRIPTION	5
3.1	General	5
3.2	Topography, Aspect and Hydrology	5
3.3	Riparian Lands and Waterways	5
3.4	Adjacent Land	5
3.5	Vegetation	5
4	RESULTS	8
4.1	Plant Species	8
4.1.1	Threatened Plant Species and populations	8
4.2	Plant Community Type (PCT)	8
4.2.1	Threatened Ecological Communities (TECs)	8
4.3	Fauna Species and Habitat	8
4.3.1	Threatened Fauna	9
4.3.1.1	<i>Long-nosed Bandicoot activity</i>	9
4.3.1.2	<i>Long-nosed Bandicoot habitat</i>	10
4.3.1.3	<i>Long-nosed Bandicoot access within the site and with neighbouring properties</i>	10
4.4	Other Fauna Habitats	11
5	TERRESTRIAL BIODIVERSITY ASSESSMENT	12
5.1	Clause 6.5 (3) and (4) of the Manly Local Environment Plan 2013	12
5.2	Section 3.3.1 a) iv) of the Manly DCP 2013	13
6	ASSESSMENT UNDER SECTION 5A OF THE EP&A ACT	14
6.1	Long-nosed Bandicoot Population at North Head	14
6.1.1	Assessment of Significance (5-part test)	15
6.1.2	Conclusions	17
7	RECOMMENDATIONS	18
8	REFERENCES	19
	Appendix A. Architectural Drawings	20

1 INTRODUCTION

1.1 Background

Total Earth Care (TEC) has been commissioned by Ray Hicks to prepare this Terrestrial Biodiversity Report and Assessment of Significance (5-part Test) for the development proposal at 88 Addison Road, Manly NSW 2095 (Lot A DP440067). The consent authority reviewing this report is Northern Beaches Council.

This Terrestrial Biodiversity Report will:

- Address the potential environmental impacts of the proposal on the Endangered Population of Long-nosed Bandicoot (*Peromyscus nasuta*) and its habitats that may occur on and/or utilise the subject site and study area;
- Prepare any relevant Assessments of Significance (5-part Tests) for populations likely to be impacted by the proposal; and
- Address Clause 6.5 (3) and (4) of the Manly Local Environment Plan 2013.

The conclusions and recommendations within this report will determine whether further planning documents are required such as a Species Impact Statement.

1.2 Subject Site and Study Area

The Subject Site (the Site) comprises the area of land directly affected by the development proposal. The study area comprises the subject site in addition to the surrounding land that may be potentially indirectly affected by the development or affect the development. The locality encompasses a larger area that includes neighbouring properties and includes areas of high biodiversity value nearby.

The site is the paved yard to the rear of the property which links to a laneway which runs parallel to Addison Road. See Map 1 below for the property boundaries.

1.3 Proposed Development

The proposal is for the renovation of the existing deck, which is in a state of disrepair. The ground floor deck footprint will stay the same. The upper level will be extended by 1.095m. Concrete footings and piers will be installed to support this extension. See Appendix A for the Architectural Drawings. A small area of garden bed will be removed under the existing external stairs.

1.4 Statutory Context

1.4.1 NSW Legislation

Section 5A of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) contains a requirement to decide “whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitat. The Act institutes a system for environmental planning and assessment, including approvals and environmental impact assessment.

The NSW *Biodiversity Conservation Act 2016* (BC Act), with associated regulations and maps, repealed the *Threatened Species Conservation Act 1995* (TSC Act) on the 25th of August 2017. The Long-nosed Bandicoot population are listed as a ‘Threatened Species’ under the BC Act and therefore subject to an assessment of significance.

The Endangered population of Long-nosed Bandicoots at North Head is noted as being isolated and disjunct from other populations of the species, and subject to survival pressures including a loss of suitable foraging and shelter habitat, predation, roadkill and reduced genetic diversity. Figure 1 below shows the extent of the population within the North Head area.

1.4.2 Local Government Legislation – Northern Beaches Council

Northern Beaches Council have outlined that proposals in areas mapped as “Terrestrial Biodiversity” must consider and provide an assessment as to whether the proposal is in accordance with Clause 6.5 (3) and (4) of the Manly Local Environment Plan 2013.

The **Subject Site is mapped as an area of Terrestrial Biodiversity** and as such Clause 6.5 of Manly LEP 2013 applies.

Northern Beaches Council have outlined in Section 5.4.2 of the Manly Development Control Plan 2013 that development carried out on land mapped on Schedule 1 – Map D ‘Areas where Assessment of Significance is Required’ must be subject to an assessment of significance (5-part Test). Figure 1 below shows the extent of the Long-nose Bandicoot population on North Head which corresponds to the area scheduled.

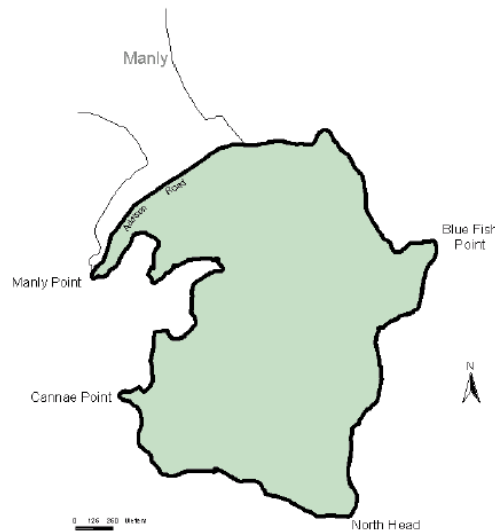


Figure 1. Population Extent of the Long-nosed Bandicoot at North Head (NSW Scientific Committee 1997)

1.5 Aims and Objectives

The aims of the Terrestrial Biodiversity Report are to:

- describe the existing flora and fauna within the subject site based on current survey effort, database searches and review of existing reports of the subject site and surveys of the wider study area;
- confirm the presence or likely occurrence of threatened species, populations and ecological communities (or their habitats), as listed under the Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999 and NSW *Biodiversity Conservation* (BC) Act 2016;
- integrate and fulfil the requirements of planning instruments relating to the site for federal, state and local levels;
- assess the impacts of potential direct and indirect impacts on flora and fauna, including threatened species, populations or endangered ecological communities or their habitats;
- make recommendations to avoid-mitigate-compensate (offset) the identified impacts, and;
- clearly set out environmental management measures that are to be implemented before, during and after construction. This includes the implementation of measures to protect and rehabilitate the remaining vegetation, which may recommend a Vegetation or Bushland Management Plan.

Title: Property Boundaries

Map No: 1

Site: 88 Addison Road, Manly

Client: Ray Hicks

Date: June 2019

Project No: C11382

Author: Georgina Barron

Legend



Site



Lot



Data Source:
Total Earth Care
SIX Maps



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2 METHODS

2.1 Desktop Assessment and Site Survey

A desktop assessment was conducted which searched mapped records of each species (OEH Wildlife Atlas).

The field survey was conducted over two (2) person hours on the 20th of June 2019. Weather conditions during the day were scattered clouds (around 14°C) with light winds.

The site assessment targeted the Long-nosed Bandicoot habitat supported within and surrounding the Subject Site. The site assessment included a literature review of species' habitat requirements, detailed survey of potential habitat features such as rock overhangs, dense vegetation and rock piles, and detailed searches for indirect evidence of species' presence such as nests, scats or diggings.

All fauna sightings, as well as fauna habitat types and evidence of fauna activity, were recorded and an inventory of species was compiled (Table 2).

In addition to an assessment of the Subject Site, an assessment was undertaken of the laneway to the rear of the properties along Addison Road and the roadside vegetation along Wood Street and Addison Road.

A general botanical survey was conducted with reference to existing vegetation community descriptions and mapping by others for the locality (NPWS 2002; OEH 2016). Threatened flora likely to occur within the locality were surveyed using the *NSW Guide to Surveying Threatened Plants* (OEH 2016). Surveys on the subject site were generally random meanders (DECC 2004), and focused on identifying native vegetation and included;

- the identification of native and exotic plant species according to *Field Guide to the Native Plants of Sydney* (Robinson, 2003), *Weeds of the south-east: an identification guide for Australia* (Richardson *et al*, 2006) and *PlantNET* (Royal Botanic Gardens Trust, 2019), with reference to recent taxonomic changes;
- targeted searches for threatened plant species according to the “random meander” method (Cropper 1993)
- the identification and mapping of plant communities based on current site conditions, soils and species list, and previous broad-scale mapping including *The Native Vegetation of the Sydney Metropolitan Area Version 3.0* (OEH 2016) and accompanying descriptions and diagnostic tests by Specht & Specht (1999).

Many of exotic garden plantings have not been recorded as part of this assessment.

2.2 Limitations

Field surveys were conducted over two person hours on 20th June 2019. If more than 3 months (one season) has lapsed between this assessment and start of works, it is recommended that a pre-clearance fauna survey be conducted by a suitably qualified Ecologist.

As stated by the DECC (2004) ‘*The absence of a species from survey data does not necessarily mean it does not inhabit the survey area. It may simply mean that the species was not detected at that time with the survey method adopted and the prevailing seasonal or climatic conditions.*’ Therefore, the relative brevity of the survey and its timing mean that the full spectrum of fauna species and ecological processes likely to occur on the site cannot be fully quantified or described in this report. These limitations have been partly addressed by identifying potential habitats for fauna species and assessing the potential for these species to occur on the site based on previous records, the type and condition of habitats present, the land use throughout the subject site, surrounds and the landscape context.

3 SITE DESCRIPTION

3.1 General

The subject site is a residential property located in the suburb of Manly in the Northern Beaches LGA. The property is a townhouse with Addison Road to the north-west and an access laneway to the south-east. This laneway runs the length of the block and is shared by properties 86A to 106 Addison Road. It is surrounded by other urban residential properties with limited vegetation. The property itself has no garden but instead has a paved rear yard. Vegetation consists of small garden borders, two large trees, a juvenile tree, a palm and potted plants. There are no grassy areas. A two-storey deck area is located on the south-eastern side of the house. There is a large open cavity under the deck. There is a walkway along the south-western side of the house. At the front of the house, bordering Addison Road, there is a small enclosed courtyard.

3.2 Topography, Aspect and Hydrology

The courtyard at the front of the property is 20m above sea level and the rear of the property is at 18m elevation. Both the yards at the front and the rear of the property are level. There is a slight slope in the rear yard towards the rear laneway. The yard is open to the laneway with no walls or fences to restrict access. There are stairs along the path to the south-west of the house.

3.3 Riparian Lands and Waterways

No riparian lands or waterways exist on the site.

