VIC LILLI
&PARTNERS

Our ref: J080235

3 November 2010

Manly Council
DX 9205
MANLY

Attention: Customer Service

Subject: **Final Occupation Certificate J080235**
Development Consent 342/07
Lots 13-19 & 27 Montpelier Place Precincts 1 & 13
St Patrick's Estate Manly

We refer to our engagement in respect of the above and enclose the Final Occupation Certificate for such in accordance with the provisions of Clause 142 of the Environmental Planning and Assessment Regulation 2000.

Also please find enclosed a cheque for $30.00 being the registration fee for the above.

Should you require any further information please contact the undersigned.

Yours faithfully

Paul Ladogna
For **Vic Lilli & Partners**

CERTIFIED

$30

R 733252

9-11-10

CC **Lend Lease**
Level 6, 30 Hickson Road
MILLERS POINT NSW 2000

Encl.

VIC LILLI & PARTNERS - Accredited Building Certifiers
T 02 9715 2555 E info@viclilli.com.au Locked Bag 3013 Burwood NSW 1805. DX 8505
F 02 9715 2333 W www.viclilli.com.au Suite 1. Level 5. 56 Railway Parade Burwood NSW 2134
A division of Mondan Management Pty Ltd ABN 60 119 432 094

VIC LILLI
&PARTNERS

Our ref: J080235

3 November 2010

Lend Lease
Level 6, 30 Hickson Road
MILLERS POINT NSW 2000

Attention: Peter Nash

Subject: **Final Occupation Certificate J080235**
Development Consent 342/07
Lots 13-19 & 27 Montpelier Place Precincts 1 & 13
St Patrick's Estate Manly

We refer to our engagement in respect of the works completed at the above address. In that regard we are pleased to enclose the Final Occupation Certificate for those works.

Should you require any further information, please contact the undersigned.

Yours faithfully

Paul Ladogna
For **Vic Lilli & Partners**

Encl.

VIC LILLI & PARTNERS - Accredited Building Certifiers
T 02 9715 2555 E info@viclilli.com.au Locked Bag 3013 Burwood NSW 1805. DX 8505
F 02 9715 2333 W www.viclilli.com.au Suite 1. Level 5. 56 Railway Parade Burwood NSW 2134
A division of Mondan Management Pty Ltd ABN 60 119 432 094

VIC LILLI
&PARTNERS

FINAL OCCUPATION CERTIFICATE No. J080235

FOR

Lend Lease

PREMISES

Lots 13-19 & 27 Montpelier Place Precincts 1 & 13
St Patrick's Estate Manly

Date: 3 November 2010

Ref: J080235

FINAL OCCUPATION CERTIFICATE

Issued under the Environmental Planning and Assessment Act 1979
Section 109(C) (1) & 109 (H)

VIC LILLI
&PARTNERS

Property to which this certificate relates

Address	Lots 13-19 & 27 Montpelier Place Precincts 1 & 13 St Patrick's Estate Manly NSW 2095		
Lot No	13-19 & 27	DP	1105469

Applicant

Name	Lend Lease
Address	Level 6, 30 Hickson Road MILLERS POINT NSW 2000

Description of Development
Seven (7) attached dwellings with basement parking and swimming pools.

Building classification **1a & 10b**

Consent details

Development Consent No	Date of determination	Consent authority
342/07	5 May 2008	Manly Council
342/07 Section 96 Mod	29 January 2009	Manly Council

Construction Certificate Details

Construction Certificate No.	Date of issue	Certifying authority
J080235	17 October 2008	Paul Ladogna BPB0219
J080235A	20 October 2009	Paul Ladogna BPB0219
J080235B	25 October 2010	Paul Ladogna BPB0219

Determination

- A current development consent is in force for the development;
- A construction certificate has been issued with respect to the plans and specifications relating to the building works;
- The building is suitable for occupation or use in accordance with its classification under the Building Code of Australia.

FINAL OCCUPATION CERTIFICATE J080235

VIC LILLI
&PARTNERS

- The following documents have been considered.

Inspection schedule (Clause 151(2)(d) EP&A Regulation 2000)

Inspections of the building works have been carried out to the extent detailed in Annexure 1.

Fire Safety Certificate (Clause 153 EP&A Regulation 2000)

A Fire Safety Certificate is not required for the building.

Certificate Number	J080235
Date of certificate	*3 November 2010*
Signature	
Accredited Certifier	*Paul Ladogna*
Accreditation body	Building Professionals Board
Registration No	BPB0219

VIC LILLI
&PARTNERS

FINAL OCCUPATION CERTIFICATE J080235

FIRE SAFETY MEASURES THAT FORM PART OF THIS CERTIFICATE

Issued in accordance with Clause 168 (1) (c) of the Environmental Planning and Assessment Regulation 2000

Property address: Lots 13-19 & 27 Montpelier Place Precincts 1 & 13
St Patrick's Estate Manly NSW 2095

Date of issue: 29 October 2010

Fire Safety Measures

Nil

VIC LILLI &PARTNERS

Annexure 1 Statutory Documentation

Inspection Schedule	1 page
Occupation Certificate Application form	1 page

Annexure 2 Supporting Documentation

Compliance Certificate/Evidence of Suitability Glazing Certificate Superior Windows Dated 14 October 2010	2 pages
Vehicular Crossing Certification Kell & Rigby Dated 28 September 2010	1 page
Mechanical Ventilation & Air Conditioning Superior Air Conditioning (NSW) Pty Limited Dated 14 October 2010	1 page
Smoke Alarm Certification ATP Electrical Contractors Pty Ltd Dated 6 October 2010	6 pages
Structural Certification Mott MacDonald Dated 6 September 2010	1 page
Waterproofing Certification Uniseal Waterproofing Pty Ltd Dated 1 September 2010	1 page
Hydraulic Certification Stillsons Plumbing Pty Ltd Dated 29 September 2010	1 page
Structural Certification – Balustrade Mott MacDonald Dated 15 October 2010	1 page
Handrail Installation Certification Rindal Welding & Fabrication Pty Ltd Dated 20 October 2010	1 page
Amarkoff Pty Ltd Dated 19 October 2010	1 page
Glazing Certification - Balustrade Amarkoff Pty Ltd Dated 19 October 2010	1 page

Glazing Certification – Shower Screen Amarkoff Pty Ltd Dated 19 October 2010	1 page
Glazing Certification – Pool Fence Amarkoff Pty Ltd Dated 19 October 2010	1 page
Landscaping Certification Heath Thompson Dated 20 October 2010	1 page
BASIX – Mechanical Ventilation Certification Superior Air Conditioning Dated 1 October 2010	1 page
BASIX – Hydraulic Certification Stilsons Plumbing Pty Ltd Dated 1 October 2010	1 page
BASIX – Natural Lighting Certification Superior Windows Pty Ltd Dated 1 October 2010	1 page
BASIX – Artificial Lighting Certification ATP Electrical Contractors Pty Ltd Dated 1 October 2010	1 page
Pool Reticulation System Certification Crystal Pools Dated 19 July 2010	1 page
Termite Treatment to dwelling 16-17, 18-19 Certification Building Industry Pest Services Dated 11 November 2009	5 pages
Termite Treatment to dwellings 13-14-15 Certification Building Industry Pest Services Dated 18 November 2009	4 pages
Lift Installation Certification Easy Living Dated 20 October 2010	7 pages
Other Supporting Documentation Compliance Certification ANS02 Lend Lease Development Dated 1 November 2010	1 page
Copy of Ecological Assessment Lesryk Environmental Consultants In conjunction with Ecosense Consulting Pty Ltd Dated August 2007	58 pages

VIC LILLI
&PARTNERS

ANNEXURE 1

Statutory Documentation

FINAL OCCUPATION CERTIFICATE J080235

VIC LILLI
&PARTNERS

Inspection Schedule

Date	Inspection	Inspected by
30 October 2009	Initial Site Inspection	Paul Ladogna BPB0219
11 November 2009	Ground Slab Reinforcement	Paul Ladogna BPB0219
17 November 2009	Ground Slab Reinforcement	Paul Ladogna BPB0219
03 December 2009	Ground Slab Reinforcement	Paul Ladogna BPB0219
10 December 2009	Ground Slab Reinforcement	Paul Ladogna BPB0219
17 December 2009	Ground Slab Reinforcement	Paul Ladogna BPB0219
18 January 2010	Ground Slab Reinforcement	Paul Ladogna BPB0219
29 January 2010	First Floor Slab Reinforcement	Paul Ladogna BPB0219
09 February 2010	First Floor Slab Reinforcement	Paul Ladogna BPB0219
5 May 2010	Pool Steel	Joe Malouf BPB0295
14 May 2010	Waterproofing	Joe Malouf BPB0295
27 May 2010	Waterproofing & Pool Steel	Paul Ladogna BPB0219
16 June 2010	Stormwater Connection	Paul Ladogna BPB0219
17 June 2010	Waterproofing	Paul Ladogna BPB0219
19 July 2010	Waterproofing	Joe Malouf BPB0295
21 October 2010	Pre-Final and pool fencing	Paul Ladogna BPB0219
28 October 2010	Final	Paul Ladogna BPB0219
2 November 2010	Final - Reinspection	Paul Ladogna BPB0219

OCCUPATION CERTIFICATE APPLICATION FORM

RECEIVED
15 OCT 2010
BY.....

VIC LILLI &PARTNERS

In accordance with Clause 149 of the Environmental Planning and Assessment Regulation 2000

Certificate type

☐ Interim
☑ Final

Description of property to which this application relates

Address 13-19 & 27 Montpelier Place, Manly NSW 2095

Title details Lot No./s 13-19 & 27 DP 1105469

Applicant
Note: The contractor who has undertaken the works cannot be an applicant for an Occupation Certificate

Applicant Name Peter Nash of Lend Lease

Address Level 6, 30 Hickson Road, Millers Point NSW 2000

Contact Numbers Phone (02) 9277 2330 Fax (02) 9383 8259
E-mail Peter.nash@lendlease.com.au Mobile 0421 572 289

BCA Classification 1a & 10b

Approval details

Development Consent No. 342/07 Date 5/5/08

Consent Authority Manly Council

Construction Certificate No. J080235 Date 17/10/08
~~J080235A~~ J080235B - Pool Landscape 25/10/10

Certifying Authority Vic Lilli & Partners

Documentation included in this application

documentation attached As provided

I apply for an Occupation Certificate for the development or works described in this application.

Applicant's Signature

15/10/10
Date

VIC LILLI & PARTNERS - Accredited Building Certifiers
T 02 9715 2555 E info@viclilli.com.au Locked Bag 3013 Burwood NSW 1805. DX 8505
F 02 9715 2333 W www.viclilli.com.au Suite 1. Level 5. 56 Railway Parade Burwood NSW 2134
A division of Mondan Management Pty Ltd ABN 60 119 432 094

VIC LILLI
&PARTNERS

ANNEXURE 2

Supporting Documentation

Superior WINDOWS
Manufacturers of *Superior* Aluminium Windows and Doors

ABN 46 002 011 083

27 Thomas Street
PO Box 4021
Edgeworth NSW 2285
Phone 02 4958 7011
02 4950 8788
Fax 02 4958 7191

14th October 2010

Kell & Rigby Pty Limited
PO Box 888
STRATHFIELD NSW 2136

Attention: Anton Carter

ST PATRICKS ESTATE STAGE 3, MONTPELLIER PLACE, MANLY
13, 14, 15, 16, 17, 18 & 19 Montpellier Place, Manly NSW

COMPLIANCE CERTIFICATE

Dear Anton Carter

Please be advised that all glazing, manufacturing and installation works carried out by Superior Windows Pty Limited on the above project, are in accordance with AS1288/AS2047,AS2048,AS1170 and as per the specifications supplied.

Yours faithfully
SUPERIOR WINDOWS PTY LIMITED

Matthew Verlin
Project Manager

Superior WINDOWS
Manufacturers of *Superior* Aluminium Windows and Doors

ABN 46 002 011 083

27 Thomas Street
PO Box 4021
Edgeworth NSW 2285
Phone 02 4958 7011
02 4950 8788
Fax 02 4958 7191

14th October 2010

Kell & Rigby Pty Limited
PO Box 888
STRATHFIELD NSW 2136

Attention: Anton Carter

ST PATRICKS ESTATE STAGE 3, MONTPELLIER PLACE, MANLY
13, 14, 15, 16, 17, 18 & 19 Montpellier Place, Manly NSW

GLAZING CERTIFICATE

Dear Anton Carter

Please be advised that all glazing works carried out by Superior Windows Pty Limited on the above project, are in accordance with AS1288/2006, AS2047/1999, and as per specifications supplied.

Yours faithfully
SUPERIOR WINDOWS PTY LIMITED

Matthew Verlin
Project Manager

Kell&Rigby

28th September 2010

Vic Lilli & Partners
Suite 1 Level 5
56 Railway Parade
Burwood NSW 2134

Project: 13-19 Montpelier Place Manly

Re: Construction of the Vehicular Footpath Crossing DA009
Construction of the Footpath Paving and Associated Works DA224

Attention: Paul Ladogna

Dear Paul,

Kell & Rigby Living Pty Ltd certifies the construction of the vehicular crossings, footpaths and associated works have been completed in accordance with the project documentation.

Drawings directly relating to this work include:

- L01 rev F
- L02 rev F
- L03 rev F
- L04 rev F
- 07S567C 11 rev 2
- 07S567C 12 rev 3
- 07S567C 13 rev 3
- 07S567C 14 rev 2

Yours faithfully

Charles Treloar
Project Manager

Superior Air Conditioning (NSW)
ABN:37 106 400 257 PTY Limited

Certificate

Mechanical Ventilation
&
Air Conditioning Equipment
For

St. Patricks Estate
Manly NSW
Site 13 - 19

I Zlatan Ivankovic of Superior Air Conditioning (NSW) Pty Limited certify that;

Air Conditioning Equipment

(a) The air conditioning equipment has been installed as per the design specifications of Terry Tompson and complies with AS/NZS 3666.1 2002, AS 1668.1 & AS 1668.2

(b) The ductwork was installed as per the design specifications of Terry Tompson and complies with AS 4254 - 2002.

Mechanical Ventilation Equipment

(a) The duct work has been installed as per the specifications of Terry Tompson and complies with AS 4254 - 2002, BCA C 3.15, BCA part J 5 & BCA part J8
(b) The mechanical ventilation has been installed to AS 1668.2

Signature _____ Date: 14th October 2010
Zlatan Ivankovic

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 13 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 14 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 15 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 16 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 17 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 18 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

ATP Electrical Contractors P/L

ABN: 80 091 268 996

42 Warraba Road
NORTH NARRABEEN NSW 2101

Mobile: 0418 969 165 Business: (02) 9913 1066 Fax: (02) 9913 1077

6th October 2010

Kell & Rigby Living Pty Ltd

Installation of 3 x 240volt Smoke Detectors

Installation Address: 19 Montpelier Place Manly

This letter is to certify that I Tony Papa of ATP Electrical Contractors Pty Ltd installed 3 mains connected smoke detectors at the above address. Which are connected to a 240 volt power supply with battery backup, wired to AS3786 Australian Standards.

Complies with Part 3.7.2 of the building code of Australia.

Yours sincerely

Tony Papa

Mott MacDonald
Hughes Trueman

Our ref 07s567
T 02 9439 2633
E twang@hughestrueman.com.au

Andrew Tobin
Lend Lease Development
30 The Bond, 30 Hickson Rd, Millers Point

E-mail: Andrew.Tobin@lendlease.com.au

8th September 2010

Dear Sir,

RE: Structural Inspection Certificate
St Patrick's Estate Lots 13-19

The structural engineering components of this project as shown on our drawings numbers 07s567-S01-4, S02-4, S03-6 S04-7, S05-7, S06-6, S07-6, S08-5, S09-5, S10-5, S11-6, S12-5, S20-5, S21-5 and S22-5 were designed by a practising structural engineer in accordance with the relevant Australian Standards, Building Code of Australia and accepted engineering practice and principles.

A practising structural engineer from this office carried out inspections during construction of the works. At the time of the inspections the works inspected were considered to be in accordance with the structural drawings, or when minor corrections were required the engineer left written instructions for rectification with the builder.

In carrying out the inspections we exercised the degree of skill, care and diligence normally exercised by Consulting Engineers in similar circumstances.

This certificate does not relieve other parties of their responsibilities for the works.

Yours faithfully

Mott MacDonald
Hughes Trueman
BILL HIGGINS
TECHNICAL DIRECTOR

56 Bain Place, DUNDAS VALLEY NSW 2117
Phone: 0411 460 533 **Fax:** 9804 8768 **Lic. No:** 126609C

UNISEAL WATERPROOFING PTY LTD

Fax

To:	Kell & Rigby - Phil Barrett/Anton	**From:**	John Harris
Fax:	8966 9097	**Pages:**	1
Phone:		**Date:**	01/09/10
Re:	Waterproofing Certification – St Patricks Estate Manly Stage 3, 13-19 Montpeller Place, Manly	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

- **Comments:** Phil

Uniseal Waterproofing Pty. Ltd. hereby certify, that the waterproofing carried out to internal areas at the above mentioned project has been installed in accordance with the design documents and conforms to the Australian Standard 3740-2004 for residential wet areas. All external membranes have been installed as per manufacturers specifications.

Further, I am appropriately qualified and experienced to provide the certification for this component of the project.

Regards

John Harris

STILLSONS PLUMBING PTY LTD

PLUMBING, DRAINAGE, GAS FITTING & FIRE SERVICES
LIC.139494 C COMPANY LIC. 228653 C ACN. 136436410

CERTIFICATION OF HYDRAULIC INSTALLATION

Date : 29 September, 2010
Address : 13-19 Montpelier place, Manly
Attention : Charles Treloar

I here by certify that the installation of hydraulic services including stormwater drainage, sanitary plumbing, water services, fixture fit off nominated in this certificate meet the current requirements as follows:

Hydraulic services	:AS 3500 & NSW CODE
Tempered water	:AS 3500 & NSW CODE
Stormwater	:AS 3500 & LOCAL COUNCIL
Rain water harvest	:AS 3500 & LOCAL COUNCIL
Pool backwash	: AS 3500 & NSW CODE & discharges to sewer as per hydraulic design

Signed.....Date.29-09-10

Print Name.SHANE JACOBS....Position.Site MANAGER

P.O Box 1349, Cronulla NSW 2230
Shane: 0417 696 890 Andrew: 0412 906 447
Fax: 02 9662 7101 Fax: 02 9501 0895
info@stillsons.com.au

Mott MacDonald
Hughes Trueman

Our ref 07s567
T 02 9439 2633
E twang@hughestrueman.com.au

Andrew Tobin
Lend Lease Development
30 The Bond, 30 Hickson Rd, Millers Point

E-mail: Andrew.Tobin@lendlease.com.au

15th October 2010

Dear Sir,

RE: Structural Adequacy Certificate for Glass Balustrade Handrail
St Patrick's Estate Lots 13-19

This is to certify that:

The glass balustrade handrail as shown on Architectural Drawings AMP 762/1-Rev3, AMP 763/1-Rev4, 763/2-Rev4, 763/3-Rev4 and AMP 776/1, 2+3-Rev4 and Mott MacDonald Hughes Trueman sketch of handrail connection detail at 27th September 2010 is able to support the load specified by Australia Standards AS1170 and AS1288.

This certificate does not relieve other parties of their responsibilities for the works.

Yours faithfully

Mott MacDonald
Hughes Trueman
SIMON A. WILTSHIER
DIVISIONAL DIRECTOR
BE(Hons), RIEAust, MICE, CPEng, NPER

RINDAL WELDING AND FABRICATION PTY LTD

ABN 80 131 955 658

8 Liane Close
Narara NSW 2250
Ph:
Fax:

Date: 20.10.2010
Company: Kell & Rigby
Attn: Phil Barrett

Project: St Patricks Estate Stage 3
Address: 13, 14, 15, 16, 17, 18 & 19 Montpellier Place, Manly NSW

This certificate is to certify that the balustrades installed in the above mentioned project are installed as per design drawings and specification.

Signed..... Date..20-10-2010.....

Name..NIGEL RINDAL.. Position..DIRECTOR.....

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

The handrail supplied and installed by AMARKOFF Pty Ltd on the above mentioned address for the front balconies of villas 13 to 19 have been installed as per design and drawings by Hughes Trueman. AMARKOFF Pty Ltd installed this handrail by the instructions provided and signed on the 15th of October 2010. Hughes Trueman is to supply the certificate as mentioned in the instructions attached.

Cleaning and maintenance:

> The anodized aluminium handrail should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
> **Abrasive cleaners should never be used as they will scratch the aluminium.**

Sincerely,

Balaz Marko

Marko Balaz

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

Glazing Certificate*
For Balustrade
RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

This is to certify that the 12mm clear toughened heat soaked glass panels installed by AMARKOFF Pty Ltd at the above mentioned address have been manufactured to the AS/NZS 1170 standard.

*Certificate for glass ONLY

Cleaning and maintenance:

The glass panels should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
Abrasive cleaners should never be used as they will scratch the glass and frame (including shower screens, mirrors and patch fitting).

A ten (10) year warranty is provided for the shower screens, valid from the commencement of the project.

Sincerely,

Balaz Marko

Marko Balaz

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

Glazing Certificate
For shower screens glass
RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

This is to certify that the 10mm clear toughened glass shower screen panels installed by AMARKOFF Pty Ltd at the above mentioned address have been manufactured to the AS1288 standard.

Cleaning and maintenance:

> The glass panels should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
> **Abrasive cleaners should never be used as they will scratch the glass and frame (including shower screens, mirrors and patch fitting).**

A ten (10) year warranty is provided for the shower screens, valid from the commencement of the project.

Sincerely,

Balaz Marko

Marko Balaz

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

Glazing Certificate*
For Balustrade
RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

This is to certify that the 12mm clear toughened heat soaked glass panels installed by AMARKOFF Pty Ltd at the above mentioned address have been manufactured to the AS/NZS 1170 standard.

*Certificate for glass ONLY

Cleaning and maintenance:

> The glass panels should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
> **Abrasive cleaners should never be used as they will scratch the glass and frame (including shower screens, mirrors and patch fitting).**

A ten (10) year warranty is provided for the shower screens, valid from the commencement of the project.

Sincerely,

Balaz Marko

Marko Balaz

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

Glazing Certificate
For shower screens glass
RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

This is to certify that the 10mm clear toughened glass shower screen panels installed by AMARKOFF Pty Ltd at the above mentioned address have been manufactured to the AS1288 standard.

Cleaning and maintenance:

> The glass panels should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
> **Abrasive cleaners should never be used as they will scratch the glass and frame (including shower screens, mirrors and patch fitting).**

A ten (10) year warranty is provided for the shower screens, valid from the commencement of the project.

Sincerely,

Balaz Marko

Marko Balaz

AMARKOFF PTY LTD

ABN: 55 089 455 630

Marko Balaz
PO Box 429
Kellyville 2155
Ph: 0419985136
Fax: 9659 3768
NSW

Date	19.10.10
Company	Kell & Rigby PTY LTD
Address	8 Dunlop St, Strathfield South
Site Ph	02 9300 6730
Site Fax	02 9300 6734
Attention	Phil Barrett

Glazing Certificate
For Pool Fence
RE: Montpelier Place, Manly
Villas 13, 14, 15, 16, 17, 18 & 19

This is to certify that the 12mm clear toughened heat soaked glass panels installed by AMARKOFF Pty Ltd at the above mentioned address have been manufactured to the AS/NZS 1170 standard.

Cleaning and maintenance:

The glass panels should be cleaned with soft lint free rags using proprietary glass cleaners such as "clear Windex" or water.
Abrasive cleaners should never be used as they will scratch the glass and frame (including shower screens, mirrors and patch fitting).

A ten (10) year warranty is provided for the shower screens, valid from the commencement of the project.

Sincerely,

Marko Balaz

Practical Completion Certicate.

PROJECT: St Patricks Estate Stage 3 – Montpellier Place, Manly
ADDRESS: 13, 14, 15,16,17,18 & 19 Montpellier Place, Manly NSW.

To Whom It May Concern:

Client / Builder: Kell and Rigby Builders Pty Ltd.

The landscape works at 13, 14, 15,16,17,18 & 19 Montpellier Place, Manly NSW.

Nick Johnston Landscapes Pty Ltd confirms the landscape works have been installed in accordance with Development Consent conditions.

Nick Johnston Landscapes Pty Ltd confirms Condition No.ANS08 has been completed.

Plants have been installed in accordance with Landscape planting plan.

All requirements of the specification have been carried out.

All works have been completed in accordance with the relevant Building Codes of Australia and the relevant Australian Building Standards.

Document Certification: Nick Johnston is a Qualified Landscape Designer, and holds a Bachelor of Applied Science (Horticulture) Degree UWS. Nick Johnston Landscapes Pty Ltd licence number is 121633C. Nick Johnston Landscapes Pty Ltd is a member of the Landscape Contractors Association of NSW- F52.
Nick Johnston Landscapes Pty Ltd: ABN 48 051 475 097

DATE: Wednesday, 20th October 2010.

Signed:

HEATH THOMPSON
Project Manager
Nick Johnston Landscapes Pty Ltd.

CERTIFICATION OF WORKS COMPLETED
IN ACCORDANCE WITH BASIX COMMITMENTS

Date: 01/10/2010

Project: St Patricks Estate, Manly – Stage 3
Address: 13-19 Montpellier Place, Manly NSW

From: Superior Air Conditioning
Address: 46 Baynton Place, St Helens Park NSW
ABN: 37 106 400 257

I hereby certify that the installation of works as specified below are in accordance with the schedule of Basix commitments.

Basix Commitments:

Cooling System:

1. The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 3-phase airconditioning; Energy rating: EER 2.5 - 3.0
2. The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase airconditioning; Energy rating: EER 2.5 - 3.0
3. The cooling system must provide for day/night zoning between living areas and bedrooms.

Heating System:

1. The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase airconditioning; Energy rating: EER 3.0 - 3.5
2. The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase airconditioning; Energy rating: EER 3.0 - 3.5
3. The heating system must provide for day/night zoning between living areas and bedrooms.

Ventilation:

The applicant must install the following exhaust systems in the development:

1. At least 1 Bathroom: individual fan, ducted to façade or roof; Operation control: interlocked to light
2. Kitchen: individual fan, ducted to façade or roof; Operation control: manual switch on/off
3. Laundry: individual fan, ducted to façade or roof; Operation control: interlocked to light

Signed ..... Date 14/10/10

Print Name BEN POTTERS Position OPS MGR

CERTIFICATION OF WORKS COMPLETED
IN ACCORDANCE WITH BASIX COMMITMENTS

Date: 01/10/2010

Project: St Patricks Estate, Manly – Stage 3
Address: 13-19 Montpellier Place, Manly NSW

From: Stilsons Plumbing Pty Ltd
Address: PO Box 1349, Cronulla NSW 2230
ABN: 56 136 438 410

I hereby certify that the installation of works as specified below are in accordance with the schedule of Basix commitments.

Basix Commitments:

Fixtures:

1. The applicant must install showerheads with a minimum rating of 3 star in all showers in the development.
2. The applicant must install a toilet flushing system with a minimum rating of 4 star in each toilet in the development.

Rainwater Tank:

1. The applicant must install a rainwater tank of at least 4000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.
2. The applicant must configure the rainwater tank to collect rain runoff from at least 174 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).
3. The applicant must connect the rainwater tank to:
   • all toilets in the development
   • at least one outdoor tap in the development (Note: NSWHealth does not recommend that rainwater be used for human consumption in areas with potable water supply.)
   • a tap that is located within 10 metres of the swimming pool in the development

Hot water:

1. The applicant must install the following hot water system in the development, or a system with a higher energy rating: solar (gas boosted) with a performance of 36 to 40 RECs or better.

Signed.....Date.....06/10/10.....

Print Name.....Shane Jacobs.....Position.....State Manager.....

CERTIFICATION OF WORKS COMPLETED
IN ACCORDANCE WITH BASIX COMMITMENTS

Project: St Patricks Estate, Manly – Stage 3
Address: 13-19 Montpellier Place, Manly NSW

Date: 01/10/2010

From: Superior Windows Pty Ltd
Address: PO Box 1349 Cronulla NSW 2230
ABN: 46 002 011 083

I hereby certify that the installation of works as specified below are in accordance with the schedule of Basix commitments.

Basix Commitments:

Natural Lighting :

1. The applicant must install a window and/or skylight in the kitchen of the dwelling for natural lighting.
2. The applicant must install a window and/or skylight in 1 bathroom(s)/toilet(s) in the development for natural lighting

Signed........[signature]........Date..14 – 10 – 10....

Print Name..Steven Day.......Position..Foreman....

CERTIFICATION OF WORKS COMPLETED
IN ACCORDANCE WITH BASIX COMMITMENTS

Date: 01/10/2010

Project: St Patricks Estate, Manly – Stage 3
Address: 13-19 Montpellier Place, Manly NSW

From: ATP Electrical Contractors Pty Ltd
Address: 42 Warraba Rd, North Narrabeen NSW
ABN: 80 091 268 996

I hereby certify that the installation of works as specified below are in accordance with the schedule of Basix commitments.

Basix Commitments:

Artificial Lighting :

The applicant must ensure that the "primary type of artificial lighting" is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word "dedicated" appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps:

- at least 1 of the bedrooms / study;
- at least 2 of the living / dining rooms;
- the kitchen;
- all bathrooms/toilets;
- the laundry;
- all hallways;

Signed.....Date.06-10-10.....

Print Name..JOHN PAPA.....Position..OWNER/DIRECTOR

CRYSTAL POOLS SINCE 1957

Crystal Pools Pty. Ltd.

1 Central Ave, Thornleigh 2120 Phone 9875 4555 Fax 9484 1019 Email crystal@crystalpools.com.au
All correspondence to: P.O. Box 271, Fennant Hills 1715

SWIMMING POOL RETICULATION SYSTEM
INSTALLATION CERTIFICATE

Project Name	*St Patricks Estate Stage 3 L09091*
Address	*14, 15, 16, 17, 18, 19 Montpelier Place Manly NSW 2095*
Part of Building to be certified	*Residential Buildings No. 14, 15, 16, 17, 18, and 19*

I hereby certify that:

a) The works have been inspected during construction and will be completed in accordance with the nominated Standards of Performance.

Measure and/or system	Standards of Performance
Swimming pool reticulation system	AS 1926.3

b) I am a properly qualified person and have a good working knowledge of the relevant codes and standards referenced above. (My qualifications and accreditations are listed below)

Relevant qualifications and accreditations: Supervisor Certificate 40885S

c) The information contained in this statement is true and accurate to the best of my knowledge.

Name: Paul Hicken

Company: Crystal Pools Pty Ltd,

Address: 1, Central Avenue, Thornleigh NSW2120

Phone No: 02 9875 4555 *Fax No:* 02 9484 1019

Signature

19 July 2010
Date

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 16, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40077000

Reticulation Legend

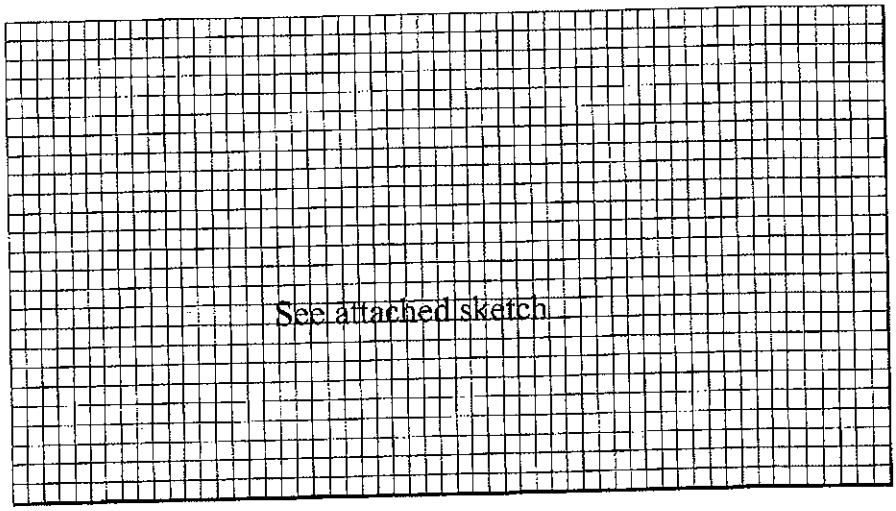
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 11-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

15 JAN 2010

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: T Best

R. Sapsford

Warranty is 12 months unless indicated otherwise.

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 17, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40078000

Reticulation Legend

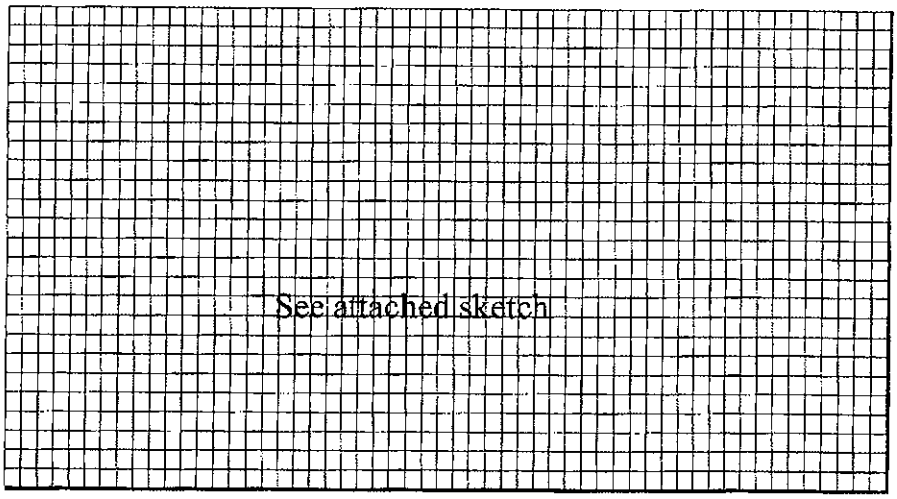
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 11-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: T Best

R. Sapsford

Warranty is 12 months unless indicated otherwise.

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 18, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earthworks, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40079000

Reticulation Legend

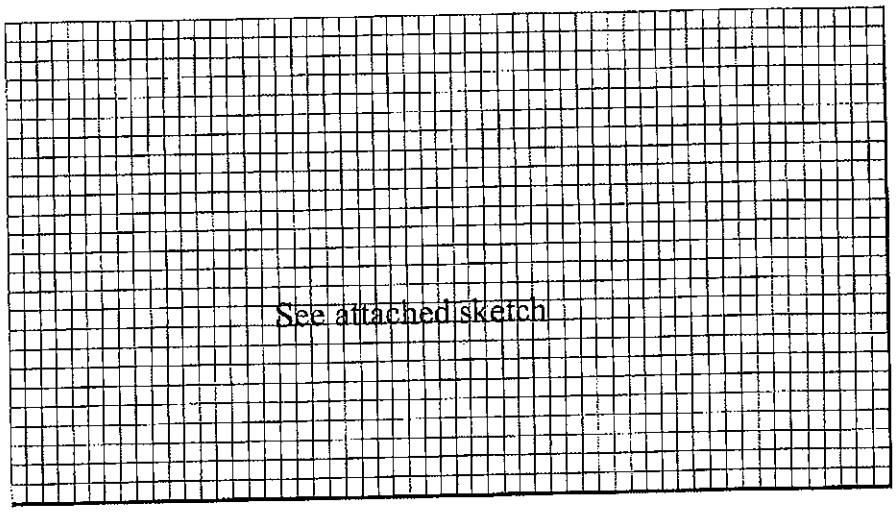
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 11-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: T Best

R. Sapsford

Warranty is 12 months unless indicated otherwise.

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 19, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40080000

Reticulation Legend

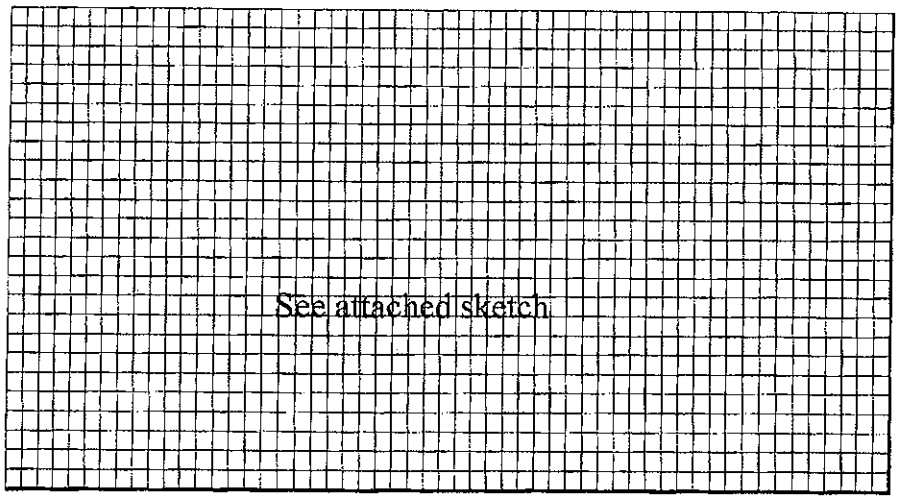
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap —|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 11-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: T Best

R. Sapsford

Warranty is 12 months unless indicated otherwise.

29719

BUILDING INDUSTRY **PEST SERVICES**

SUBSIDIARY OF ENVIROPEST P/L

Level 2, Suite 3
39 Stanley Street
Bankstown N.S.W. 2200
Tel: (02) 9793 2166
Fax: (02) 9708 6306
DX 11227, Bankstown

A.B.N. 56 947 548 056

INSTALLATION SHEET

Builder: KELL + RISBY Date: 11.11.09

Site Address: 13-19 MONTPELIER PL MANLY

Job Sheet No.: 44413

Installer: Panther Lic No.:

SIGNED: TBut Ref No.: 39778000

Environmental Information

External

Chemical Name .....

Vol of Concentration .....

Vol of Emulsion .....

Equipment:
Hand held spray ☐
Truck mounted spray ☐

Other .....

Cavity

Chemical Name .....

Vol of Concentration .....

Vol of Emulsion .....

Equipment:
Hand held spray ☐
Truck mounted spray ☐

Other .....

Wind Speed ..... Wind Direction .....

Time Start ..... Time Finish .....

Area Protected

Under Slab M2..... Perimeter L/m.....

Subfloor M2..... Penetrations Qty 36...

Cure M2 ..... Ringline L/m .....

Slab ☑ Monolithic slab on ground

☐ In-fill slab ☐ Waffle pod

☐ B/J Timber floor ☐ Ultra floor

Method of Protection

☑ Physical Barrier ☐ Chemical Barrier

Type..... SHEETS .....