3.4 Adjacent Land

Generally, the study area and subject site are situated within a modified urban landscape setting that has a relatively long history of development including low to medium density housing and commercial complexes. The closest natural area is North Head, part of Sydney Harbour National Park approximately 470m to the south-east. There is no connectivity between the subject site and the North Head part of the Sydney Harbour National Park.

3.5 Vegetation

No remnant native vegetation was observed during the site inspection.

The site consists of a small paved courtyard. There is a large *Radermachera sinica* adjacent to the southern corner of the existing deck and a juvenile tree of the same species next to it. There is also a Japanese Maple (*Acer palmatum*) on the western fence line. There are planted Peace Lilies (*Spathiphyllum sp.*) under the existing stairs to the upper level of the deck and there is a Kentia Palm (*Howea forsteriana*) adjacent to the stairs. There are several pot plants throughout the courtyard.

See Figure 2 - Figure 11 which show the vegetation structure on the Subject Site.



Figure 2. Photo of the rear of the property with the existing two-storey deck.



Figure 3. The front of the property



Figure 4. The location of one of the proposed concrete footings between the Japanese Maple and the *Radermachera sinica*.



Figure 5. The laneway to the rear of the property, facing south-west towards Wood Street.



Figure 6. The laneway to the rear of the property, facing north-east.



Figure 7. Cavity under the existing deck.

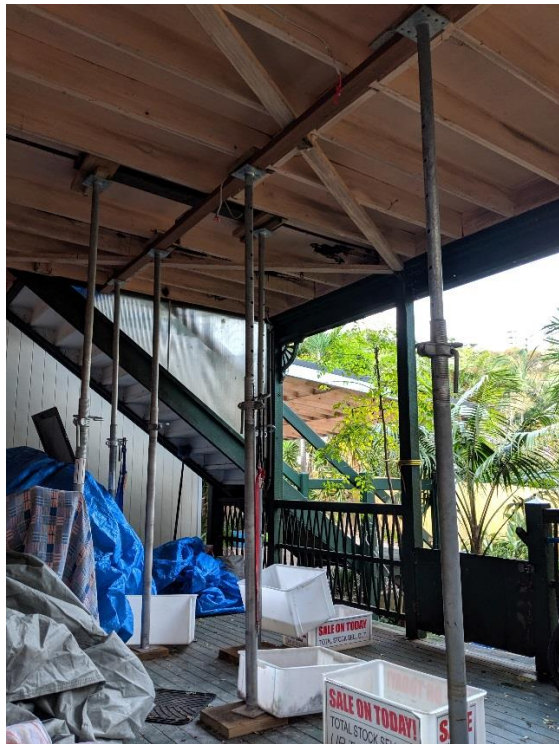


Figure 8. Supports under the existing deck which is in disrepair.

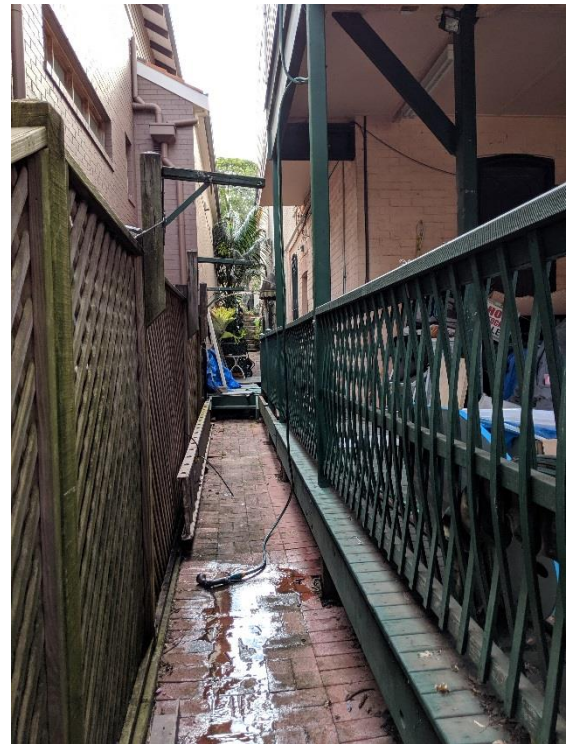


Figure 9. Path along the south-west side of the house.



Figure 10. Existing stairs to the upper level of the deck and area where the eastern footing will be installed.

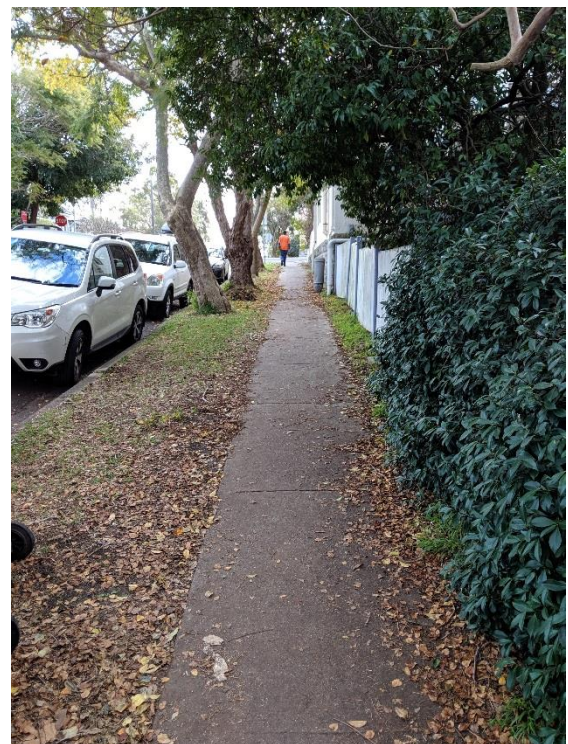


Figure 11. Roadside vegetation along Wood Street.

4 RESULTS

4.1 Plant Species

A flora inventory for the site is provided in Table 1. The methodology of a random meander within the study site included the subject site and the immediate surrounding contiguous vegetation.

A total of ten (10) plant species were recorded during the flora survey. The survey identified nine (9) exotic species, and one (1) exotic species.

Table 1. Flora species recorded during the site survey

Family	Exotic	Scientific Name	Common Name	BC Status	EPBC Status
Agavaceae	*	<i>Yucca sp.</i>			
Amaryllidaceae	*	<i>Clivia spp.</i>			
Apocynaceae	*	<i>Plumeria sp.</i>	Frangipani		
Araceae	*	<i>Spathiphyllum sp.</i>	Peace Lily		
Araliaceae	*	<i>Schefflera arboricola</i>			
Arecaceae		<i>Howea forsteriana</i>	Kentia Palm	P	
Bignoniaceae	*	<i>Radermachera sinica</i>	China Doll		
Bromeliaceae	*	<i>Billbergia sp.</i>			
Sapindaceae	*	<i>Acer palmatum</i>	Japanese Maple		
Strelitziaceae	*	<i>Strelitzia nicolai</i>			

*P= Protected

4.1.1 Threatened Plant Species and populations

No threatened flora species or populations listed under the BC Act were recorded on the subject site in the current investigation.

4.2 Plant Community Type (PCT)

The site is characterized as Urban Exotic Garden with no local remnant vegetation remaining.

The site consists of a small paved yard. There is a large *Radermachera sinica* adjacent to the southern corner of the existing deck and a juvenile tree of the same species next to it. There is also a Japanese Maple (*Acer palmatum*) on the western fence line. There are planted Peace Lilies (*Spathiphyllum sp.*) under the existing stairs to the upper level of the deck and there is a Kentia Palm (*Howea forsteriana*) adjacent to the stairs. There are several pot plants throughout the courtyard.

4.2.1 Threatened Ecological Communities (TECs)

No threatened ecological communities listed under the BC Act were recorded on the subject site in the current investigation.

4.3 Fauna Species and Habitat

No fauna species were recorded during the current field survey. The Echidna, Australian Brush Turkey and Noisy Miners were identified as regular visitors by the property owner. However, the Echidna has not been seen recently since the installation of the fence along the northern border of 19 Wood Street. All fauna species are listed in Table 2.

The majority of fauna species recorded on the subject site are generally typical of urban areas, urban fringes and adjoining natural areas within the Sydney Basin Bioregion. They are usually widespread in distribution and common to abundant within their ranges.

It is likely that the low record of fauna observations during the survey were due to the proximity to high density of housing in the area.

Table 2. Fauna species recorded during the site survey

Order	Family	Scientific Name	Common Name	Status*	Obs Type ¹
Aves	Galliformes	<i>Alectura lathamii</i>	Australian Brush-turkey	P	Per comms.
Aves	Passeriformes	<i>Manorina melanocephala</i>	Noisy Miner	P	Per comms.
Mammalia	Monotremata	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	P	Per comms.
Mammalia	Peramelemorphia	<i>Perameles nasuta</i>	Long-nosed Bandicoot	P	F

¹Observation Type: F Tracks/Scratchings, Per comms. Communication with the owner

* P = Protected

4.3.1 Threatened Fauna

No threatened fauna species listed under the BC Act were recorded on the subject site in the current investigation.

Two (2) Endangered fauna populations, the Endangered Population of Long-nosed Bandicoot (*Perameles nasuta*), and the Endangered Population of Little Penguins (*Eudyptula minor*), listed under the BC Act have previously been recorded within the locality. The subject site is within the known population extent of the Long-nosed Bandicoot.

The site survey results, and habitat suitability and access are described below.

4.3.1.1 Long-nosed Bandicoot activity

During the field survey some potential evidence of conical diggings by the Long-nosed Bandicoot were detected in the roadside verge along Wood Street (Figure 12). No diggings were detected within the Subject Site and the property owner advised that they had never seen bandicoots in their property in the 30 years that they have owned it.



Figure 12. Possible bandicoot diggings in grass along Wood Street.

4.3.1.2 *Long-nosed Bandicoot habitat*

An essential habitat requirement for this species appears to be a mosaic of both open and dense vegetation. Bandicoots forage opportunistically on invertebrates and plants but also take fungi, seeds, fruit and small vertebrates. During the day, individuals retreat into dense vegetation where they occupy nests made of dry grass, twigs and leaf litter constructed in depressions in the ground or at the base of trees.

The habitat within the Subject Site is limited. There are small areas of potential foraging in the Peace Lilies under the existing stairs and the cavity under the existing deck could provide some hiding shelter during foraging activities. The site does not provide suitable nesting habitat due to the generally sparse coverage.

Despite some access for bandicoots to the potential foraging habitat under the stairs, the site lacks quality refuge and connective habitat which makes the subject site a low quality habitat and is unlikely to be frequently used by bandicoots.