Reticulation Legend

Path trap ☒ Drilled pipe ——

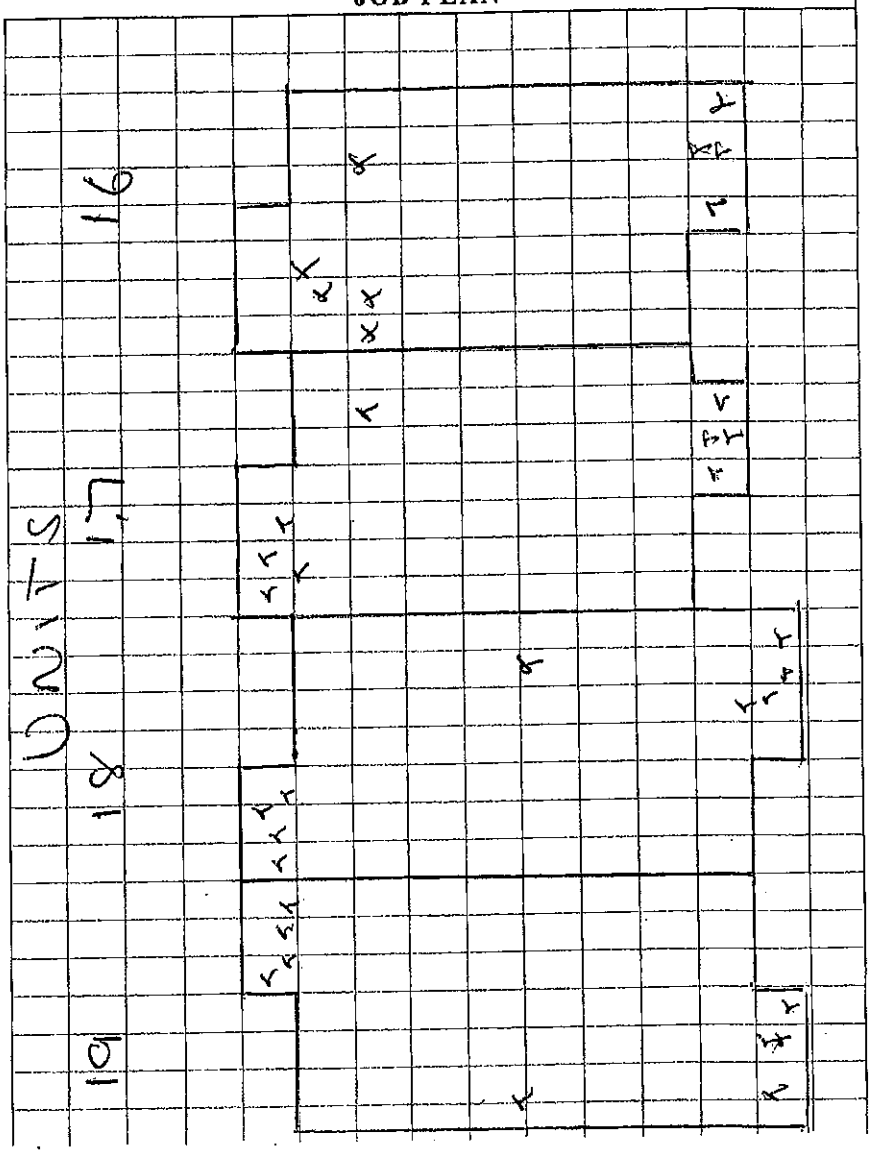
Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //

JOB PLAN



BUILDING INDUSTRY PEST SERVICES

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 13, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 39778000

Reticulation Legend

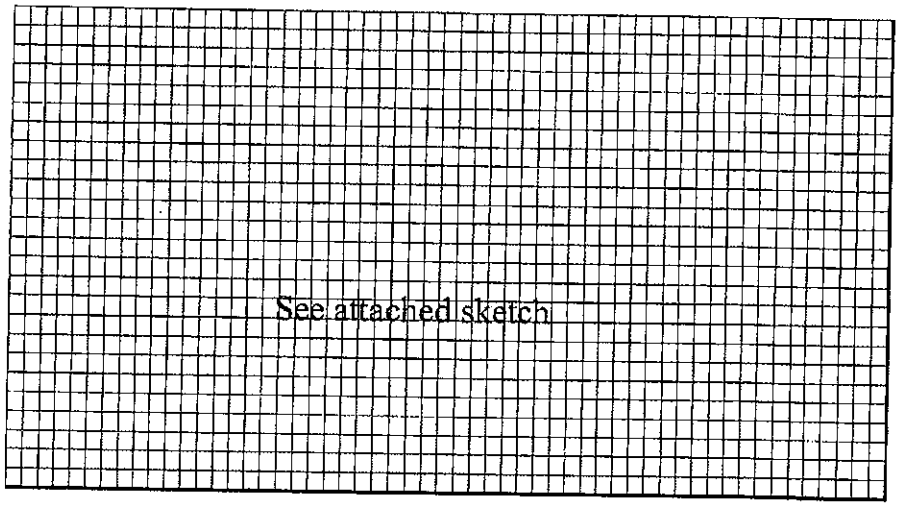
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 18-11-2009
Number of Penetrations: 8
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: B McLean

R. Sapsford

Warranty is 12 months unless indicated otherwise.

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 14, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40075000

Reticulation Legend

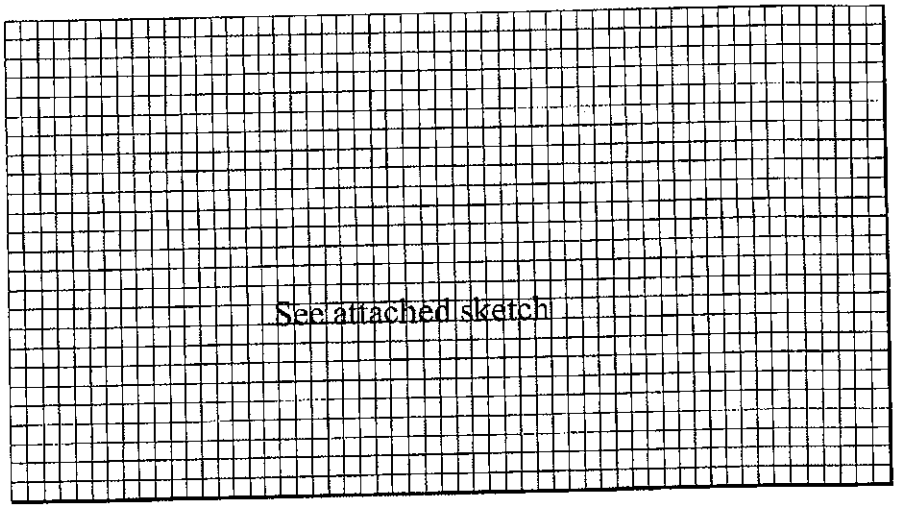
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 18-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: B McLean

R. Sapsford

Warranty is 12 months unless indicated otherwise.

BUILDING INDUSTRY **PEST SERVICES**

P.C. Licence No: 611

Head Office: Suite 9, 39 Stanley Street, Bankstown NSW 2200
Phone: (02) 9709 2011 Fax: (02) 9708 6306 DX: 11227

A.C.N. 002313439

CERTIFICATE OF TREATMENT

This document is official certification that the building described has been treated by BUILDING INDUSTRY PEST SERVICES to provide protection from subterranean termite attack. Please note that further treatments may be required to completely protect your home.

SITE ADDRESS: **MANLY, UNIT 15, MONTPELIER PLACE [lot 13-19]**

BUILDER OR OWNER: **KELL & RIGBY (BUILDERS) P/L**

ATTENTION: Whilst the barrier system provides significant protection for many years, annual, complete inspection is recommended. Additional treatment is only required when bridging or breaching has occurred or is suspected. Any additions, alterations or earth works, including gardening adjacent to the building, may render the chemical or Granitgard barrier ineffective.

Slab Penetrations

Ref. 40076000

Reticulation Legend

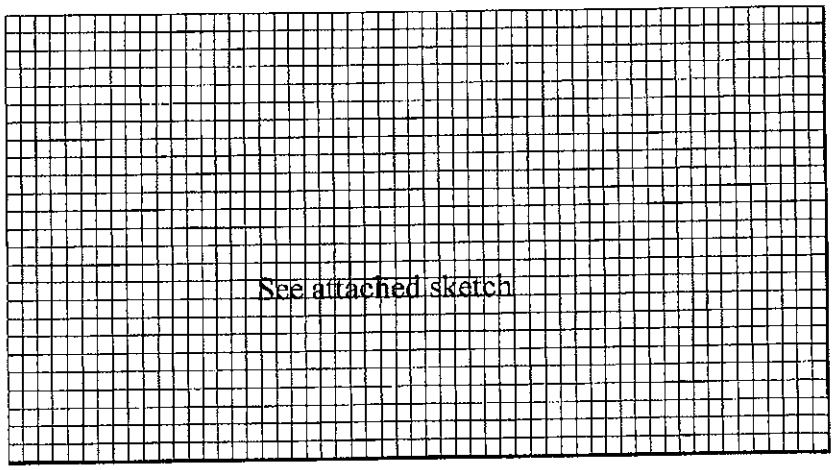
Path trap ⊠ Drilled pipe ——

Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //



Rough sketch only - refer builder's plans for true dimensions.

DATE OF TREATMENT: 18-11-2009
Number of Penetrations: 9
Materials Applied: TERMIFLANGES

Certification

This document certifies that the above structure has been treated in accordance with AS3660-1 except for the limitations listed above.

Authorised by:

Applied by: B McLean

R. Sapsford

Warranty is 12 months unless indicated otherwise.

29719

BUILDING INDUSTRY **PEST SERVICES**

SUBSIDIARY OF ENVIROPEST P/L

A.B.N. 56 947 548 056

Level 2, Suite 3
39 Stanley Street
Bankstown N.S.W. 2200
Tel: (02) 9793 2166
Fax: (02) 9708 6306
DX 11227, Bankstown

INSTALLATION SHEET

Builder: KELL & RIGBY Date: 18/11/2009

Site Address: LOT 13-19 MONTPELIER PLACE MANLY Job Sheet No.: 43627

Installer: BILL Lic No.:

SIGNED: Ref No.: 39778001

Environmental Information

External
- Chemical Name .....
- Vol of Concentration .....
- Vol of Emulsion .....
- Equipment: Hand held spray ☐ Truck mounted spray ☐
- Other .....

Cavity
- Chemical Name .....
- Vol of Concentration .....
- Vol of Emulsion .....
- Equipment: Hand held spray ☐ Truck mounted spray ☐
- Other .....

Wind Speed ..... Wind Direction .....

Time Start ..... Time Finish .....

Area Protected

Under Slab M2..... Perimeter L/m .....

Subfloor M2..... Penetrations Qty 20

Cure M2 ..... Ringline L/m .....

Slab ☐ Monolithic slab on ground ☐ In-fill slab ☐ Waffle pod ☐ B/J Timber floor ☐ Ultra floor

Method of Protection

☐ Physical Barrier ☐ Chemical Barrier

Type.....

Reticulation Legend

Path trap ☒ Drilled pipe ——

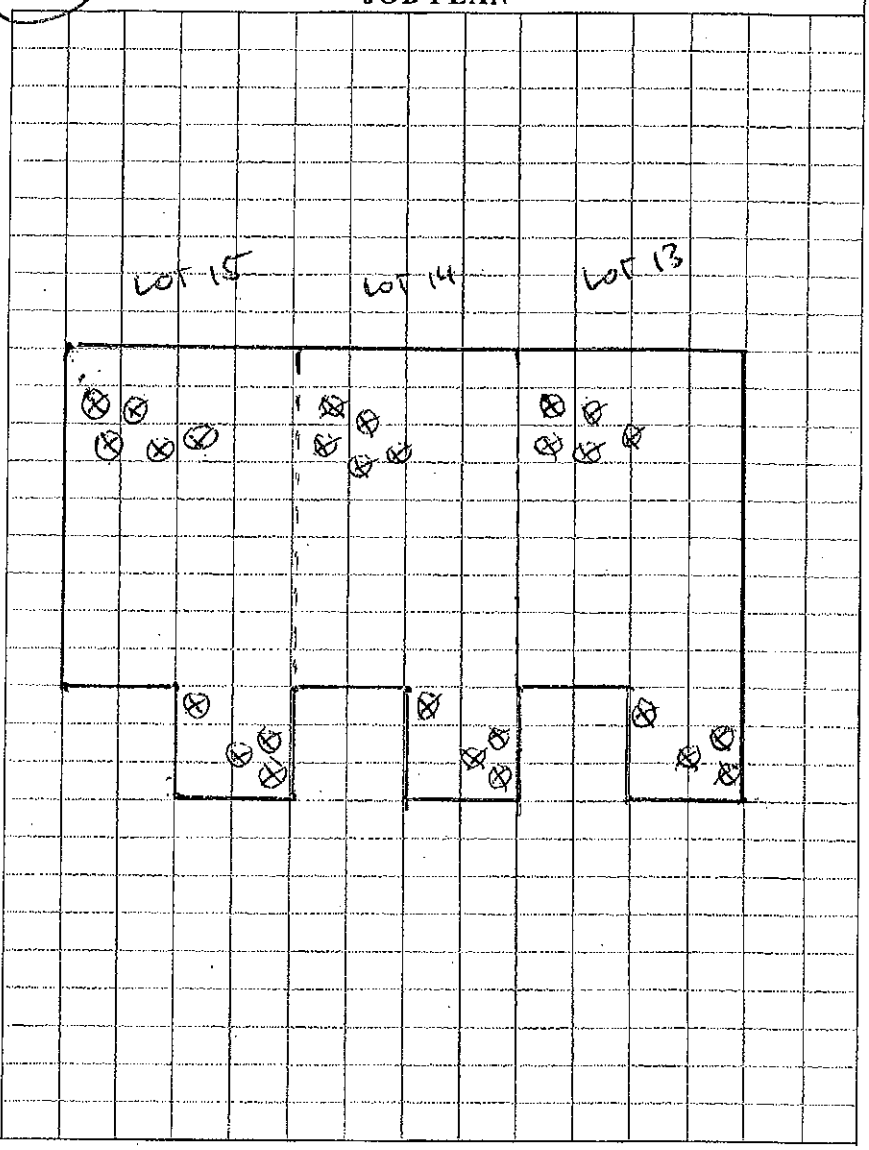
Undrilled pipe - - - - End cap ——|

Physical Barrier Legend

Penetration ⊗ Start / Finish ×

Area Protected //

JOB PLAN



Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4179

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 13 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4179** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4180

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 14 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4180** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4181

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 15 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4181** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4182

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 16 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4182** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4183

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 17 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4183** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4184

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 18 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4184** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Easy Living Home Elevators Vic Pty Limited
64 Penshurst Street, Willoughby, PO BOX 103, NSW, 2068
Maintenance Hotline: 1800 813 555

20 October 2010
Ref: N4185

CERTIFICATION AND COMPLIANCE STATEMENT

Dear Sir / Madam,

We, Easy Living Home Elevators Pty Limited, hereby advise:

We are the holders of the IGV **"Domus Lift"** approval, compliance to AS1735 Part **18.**

The lift installed at **ST PATRICKS ESTATE, STAGE 3, 19 Montpelier Place, Manly NSW, 2095** has been installed in accordance with the manufacturers specifications, the special conditions of the Work Cover approval held by Easy Living Home Elevators Pty Limited, and **AS1735 Part 18 " Private Residential Lift "**
In accordance with the above approvals, standards and procedures, we certify the disabled persons lift with reference number **N4185** as complete, tested and passed into service on 20/10/10

Yours Faithfully,

Project Management Team
Easy Living Home Elevators

Lend Lease
Development

1st November, 2010

Paul Ladogna
Vic Lilli & Partners
Suite 1, Level 5
56 Railway Parade
BURWOOD NSW 2134

Dear Paul,

Montpelier Stage 3, House 13-19 Montpelier Place, Manly
Occupation Certification Application
Re: ANS02 Compliance

Lend Lease Development wish to confirm compliance to conditions ANS02 under development application 342/07. Lend Lease Development have fully implemented the following conditions within the Ecological Assessment (Appendix J) of the Statement of Environmental Effects (SEE), prepared by LesryK Environmental Consultants and Ecosense Consulting Pty Ltd;

- Mitigation Measures as contained in Section 6.4
- Additional Mitigation Measures as contained in Section 7.2
- Recommendations as contained in Section 11

If there is any further documentation you require, please don't hesitate to contact myself.

Yours faithfully,

PETER NASH
Asst Development Manager

Lend Lease Development Pty Limited
ABN 33 000 311 277
Level 4, 30 The Bond, 30 Hickson Road
MILLERS POINT NSW 2000
Australia

Postal Address
Locked Bag 1
MILLERS POINT NSW 2000

Telephone +61 2 9236 6111
Facsimile +61 2 9383 8259
www.lendlease.com

Ecological assessment proposed residential development.

Lots 13 to 19
Montpelier
Place,
North Head

August 2007

LesryK Environmental
Consultants
in conjunction with
Ecosense Consulting Pty Ltd

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1. Introduction.

Development of parts of the St Patrick's Estate, North Head, New South Wales (NSW) have been the subject of various Development Applications (DAs) and Land and Environment Court decisions since 1996. North of Darley Road, Precinct 2 has already been developed with residential flats and a townhouse development. The construction of 44 apartments and 16 townhouses on Precincts 3 and 12 was completed in June-July 2007, with the construction of Lots 1-8 finalised in February 2007.

This report presents the findings of a flora and fauna survey of the lands that occur within, and in close proximity to, Lots 13 to 19, Precinct 1, Montpelier Place (Figure 1 & 2) (Gunninah Environmental Consultants 2003). The survey has been undertaken at the request of Lend Lease Property Group to determine the ecological impacts associated with the development of these seven lots. For reference, the location of the St Patrick's Estate is provided on Figure 1.

The Proposal would encompass the development of seven semi-detached two and three-storey terraced houses, each supporting a double garage, pool and garden. Where required, more detailed information on the scope of the project is provided in the development's DA.

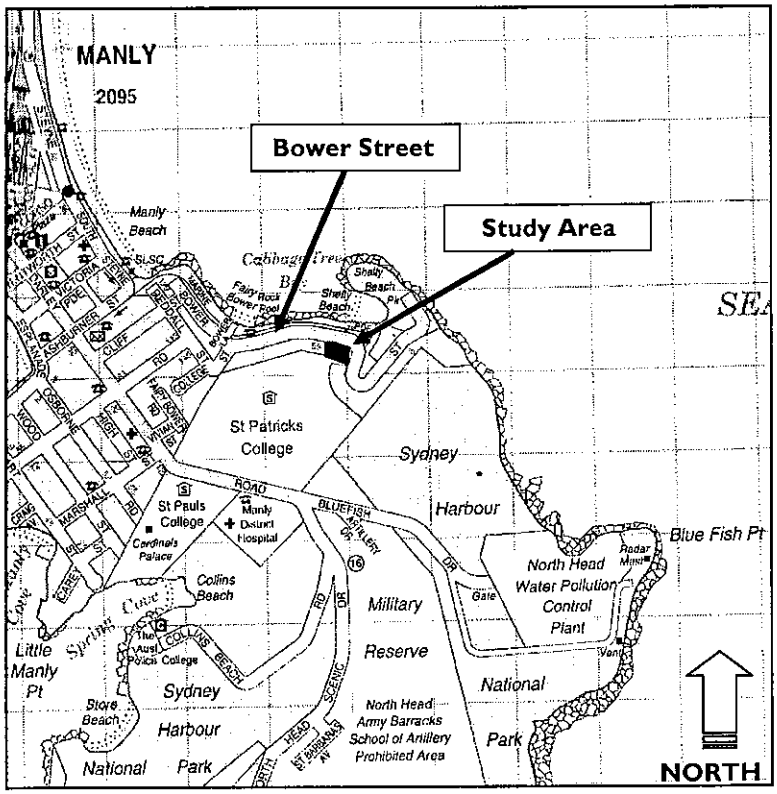


Figure 1: Study location and area.

Source: UBD (1993).
Not to scale.

With reference to the definitions provided by the Department of Environment and Climate Change [DECC] (DECC 2004) it is noted that the:

- Subject site is defined as: the area(s) directly affected by the Proposal (i.e. Lots 13-19 Montpelier Place);
- Study area is defined as: the subject site and any additional areas that are likely to be affected by the Proposal, either directly or indirectly; and
- A local population is defined as: the population that occurs within the study area, unless the existence of contiguous or proximal occupied habitat and the movement of individuals or exchange of genetic material across the boundary can be demonstrated.