4.3.1.3 *Long-nosed Bandicoot access within the site and with neighbouring properties*

Bandicoot access within the Subject Site is limited due to the lack of suitable refuge habitat, such as dense, low, clumping, vegetation, that would be used during foraging activities. No other habitat for bandicoots was identified on the property.

The site is open along the south-eastern boundary to the rear laneway. The remaining three property boundaries are closed and provide no access for bandicoots. The north-western boundary adjacent to Addison Road is a brick wall, the north-eastern boundary is the adjoining wall to the house at 90 Addison Road and the south-western property boundary is marked by a fence which does not have holes or sufficient clearance for bandicoot access.

Potential habitat was surveyed along the laneway to the rear of the property and along Wood Street and Addison Road. Potential bandicoot diggings in the form of conical holes were identified in the grass verge along Wood Street (Figure 12).

4.4 Other Fauna Habitats

Other fauna habitats features include highly modified groundcover which would provide foraging for small and medium birds, and reptiles, and stone retaining walls which would provide foraging or sheltering for local reptiles.

Table 3. Fauna habitat types and resources.

Scale	Habitat Features	Habitat Resources & Fauna
Locality	Regional Bushland Reserves – Sydney Harbour National Park	Remnant and regrowth native plant communities generally with statutory protection for conservation.
	Landscape planted and street trees, remnant vegetation on private land	Scattered native or exotic shrubs and trees with some connectivity.
Site Specific	Broken canopy of native and/or exotic trees	Foraging, nesting, roosting and sheltering for small, medium and large birds, arboreal mammals and megachiropteran and microchiropteran bat species.
	Sparse and disjunct midstorey and understorey	Foraging, nesting, roosting and sheltering for small and medium birds, reptiles, arboreal mammals and arboreal frogs.
	Highly modified groundcover	Foraging for small and medium birds, reptiles, amphibians and terrestrial mammals.
	Landscape features including stone retaining walls	Foraging or sheltering for reptiles, amphibians and terrestrial mammals.
	Damp areas	Foraging and sheltering for reptiles and amphibians.

Overall the subject site is a small area of urbanised landscape that lacks many of the natural habitat features and resources that are important in the maintenance of native fauna diversity and life cycles, including fully structured vegetation, a diverse shrub layer for food sources and protection, leaf litter and loose surface soils, sandstone outcrops and ledges, loose rocks, logs on the ground and rotting stumps. Native fauna habitat is mainly limited to tree canopy with the lower strata discontinuous, highly modified and disturbed by past and current land use. In addition to the altered nature of fauna habitats, intense human activities within the subject site and surrounding area are likely to reduce fauna habitat potential. These activities include high levels of night light, noise, keeping of domestic companion animals and ongoing maintenance of the existing vegetation cover.

5 TERRESTRIAL BIODIVERSITY ASSESSMENT

5.1 Clause 6.5 (3) and (4) of the Manly Local Environment Plan 2013

The following information relating to Clause 6.5 (3) and (4) of the MLEP 2013 has been provided below.

3ai) Is the proposal likely to have any adverse impact on the condition, ecological value, and significance of the fauna and flora on the land?

The survey found evidence of at least three (3) native species using the site and potential evidence of Long-nosed Bandicoots within 20m of the site (see Table 2). These species are generally typical of highly modified and fragmented urban environments, the bird species also being highly mobile.

Currently, the site currently contains approximately 15m² of potential foraging habitat for long-nosed bandicoots, and almost no contiguous vegetative connectivity to immediately adjacent areas which also contain potential foraging habitat.

The proposal does not significantly modify the existing foraging areas. The Peace Lilies under the existing stairs will be removed. However, these are not native flora species and would only provide a small amount of foraging habitat and are too sparse to provide sufficient sheltering habitat.

The proposal is unlikely to have any adverse impact of the condition, ecological value, and significance of the fauna and flora on the land.

3aii) Is the proposal likely to have any adverse impact on the importance of vegetation on the land to the habitat and survival of native fauna?

The site currently does not contain any vegetation which would be important habitat for the survival of local native fauna. The Peace Lilies planted under the existing stairs will be removed as part of the proposal. However, these are not native flora species and would only provide a small amount of foraging habitat and are too sparse to provide sufficient sheltering habitat.

The proposal is unlikely to have any adverse impact on the importance of vegetation on the land, and is unlikely to adversely impact the habitat and survival of native fauna.

3aiii) Is the proposal likely to fragment, disturb or diminish the biodiversity structure, function and composition of the land?

The site is located within a highly modified, disturbed, and fragmented landscape with a long history of disturbance.

The proposal is unlikely to further fragment, disturb or diminish the biodiversity structure, function and composition of the land.

3aiv) Is the proposal likely to have any adverse impact on the elements providing connectivity on the land?

The site currently only has good connectivity for highly mobile fauna (e.g. birds), and limited connectivity for arboreal and ground dwelling species. The site is open along the south-eastern boundary to the rear laneway. However, the remaining three property boundaries are closed and provide no access for bandicoots.

The proposal is unlikely to have any adverse impact on the elements providing connectivity on the land.

3b) Does the proposal have any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development?

The area of the lower deck is not being altered, minimising the impact of the works. Renovations are only being conducted due to the deck being in a state of disrepair. The upper deck is being extended by 1.095m. Concrete footings and piers will be installed to support this extension. No trees will be removed as a result of the installation of the concrete footings. The Peace Lilies under the existing stairs will be removed as a result of the proposal. However, these are planted exotic ornamental species which hold low foraging value to bandicoots. The development will have minimal impact on the ecological value of the site.

Under Clause 6.5 (4) it would not appear that this proposal is likely to result in “significant adverse” environmental impact that that would necessitate looking for additional alternatives or mitigation measures.

5.2 Section 3.3.1 a) iv) of the Manly DCP 2013

As the subject site is located in the area for the known population extent of the Long-nosed Bandicoot (Figure 2) Section 3.3.1 Landscaping Design of the MDCP 2013 applies.

Will areas adjacent of native vegetation be designed to be sympathetic to the natural environment in order to protect and enhance the area as habitat for native fauna?

The proposed action does not involve the clearing or planting of any new vegetation within the Subject Site, thus this clause is not considered to apply to the proposal. Extant vegetation within the Subject Site will be retained throughout the period of the proposed action.

a) iv) In areas of habitat for Long-nosed Bandicoots, does the landscape design include native plant species to provide low dense clumping habitat for potential foraging and nesting habitat?

The Subject Site contains very little vegetation, consisting of a paved courtyard which is bordered by small flowerbeds containing planted exotic ornamental species such as Peace Lilies. The Peace Lilies under the existing stairs will be removed as a result of the proposal but the impact will be minimal due to the low quality of the habitat. There is no landscape design as there will be minimal impact to the existing vegetation.

Should planting be conducted the planting guide in the Manly DCP prescribes that native flora species with low, dense clumping habit be planted, such as those suggested in the clause (*Lomandra* sp., *Dianella* sp., *Banksia spinulosa*, *Caustis* sp., *Xanthorrhoea* sp., *Isolepis* sp., *Juncus* sp., *Adiantum* sp., *Calochlaena* sp., *Callistemon* sp., *Gleichenia* sp., and tussocky native grasses [eg. Kangaroo Grass]).

6 ASSESSMENT UNDER SECTION 5A OF THE EP&A ACT

Northern Beaches Council have outlined in Section 5.4.2 of the Manly Development Control Plan 2013 that development carried out on land mapped on Schedule 1 – Map D ‘Areas where Assessment of Significance is Required’ must be subject to an assessment of significance (5-part Test).

The Subject Site is mapped as occurring within the area requiring an Assessment of Significance for the Long-nosed Bandicoot Endangered Population on North Head.

6.1 Long-nosed Bandicoot Population at North Head

Unless otherwise stated, the following information is summarised from NPWS (2004) and the Long-nosed Bandicoot, North head – profile (NSW Office of Environment & Heritage, 2019).

Long-nosed bandicoots are a nocturnal marsupial. They are medium sized (1-2 kg) with grey-brown colouring above and a creamy underbelly, a long pointy nose and a sparsely haired tail.

The habitat of Long-nosed Bandicoots ranges from rainforest through to wet and dry forest, heathland and grassland. At the ‘macro-habitat’ level, an essential habitat requirement for this species appears to be a mosaic of both open and dense vegetation. Bandicoots forage opportunistically on invertebrates and plants but also take fungi, seeds, fruit and small vertebrates. During the day, individuals retreat into dense vegetation where they occupy nests made of dry grass, twigs and leaf litter constructed in depressions in the ground or at the base of trees. Movement corridors comprising suitable refuge from predators are also important for this species.

Studies on North Head concluded that bandicoots preferred open and open/scrub habitats; Chambers (1991) hypothesised that this may reflect a tendency to utilise those feeding sites that were close to shelter. Similarly, both Chambers (1991) and Scott (1995) found that feeding activity was concentrated on suburban lawns where primary prey items included beetles, ants, monocot leaf and stem material and fungi. On North Head, bandicoots have been observed nesting in dense shrubs, long grass, exotic vegetation (e.g. Lantana and Pampas Grass) and in residential backyards. Chambers (1991) concluded that vegetation structure was more important than floristics in determining habitat preference in bandicoots.

The Final Determination of the NSW Scientific Committee (1997) for the listing of Long-nosed Bandicoots at North Head as an ‘endangered population’ (under the TSC Act) defined the distribution of the North Head population as the area shown in Figure 1. This area is approximately 360ha which includes Sydney Harbour National Park (160ha), the former Department of Defence lands and National Artillery Museum (72ha), the North Head Sewerage Treatment Plant (20ha), St Patrick’s Estate (25ha), Manly Hospital (15ha), the Australian Institute of Police Management (3ha), Manly Council reserves (including Spring Cove, Shelley Beach and Little Manly Point - 25ha) and part of residential Manly (40ha). Bandicoots are widely distributed within this area, including residential backyards.

Although mating may take place throughout the year, there is a trough in breeding activity between late autumn and mid-winter (Stoddart 1995). Female bandicoots are able to breed for the first time at four months of age while males may mate at five months. This species has the lowest gestation period of any marsupial at 12.5 days. The young are carried in the pouch for 50-54 days and then left in the nest while the female forages. They are weaned at 60 days and females are able to mate again at this time. Mean litter size is 2.3 and up to four litters are produced in a single season. On North Head, breeding begins in mid-winter and continues for 8-10 months.

6.1.1 Assessment of Significance (5-part test)

The following factors of Part 1, Section 5A of the EP&A Act are taken into account in determining if there will be significant effect from the proposed development on the endangered Long-nosed Bandicoot population at North Head.

- (a) *in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The Long-nosed Bandicoot Population at North Head is listed as a 'threatened species' under Schedule 1 of the BC Act. No direct impacts to bandicoots have been identified as the vegetation on site is of insufficient density that individuals would be harmed or disrupted during construction. There is no suitable breeding or nesting habitat on site. The Peace lilies under the existing stairs will be removed as result of the proposal. However, these are not native flora species and would only provide a small amount of foraging habitat and are too sparse to provide sufficient sheltering habitat. In context of the habitat available opposite the property, the potential foraging habitat that will be lost is minimal.

Therefore the proposal is unlikely to have an adverse effect on the life cycle of the species, such that a viable local population of the species is likely to be placed at risk of extinction.

- (b) *in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*
- i. *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
 - ii. *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,*

The Long-nosed Bandicoot Population at North Head does not fall under the listing of 'an endangered ecological community or critically endangered ecological community' as defined by the BC Act.

- (c) *in relation to the habitat of a threatened species or ecological community:*
- i. *the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*

The Subject Site consists of a paved courtyard with three trees, a Kentia Palm and small garden beds with ornamental species. There is limited foraging and nesting habitat. The proposal is for the renovation of the existing deck which is in a state of disrepair. The ground floor deck footprint will stay the same. The upper level will be extended by 1.095m. Concrete footings and piers will be installed to support this extension. The planted Peace Lilies under the existing stairs will be removed as a result of the proposal. However, these are exotic ornamental plants which provide limited foraging habitat.

- ii. *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*

There is limited foraging and nesting habitat present within the site which largely consists of a paved courtyard. This limited habitat is already fragmented and isolated by the nature of the urbanised landscape. The proposal will result in the removal of the planted Peace Lilies under the existing stairs. However, these are exotic ornamental plants which provide limited foraging habitat. This loss of vegetation will not cause the available habitat to become more fragmented or isolated from other areas of habitat.

- iii. *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,*

The foraging habitat on site will not be significantly altered. The planted Peace Lilies under the existing stairs will be removed as a result of the proposal. However, these are exotic ornamental species which provide limited habitat and so potential habitat that may be lost under this proposal has no significant importance in the locality.

- (d) *whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

The subject site is in not in an area that is mapped as declared area of outstanding biodiversity value under the BC Act.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A “threatening process” is defined under the BC Act as “a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities”. Further to that, “key threatening processes” are threatening processes specified in Schedule 4 of the BC Act.

Four “key threatening processes” listed under Schedule 3 of the TSC Act are considered to be of relevance to the Endangered population of Long-nosed Bandicoots in the context of the current proposal:

- competition and grazing by the feral European Rabbit;
- predation by the Feral Cat;
- predation by the European Red Fox; and
- clearing of native vegetation.

The proposal will not result in the operation of, or increase the impact of, any of the Key Threatening Processes listed for the Endangered Population of Long-nosed Bandicoots at North Head.

Conclusion of Assessment of Significance

In light of the consideration of the above five factors (a to e), the proposed development for the subject site is not likely to impose ‘a significant effect’ on the endangered population of the Long-nosed Bandicoot at North Head, as:

- the proposal is **unlikely** to have an adverse effect on the life cycle of the endangered Long-nosed Bandicoot Population at North Head such that a viable local population of the species is likely to be placed at risk of extinction;
- the proposal is not likely to result in the modification of the landscape of the subject site to the extent that access or movement corridors to potential foraging and sheltering habitat will be further fragmented or isolated from other areas of habitat in the locality;
- the proposal does not constitute part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Consequently, a further Biodiversity Assessment report is not required to be prepared for the development application.

6.1.2 Conclusions

The subject site forms part of the known larger foraging habitat for the bandicoot population. Evidence of bandicoot activity was found approximately 20m to the south-west in the grass verge along Wood Street. No evidence of bandicoots was found during the site survey on the subject site.

The site has the limited potential to be utilised by bandicoots for occasional foraging. There is access to the rear of the property, however the property consists of a concrete courtyard with little vegetation. The proposal will result in the removal of the planted Peace Lilies under the existing stairs. However, these are exotic ornamental plants which provide limited foraging habitat. There is a lack of connective vegetation which facilitates safe movement between the site and nearby vegetation.

The Assessment of Significance finds that the proposal is unlikely to impose a significant effect on the Long-nose bandicoots of the North Head population.

Lack of suitable sheltering habitat on the site makes it highly unlikely that any individual bandicoots would be harmed or disturbed during the construction phase of the proposal.

7 RECOMMENDATIONS

The following recommendations are made with regard to the proposed development.

- Include information about both Endangered Populations during site briefing for all staff;
- Limit works to the hours of 7:00 am to 5:00 pm daily;
- Only store materials within the existing hard surface areas on the site;
- Any weeds identified listed under the Biosecurity Act 2015 should be managed under legal obligations.
- Keep domestic dogs and cats indoors at night to prevent predation.
- All machinery and construction material stock piles are to be inspected daily prior to operations commencing to ensure that no bandicoots are sheltering.
- If an injured bandicoot is found, it must be reported to the NPWS Harbour North Office on 9977 6732, or if unavailable contact the Sydney Metropolitan Wildlife Service on 9413 4300.
- If a dead bandicoot is found, it must be reported to NPWS on the above number. A NPWS Ranger will need to check the body for a microchip, therefore, if possible put the body in a plastic bag and refrigerate or keep cool.

8 REFERENCES

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Appendix A. Architectural Drawings

DEVELOPMENT APPLICATION

ALTERATIONS + ADDITIONS
No. 88 ADDISON ROAD, MANLY



ARTISTS IMPRESSIONS



DRAWING INDEX		
DRAWING #	DRAWING NAME	REVISION
1	COVER PAGE	a
2	SITE PLAN + SITE ANALYSIS PLAN	a
3	FLOOR PLANS	a
4	ELEVATIONS + SECTION A-A	a
5	ELEVATIONS	a
6	SHADOW DIAGRAMS AT 9AM	a
7	SHADOW DIAGRAMS AT 12PM	a
8	SHADOW DIAGRAMS AT 3PM	a

Thursday, 30 May 2019

NOTES:

These drawings shall be read in conjunction with all structural & other consultants drawings & specifications and with such other written instruction as may be issued during the course of the contract.

Any discrepancies shall be referred to the building designer for decision before proceeding with the work.

Figured dimensions to be taken in preference to scaling from drawings.

During construction the building shall be maintained in a stable condition & no part shall be overstressed.

All workmanship shall be in accordance with the requirements of the SAA codes & by-laws & ordinances of the relevant building authority.

Dimensions are in millimetres. R.L's are in metres to A.H.D.

All dimensions and levels shall be checked by the builder prior to the commencement of the works.

All timber framing sizes & spans to be in accordance with SAA timber framing code AS 1684.

All bracing of roof & wall framing to satisfy wind speed design category in accordance with BCA & AS 4055 to engineers certification.

All reinforced concrete shall be in accordance with engineers details.

Builder/developer to maintain erosion control in accordance with the clean waters act 1970.

Termite treatments in accordance with AS 3660 & AS 3660 part 1.

Builder to verify location of all services & vegetation prior to commencement of works.

All opening sizes to be confirmed on site prior to ordering of windows & doors.

All Structural Steel is to be protected against corrosion in ccordance with Structural Engineers recommendations.

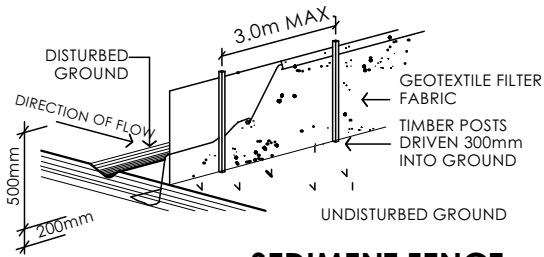
The Waterproofing of all work is the builders responsibility.

All building work must be carried out in accordance with the Building Code of Australia.

SITE NOTES:

- REMOVE EXISTING STRUCTURES ON SITE AS NOTED
- NO KNOWN WATERCOARSES OR WATERWAYS ON SITE
- NO CUT AND FILL REQUIRED
- PROVIDE SILTATION BARRIER AS REQUIRED BY COUNCIL
- HARVESTED RAINWATER TO BE DIRECTED TO EXISTING SYSTEM
- NO EXISTING TREES TO BE REMOVED
- THE BUILDING SITE IS TO BE SECURED BY A SAFETY FENCE TO PROHIBIT UNAUTHORISED PUBLIC ACCESS DURING THE COURSE OF CONSTRUCTION
- ALL LEVELS ARE TO AHD