'Locality' is considered to encompass all lands that occur within 5 square kilometres (km^2) of the subject site. When referring to the Proposal, this is considered to include all works associated with the development and occupation of Lots 13 to 19.

The assessment of possible impacts associated with the Proposal is based on a field survey of the subject site, a literature review of previous studies undertaken in both the locality and this portion of the Manly Local Government Area (LGA), the consultation of standard databases and the consideration of the objectives of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*), the New South Wales *Environmental Planning and Assessment Act 1979*, NSW *National Parks and Wildlife Act 1974*, NSW *Threatened Species Conservation Act 1995* (*TSC Act*) and any relevant State Environmental Planning Policies (SEPPs).

2. Environmental setting.

As noted, the subject site is located in the Sydney suburb of Manly, within the Manly LGA. Land uses that occur in the vicinity of the study area include residential developments to the north, east and west (Figure 1). To the south is St Patrick's College and further beyond the College is the North Head Army Barracks Military Reserve and Sydney Harbour National Park (Figure 1).

The majority of the subject site is cleared apart from some isolated mature Eucalypts, a single conifer, some semi-mature Acacias and a mix of native and exotic groundcover plants. This vegetation covers approximately 13% of the subject site (around 525 square metres) and is present within the northern portions of the area investigated (Figure 2). A disturbed drainage line containing several small pools of water and sandstone boulders are also present (Figure 2).

In total, Lots 13 to 19 covers an area of approximately 4082 square metres (m^2).

For reference, a photographic record of the subject site has been provided, this illustrating the current condition of Lots 13-19.

Natural elevations within the subject site are around 25 metres (m) Australian Height Datum (AHD), the site being located within a landscape that is characterised by undulating to rolling low hills. The annual average rainfall in the locality is 1220 millimetres (mm) with the greatest falls being experienced during the summer months (Bureau of Meteorology 2007). Average temperatures range from a winter low of approximately 8°C to a summer high of around 26°C (Bureau of Meteorology 2007).

The soils of the subject site have been mapped by Chapman and Murphy (1989) as being comprised of the Lambert Erosional Landscape. These soils are derived from the underlying Hawkesbury Sandstone geology, this being generally comprised of medium to coarse-grained quartz sandstone with minor shale and laminite lenses (Chapman and Murphy 1989). The Hawkesbury Sandstone soils are generally lithosols/siliceous sands that are associated with rock outcrops and Earthy Sands and Yellow Earths on crests and the insides of benches (Chapman and Murphy 1989). These soils are highly permeable, of low fertility and subject to high erosion hazard. Rock outcropping is common and generally occurs as wide benches (Chapman and Murphy 1989).

Conservation reserves and other protected areas that occur in the vicinity of the subject site include Sydney Harbour National Park (this covering an area of 393 hectares [ha]), and a number of smaller Council managed reserves, including Shelly Beach Park, Spring Cove and Little Manly Point, the exact size of which are unknown. Within the Manly LGA there is 268.1ha of National Park and 88.12ha of Crown land (Manly City Council 2004). Whilst this is the case approximately 90% of the bushland in Manly is degraded to some extent due to human activities (Manly City Council 1997 in Manly City Council 2004).

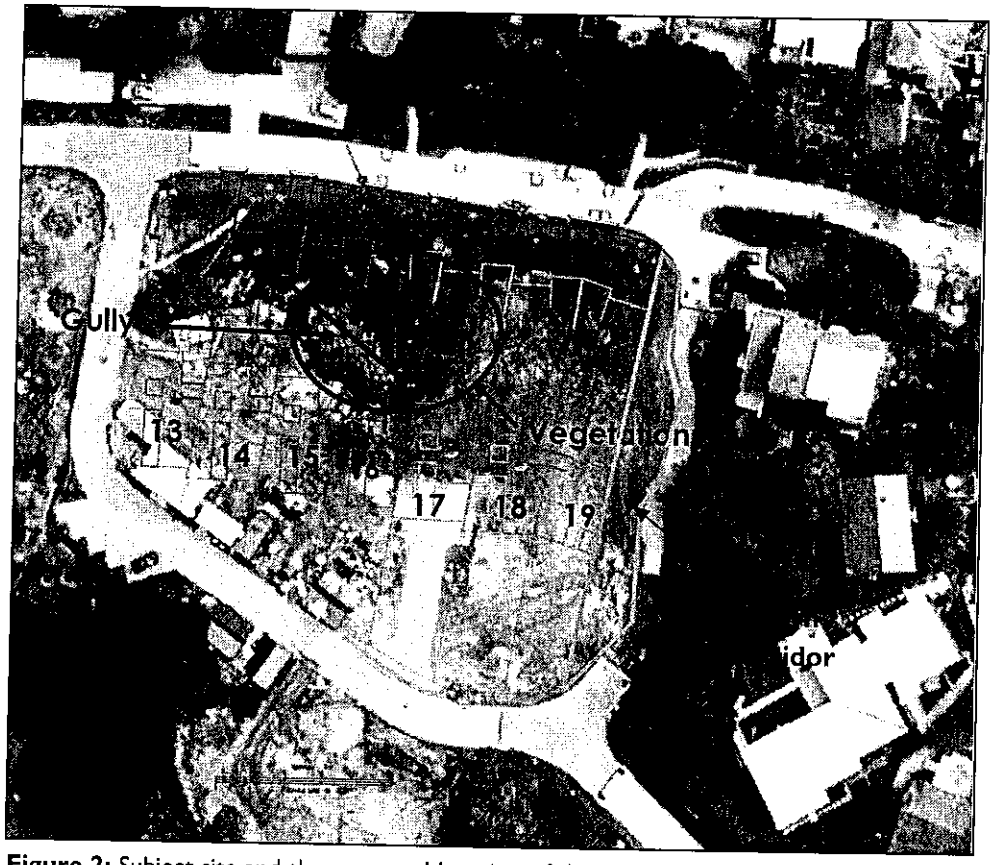


Figure 2: Subject site and the proposed location of the individual lots being assessed.

Source: Lend Lease (2007). Not to scale.

3. Literature review and field guides.

Prior to undertaking any fieldwork, previous studies conducted in the region and known databases were consulted to identify the diversity of flora and fauna species known for, or potentially occurring in, the locality. The identification of known, or potentially occurring, native species within this portion of the Manly LGA, particularly those listed under the Schedules of the *EPBC* and/or *TSC Acts*, thereby permits the tailoring of the field survey strategies to the detection of these animals and plants, their vegetation communities and necessary habitats. By identifying likely species, particularly any threatened animals or plants, the most appropriate species-specific survey techniques can be selected should their associated vegetation communities/fauna habitats be present. The undertaking of a literature search also ensures that the results from surveys conducted during different climatic, seasonal and date periods are considered and drawn upon as required. This approach therefore increases the probability of considering the presence of, and possible impacts on, all known and likely native species, particularly any plants and animals that are of regional, state and/or national conservation concern. This approach also avoids issues inherent with a one off "snap shot" study.

The studies, reports and databases referred to include:

- A flora and fauna report of Manly Council's bushland reserves (Skelton *et al* 2003);
- A flora and fauna assessment of the St Patrick's Estate Precincts 1 and 13 (Gunninah Environmental Consultants 2003);
- A Species Impact Statement prepared for the development of the St Patrick's site (Bali 2005a);
- An ecological assessment report prepared for Lots 9-12, Precinct 13 (LesryK Environmental Consultants 2005);
- Ecological assessment reports prepared for adjacent Lots (Pepper 2005, Bali 2002 & 2004);

- An ecological assessment report prepared for Precinct 3 and 12 (Total Earth Care and Ecosense Consulting (2004);
- The results of on-going Bandicoot monitoring investigations conducted within the St Patrick's and St Theresa's Convent sites (Bali ongoing);
- The Department of Environment and Water Resources (DEW) Online Database (DEW 2007);
- The DECC Atlas of NSW Wildlife (DECC 2007a);
- The BioNet Database (NSW Government 2007);
- The Australian Museum Database (Australian Museum 2007); and
- Manly Council's State of the Environment Report (Manly City Council 2006).

Other reports and documents referred to are provided within the bibliography section of this report.

When accessing the DEW and DECC databases, the search area specified was 5km^2 centred on the subject site, whilst the Manly LGA was used when investigating the Australian Museum and BioNet databases.

All these databases and reports were reviewed and drawn upon where relevant. While reviewing these documents, particular attention was paid to identifying records of species listed under the Schedules of the *EPBC* and/or *TSC Acts*, animals and plants that have been recorded in the locality and which may occur within, or in the vicinity of, the subject site.

Field guides and standard texts used include:

- Harden (1992, 1993, 2000 and 2002), Fairley and Moore (2000), Robinson (1994) and Auld & Medd (1992) (used for the identification of plants);
- Cogger (2000) (reptiles and frogs);
- Simpson and Day (1999) (birds);
- Strahan (1995) (mammals); and
- Triggs (1996) (scats, tracks and markings).

The naming of those species recorded or known for the locality follows the nomenclature presented in these texts.

The conservation significance of those plants and animals recorded is made with reference to:

- A publication on Australia's Rare or Threatened Plants (ROTAP's) (Briggs and Leigh 1996);
- The Schedules to the *EPBC* Act and the *TSC Act*; and
- Manly City Council's State of the Environment Report (Manly City Council 2006).

4. Field survey methods.

A survey of the study area was undertaken by Corrine de Mestre $_{(Bsc.\ Hons)}$ and John Speight $_{(Bsc)}$ on the 10th of July 2007. The investigation of the site involved foot traverses across the entire Proposal area, and those habitats that occur adjacent to it up for a distance of approximately 10m. During these investigations the diversity of plants and animals present was recorded.

The weather conditions experienced during the field investigation were overcast skies, cool temperatures (16°C) and light to moderate breezes.

The survey methods employed during the field investigations were:

- The direct observation of any fauna species present within, or adjacent to, the subject site;
- The identification of all plants within the areas of likely disturbance, including both direct and indirect impacts;

Photographic record of the subject site.

Plate 1: Looking east through the proposed development area. Note several mature trees proposed for removal.

Plate 2: Looking west through the vegetated area depicted in Plate 1.

Plate 3: Looking north through the disturbed nature of the site (vegetated patch in background).

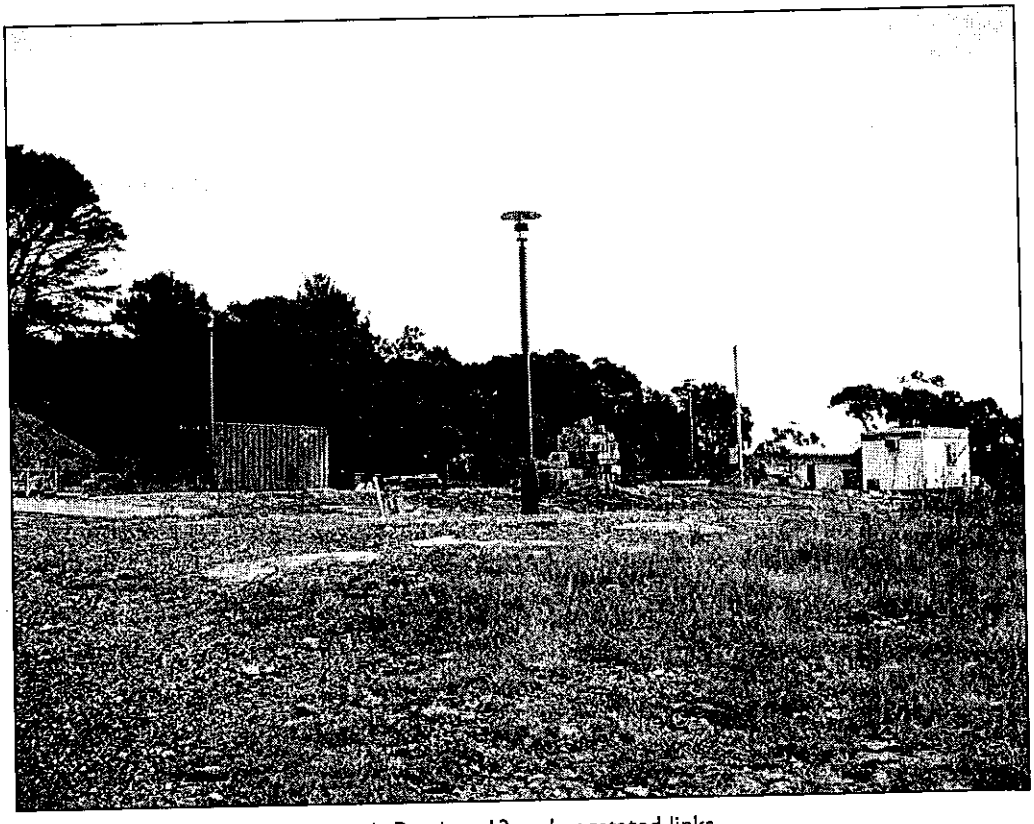


Plate 4: Looking south-west towards Precinct 13 and vegetated links.

- The identification of the structure of those vegetation communities and fauna habitats present;
- Diurnal call identifications of fauna species with all calls being identified in the field;
- The identification of indirect evidence, such as tracks, scats, diggings and scratchings;
- Litter and ground debris searches for reptiles and amphibians; and
- Targeted searches for those species of state and national conservation concern, or their likely habitat areas, that were identified during the literature review stage of the project.

The purpose of the field surveys was to locate within the areas surveyed any plants, animals or vegetation communities that are of state and/or national conservation significance. When conducting the field investigation, the 'Random Meander Method' (as per Cropper 1993), or an adaptation of this was employed. This method is suitable for covering large areas and for locating any rare species (and their associated vegetation communities/habitat types) that may occur within a survey site. The method involves walking randomly across a particular survey area whilst sampling all of the various habitat types and vegetation communities present until no new species have been recorded for at least thirty minutes.

Whilst conducting the fauna survey, efforts were made to document the diversity, structure and value of those habitats present within the areas surveyed for those protected, as defined under the *NSW National Parks and Wildlife Act 1974*, and threatened, species recorded or potentially occurring. This involved assessing the structure of the flora and fauna habitats present and determining their significance for native species, particularly any that are of national and/or state conservation concern. Whilst conducting the habitat assessments, efforts were made to identify features such as known feed trees, mature trees with hollows, connectivity of fauna corridors, aquatic environments and other habitat features important to the life cycle needs of those threatened species known or likely to occur in the study region.

Stands of vegetation were described by their structural characteristics according to Specht (1981), and mapping and community names by Benson and Howell (1994). Where applicable, Endangered Ecological Communities were classified and named according to the NSW Scientific Committee's Final and Preliminary Determinations (various dates).

The diversity of the species recorded during the survey would be influenced by seasonal factors, with some species likely to be inconspicuous or absent from the local population during winter. This is particularly true of terrestrial orchids, which persist as dormant underground tubers during particular seasons. Other species (especially those growing in areas of long grass) are difficult to find unless they are experiencing a period of new growth or are flowering. For these reasons, survey results could have been improved by extending the investigation period to encompass all seasons. However, given the small size and highly disturbed condition of the subject site, in addition to the numerous surveys undertaken on the site over the years, it is considered that the survey time allowed for this investigation is sufficient, and provides an adequate floristic description of the subject site.

By the completion of the field investigation, approximately two (2) person hours of active searches had been accumulated, active searches being defined as the time spent actively searching the study area. Given the physical condition and size of the subject site, combined with the results of the previous ecological investigations undertaken in this locality, this length of time is considered more than adequate when endeavouring to determine the diversity of native species present, their associated habitats and the conservation status of both of these. Given the essentially cleared and disturbed nature of the subject site, access to all parts of the likely development area was above average with no limitations to the success of the study being encountered.

5. Results

5.1. Flora survey.

5.1.1. Plant species.

A list of plant species recorded within the subject site is provided in Appendix 1. This is a comprehensive list of all native species present within the subject site, but is not comprehensive of all weeds detected.

One small mature individual of *Acacia terminalis* ssp. *terminalis* was found during the field investigation (Figure 3). This species is listed as endangered on both the *EPBC* and *TSC Acts*. The individual occurs in the remnant vegetation stand below the fill area on Lot 13.

Consultation of the DECC (DECC 2007a) and DEW databases (DEW 2007) identified a further nine threatened plants that have been previously recorded in the locality (Table 1). Though targeted during the field investigation, none of these plants were recorded within, or in close proximity to, the subject site. As such they are not further considered in this report.

The following plants recorded within the subject site are listed as noxious weeds in the Manly LGA (as per the *Noxious Weeds Act 1993*): Fishbone Fern (*Nephrolepis cordifolia*), Asparagus Fern (*Protasparagus aethiopicus*), Lantana (*Lantana camara*), Mickey Mouse Plant (*Ochna serrulata*), Cotoneaster (*Cotoneaster glaucophyllus*) and Crofton Weed (*Ageratina adenophora*). Recommendations for the treatment of these plants have been provided in Section 10.0 of this report.

Figure 3: Approximate location of the single *Acacia terminalis* ssp. *terminalis* plant recorded (red arrow).

Source: Google maps (2007). Not to scale.

5.1.2. Plant communities.

The subject site is heavily disturbed, the proposed development supporting large areas of fill and sites that have been previously cleared and are now vegetated by exotic grasses. A small discontinuous stand of remnant native vegetation occurs along the base of the fill on the northern side of the subject site. This remnant follows a disturbed drainage line and includes several mature Bangalay (*Eucalyptus botryoides*) trees and naturalised Paperbarks (*Melaleuca quinquenervia*).

Those overstorey plants recorded are around 8m in height and occur above a very sparse spread of native shrubs, twiners and grasses. Native shrubs present include Tick Bush (*Kunzea ambigua*) and Ball Honeymyrtle (*Melaleuca nodosa*). Other common native species are Running Postman (*Kennedia rubicunda*), Coast Wattle (*Acacia longifolia*) and Water Couch (*Paspalum distichum*).

Table 1. Plant species of state or national conservation significance previously recorded within the locality.

Key
E = Endangered; V= Vulnerable.

Species	Status		Habitat*
	TSC	*EPBC*	
Allocasuarina portuensis	E	E	Restricted to a small area of coastal scrub at Nielsen Park.
Acacia bynoeana	E	V	Woodland and Heath on clayey ridge-tops over sandstone.
Acacia terminalis ssp. *terminalis*	E	E	Found during a previous survey undertaken on an adjacent lot (Lot 11) this being present to the west of the subject site.
Callistemon linearifolius	V	V	Ridgetops and upper slopes on sandstone.
Eucalyptus camfieldii	V	V	Woodland and Heath on clayey ridge-tops.
Syzygium paniculatum	V	V	Littoral rainforest.
Caladenia tessellata	E	E	Very rare orchid occurring in clay loam or sandy soils.
Thesium australe	V	V	Grassland or woodland often in damp sites.
Pimelea curviflora var. curviflora	V	V	Woodland and Heath on clayey ridge-tops over sandstone.
Tetratheca glandulosa	V	V	Woodland and Heath on clayey ridge-tops over sandstone.

* based on Harden (1990-2002), Fairley and Moore (2001), LesryK Environmental Consultants (2005) and author's field notes.

5.1.3. Conservation significance of the vegetation.

Benson and Howell (1994) mapped the vegetation of the Sydney 1:100,000 map sheet. They mapped the subject site and surrounds as Sydney Sandstone Ridgetop Woodland. The vegetation on the site is a coastal variant of Sydney Sandstone Ridgetop Woodland, as Bangalay is present rather than the more typical eucalypt species such as Red Bloodwood (*Corymbia gummifera*) and Scribbly Gum (*Eucalyptus haemastoma*).

At a state scale Keith (2002) has classified vegetation communities and estimated the amount of each removed since European settlement. The vegetation in the subject site corresponds to his "Sydney sandstone coastal dry sclerophyll forest". He estimates that there is 3500-4600km^2 of this vegetation type remaining with less than 30% having been cleared since European settlement.