ANY NEW CONSTRUCTION WITHIN 900mm OF THE BOUNDARY MUST HAVE A FRL OF 60/60/60 IN ACCORDANCE WITH THE BCA



SEDIMENT FENCE
N.T.S

SEDIMENT CONTROL NOTES

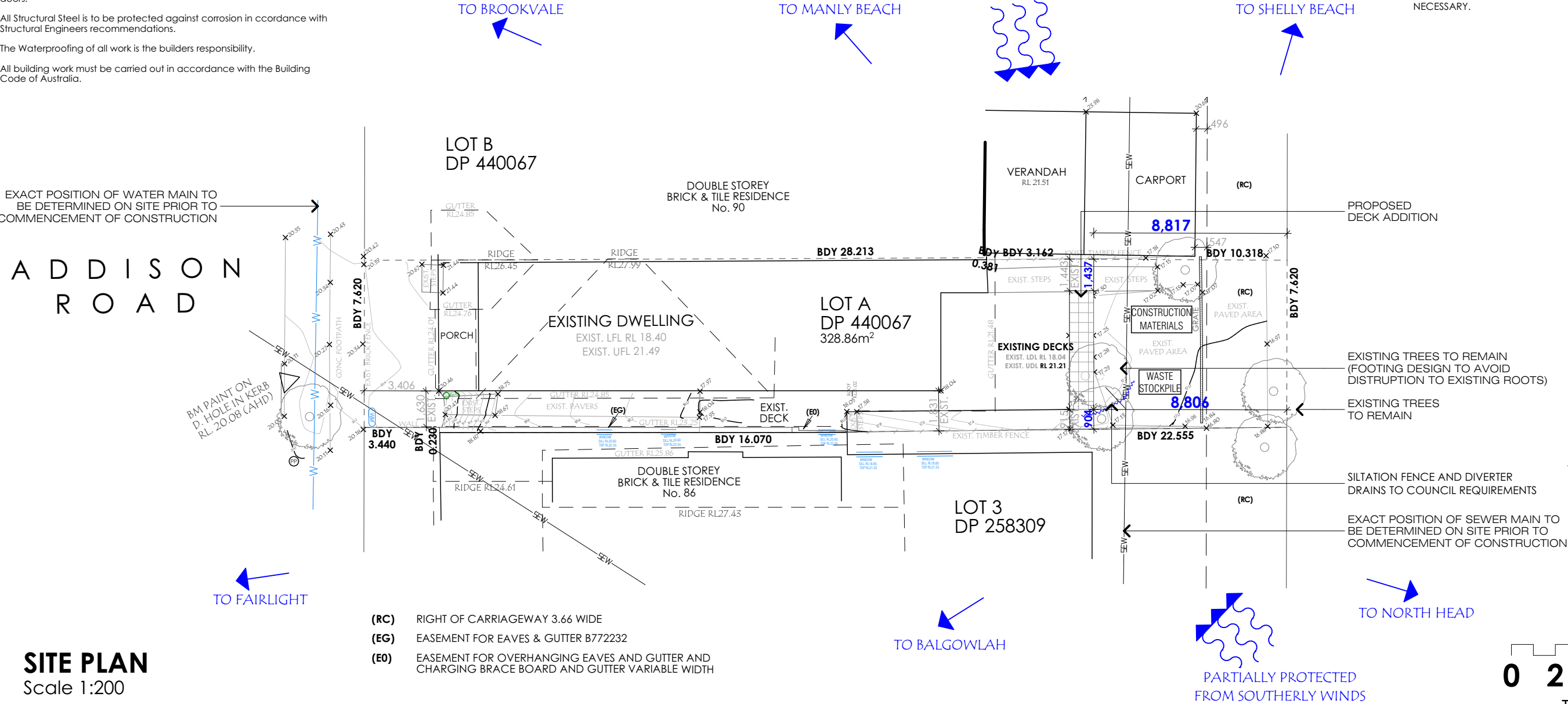
1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES, INCLUDING REVEGETATION AND STORAGE OF SOIL AND TOPSOIL, SHALL BE IMPLEMENTED TO COUNCIL REQUIREMENTS.
2. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
3. SEDIMENT TRAPS SHALL BE CONSTRUCTED AROUND ALL INLET PITS, CONSISTING OF 300mm WIDE X 300mm DEEP TRENCH.
4. ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEANED WHEN THE STRUCTURES ARE A 60% FULL OF SOIL MATERIALS, INCLUDING THE MAINTENANCE PERIOD.
5. ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED.
6. SOIL AND TOPSOIL STOCKPILES SHALL BE LOCATED AWAY FROM DRAINAGE LINES AND AREA WHERE WATER MAY CONCENTRATE.
7. FILTER SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR APPROVED EQUIVALENT BETWEEN POST AT 3.0m CENTRES. FABRIC SHALL BE BURIED 150mm ALONG ITS LOWER EDGE.

SITE CALCULATIONS

SITE AREA	335.11 m ²
OPEN SPACE AREA	44% (EXISTING) 148.04 m ²
FSR RESIDENCE	0.81: 1 (EXISTING)
EXISTING LIVING	270.71 m ²
EXISTING DECK AREAS	77.03 m ²
PROPOSED DECK AREA	5.93 m ²
TOTAL DECK AREAS	82.96 m ²



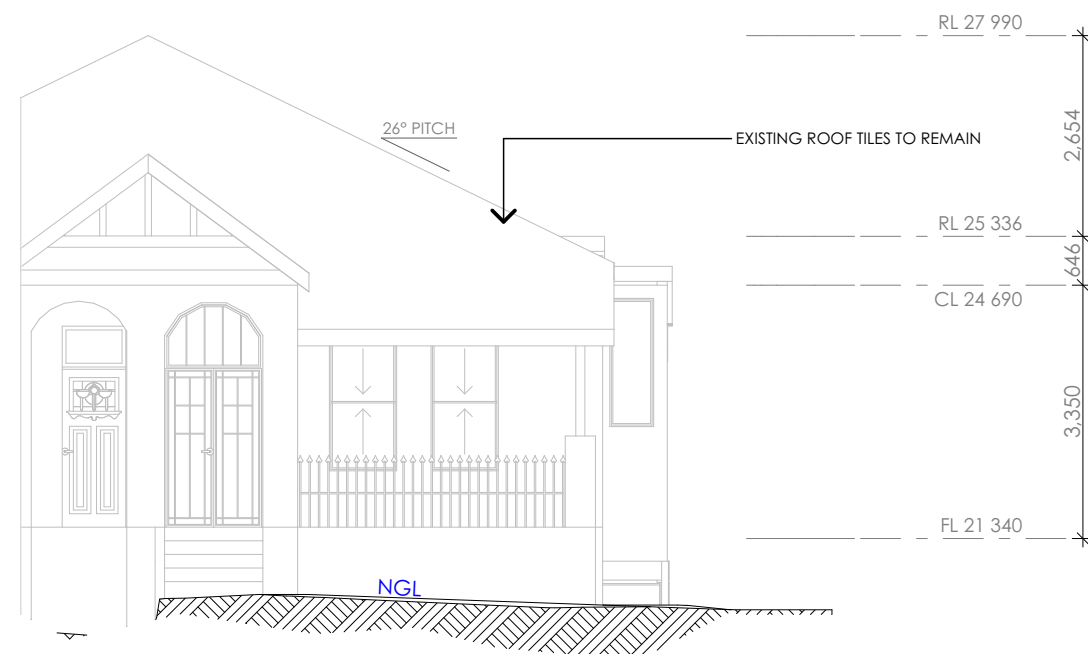
NOTE: THE LOCATION OF SERVICES ARE TO BE VERIFIED BY OBTAINING CURRENT INFORMATION FROM "DIAL BEFORE YOU DIG" (PHONE 1100) PRIOR TO DESIGN/CONSTRUCTION WORKS. ALTERNATIVELY, THE EXACT LOCATION OF SERVICES SHOULD BE DETERMINED BY FIELD SURVEY IN CONSULTATION WITH THE SERVICE AUTHORITIES WHERE DEEMED NECESSARY.



SITE PLAN
Scale 1:200

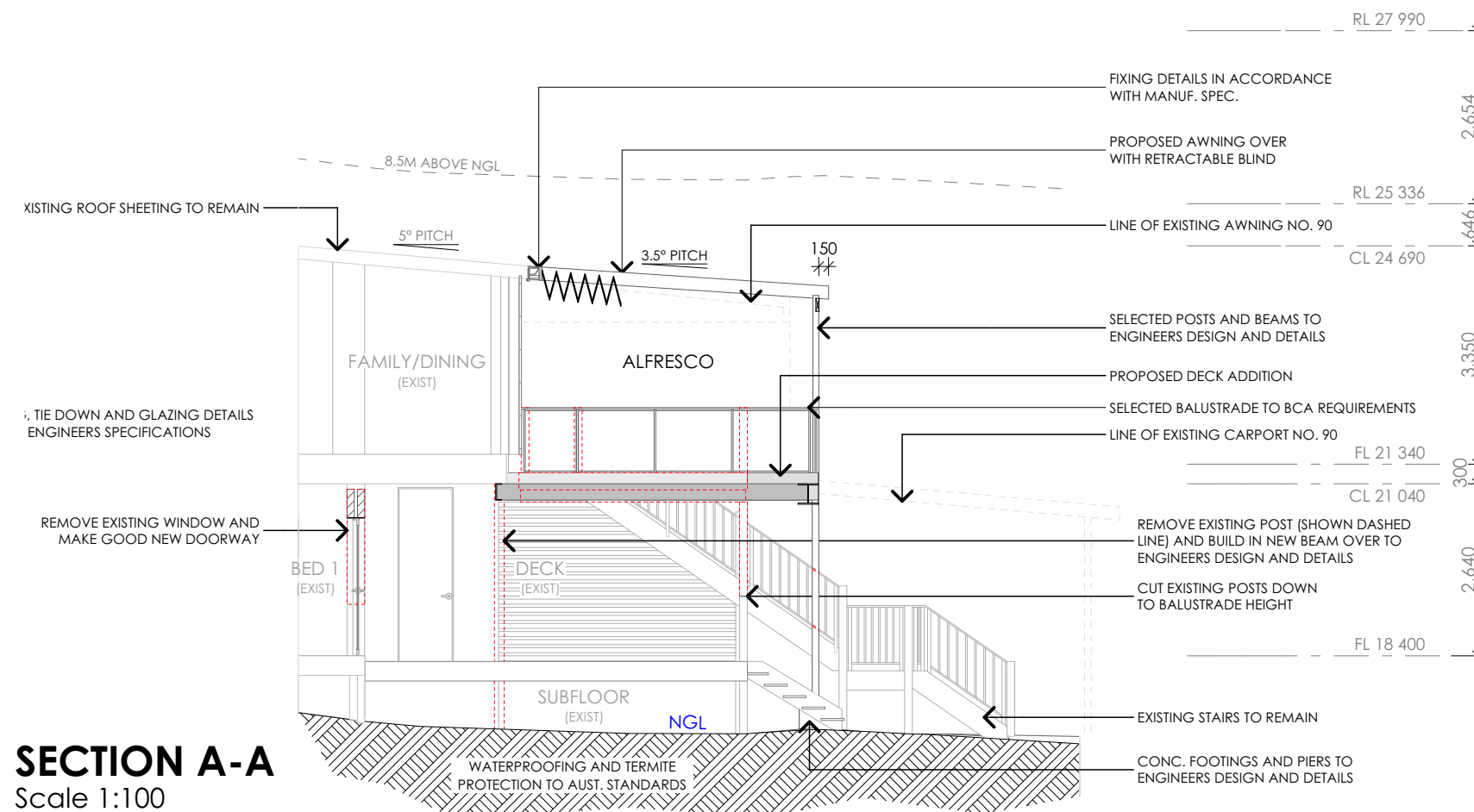
- (RC) RIGHT OF CARRIAGEWAY 3.66 WIDE
- (EG) EASEMENT FOR EAVES & GUTTER B772232
- (EO) EASEMENT FOR OVERHANGING EAVES AND CHARGING BRACE BOARD AND GUTTER VARIABLE WIDTH