The vegetation community occurring at the site does not conform to any Endangered Ecological Community listed, or currently being considered for listing, on the Schedules to either the *EPBC* or *TSC Acts*.

5.2. Fauna survey.

5.2.1. Habitat types present within the subject site.

Only one habitat type was recorded within the subject site, this being a disturbed environment. This habitat type dominates the subject site and is the result of previous development works undertaken at this locality. Predominantly the site is cleared, levelled and devoid of any habitat features suitable for native fauna. Whilst this is the case, a small discontinuous stand of remnant native vegetation was recorded, this being present along the base of a mound of fill. The vegetation within this portion of the site consists of a few, 8m high mature trees, several semi-mature shrubs (that are to 3m in height) and a regenerative groundcover that supports a mixture of both exotic and native plants. In regards to those eucalypts present, none support any hollows suitable for the roosting or sheltering needs of native animals. Within the disturbed environment, accumulations of ground debris are common, as is the presence of urban and construction refuse, soil mounds, timber, pipes, steel, demountable sheds and so forth. Sandstone rock material is also present within the area surveyed, this being evident along the ephemeral drainage line.

The disturbed environment is characteristic of those modified and altered urban environments that surround the subject site, no habitat features observed within Lots 13 to 19 being unique to this locality. Giving consideration to the life cycle needs of those native species recorded, and their adaptation to urban areas, it is not considered that any further development of the subject site would cause the displacement and/or loss of any of these animals. The disturbed environment is not considered significant for the local occurrence of any viable populations of native fauna or their ecological communities, particularly any animals listed under the Schedules to either the *EPBC* or *TSC Acts*. As such, the disturbed environment could be further developed without significantly affecting the biodiversity of the locality, or threatening the presence of any of the native animals recorded or expected.

5.2.2. Wildlife corridors and vegetation links.

Based on a review of topographic maps and aerial photography, combined with a visual assessment of the subject site undertaken at the time of the field investigation, it is noted that the vegetation that is present to the south of the study area (i.e. that which borders St Patrick's College and is known as Vegetated Link P13 - upper) forms a component of a local vegetation corridor. This corridor finishes to the west at Reddall Street, however connectivity eastwards through to both the Sydney Harbour National Park and North Head Army Barracks Military Reserve is possible. In regards to this corridor (which has been enhanced through the undertaking of habitat restoration works), whilst its width is variable, opportunities do exist for the east – west dispersal of native animals such as the Long-nosed Bandicoot (*Perameles nasuta*). Whilst this locally significant corridor is present to the south of the proposed development area, it is not considered that the establishment of seven residential dwellings within the subject site would present a barrier to the dispersal needs of any native species that are currently utilising and traversing through this bushland (refer to Section 6.0). Similarly, with the retention of corridor to the south of Lots 13 to 19 movements for any ground dispersing species present would still be possible. The proposed residential dwellings are therefore not considered to present a barrier to the movement patterns of any native fauna, thereby isolating or further fragmenting their habitat areas. Similarly the Proposal would not isolate any interbreeding populations.

5.2.3. Fauna species recorded during the field investigations.

By the completion of the field surveys 6 native birds, 2 reptiles and 1 frog had been recorded within, or adjacent to, the subject site (Table 2), none of these being listed (or currently considered for listing i.e. Preliminary Determinations) under the Schedules to either the *EPBC* or *TSC Acts*. Similarly none are of regional conservation concern within the Manly LGA (Manly City Council 2006).

In addition to the native species recorded, a number of introduced animals were also detected, or indicated as occurring, within the subject site (Appendix 2).

Table 2. Fauna species recorded during the field investigation.

COMMON NAME	FAMILY and SCIENTIFIC NAME
BIRDS	
	Psittacidae
Rainbow Lorikeet	*Trichoglossus haematodus*
	Meliphagidae
Little (Brush) Wattlebird	*Anthochaera chrysoptera*
Noisy Miner	*Manorina melanocephala*
	Artamidae
Australian Magpie	*Gymnorhina tibicen*
Pied Currawong	*Strepera graculina*
	Hirundinidae
Welcome Swallow	*Hirundo neoxena*
REPTILES	
	Scincidae
Garden Skink	*Lampropholis delicate*
	Gekkonidae
Lesueur's Velvet Gecko	*Oedura lesueurii*
AMPHIBIANS	
Common Eastern Froglet	*Crinia signifera*

In regards to the detection of those native species recorded:

- All of the birds were observed within, adjacent to, or flying over the subject site, or identified from their distinct calls;
- Several Garden Skinks (*Lampropholis delicata*) were observed at various locations throughout the subject site whilst conducting the ground debris searches;
- A juvenile Lesueur's Velvet Gecko (*Oedura lesueurii*) was observed in association with a sandstone outcrop that occurs beyond the limits of the subject site; and
- The Common Eastern Froglet (*Crinia signifera*) was heard calling from the drainage line that is present within the subject site.

The native species recorded within the subject site are all protected, as defined by the NSW *National Parks and Wildlife Act 1974*, but considered to be common to abundant throughout the surrounding region. These animals are all commonly recorded in Hawkesbury Sandstone vegetation, as well as in association with residential areas and suburban properties. All of the species recorded would be considered either generalist and/or suburban animals (Catteral, Green and Jones 1991). These species would not be solely reliant upon those habitats present within the subject site such that the removal or further disturbance of these would threaten the occurrence of these animals. The species recorded are all expected to be present within both the subject site and surrounding locality post-construction. Due to their ability to adapt to, and be tolerant of, urban environments, none of the native species recorded would be adversely affected by the Proposal such that the viability of a local population of that animal would be placed at risk of extinction.

The on-going occupation of the property could potentially influence the diversity of native species present. Whilst this is the case, the species recorded are known to be adaptable to and be tolerant of urban environments, the retention of the vegetated links (e.g. Vegetated Link P13 - upper) and Sydney Harbour National Park to the rear and south-east of the subject site expected to ensure the long-term presence of these animals.

5.2.4. Fauna species previously recorded within the locality.

Fauna surveys and compilation lists prepared for the locality have identified an additional eighteen (18) native mammals, one hundred and sixty two (162) native birds, twenty eight (28) reptiles and nine (9) frogs (Appendix 2). In addition to these, a number of introduced animals have also been recorded (Appendix 2).

Of those native species previously recorded, 44 are listed, or currently being considered for listing, under the Schedules to the *EPBC* and/or *TSC Acts* (Table 3). Based on the consideration of the habitat needs of those native species recorded during the field survey, combined with the identification of those habitats present within the subject site, it is expected that, of those state and nationally listed threatened species previously recorded in the locality (as listed in Table 3), six (6) have the potential to be present within, or in the vicinity of, the subject site. For reference, the main habitat requirements of these seven animals, and a consideration of the likely impacts of the Proposal on the local viability of these species has been provided in Appendix 3. When assessing the extent of likely impact of the Proposal on the local and regional presence of those species presented in Appendix 3, including their movement patterns and interbreeding needs, the assessment criteria provided under Section 5A of the NSW *Environmental Planning and Assessment Act 1979* have been referred to and drawn upon. None of the threatened animals listed in Appendix 3 are considered to solely rely upon the subject site, such that the Proposal would have a significant impact on the local or regional viability of these species, their populations or habitats.

In relation to the species listed in Table 3, two, the Long-nosed Bandicoot and Grey-headed Flying-fox have the potential to be impacted on by the Proposal due to either the presence of resident individuals to the south of the subject site or previous recordings of these animals within the study area. Based on a precautionary approach, further ecological assessments have been undertaken on these species in Section 9 of this report. Given the structure and condition of the habitat to be modified as part of the Proposal, it is not considered that there would be any impact on the remaining species listed in Table 3 as a result of the future development of the subject site.

In relation to the additional threatened species listed in Table 3, though previously recorded within the locality, it is noted that these animals have specific habitat requirements (e.g. open expanses of water, rainforests, well developed woodlands and caves), no components of which are present within or in close proximity to the subject site. As such, no locally viable populations of these species would be present within or beyond the limits of the subject site. Therefore, as no locally viable populations of these animals would be present, it is not considered that the undertaking of the Proposal would have an adverse impact on any of these species, their populations or habitats.

The DECC has prepared, or is currently preparing, recovery plans for the Koala (*Phascolarctos cinereus*), Gould's Petrel (*Pterodroma leucoptera*), Barking Owl (*Ninox connivens*), Long-nosed Bandicoot (*Perameles nasuta*) and Large Forest Owls, these species having been previously recorded within the Manly LGA. As part of these recovery plans certain objectives have been established. Given the minimal extent, and type, of habitat to be modified as part of the Proposal, it is not considered that the development of the subject site would breach any of these objectives such that there would be a significant impact on these animals or their necessary habitats.

Table 3. Threatened fauna species previously recorded in the locality.

Legislation
EPBC Act M – Listed as migratory under the *EPBC Act.*
EPBC Act TM – Listed as threatened and migratory under the *EPBC Act.*
E – endangered population at North Head as listed under the *TSC Act.*
Bold – species potentially present within the subject site.

Common Name	Scientific Name	Legislation
MAMMALS		
Spotted-tailed Quoll	*Dasyurus maculates*	*EPBC Act and TSC Act*
Long-nosed Bandicoot	***Perameles nasuta***	***TSC Act E***
Koala	*Phascolarctos cinereus*	*TSC Act*
Grey-headed Flying Fox	***Pteropus poliocephalus***	***EPBC Act and TSC Act***
Eastern Bentwing Bat	***Miniopterus schreibersii***	***TSC Act***
BIRDS		
Wandering Albatross	*Diomedea exulans*	*EPBC Act TM*
Black-browed Albatross	*Diomedea melanophris*	*EPBC Act M and TSC Act*
Yellow-nosed Albatross	*Diomedea chlorohynchos*	*EPBC Act M*
Shy Albatross	*Diomedea cauta*	*EPBC Act TM and TSC Act*
Sooty Albatross	*Phoebetria fusca*	*EPBC Act TM and TSC Act*
White-chinned Petrel	*Procellaria aequinoctialis*	*EPBC Act M*
Gould's Petrel	*Pterodroma leucoptera*	*EPBC Act TM and TSC Act*
Fairy Prion	*Pachyptila turtur*	*EPBC Act*
Wedge-tailed Shearwater	*Puffinus pacificus*	*EPBC Act M*
Short-tailed Shearwater	*Puffinus tenuiorstris*	*EPBC Act M*
Southern Giant Petrel	*Macronectes giganteus*	*EPBC Act TM and TSC Act*
White-tailed Tropicbird	*Phaeton lepturus*	*EPBC Act M*
Cattle Egret	*Ardea ibis*	*EPBC Act M*
Great Egret	*Ardea alba*	*EPBC Act M*
Eastern Reef Egret	*Egretta sacra*	*EPBC Act M*
Wandering Tattler	*Hetroscelis incana*	*EPBC Act M*
Sooty Oystercatcher	*Haematopus fuliginosus*	*TSC Act*
Arctic Jaeger	*Stercorarius parasiticus*	*EPBC Act M*
Long-tailed Jaeger	*Stercorarius Longicauda*	*EPBC Act M*
Caspian Tern	*Sterna caspia*	*EPBC Act M*
Common Tern	*Sterna hirundo*	*EPBC Act M*
Sooty Tern	*Sterna fuscata*	*TSC Act*
Osprey	*Pandion haliaetus*	*EPBC Act M and TSC Act*
White-bellied Sea-eagle	***Haliaeetus leucogaster***	***EPBC Act M***
Superb Fruit-dove	*Ptilinopus superbus*	*TSC Act*
Swift Parrot	*Lathamus discolor*	*EPBC Act and TSC Act*
Powerful Owl	*Ninox strenua*	*TSC Act*
Barking Owl	*Ninox connivens*	*TSC Act*
White-throated Needletail	*Hirundapus caudacutus*	*EPBC Act M*
Fork-tailed Swift	*Apus pacificus*	*EPBC Act M*
Regent Honeyeater	***Xanthomyza phrygia***	***EPBC Act TM and TSC Act***
Rufous Fantail	*Rhipidura rufifrons*	*EPBC Act M*
Satin Flycatcher	*Myiagra cyanoleuca*	*EPBC Act M*
Black-faced Monarch	*Monarcha melanopsis*	*EPBC Act M*
Spectacled Monarch	*Monacrha trivirgatus*	*EPBC Act M*
Diamond Firetail	***Stagonopleura guttata***	***TSC Act***
REPTILES		
Heath (Rosenberg's) Goanna	*Varanus rosenbergi*	*TSC Act*
AMPHIBIANS		
Giant Burrowing Frog	*Heleioporus australiacus*	*EPBC Act and TSC Act*
Red-crowned Toadlet	*Pseudophryne australis*	*TSC Act*

6. The Proposal Impacts

6.1. Flora.

Native and weed vegetation would be removed during the development of the subject site. All except one of the native species affected are considered to be common to abundant in the sandstone coastal areas of the Sydney region. A positive impact of development would be the removal of the six species of noxious weeds present on the subject site.

The only pre-construction impact on threatened flora would be the removal of one individual of Sunshine Wattle (*Acacia terminalis* ssp. *terminalis*) and its habitat (including the potential soil seed bank) prior to construction on Lot 13. Post-construction, the transplanted *Acacia terminalis* ssp. *terminalis* individual could be affected by fire, grazing, trampling, altered drainage or other factors associated with human activity. These potential impacts would be minimised through the implementation of the Translocation Management Plan (Total Earth Care, 2005) (see Section 6.4 below).

6.2. Fauna.

The potential effects of development of Lots 13-19 on fauna pre-, during and post-construction are summarised below. Mitigation aimed at minimising these impacts is discussed in Section 6.4.

Potential construction impacts for threatened fauna species and endangered populations would include the following:

- Loss of 525m^2 of potential foraging habitat for bandicoots on Lots 13-19;
- Loss of at least 7 native trees, these plants providing foraging opportunities for a range of birds, the Common Brushtail Possum (*Trichosurus vulpecula*) and Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Creation of movement barriers associated with cleared areas/construction activities;
- Noise and human activity; and
- Potential injury/death of individuals.

Potential post-construction impacts for the endangered population of bandicoots include:

- Potential road mortality;
- Barrier effects of roads, driveways and retaining walls;
- Deterrent effects of lighting; and
- Noise and human disturbance.

Overall, approximately 525m^2 of disturbed land that includes some vegetation would be permanently removed as a result of the development. The loss of this vegetation would be offset through landscaping works, the Proposal intending to develop 232.4m^2 of lawn and 717.5m^2 of shelter/shrubs within the rear courtyard of the Lots and 191m^2 of shrub/lawn on the eastern boundary of Lot 19 (total = 1140.9 m^2).

6.3. Cumulative Impacts.

A number of DA's have been approved or submitted for development of Darley North since 2000. Cumulative impacts are summarised in Table 4 below:

Overall, more than 20.770m^2 of habitat would be permanently removed north of Darley Road. At least 11,822.2m^2, would be retained/planted in the form of fuel-managed habitat corridors, additional vegetated links, lawns and garden beds. More than 86 trees would be removed.

Table 4. Summary of cumulative impacts north of Darley Road.

Precinct	Notional Construction Timing (Years)	Vegetation to be Permanently Removed (m^2)	Vegetation to be Retained/Planted (m^2)	Trees to be Removed
P2	2000-2	1560	3440	-
P3 & P12	2005-7	12,627	3997[1]	-
Decontamination, P1 & P13	2003	1800	? (garden planting)	18
Lots 1-8, P13	2004-6	2800	2420	49
Lots 9-12	2006-7	1458	824.3	12
P1 (Lots 13-19)	2007	525	1140.9	7
TOTAL	**7**	**20,770**	**11,822.2**	**86**

[1] 1012m^2 to be retained and 2985m^2 to the planted.

6.3.1. *Acacia terminalis* ssp. *terminalis* individuals.

When considering and assessing the cumulative impacts of the Proposal on the *Acacia terminalis* ssp. *terminalis* individual present, the following factors are of relevance:

1. A large population of this subspecies is present within the nearby Sydney Harbour National Park. Through reference to known databases and previous studies prepared for this locality, it is likely that this population is adequately represented within this conservation reserve;

2. The individual of *Acacia terminalis* ssp. *terminalis* recorded on Lot 13 does not comprise a significant area of known habitat for this subspecies. Similarly, the site would not be significant in the overall conservation of this subspecies in either the locality or surrounding region; and

3. It is proposed that the *Acacia terminalis* ssp. *terminalis* individual (and an area of surrounding soil) would be translocated to the vegetation link that occurs immediately south of Precinct 13. The success rate of relocated individuals has been varied – the overall success generally good but with last summer's (2006-07) extremely high temperatures and the incessant drought many of those individuals transplanted during this period did not survive (Total Earth Care, pers.comm.). Whilst it is acknowledged that the success of translocation programme is not guaranteed, the individual (and any seeds within the soil that is collected as part of the plants translocation) is likely to survive due to its ability to germinate well in response to disturbance events. Provided that the transplanting is undertaken during the cooler periods it is likely that the individuals will survive to maturity.

Whilst it is acknowledged that the Proposal would contribute to the cumulative removal of this species from private land holdings across its range, this impact is considered to be relatively minor based on a consideration of the above three factors.

6.3.2. Long-nosed Bandicoot.

With respect to assessing the impacts of habitat removal on the endangered population of bandicoots, it is important to take into account previous and proposed plantings on the Estate. Vegetation links have been progressively established on the site since 1997. The purpose of these was to provide bandicoots with additional habitat prior to development of Precincts 1 and 3. It has been demonstrated that bandicoots utilise these links for foraging and sheltering purposes (Bali ongoing). Another small habitat link was established opposite to the Precinct 2 apartments.

Other areas directly adjacent to Precinct 13 were planted during January to April 2006 as part of the early works for construction of Lots 1-8 (see Appendix 4). Similarly, development of Precincts 3 and 12 is associated with the establishment of a number of major and minor habitat links planted between December 2005 and March 2006, both within the Estate and between the Estate and the nearby National Park. Some of these were previously agreed with DECC, whilst other supplementary plantings have been modified or added during the design process.

Development of Darley North is almost complete after a seven-year period. Lots 9-12 (Precinct 13) are currently underway, with Lots 13-19 (Precinct 1) due to start early in 2008 and Lots 20-26 (Precinct 1) also projected to begin in 2008. During this time, habitat has been removed and replaced through a staging process aimed at minimising the scale of impact in any one location and the distribution of impacts over the whole of Darley North. By undertaking habitat creation/enhancement works well in advance of construction (i.e. vegetated links) and prior to clearing and construction (i.e. early works program), the availability of some habitat in the immediate area is ensured during development. Monitoring throughout the construction process is important to detect any changes in bandicoot activity as early as possible and to implement further mitigation measures if necessary.

The impacts of construction on Lots 13-19 would be minimised through the incorporation of appropriate mitigation measures (see Section 6.4). In the longer term, management protocols and strategies undertaken in consultation with DECC would be implemented to minimise Estate-wide cumulative impacts (see Section 7.0).

6.4. Mitigation Measures.

The Proposal incorporates a number of pre-construction and post-construction mitigation measures that are aimed at minimising the impacts of the development on flora and fauna species.

It is important to note that translocation of threatened plant species is not considered by the DECC to be a mitigation measure but rather an emergency procedure undertaken only where habitat destruction is imminent. Prior to construction, the *Acacia terminalis* ssp. *terminalis* individual present (including an area of the soil that surrounds this plant) would be excavated and translocated to a recipient site in the vegetated link immediately south of Precinct 13. A Translocation Management Plan has been previously prepared to guide this process for the translocation of other individuals from Lots 9-12. The Management Plan contains guidelines for post-translocation management and monitoring and a map showing the location of plants to be salvaged and the recipient site. The management plan is consistent with the *Guidelines for the Translocation of Threatened Plants in Australia* (Vallee *et al.* 2004).