Thursday, 30 May 2019

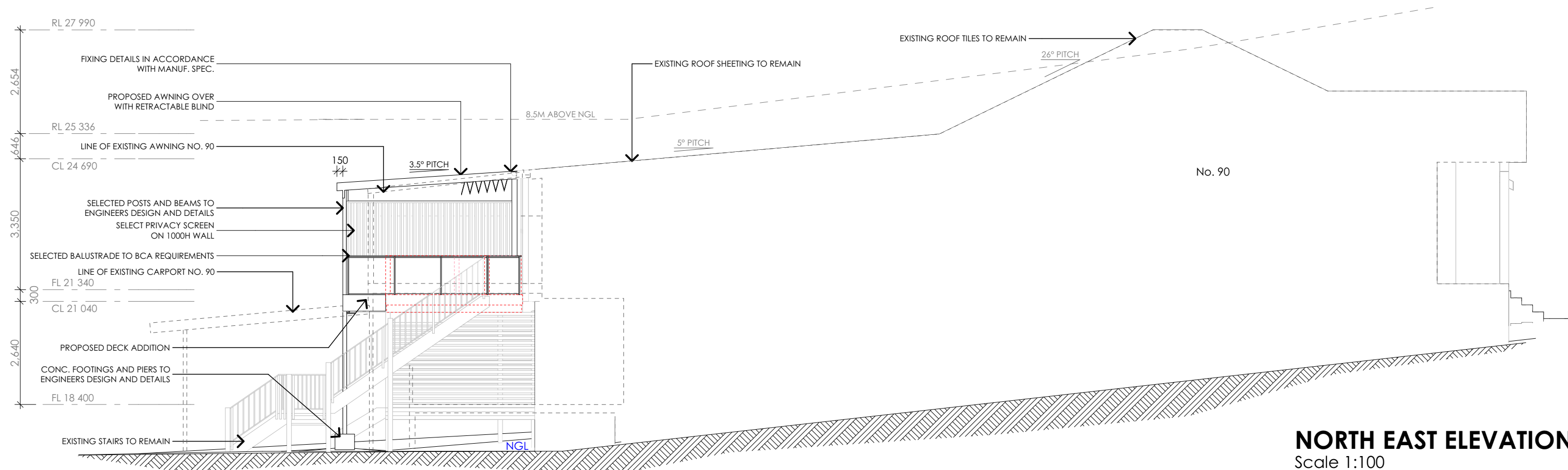


NORTH WEST ELEVATION
Scale 1:100

ANY NEW CONSTRUCTION WITHIN 900mm OF THE BOUNDARY
MUST HAVE A FRL OF 60/60/60 IN ACCORDANCE WITH THE BCA

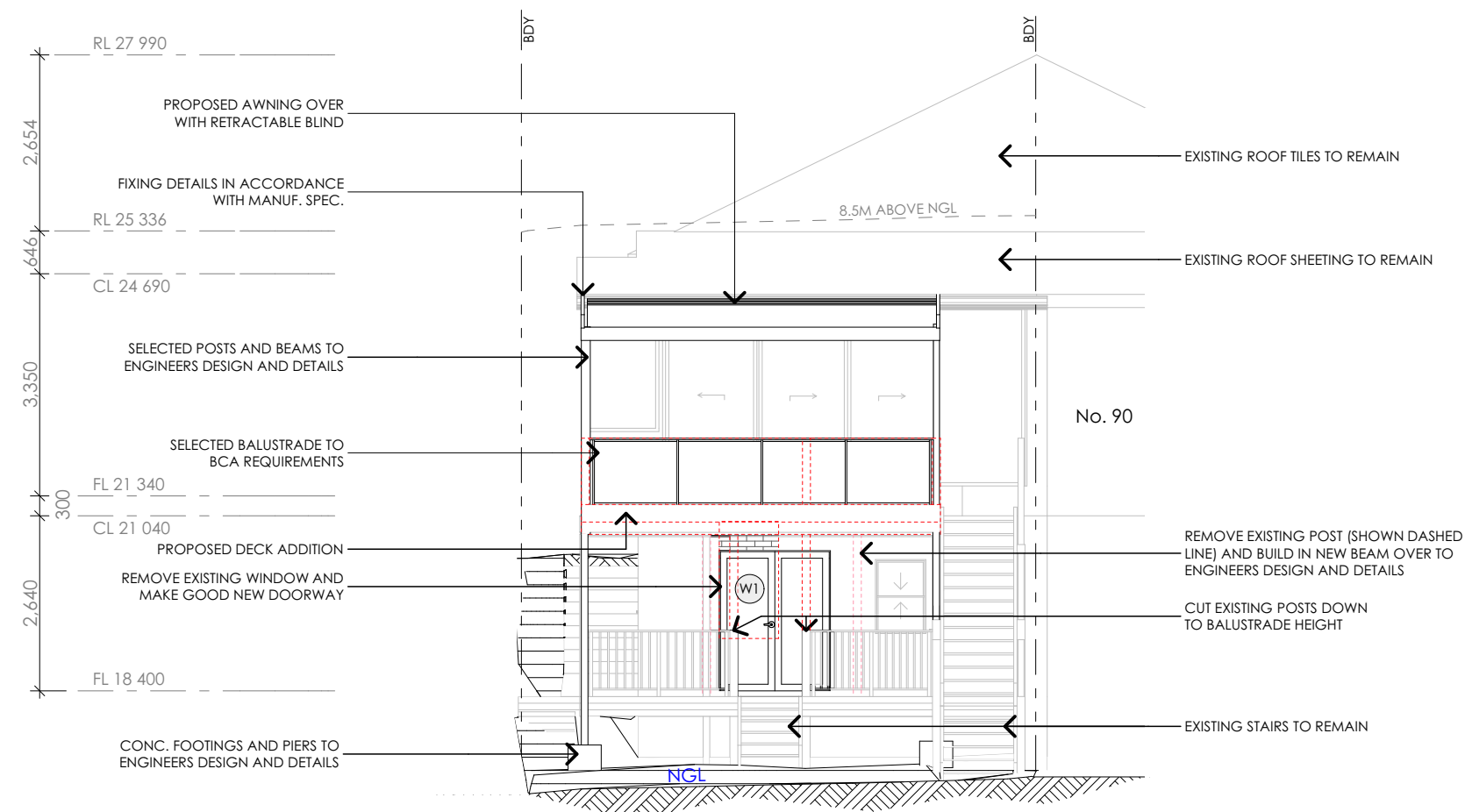


SECTION A-A
Scale 1:100



NORTH EAST ELEVATION
Scale 1:100

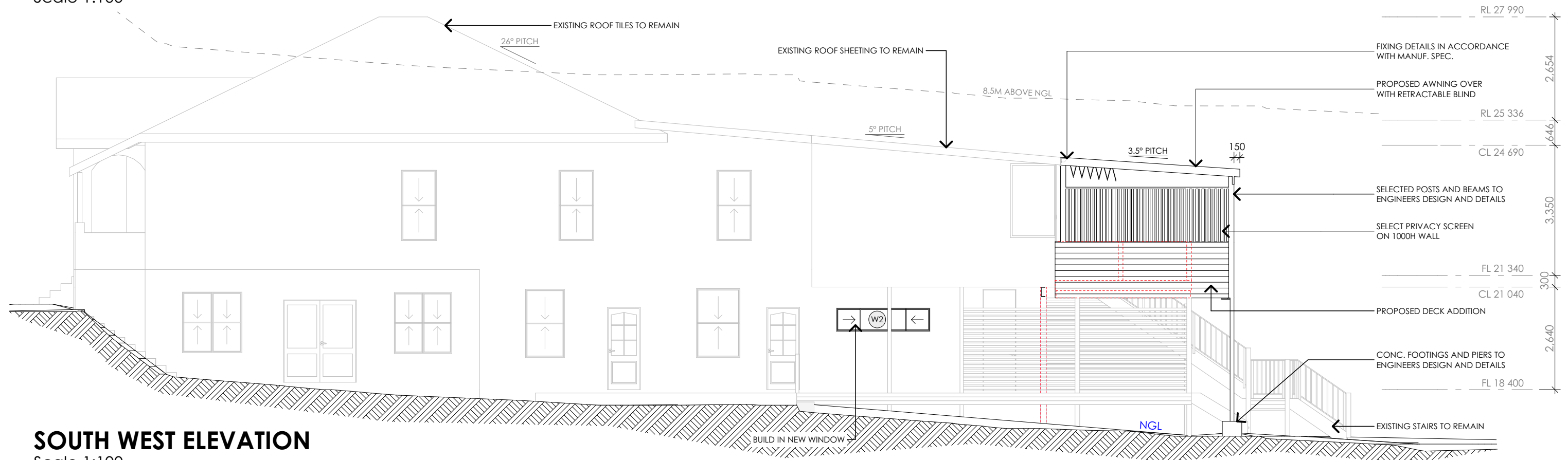
Thursday, 30 May 2019



SOUTH EAST ELEVATION

Scale 1:100

ANY NEW CONSTRUCTION WITHIN 900mm OF THE BOUNDARY MUST HAVE A FRL OF 60/60/60 IN ACCORDANCE WITH THE BCA

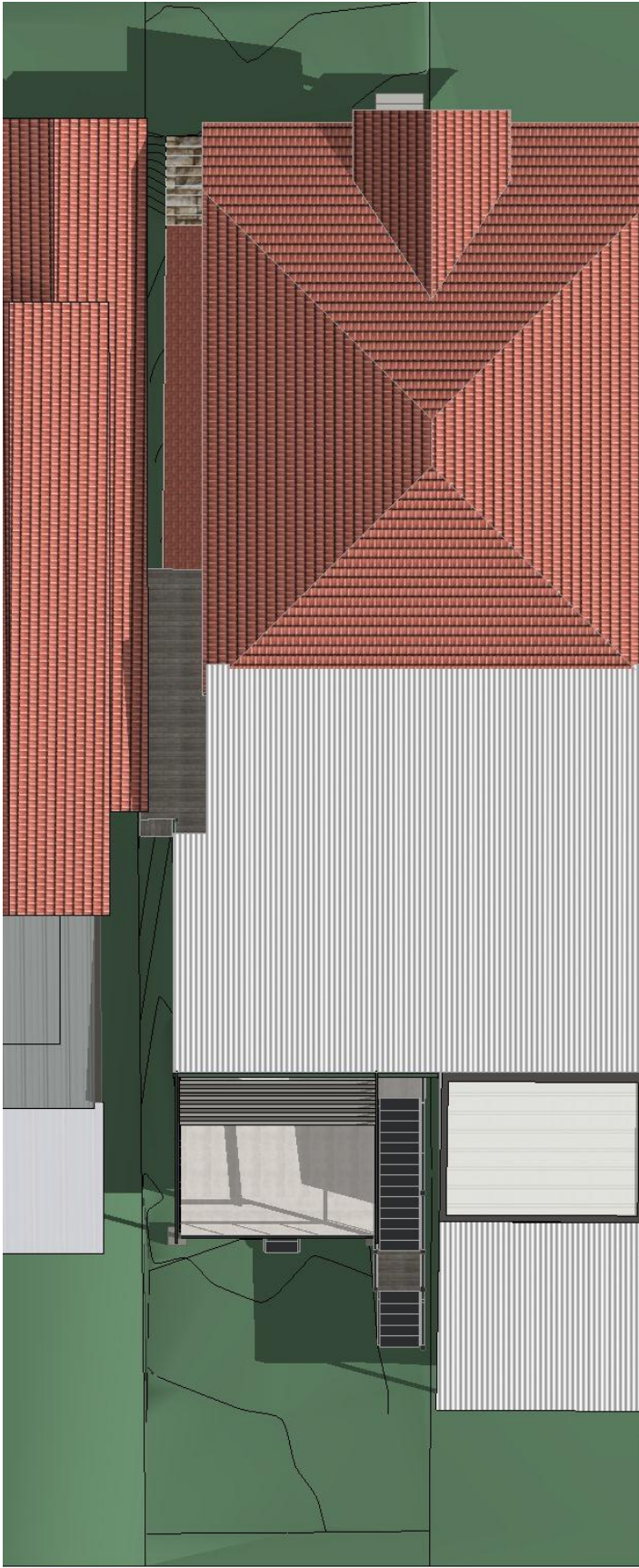


SOUTH WEST ELEVATION

Scale 1:100

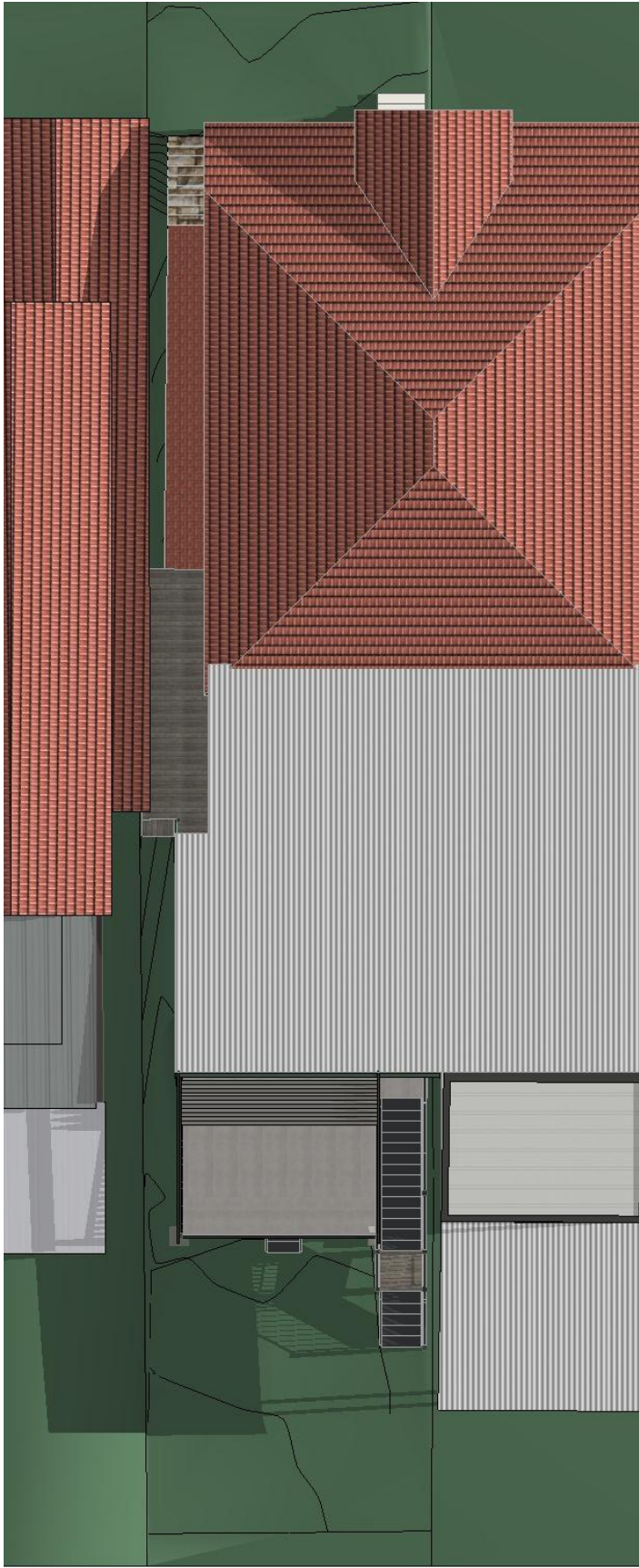
Thursday, 30 May 2019

ADDISON ROAD



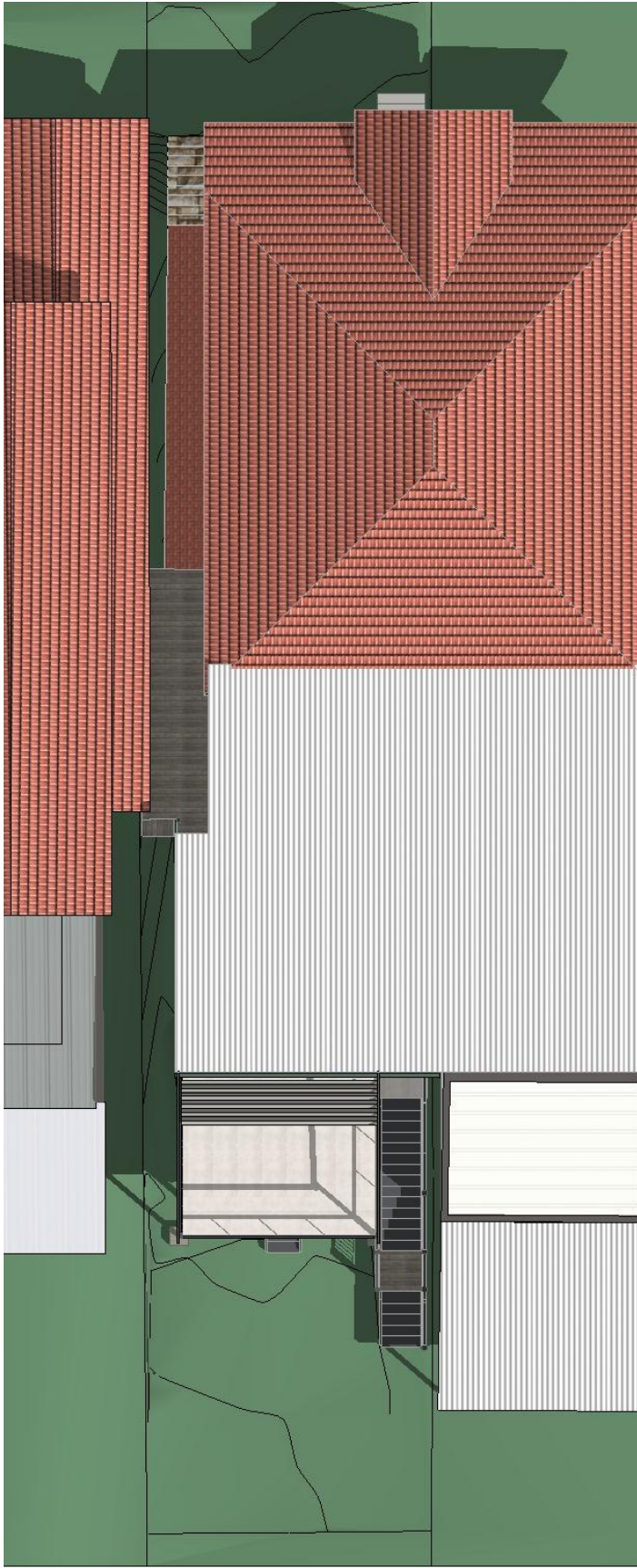
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ADDISON ROAD