6.4.1. Pre-construction.

Pre-construction mitigation measures for flora and fauna include:

- Conducting a site induction for contractors to alert them to the presence and location of threatened plants and retained bandicoot habitat;
- Translocating the individual of Sunshine Wattle (*Acacia terminalis* ssp. *terminalis*) and its surrounding soil, and weed management of the translocated soil;
- Erecting temporary barrier fencing to prevent machinery from damaging or removing surrounding vegetation;
- Incorporating a 20-30cm gap under the barrier fencing to facilitate bandicoot movements throughout the study area; and
- Integrating 'overlaps' in sediment fencing to permit bandicoot access.

6.4.2. Construction.

Construction mitigation measures for flora and fauna include:

- Applying the Bandicoot Construction Protocol (see Appendix 5);
- Continuing to monitor vegetated links quarterly throughout the construction process;
- Constructing, implementing and maintaining soil erosion and sediment control in accordance with requirements of the stormwater management manual *Managing Urban Stormwater – Soils and Construction* (Landcom 2004);
- Ensuring vehicles and machinery do not enter those portions of the site proposed for retention; and

- Removing temporary soil and water management structures only after the site has been stabilised/rehabilitated.

6.4.3. Post-construction.

Post-construction mitigation measures for flora and fauna include:

- Minimising the risk of road kills through enforcing a 'Shared Zone' limiting the speed limit to 15 – 20 kilometres per hour;
- Removing weeds and planting 1140.9m^2 of landscaping (see Figure 4), this including 23 endemic trees;
- Ensuring that the landscape plantings do not include aggressive exotic species that could invade the adjacent bushland;
- Including a covenant prohibiting future leaseholders from owning dogs and cats to minimise the risk of bandicoot predation;
- Incorporating additional mitigation measures as per letters received by Lend Lease Development from the NPWS (now DECC) dated 20 November 2000 and 3 November 2003 (see Section 7.2);
- Preparing a Bandicoot Amelioration Strategy for the entire Estate (see Section 7.1);
- Implementing monitoring and educational programs consistent with the Recovery Plan (see Section 7.1); and
- Continuing to monitor vegetated links during and post-construction (see Section 7.1.1).

7. Long-term management strategies.

A summary of long-term management measures and strategies relevant to the protection and maintenance of bandicoot habitat is presented below:

7.1. Bandicoot Amelioration Strategy.

Since 1996 the Trustees, together with their consultants and the DECC, have developed a range of amelioration measures to ensure that foraging and shelter habitat, and movement corridors, are maintained and/or enhanced during the development of various precincts on the Estate. These are described in the report Bandicoot Management Plan St Patrick's Estate (Bali 2005b). The plan is an evolving document that would eventually apply to the entire Estate (both developed and residual).

7.1.1. Vegetated Links Monitoring.

Development of Precincts 1 and 3 was approved by the Land and Environment Court in 1996. As part of the Conditions of Consent for development of Precinct 1, vegetated links were established within St Patrick's Estate in 1997 (P12), 2000 (P1) and 2002 (P13 upper). These were designed in order to increase the amount of lawn/shrub ecotone, the preferred habitat for Long-nosed Bandicoots. Their primary purpose is therefore to provide bandicoot movement corridors and shelter both within the Estate and between the Estate and Sydney Harbour National Park. As vegetated links were considered to be experimental, they required monitoring.

Quarterly monitoring of foraging activity and bandicoot numbers was undertaken for vegetated links P12, P1 and P13 (upper) from April 2002 to February 2003. In April 2004, a longer term monitoring program was initiated with the aim of collecting additional baseline data for the whole Estate prior to construction (Darley North) and decontamination/construction in the vicinity of existing shelter link P10 (Darley South) and to determine if bandicoots will continue to use established/future vegetated links for foraging and sheltering throughout the construction process. This monitoring program is ongoing.

Vegetated link P1 is located closest to the subject site. During April 2002 to February 2003, the quality of foraging habitat near P1 appeared to decline. As plantings took a long time to establish, habitat structure remained very open and therefore unsuitable as bandicoot refuge. Furthermore, a central portion of the link was washed away and then restored in 2002. However by February 2005, the link was impenetrable and was used by bandicoots for both foraging and sheltering. The highest frequency of diggings was recorded near P1 in June 2006. Four to five bandicoots were observed near P1 in 2004-5, with some of these taking refuge in the link when disturbed.

Since February 2003, the level of foraging activity north of Darley Road has increased to the highest recorded levels in June 2005. Digging frequency has remained consistently high near vegetated link P12 over this period, but has varied near links P1 and P13 (upper). Fluctuations in the number of diggings are not correlated with bandicoot captures (see Section 7.1.2) that have remained relatively stable over the same period. As the highest levels of foraging corresponded closely with the onset of construction activities on Precincts 3 and 12, it appears that the links are functioning as they were intended by providing additional habitat for bandicoots disturbed by construction activities.

Since monitoring began in March 2004, bandicoot diggings south of Darley Road increased to September 2004 and then decreased to August 2005. Increases were associated with the post-decontamination activities on the site. However, the number of bandicoots observed and captured has remained relatively consistent during the past 2 years.

7.1.2. North Head Monitoring.

The DECC has been monitoring an endangered population of Long-nosed Bandicoots in North Head. Quarterly monitoring sessions involve trapping 20 transects (including four on St Patrick's Estate) over a 3-night period. In addition a more intensive survey is undertaken every two years; this involves trapping 43-46 transects over a 5-night period. Since August 2002, the Church has participated in the program by allowing the DECC to monitor four transects on St Patrick's Estate and by encouraging its consultants to assist with trapping activities. Transects within the Estate were included in the most recent intensive monitoring session held in May 2006.

The number of bandicoots captured along four transects located in St Patrick's Estate during quarterly monitoring is variable. Numbers appeared to decline progressively from August 2002 to February 2004, although this trend could not be correlated with any activities being undertaken on or near the Estate. However, the number of bandicoots captured between May 2004 and November 2006 has remained relatively high and stable (n=16-23) even though construction activities in Precincts 13 and 12 began in January 2005 and January 2006, respectively. This indicates that construction has not resulted in any noticeable decrease in the number of bandicoots using the area. Although there have been lows recorded in February 2006 and 2007, these seem to be related to environmental factors.

During intensive trapping on North Head in May 2002, 64 individuals were trapped 117 times over 5 days. Using Population Viability Analysis (PVA), DECC estimated the North Head bandicoot population to be approximately 94 individuals. However, St Patrick's Estate was not included in that estimate. In May 2004, 116 individuals were captured 211 times and the population was estimated at 130-160 bandicoots using PVA. The DECC attributed the apparent population increase to the effectiveness of various mitigation measures implemented across North Head including traffic calming measures, fox control and burning (see Appendix 6). The number of bandicoots captured in May 2006 fell slightly to 102.

The Church will continue to cooperate with DECC in relation to population monitoring on North Head as part of its commitment to the implementation of the Recovery Plan.

7.1.3. Education and Awareness.

It is anticipated that a package of information on threatened plants and endangered populations would be distributed to leaseholders as part of the lease agreement.

Recommendations for education and awareness programs will be incorporated into the Environmental Management System for the Estate. In addition, interpretive material and signage will be incorporated into the Public Walkways Plan which has been developed by Lend Lease Development and is currently being reviewed by Manly Council.

7.2. Additional Mitigation Measures.

On 8th November 2002, the State Government gazetted Amendment No. 24 to the Manly Local Environment Plan (LEP) that considered development in St Patrick's Estate and included the rezoning of Precincts 12 and 13 for residential purposes. In order to mitigate the loss of bandicoot habitat associated with the development, the DECC and Church agreed to implement additional amelioration measures for bandicoots. These are described in letters from the DECC to Lend Lease Development dated 20th November 2000 and 3rd November 2003 and are shown on the attached Vegetated Links Summary Plan (Appendix 7). All but one of the mitigation measures would be incorporated as part of specific DAs that have already been submitted or will be submitted to Council in future. Progress for each of these additional measures is reported briefly below. All works would be undertaken to the satisfaction of the DECC:

- ***Enhancement of shelter habitat (i.e. weeding and planting additional understorey species) including 10m wide strip to the south of Precinct 13 Lots;***

The 10m setback has been incorporated into the design for Lots 1-8 (DA Nos. 277-84/0, Plans L02-L12) and for Lots 9-12 (Plans DA L02-DA L05).

As part of the early works program for Lots 1-8, additional plantings were established in the Conservation Area gardens and in the area immediately to the south of the Lots in January 2005 (see Appendix 4).

- ***Enhancement of shelter habitat (i.e. weeding and planting additional understorey species) thereby linking Precincts 1, 12 and 13 and maintaining a 3m strip of vegetation along the Estate side of the wall;***

This has been incorporated into the Proposal for development of Precincts 3 and 12 and is discussed in the report, *Flora and Fauna Assessment Proposed Residential Development Precincts 3 and 12 St Patrick's Estate, Manly* (Total Earth Care and Ecosense Consulting 2004).

- ***Establishment of new shelter habitat and associated foraging opportunities (i.e. habitat mosaic) in eastern portion of Precinct 12;***

As above.

- ***Establishment of shelter habitat by planting a 2m wide strip along the inside of the perimeter wall from Precinct 3 to immediately east of the main Darley Road entrance;***

As above. Part of this strip has been widened to 4m.

- ***Bush regeneration works (i.e. removal of introduced species and enhancement of existing native vegetation) for bandicoot movement corridors located in Manly Council land (i.e. between Precinct 10 and Spring Cove) and in National Park and (i.e. behind Collins Beach); and***

The area under consideration is shown in the Vegetated Links Summary Plan (Appendix 7). Bush regeneration works would be undertaken in consultation with DECC and taking into consideration in

the relevant bushfire hazard assessment (Building Code and Bushfire Hazard Solutions 2004). The timing is planned to coincide with the early works program for development of Precincts 5, 6 and 10.

- ***Enhancement of shelter belt between Precincts 5 and 10;***

This has been incorporated into the Proposal for the development of Precincts 5, 6 and 10 and is discussed further in the Species Impact Statement prepared for the area by Ecosense Consulting Pty Ltd (Bali 2005a). This link has also been extended so that it transects Darley South from east to west.

8. Flora.

8.1. Commonwealth legislative considerations.

The only threatened plant species detected on the subject site was Sunshine Wattle (*Acacia terminalis* ssp. *terminalis*). No listed endangered populations of plants or Endangered Ecological Communities occur within the subject site. *Acacia terminalis* ssp. *terminalis* is listed as endangered on the *EPBC Act* and is therefore a Matter of National Environmental Significance requiring assessment under this Act.

The following assessment guidelines are used to determine whether the action (i.e. the proposed development) has, will have, or is likely to have a significant impact on *Acacia terminalis* ssp. *terminalis*. If so, referral to the Federal Minister for the Environment and Water Resources will be required for further consideration or approval.

For the purposes of this assessment it is assumed that the single individual of *Acacia terminalis* ssp. *terminalis* will be removed (i.e. destroyed), even though it would be translocated to the vegetation link immediately south of Precinct 13 in St Patrick's Estate, and managed according to the Translocation Management Plan.

8.1.1. (a) *Acacia terminalis* ssp. *terminalis*.

An action has, will have, or is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population,*

The proposed development will result in the removal of one *Acacia terminalis* ssp. *terminalis* individual and some associated habitat. It is recommended that the plant be translocated to the conservation area immediately south of Precinct 13. The wider population consists of over 100 individuals many of which occur in the nearby National Park (based on NPWS Wildlife Atlas records). Whilst the removal of any individuals from the population would lead to a decrease in its size, given the proposal to translocate the individual and its soil seed bank, and to manage its survival, this population decrease is expected to be *short-term*. The implementation of the Translocation Management Plan is likely to result in the long-term increase of the size of the Manly/North population of *Acacia terminalis* ssp. *terminalis*. Given the highly disturbed condition of the subject site and the dense weed infestation, the individual is expected to have low long-term viability, with poor survival of any seedlings that may germinate. Translocation and active management of the translocation site is expected to improve the seedling recruitment potential of this plant.

- *reduce the area of occupancy of the species,*

The proposed development would marginally reduce the area of occupancy of *Acacia terminalis* ssp. *terminalis*. Whilst this is the case, much more significant areas of better quality habitat occur elsewhere in both St Patrick's Estate and the nearby Sydney Harbour National Park.

- *fragment an existing population into two or more populations,*

The individual occurs at the northern end of the patch of remnant native vegetation. North of the subject site only residential developments occur, no native habitat being present within this area that

could support another population of *Acacia terminalis*. Immediately south of the individual, the subject site consists of fill and landscaped areas. As such it is considered that the individual is at the edge of this species range, the loss of this plant not affecting the connectivity or increasing the fragmentation between any existing populations.

- *adversely affect habitat critical to the survival of a species,*

It is unlikely that the habitat at the site is critical to the survival of this species, given its small size, degraded condition and the extent of suitable habitat in the conservation area of Sydney Harbour National Park.

- *disrupt the breeding cycle of a population,*

The removal of a single individual plant from the Manly/North Head population of *Acacia terminalis* ssp. *terminalis* would not significantly affect the breeding cycle of this population.

- *modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,*

The removal of the small amount of disturbed habitat is unlikely to cause the decline of the species in the Manly/North Head area.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the critically endangered or endangered species' habitat*[1],

The individual currently occupies a site that is highly disturbed by earthworks and weed invasion. Invasive species are therefore already well established and are likely to be having a detrimental effect on seedling recruitment and the viability of the species at this location.

- *introduce disease that may cause the species to decline,*

The disturbance that has already occurred on site (particularly the importation of fill and the movement of plant and vehicles that track soil, seeds and spores from one location to the other), is expected to have the greatest potential to introduce plant diseases that may cause the decline of the species on the site.

- *interfere with the recovery of the species.*

The loss of one individual plant and associated potential soil seed bank would not interfere with the recovery of the Manly/North Head population of the species. The recovery of the species in the locality would include the translocation of one plant from the proposed development site to the managed vegetated link area. This area is included under the recovery plan for the Long-nosed Bandicoot population in the area monitored by DECC.

The management of the vegetated link and the already translocated *Acacia terminalis* individuals includes a weed management program. Given the extent of the disturbances already occurring and the inclusion of the individual in the translocation programme of the development, it is considered that the proposed action would not detrimentally affect the recovery of the species.

8.1.1. (b) Expected impact on *Acacia terminalis* ssp. *terminalis*.

The proposed action is unlikely to have a significant adverse impact on *Acacia terminalis* ssp. *terminalis*. Therefore it is not considered that the matter would require referral to the Federal Minister for the Department of Environment and Water Resources for further consideration or approval.

[1] Introducing an invasive species into the habitat may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat, or predation.

8.2. State legislative considerations.

8.2.1. *Environmental Planning and Assessment Act 1979.*

The only threatened plant species detected in the subject site was *Acacia terminalis* ssp. *terminalis*. No endangered populations of plants or any Endangered Ecological Communities listed under the *TSC Act* occur within the subject site.

Section 5A of the *Environmental Planning and Assessment Act 1979* (as amended by the *TSC Act*) requires that the following factors (the "seven part test") be considered to determine whether a Proposal is likely to have a "significant effect on a threatened species, its populations, ecological communities or habitats".

For the purposes of this assessment it is assumed that the single individual of *Acacia terminalis* ssp. *terminalis* will be removed (i.e. destroyed), even though it would be translocated to the vegetation link that is present immediately south of Precinct 13 (within the nearby St Patrick's Estate) and managed according to the Translocation Management Plan.

8.2.1. (a) *Acacia terminalis* ssp. *terminalis*.

(a) *in the case of a threatened species, whether the life cycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction,*

One individual of *Acacia terminalis* ssp. *terminalis* was found within Lot 13. The local (North Head) population of the species consists of at over 100 *Acacia terminalis* ssp. *terminalis* individuals (based on NPWS Wildlife Atlas records), including some 30 individuals that have been translocated from areas to be developed within St Patrick's Estate to a conservation area that is present to the south of the subject site.

The removal of one individual *Acacia terminalis* ssp. *terminalis* would not place the local Manly/North Head population at risk of extinction.

(b) *in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population, such that a viable local population of the species is likely to be placed at risk of extinction,*

An 'endangered population' is defined as a "population specified in Part 2 of Schedule 1" of the *TSC Act*. The Manly/North Head population of *Acacia terminalis* ssp. *terminalis* is not listed as an endangered population.

(c) *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(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,

An 'endangered ecological community' is defined as a community specified in Part 3 of Schedule 1 of the *TSC Act* and 'critically endangered ecological community' is defined as a community specified in Part 2 of Schedule 1A of the *TSC Act*. The Manly/North Head population of *Acacia terminalis* ssp. *terminalis* is not listed as an endangered ecological community or a critically endangered ecological community.

(d) *in relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which the habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community,

The amount of habitat to be removed is small (up to $9m^2$ - seeds are dispersed and stored underground by ants as well as dropping below the plant, making estimates of the area of potential soil seed bank difficult). This comprises one plant and the potential soil seed bank that occurs around this individual. While other areas in the subject site may provide *potential* habitat, that habitat is poor and is highly degraded by mechanical disturbance, weed invasion, altered drainage conditions, and the importation of fill.

The study area is situated at the northern extent of the population's distribution (DECC 2007a). Previously suitable habitat has recently been removed to the east and west with that to the north having been developed some decades ago. Whilst there would be a small amount of contraction in the population's distribution, the proposed development would not isolate habitat as the study area does not represent a link to any habitat beyond the extent of the study area.

The habitat to be removed from the subject site is not considered to be important for the long-term survival of *Acacia terminalis* ssp. *terminalis,* given the larger areas of habitat in the Manly/North Head locality.

(e) *whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),*

Critical habitat has not yet been defined for *Acacia terminalis* ssp. *terminalis.* Nevertheless, any remnant of the size and condition of the subject one is unlikely to constitute critical habitat in any future declaration.

(f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

No recovery plan or threat abatement plan for *Acacia terminalis* ssp. *terminalis* has been or is being prepared by DECC. However, the translocation of individuals of the species that do not have long term viability in their current habitat, or that would otherwise be destroyed, would be consistent with broad recovery planning strategies.

(g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process,*

Of the 27 Key Threatening Processes pertinent to mainland NSW that are listed under Schedule 3 of the *TSC Act,* "clearing of native vegetation" is applicable to the Proposal. However, as stated in 8.2.1 (a) above, the loss of the vegetation at the subject site is unlikely to adversely affect the local Manly/North Head population of *Acacia terminalis* ssp. *terminalis.* As such, it is not considered that the Proposal would constitute a significant Key Threatening Process such that the life cycle requirements of this species would be compromised.

8.2.1. (b) Expected impact on *Acacia terminalis* ssp. *terminalis.*

While *Acacia terminalis* ssp. *terminalis* is inadequately represented in conservation reserves and the individual on the subject site is at or near the northern limit of its distribution, it is considered that the proposed development is unlikely to have a significant effect on this species or its habitat. This is

because only one individual is affected and the amount of habitat to be removed is not considered to be significant. A Species Impact Statement is therefore not required.

9. Fauna

9.1. Commonwealth legislative considerations

By the completion of the field investigations, no animals listed under the Schedules to the *EPBC Act* had been recorded within, or in the vicinity of, the subject site. Although this is the case, based on the preceding literature review and studies carried out by the authors within the adjacent St Patricks Estate, one species of national conservation significance, the Grey-headed Flying-fox, was identified as potentially occurring in the vicinity of the subject site.

Based on the potential for this species to be present within or adjacent to the subject site, combined with the lack of suitable resources in the direct vicinity of the proposed works and the consultation of known literature sources, it is not considered that the Grey-headed Flying-fox would significantly rely upon the study area for any of its necessary life cycle requirements. Therefore, giving consideration to the Significance Impact Guidelines that are relevant to a vulnerable species, it is not considered that the Proposal would:

- lead to a long-term decrease in the size of an important Grey-headed Flying-fox population, or
- reduce the area of occupancy of an important Grey-headed Flying-fox population, or
- fragment an existing important population into two or more populations, or
- adversely affect habitat critical to the survival of the Grey-headed Flying-fox, or
- disrupt the breeding cycle of an important Grey-headed Flying-fox population, or
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat, or
- Interfere substantially with the recovery of the Grey-headed Flying-fox.

Therefore, the Proposal can proceed as planned without requiring referral of the matter to the Federal Minister for the Environment and Water Resources for further consideration or approval.

The proposed construction of seven residential dwellings within Lots 13-19 Montpelier Place, St Patrick's Estate, North Head would not have a detrimental impact on any species of national conservation significance and therefore it is not considered that the matter would require referral to the Federal Minister for the Environment and Water Resources for further consideration or approval.

9.2. State legislative considerations.

9.2.1. *Environmental Planning and Assessment Act 1979.*

Although no species listed under the *TSC Act* were recorded during the field survey, based on the literature review conducted as part of this study, and studies carried out by the authors within the adjacent St Patricks Estate, two species of state conservation significance, the Long-nosed Bandicoot and Grey-headed Flying-fox, were identified as potentially occurring within the subject site.

Based on a precautionary approach, the potential impacts associated with the Proposal on the local and regional viability of the Long-nosed Bandicoot and Grey-headed Flying-fox are considered using the seven part test as provided under Section 5A of the *Environmental Planning and Assessment Act 1979*. These criteria are designed to determine "whether there is likely to be a significant effect on these threatened species, their populations, ecological communities, or habitats", and consequently whether a Species Impact Statement is required.

9.2.1. (a) Long-nosed Bandicoot.

(a) "...in the case of a threatened species, whether the action proposed 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..."

A 'threatened species' is defined as "a species specified in Part 1 or 4 of Schedule 1 or in Schedule 2" of the *TSC Act*. Therefore the Long-nosed Bandicoot is not a threatened species.

(b) "...in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction..."

An 'endangered population' is defined as a "population specified in Part 2 of Schedule 1" of the *TSC Act*. Therefore the Long-nosed Bandicoot is classified as an endangered population.

Bandicoots prefer to forage in deeper moist soils for invertebrates, 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 are also important, linking foraging and refuge habitats. Although neither bandicoots nor their characteristic diggings were recorded during the present survey and the area does not appear to contain suitable habitat, individuals may use the area (particularly the perimeter) as a movement corridor and/or foraging habitat. Bandicoots are known to forage and shelter within Precinct 13 and surrounds as shown through capture, radio-tracking and direct observations of individuals and diggings. Use of the site is likely to change seasonally and with soil moisture levels.

A detailed monitoring study undertaken on the Estate in January 1998 indicated that there may be 13 resident and up to 9 transient bandicoots occurring on Darley North. Most recent comprehensive monitoring data collected for the whole of North Head (May 2006) indicated that seven bandicoots were trapped near Precinct 1 (T52). Systematic quarterly monitoring undertaken by the DECC indicates that four to six individuals are regularly trapped near Precinct 13. Although four bandicoots were observed near Precinct 1 in June 2006, no bandicoots have been observed there during subsequent monitoring sessions.

Overall, approximately 525m^2 of vegetation would be permanently removed as a result of construction. The remainder consists of cleared areas and a road surrounding the perimeter of Precinct 1. It should be noted that bandicoots will forage in newly disturbed/cleared areas as long as these are accessible and close to shelter. During construction, it is expected that any resident bandicoots would potentially use these cleared areas for foraging. Bandicoots would also continue to utilise the existing vegetated links (i.e. P1 and P13 [upper]) as well as habitat created/enhanced to the south and west as part of the early works program (see Appendix 4). Post-construction, once the landscaping is complete, it is likely that bandicoots would again shift their home ranges to incorporate new habitat.

Fencing design together with the incorporation of a continuous bandicoot corridor (in the form of backyards landscaping) has maintained permeability to the west and south between the Lots and the surrounding Estate (see Figure 4). The perimeter road acts as a potential barrier to bandicoot movements and is likely to reduce bandicoot activity within Precinct 1 and hence may be beneficial in minimising the risk of road kills as the amount of habitat available is limited to front and backyards.

The residential development is not expected to increase the number or frequency of feral cats or foxes in the study area. Feral cats are already present in the park but there are presently no foxes on North Head. The latter are clearly a major threat to bandicoots with a single fox killing at least 15 bandicoots and 2 penguins in 2000. DECC has an emergency shooting strategy in place in the event that a fox is detected at North Head. Ownership of pets is not allowed under the lease agreement.

In the long-term, the use of vegetated links for foraging and shelter would continue to be monitored. Monitoring of the existing links was undertaken quarterly from April 2002 to February 2003. Another monitoring program was initiated in April 2004 and will continue throughout construction of Lots 13-

19 until 2010. Furthermore, DECC regularly traps bandicoots along a fixed transect near Precinct 1 (T52) as part of its overall North Head monitoring program. By systematically monitoring use of the site by bandicoots, it should be possible to detect any decline in numbers or activity and to implement appropriate mitigation measures if necessary.

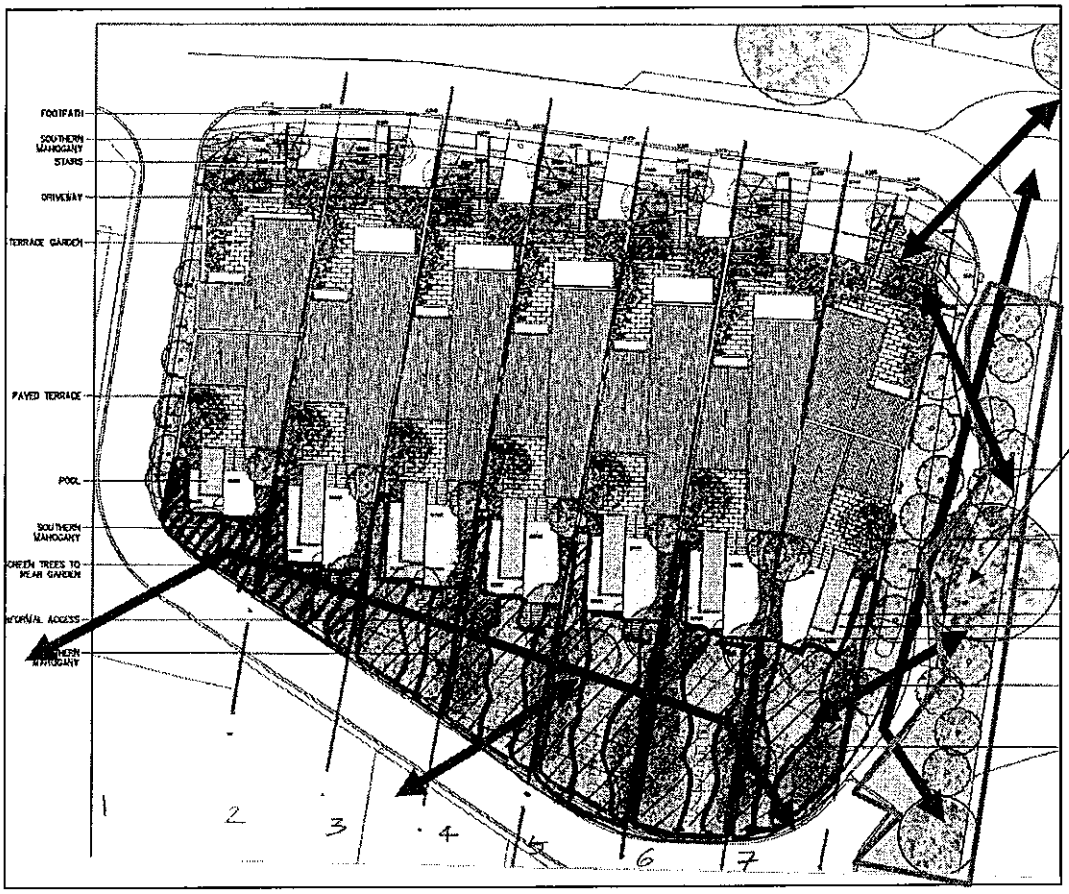


Figure 4: Permeability of the subject site post-construction.

Source: Oculus (2007). Not to scale.

An updated report summarising the amelioration measures that have been implemented to date, and that are proposed for the Estate as part of a wider *Bandicoot Management Plan,* has been prepared (Bali 2005b).

The area that is to be developed is generally cleared and highly disturbed, there being no resources present that would be important to the local viability of a Long-nosed Bandicoot population. As such, the life cycle of the species that constitutes the endangered population is unlikely to be disrupted such that the viability of the population is likely to be significantly compromised.

(c) "...in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(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 final determination of the NSW Scientific Committee defined the distribution of the North Head population of bandicoots as being approximately 360 ha, this encompassing Sydney Harbour National Park (160 ha), the Department of Defence lands and National Artillery Museum (72 ha), the North Head Sewerage Treatment Plant (20 ha), St Patrick's Estate (25 ha), Manly Hospital (15 ha), the Australian Institute of Police Management (3 ha), Manly Council Reserves including Spring Cove,

Shelley Beach and Little Manly Point (25 ha) and part of residential Manly (40 ha). The subject site therefore covers approximately 0.4% of the population's distribution.

The Proposal would result in the permanent removal of 525m^2 of habitat. Once construction is complete, approximately 232.4m^2 of foraging habitat and 908.5m^2 (including 191m^2 for the eastern corridor) of sheltering habitat would be re-established within Lots 13-19 (total = 1140.9 m^2). During construction, all vegetation on the Lots would be cleared. Although large open areas may form a barrier to bandicoot movement, individuals will still be able to access potential foraging habitat around the edges through gaps in the construction and sediment fences. However, it is important that contractors ensure that they check for any bandicoots that may be sheltering in heavy machinery each morning prior to beginning any works. These issues are taken into account in the Bandicoot Construction Protocol (Appendix 5) developed in consultation with DECC.

Some areas of bandicoot foraging habitat would be altered as a result of development, primarily for the purposes of the construction of terraced houses. However, landscaped habitat would comprise grassy foraging areas and dense shelter, thus maximizing the proportion of ecotone that is preferred by bandicoots. A package of information relating to the natural values of the subject site and to the Estate as a whole would be distributed to leaseholders with the lease agreement.

Lighting, noise and other disturbances may also indirectly affect the suitability of habitat for bandicoots. During construction, the use of heavy machinery would be confined to daylight hours and therefore would not affect bandicoots that are only active between dusk and dawn. Bandicoots are tolerant of some degree of noise and human activity.

The implementation of standard erosion and sedimentation controls would minimise the risk of indirect impacts associated with drainage affecting bandicoot habitat off-site.

Each Lot was assessed separately with regards to the removal/modification of habitat. This is summarised below in Table 5. A habitat assessment of Lots 13-19 as a single area has been detailed in Appendix 8.

Table 5. Summary of bandicoot habitat features for each Lot (rear courtyard only).

Lot Number	Area Planted (m^2)	Area Lawn (m^2)	Area Shrub (m^2)	Percentage Landscaped %	Permeability (Direction)
13	40.1	2.7	37.4	12.3	South and West
14	60.8	4.7	56.1	12.5	South
15	107	21	86	19.9	South
16	153	33	120	26.4	South
17	192	50	142	31.2	South
18	214	71	143	34.3	South
19	183	50	133	24.4	South and East
Small corridor to east of Lot 19	191	Na	191	Na	South, East, North, West
Total	**1140.9**	**232.4**	**717.5**	**28**	**NA**

Although all existing habitat on Lots 13-19 would be removed or modified during construction, each individual Lot would eventually provide suitable foraging and shelter habitat for 12 – 34% of its area.

The study area is not considered to constitute a significant regional area of known habitat for the Long-nosed Bandicoot. The vegetated areas within the subject site are highly disturbed, with non-contiguous, broken tree canopies and patchy groundcover being present. The value of the vegetation proposed to be removed is minimal compared to the remaining areas of similar foraging resources (both adjacent to, and beyond the limits of, the subject site). Therefore, the Proposal would not modify or remove a significant area of known regional habitat for the Long-nosed Bandicoot.

(d) "...in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed...", and

The Proposal would result in the removal of both native and exotic vegetation. The permanent removal of approximately 525m^2 of potential habitat and the addition of 1140.9m^2 of soft landscaping is not likely to result in a significant effect on the North Head population.

The introduced European rabbit is already present in the study area. Large populations of this pest species have the potential to adversely affect bandicoots through the removal of cover and promotion of soil erosion. It is not expected that the residential development of Lots 13-19 will have any effect on current rabbit numbers.

The removal of several mature trees and limited exotic ground cover, in comparison with the extent of more suitable habitats adjacent to the study area, is not considered to represent a significant reduction in the overall extent of habitat available to the Long-nosed Bandicoot.

(ii) "... whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action...", and

The Long-nosed Bandicoot is extremely adaptable and tolerant of major habitat disturbance and modifications and is one of the few Australian marsupials to be consistently recorded in urban environments (author's field notes, DECC 2007c). Precinct 1 is already considerably isolated as it is surrounded completely by an access road and residential development already occurs to the east, west and north. The subject site does not directly adjoin any vegetation links, however shelter or foraging habitat will be planted during the landscaping works post-construction. Landscaped areas present to the east of the subject site, in addition to the Eastern Corridor (Figure 2) may provide suitable foraging and shelter habitats to support the movement of bandicoots into Lots 13-19 (Figure 4).

Although a large cleared area would form a barrier to bandicoot movements during construction, permeability would be maintained within the vegetated links directly south of the perimeter road to the south of the subject site and the landscaped area directly east. As part of the works program for Lots 13-19, plantings will be established in the rear courtyards, which will provide potential foraging or shelter habitat for bandicoots that could potentially use the subject site as a stepping stone to more suitable habitat on the estate. The plantings in the front terraced gardens may be potentially suitable for the foraging and sheltering needs of bandicoots and aid in their east-west traverse. The removal of a small percentage of currently disturbed vegetated foraging habitats, in addition to the planting of 1140.9m^2 of landscaping, would not further isolate any current interconnecting areas of habitat available to this species.

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

Currently, it is unlikely that Precinct 1 provides habitat important to the survival of this species due to its disturbed nature. The amount of vegetation proposed to be removed would not be important for the long-term survival of the Long-nosed Bandicoot at this locality. Adjacent to the Proposal, numerous stands of more suitable native vegetation are present, these providing foraging, breeding and sheltering opportunities for this species.

Post-construction, permeability within the site and between the subject site and the rest of the Estate will be maintained through fencing design (perimeter fencing would be raised a minimum of 150mm to allow unobstructed access along its length) and side boundary plantings. However, the perimeter road may reduce bandicoot activity within Precinct 1, the benefit of which would be a reduced possibility of road kill/injury at this location.

All seven lots were assessed as one unit with regards to their permeability to bandicoots. This is detailed in Appendix 8 and summarised in Table 5 above. Although permeability within the subject site has been reduced due to the terraced housing design, limiting movement from east to west (and vice versa) the use of raised fencing for front and rear gardens would ensure that limited permeability within the Subject site and between Lots and the adjacent Estate is retained. Although there will be limited access between the subject site and the adjacent estate this may be beneficial in minimising the risk of road kills as fewer bandicoots are likely to the use the vegetated areas for foraging. The overall location of this precinct is likely to reduce the number of potential bandicoots infiltrating the subject site instead utilising the more suitable vegetated links to the south.

In the long-term, the use of vegetated links for foraging and shelter would continue to be monitored. Furthermore, DECC regularly traps bandicoots along a fixed transect near Precinct 1 (T52) as part of its overall North Head monitoring program. By systematically monitoring use of the site by bandicoots, it should be possible to detect any decline in numbers or activity and to implement appropriate mitigation measures if necessary.

As such, it is considered that the long-term presence of the local Long-nosed Bandicoot population would not be compromised.

(e) "...whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)..."

No critical habitat would be adversely affected by the Proposal. The study area is not listed as critical habitat under Part 3 Division 1 of the *TSC Act*.

(f) "...whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan..."

A Draft recovery plan is currently being prepared for the threatened Long-nosed Bandicoot population at North head. There are nine (9) Priority Actions identified for this species (DECC 2007b). Of these, the following may be relevant:

- Community and land-holder liaison/ awareness and/or education;
- Habitat management: Feral Control; Ongoing EIA - Advice to consent and planning authorities, Provide advice to consent authorities regarding impacts on population, Site Protection (e.g. Fencing/Signage), Erect signage/speed bumps to alert motorists and reduce road mortality;
- Weed Control: Continue weed control program in accordance with Sydney Harbour National Park PoM, Habitat Protection; and
- Monitoring: Monitor population in accordance with recovery program monitoring program.

However, given the amount of habitat likely to be disturbed by the Proposal, its undertaking is not considered to threaten the presence of any Long-nosed Bandicoot individuals, populations or their necessary habitat areas.

(g) "...whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process..."

Currently 27 Key Threatening Processes for mainland NSW are listed under Schedule 3 of the *TSC Act*. Of these, in regards to the presence of the Long-nosed Bandicoot, the following are of relevance to the study area:

- Clearing of native vegetation;
- Competition and grazing by the feral European Rabbit;
- Predation by feral cats;
- Predation by the European Red Fox; and

- Removal of dead wood and dead trees.

Whilst this is the case, the percentage of habitat suitable for this species lost due to the undertaking of the Proposal would be minimal. Beyond the study area, the Long-nosed Bandicoot's necessary habitat requirements are well represented, thereby meeting the local and regional requirements of this species. As such, it is not considered that the Proposal would constitute a significant Key Threatening Process such that the life cycle requirements of this species would be compromised.

9.2.1. (b) Expected impact on the Long-nosed Bandicoot.

The undertaking of the Proposal would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the Long-nosed Bandicoot population at North Head. The proposed development is therefore unlikely to significantly affect the endangered population of Long-nosed Bandicoots, because:

- The site is highly disturbed and cleared and would not be important to a resident population;
- The removal of 525m^2 of vegetation on site would be permanent, however this does not constitute a significant area of habitat for the population and will be offset by landscaping works; and
- The population is protected within the adjoining National Park, where more extensive habitats are present.

Consequently, a Species Impact Statement for the endangered population of Long-nosed Bandicoots is not required.

9.2.1. (c) Grey-headed Flying-fox.

(a) "...in the case of a threatened species, whether the action proposed 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..."

During the field investigations, no historic or current Grey-headed Flying-fox camps were recorded within the subject site. Whilst this is the case, individuals have been previously recorded in the vicinity of the site, these having the opportunity to utilise those native plants present. In the locality, those native plants present within the subject site are not considered to constitute a significant foraging resource, other opportunities occurring both adjacent to and beyond the limits of the subject site. Giving consideration to the habitat requirements of this species, its adaptation to urban areas and utilisation of planted horticultural and native species, it is not considered that the development of the study site would disrupt the viability of a local population of this species, such that it would be placed at risk of extinction.

(b) "...in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction..."

An 'endangered population' is defined as a "population specified in Part 2 of Schedule 1" of the *TSC Act*. Therefore the Grey-headed Flying-fox is not an endangered population.

(c) "...in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(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 Grey-headed Flying-fox is not listed as an Endangered Ecological Community.

(d) "...in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed...", and

The Proposal would result in the loss of 525m^2 of vegetation, including several potential feed trees. Whilst this is the case, it is noted that this vegetation provides limited foraging opportunities to the Grey-headed flying-fox. The removal of this vegetation, in comparison with the extent of more suitable resources that occur adjacent to the study area, is not considered to represent a significant reduction in the overall extent of habitat available to the Grey-headed Flying-fox.

(ii) "... whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action...", and

The Grey-headed Flying-fox is known to easily negotiate urban infrastructure, including urban areas, roads, open fields and paddocks (LesryK Environmental Consultants 2002, LesryK Environmental Consultants 2004). As such, the Proposal would not present a barrier to the movement patterns of this species such that its habitat areas are likely to become isolated.