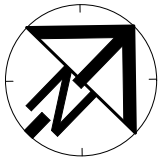


21 JUNE 9AM

ADDISON ROAD

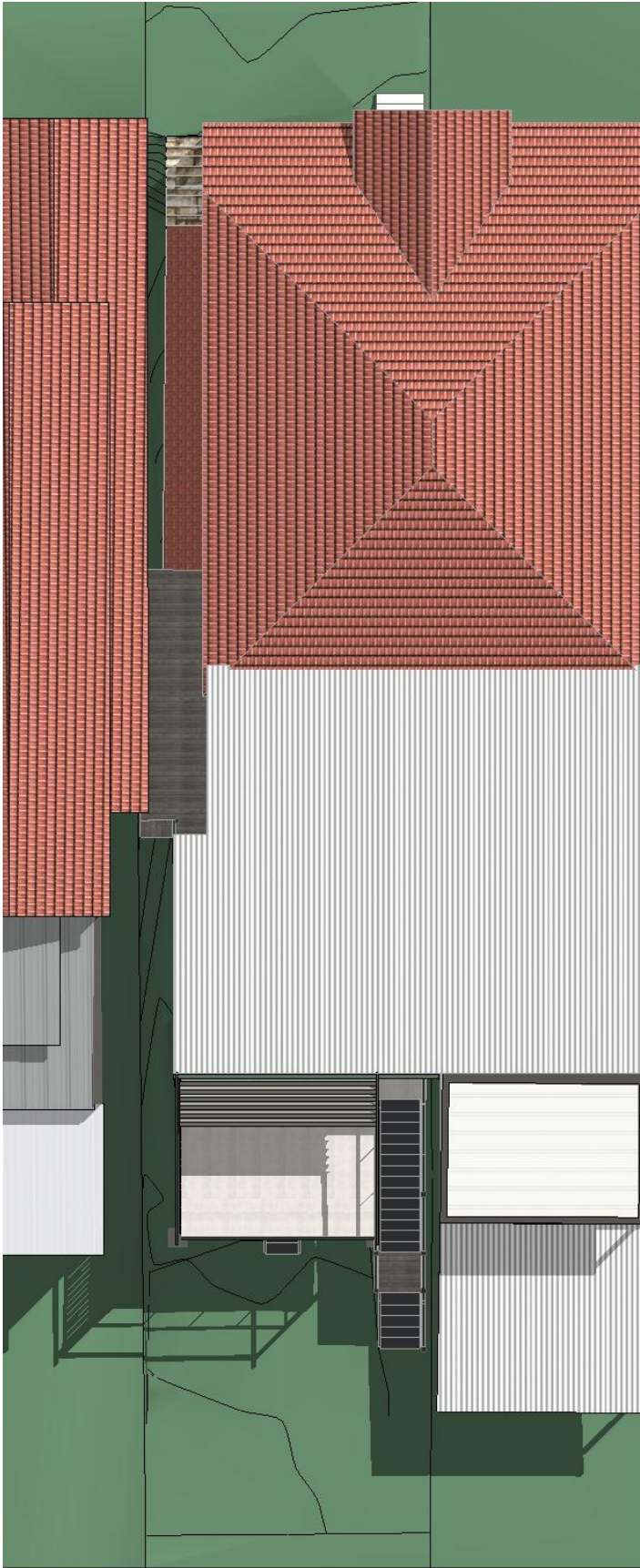


21 DEC 9AM



Thursday, 30 May 2019

ADDISON ROAD



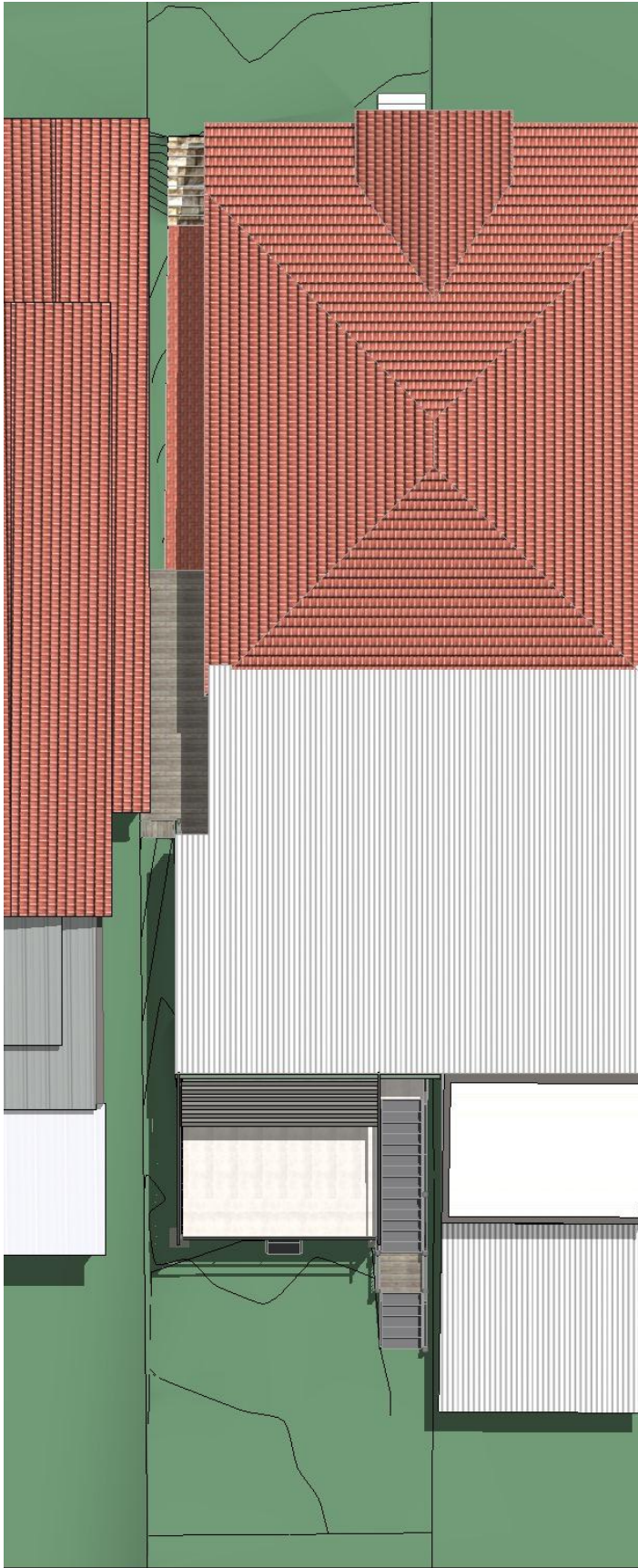
21 MAR 12PM

ADDISON ROAD

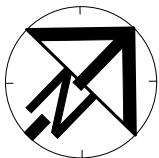


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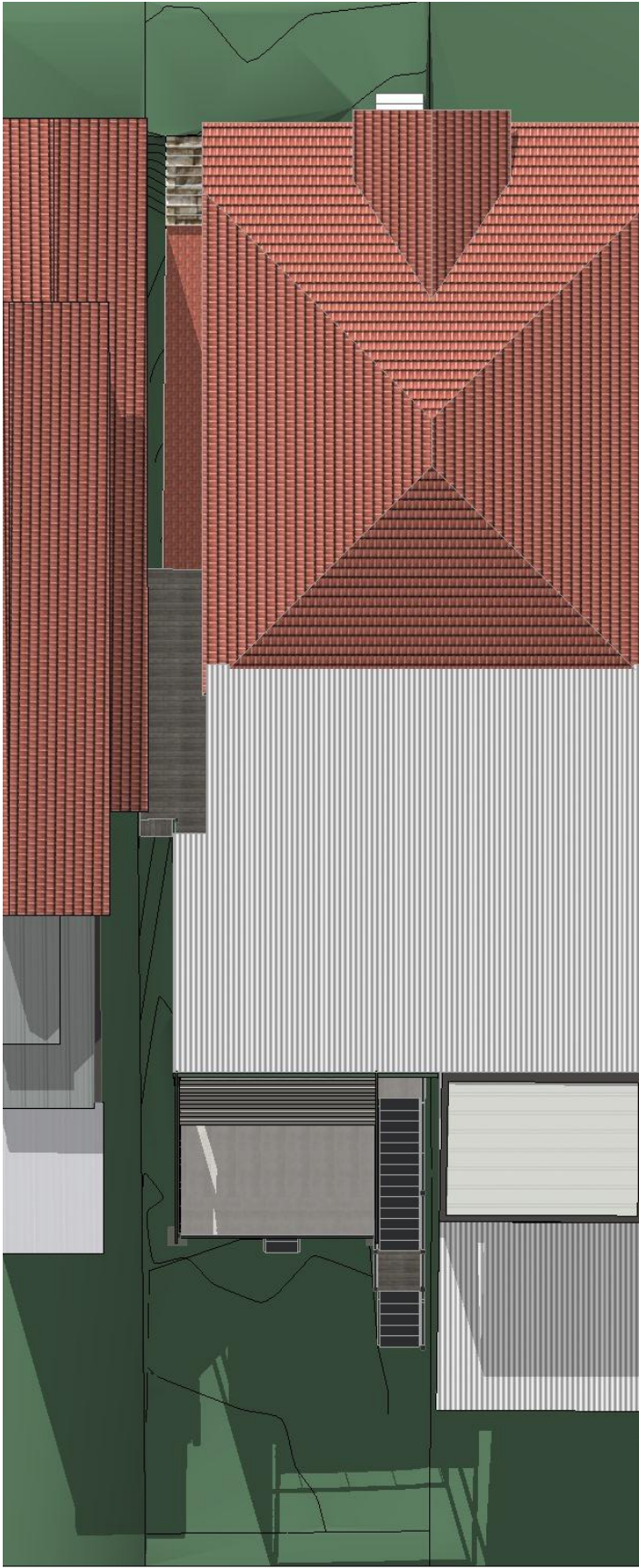


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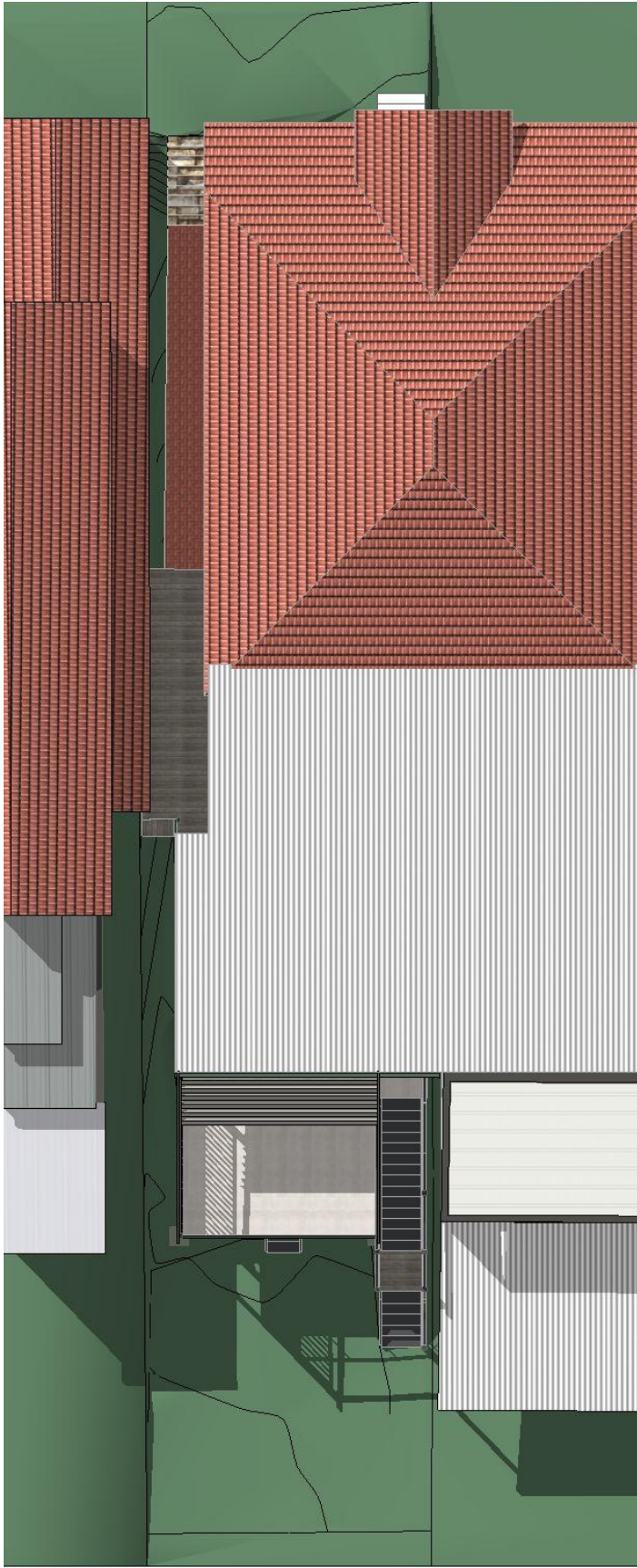
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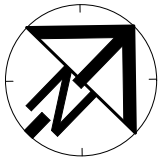


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21 DEC 3PM



Thursday, 30 May 2019