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

The vegetation proposed to be removed would not be important for the long-term survival of the Grey-headed Flying-fox at this locality. Adjacent to the Proposal (particularly within the nearby Sydney Harbour National Park), numerous stands of native vegetation are present, these providing greater foraging opportunities for this species thereby guaranteeing its long-term presence.

(e) "...whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)..."

The study area is not listed as critical habitat under Part 3 Division 1 of the *TSC Act*. Critical habitat for the Grey-headed Flying-fox is yet to be defined. Nevertheless, any remnant of the size and condition of the subject site is unlikely to constitute critical habitat in any future declaration.

(f) "...whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan..."

Thirty-one priority actions have been identified for the Grey-headed Flying-fox (DECC 2007b). Of these the following may be relevant to the current Proposal: Habitat Protection: Protect and enhance priority foraging habitat for Grey-headed Flying-foxes, for example through management plans, local environmental plans and development assessments, and through volunteer conservation programs for privately owned land. However, given the limited amount of habitat available in the study area it is considered unlikely that it would be identified as a priority foraging habitat.

(g) "...whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process..."

Of the 27 Key Threatening Processes pertinent to mainland NSW that are listed under Schedule 3 of the *TSC Act*, "clearing of native vegetation" is applicable to the Proposal. Whilst it is acknowledged that the current proposal would result in the clearance of some native vegetation potentially available for the foraging needs of the Grey-headed Flying-fox, it is not considered that the clearance that would take place would result in a significant loss of habitat for this species from the locality. As such, it is not considered that the Proposal would constitute a significant Key Threatening Process such that the life cycle requirements of this species would be compromised.

9.2.1. (d) Expected impact on the Grey-headed Flying-fox.

The Proposal would not disturb, remove, modify or fragment any habitats critical to the life cycle requirements of the Grey-headed Flying-fox. No habitats were observed within the area of possible impact (including both direct and indirect impacts) that would be considered significant for the conservation and preservation of this species. Due to its ability to negotiate urban infrastructure, no Grey-headed Flying-fox corridors would be disturbed, and no significant areas of local or regional habitat would be removed or isolated. During the field survey, no resident individuals of this species were recorded within, or adjacent to, the subject site. As such, no locally viable populations of this animal are considered to occur. Therefore, the expected impacts associated with the Proposal on the Grey-headed Flying-fox are considered to be minimal, and therefore, the preparation of a Species Impact Statement is not considered necessary.

10. Conclusions.

The Proposal is not considered to affect, threaten or have a significant adverse impact on any of those plants or animals listed under the *EPBC Act*. Therefore, it is not considered that the matter would require referral to the Federal Minister for the Environment and Water Resources for further consideration or approval.

Whilst it is acknowledged that one individual of *Acacia terminalis* ssp. *terminalis* were recorded in the subject site and that the Long-nosed Bandicoot and Grey-headed Flying-fox are present within close proximity, based on a consideration of the assessment criteria provided under Section 5A of the NSW *Environmental Planning and Assessment Act 1979*, it is not considered that the Proposal would have a significant impact on the local or regional presence of any of these species. As such, a Species Impact Statement that further considers the impacts of the Proposal on *Acacia terminalis* spp. *terminalis*, the Grey-headed Flying-fox or the North Head population of the Long-nosed Bandicoot is not required.

Based on the results of the flora and fauna surveys, combined with a review of known literature and database sources, it is not considered that there are any ecological constraints to the Proposal proceeding as planned. The proposed development of Lots 13-19 Montpelier Place, St Patrick's Estate, North Head would not significantly affect any populations of any native plants, animals, populations or ecological communities such that they are placed at risk of extinction. Similarly the construction of seven residential dwellings would not remove or significantly affect any habitats of local, regional, state or national conservation concern providing that the recommendations contained within this report are followed.

11. Recommendations

In addition to the mitigation measures highlighted in Sections 6.4 – 7.2 the following recommendations to ensure the Proposal is undertaken in an ecologically sustainable manner are presented:

- Before translocation of the *Acacia terminalis* spp. *terminalis* individual is undertaken, the weeds around the individual should be removed by the method determined by the Translocation Management Plan, so that weeds are not carried to the translocation site, and seeds of the

Acacia have the best possibility of germination and growth. Growth of any weeds from the soil after translocation should also be removed as required to maintain optimum growth and recruitment conditions for *Acacia terminalis* spp. *terminalis*.

- The *Acacia terminalis* spp. *terminalis* individual to be translocated should be removed using a front-end loader bucket, and include as much of the surrounding soil as possible so that any Acacia seed in the soil is also translocated.
- The post planting recommendations presented in the Translocation Management Plan for the Sunshine Wattle should be adhered to. These recommendations should include regular watering of any translocated individuals particularly during extended heat intervals for a minimum period of six months.
- Those infestations of noxious weeds present should be treated prior to the development of the site.
- Prior to the commencement of the project the proponent should liaise with the local (weed) control authority to determine the best methods for the treatment of the Fishbone Fern (*Nephrolepis cordifolia*), Asparagus Fern (*Protasparagus aethiopicus*), Lantana (*Lantana camara*), Mickey Mouse Plant (*Ochna serrulata*), Cotoneaster (*Cotoneaster glaucophyllus*) and Crofton Weed (*Ageratina adenophora*) infestations.

12. Bibliography.

Auld, B.A. and Medd, R.W. (1992) Weeds. An illustrated botanical guide to the weeds of Australia. Inkata Press, Sydney.

Australian Museum (2007) Faunanet http://www.faunanet.gov.au. [Accessed July 2007].

Bali (2002).Potential Impacts of Remediation works in Precincts 1 and 13 on flora and fauna. Report prepared for Lachlan Project Management by Ecosense Consulting, Strathfield South.

Bali R. (2004) Flora and Fauna Assessment House Construction on Lots 1-8, Precinct 13, St Patrick's Estate. Report prepared for Lachlan Project Management by Ecosense Consulting Pty. Ltd., Strathfield South, NSW.

Bali, R. (2005a) Species Impact Statement Proposed Residential Development Precincts 5, 6 and 10 St Patrick's Estate, Manly. Report prepared for Lachlan Project Management by Ecosense Consulting Pty. Ltd., Strathfield South, NSW.

Bali, R. (2005b) Bandicoot Management Plan, St Patrick's Estate. Report prepared for Lend Lease Development by Ecosense Consulting Pty. Ltd., Strathfield South, NSW.

Bali, R. (ongoing) Bandicoot Monitoring Progress Reports – St Patrick's Estate. Reports prepared for Lachlan Project Management by Ecosense Consulting Pty. Ltd., Strathfield South, NSW.

Benson, D. and Howell, J. (1994) The natural vegetation of the Sydney 1:100,000 map sheet. Cunninghamia. 3(4).

Briggs, J. and Leigh, J. (1996) Rare or Threatened Australian Plants. CSIRO Publishing, Collingwood, Victoria.

Building Code and Bushfire Hazard Solutions (2004) Bushfire Hazard Assessment Report for Precincts 5, 6 and 10, St Patrick's Estate. Report prepared for Lachlan Project Management.

Bureau of Meteorology (2007) Bureau of Meteorology Climate Averages. http://www.bom.gov.au/climate/averages [Accessed July 2007].

Catteral, C.P., Green, R.J. and Jones, D.N. (1991) Habitat use by birds across a forest-suburb interface in Brisbane: implications for corridors. In: Nature Conservation 2: The Role of Corridors. (D.A. Saunders and R.J. Hobbs [Eds.]) Surrey Beatty and Sons, Chipping Norton. pp 247 – 258.

Chapman, G.A. and Murphy, C.L. (1989) Soil Landscapes of the Sydney 1:100000 Sheet. Soil Conservation Service of NSW, Sydney, NSW.

Cogger, H. (2000) Reptiles and amphibians of Australia. Reed Books, Chatswood, NSW.

Cropper, S. (1993) Management of Endangered Plants. CSIRO, Melbourne, Victoria.

Department of Environment and Climate Change (2004) Threatened biodiversity survey and assessment: Guidelines for developments and activities (working draft). Department of Environment and Climate Change, Hurstville, NSW.

Department of Environment and Climate Change (2007a) Atlas of NSW Wildlife Database. http://wildlifeatlas.npws.gov.au [Accessed July 2007].

Department of Environment and Climate Change (2007b) Threatened species profiles. http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/index.aspx [Accessed July 2007].

Department of Environment and Climate Change (2007c) Bandicoots.

http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Bandicoots [Accessed July 2007].

Department of Environment and Climate Change (2007d) *Threatened species, populations and ecological communities of NSW - profiles.* http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx [Accessed July 2007].

Department of Environment and Water Resources (2007) *Environment Protection and Biodiversity Conservation Act Online Databases.* http://www.environment.gov.au/epbc/db/index.html [Accessed July 2007].

Ehmann, E. (1997) *Threatened frogs of New South Wales: Habitats, status and conservation.* Frog and Tadpole Study Group, Sydney, NSW.

Fairley, A. and Moore, P. (2000) *Native plants of the Sydney District: an identification guide.* Kangaroo Press, Kensington, NSW.

Frith, H.J. (Ed) (1997) *Complete book of Australian birds.* Readers Digest, Surry Hills, NSW.

Gunninah Environmental Consultants (2003) *St Patrick's Estate, Manly Precincts 1 and 13 proposed residential subdivision, flora and fauna assessment.* Report prepared on behalf of the development proponent by Gunninah Environmental Consultants, Crows Nest.

Harden, G. (Ed) (1992-2002) *Flora of New South Wales Vols 1,2,3 and 4.* NSW University Press, Kensington, NSW.

Keith, D. (2002) *A compilation map of Native Vegetation for New South Wales.* Draft Report July 2002. National Parks and Wildlife Service, Hurstville, NSW.

Ku-ring-gai Municipal Council (1999) *Ku-ring-gai Flying-fox Reserve management plan.* http://www.sydneybats.org.au/PDF/FlyfoxResManPlan.pdf [Accessed July 2007].

Landcom (2004) *Managing Urban Stormwater: Soils and Construction. Volume 1. 4th edition.* Landcom, Sydney, NSW.

LesryK Environmental Consultants (2002) *Grey-headed Flying-fox (Pteropus poliocephalus) targeted surveys Bumborah Point Road, Matraville, NSW.* Report prepared for EDAW (Australia) Pty Ltd by LesryK Environmental Consultants, Bundeena, NSW.

LesryK Environmental Consultants (2004) *Grey-headed Flying-fox (Pteropus poliocephalus) targeted survey 81 Governor Macquarie Drive, Chipping Norton, NSW.* Report prepared for Hassell Pty Ltd by LesryK Environmental Consultants, Bundeena, NSW.

LesryK Environmental Consulting (2005) *Ecological Assessment Proposed Residential Development, Montpelier Place, North Head.* Report prepared on behalf of Lachlan Project Management Pty Ltd, by LesryK Environmental Consultants and Ecosense Consulting Pty Ltd.

Manly City Council (2004) State of the Environment Report 2003-2004. Manly City Council, Manly NSW.

Manly City Council (2006) *State of the Environment Report 2005-2006.* Manly City Council, Manly NSW.

Menkhorst, P.W. (Ed) (1995) *Mammals of Victoria: Distribution, Ecology and Conservation.* Oxford University Press, Melbourne, Victoria.

NSW Government (2007) *BioNet.* http://www.bionet.nsw.gov.au/ [Accessed July 2007].

NSW National Parks and Wildlife Service (1999) *Threatened species management – Species information.* NSW National Parks and Wildlife Service, Hurstville, NSW.

NSW National Parks and Wildlife Service (2000) *Endangered Long-nosed Bandicoot Population at North Head.* http://www.nationalparks.nsw.gov.au/pdfs/tsprofile_long_nosed_bandicoot_northhead_pop.pdf [Accessed July 2007].

NSW Scientific Committee (2007) *Threatened Species Final and Preliminary Determinations.* http://www.npws.nsw.gov.au/news/tscdets/index.html [Accessed July 2007].

Oculus (2007) *St Patrick's Manly Estate – Precincts 13 and 19 Stage 2 Landscape Design Report,* prepared for Lend Lease Development by Oculus, Newtown, NSW.

Pepper, J. (2005) *Flora Assessment Report, Lots 1-8, Precinct 13, St Patrick's Estate, Manly.* Total Earth Care Pty Ltd, North Narrabeen, NSW.

Robinson, L. (1994) *Field guide to the native plants of Sydney* (2nd Edition). Kangaroo Press, Sydney, NSW.

Scott, L.K., Hume, I.D. and Dickman, C.R. (1999) Ecology and population biology of long-nosed Bandicoots (Perameles nasuta) at North Head, Sydney Harbour National Park. *Wildlife Research.* 26(6): 805-821.

Simpson, K. and Day, N. (1999) *Field guide to the birds of Australia.* Version 6. Penguin Books Australia, Victoria.

Skelton, N., Wong, P. and Donner, E. (2003) *Flora and fauna of Manly Councils bushland reserves, Manly Council.* GIS Environmental Consultants, Sydney, NSW.

Specht, R.L. (1981) Major vegetation Formations in Australia. In: *Ecological Biogeography of Australia* (A. Keast [Ed.]) Dr. W. Junk by Publishers, The Hague, pp. 163-297.

Strahan, R. (Ed) (1995) *The mammals of Australia.* Reed Books, Chatswood, NSW.

Tidemann, C. R. (1999) The biology and management of the Grey-headed Flying-fox Pteropus poliocephalus. *Acta Chiropterologica.* 1: 151-164.

Tidemann, C. R. (2002) Sustainable management of the Grey-headed Flying-fox Pteropus poliocephalus. pp. 122-127 in: *Managing the Grey-headed Flying-fox as a Threatened Species in New South Wales.* (P. Eby and D. Lunney [Eds.]). Royal Zoological Society of New South Wales, Mosman, NSW.

Total Earth Care and Ecosense Consulting (2004) *Flora and fauna assessment proposed residential development Precincts 3 and 12 St Patrick's Estate, Manly.* Report prepared for Lend Lease Development by Total Earth Care, North Narrabeen, NSW.

Total Earth Care (2005) *Translocation Management Plan for the Sunshine Wattle Acacia terminalis ssp. terminalis on St Patrick's Estate, Manly.* Prepared for Lend lease Development by Total Earth Care, North Narrabeen, NSW

Triggs, B. (1996) *Tracks, scats and other traces : A field guide to Australian mammals.* Oxford University Press, Melbourne, Victoria.

Vallee, L., Hogbin, T., Monks, L., Makinson, B., Matthes, M. and Rossetto, M. (2004) *Guidelines for the Translocation of Threatened Plants in Australia* (2nd Edition). Australian Network for Plant Conservation, Environmental Trust, Sydney, NSW.

Urban Bushland Management Consultants (1997) *Cabramatta Creek Flying-fox Reserve Action Plan.* Report prepared for Fairfield City Council and Cabramatta Creek Flying Fox Committee by Urban Bushland Management Consultants, Castle Hill, NSW.

Appendix 2: Fauna species recorded or known to occur in the vicinity of the subject site.

Source of Records
1 = Species recorded during the present study.
2 = DECC (2007a).
3 = Skelton *et al.* (Bower Gully section) (2003).
4 = Manly City Council (2006).

Key
A - indicates species listed under the *EPBC Act.*
F - migratory Family listed under the *EPBC Act.*
M - Species listed as migratory listed under the *EPBC Act.*
B - indicates species listed under the *TSC Act.*
E - Species is Endangered.
V - Species is Vulnerable.
EN - endangered population at North Head as listed under the *TSC Act.*
* - indicates introduced species.

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
		MAMMALS					
			Tachyglossidae				
		Short-beaked Echidna	*Tachyglossus aculeatus*		x		
			Dasyuridae				
V	V	Spotted-tailed Quoll	*Dasyurus maculatus*		x		
		Brown Antechinus	*Antechinus stuartii*		x		
			Peramelidae				
	EN	Long-nosed Bandicoot	*Perameles nasuta*		x	x	
			Phascolarctidae				
	V	Koala	*Phascolarctos cinereus*		x		
			Petauridae				
		Sugar Glider	*Petaurus breviceps*		x		
			Pseudocheiridae				
		Common Ringtail Possum	*Pseudocheirus peregrinus*		x	x	
			Phalangeridae				
		Common Brushtail Possum	*Trichosurus vulpecula*		x	x	
			Macropodidae				
		Swamp Wallaby	*Wallabia bicolor*		x		
			Pteropodidae				
V	V	Grey-headed Flying Fox	*Pteropus poliocephalus*		x	x	x
			Vespertilioidae				
		Gould's Wattled Bat	*Chalinolobus gouldii*		x		
	V	Eastern Bentwing Bat	*Miniopterus schreibersii*		x		
		Little Forest Bat	*Vespadelus vulturnus*		x		
			Molossidae				
		White-striped Freetail Bat	*Nyctinomus australis*		x		
			Muridae				
		Water Rat	*Hydromys chrysogaster*		x		
		* House Mouse	*Mus musculus*		x		
		Bush Rat	*Rattus fuscipes*		x		
		* Black Rat	*Rattus rattus*		x		
		* Unidentified rat	*Rattus sp.*	x			

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
			Canidae				
		Dingo	*Canis lupus dingo*		x		
		* Fox	*Vulpes vulpes*		x		
		* Dog	*Canis familiaris*		x	x	
			Felidae				
		* Feral Cat	*Felis catus*		x	x	
			Leporidae				
		* Rabbit	*Oryctolagus cuniculus*		x	x	
		BIRDS					
			Phasianidae				
		Brown Quail	*Coturnix ypsilophora*		x		
			Turnicidae				
		Painted Button-quail	*Turnix varia*		x		
			Diomedeidae				
MV		Wandering Albatross	*Diomedea exulans*		x		
M	V	Black-browed Albatross	*Diomedea melanophris*		x		
M		Yellow-nosed Albatross	*Diomedea chlorohynchos*		x		
MV	V	Shy Albatross	*Diomedea cauta*		x		
ME	V	Sooty Albatross	*Phoebetria fusca*		x		
			Procellariidae				
M		White-chinned Petrel	*Procellaria aequinoctialis*		x		
		Great-winged Petrel	*Pterodroma macroptera*		x		
ME	E	Gould's Petrel	*Pterodroma leucoptera*		x		
		Antarctic Prion	*Pachyptila desolata*		x		
V		Fairy Prion	*Pachyptila turtur*		x		
M		Wedge-tailed Shearwater	*Puffinus pacificus*		x		
		Buller's Shearwater	*Puffinus bulleri*		x		
M		Short-tailed Shearwater	*Puffinus tenuiorstris*		x		
		Fluttering Shearwater	*Puffinus gavia*		x		
ME	E	Southern Giant Petrel	*Macronectes giganteus*		x		x
		White-faced Storm Petrel	*Pelagodroma marina*		x		
		Common Diving-Petrel	*Pelecanoides urinatrix*		x		
			Pelecanidae				
		Australian Pelican	*Pelecanus conspicillatus*		x		
			Sulidae				
		Australasian Gannet	*Morus serrator*		x		
			Phaethontidae				
M		White-tailed Tropicbird	*Phaeton lepturus*		x		
			Phalacrocoracidae				
		Pied Cormorant	*Phalacrocorax varius*		x		
		Little Pied Cormorant	*Phalacrocorax melanoleucos*		x		
		Great Cormorant	*Phalacrocorax carbo*		x		
		Little Black Cormorant	*Phalacrocorax sulcirostris*		x		
			Podicipedidae				
		Hoary-headed Grebe	*Poliocephalus poliocephalus*		x		
			Spheniscidae				

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
	EN	Little Penguin	*Eudyptula minor*		×		
F			**Anatidae**				
		Pacific Black Duck	*Anas superciliosa*		×		
		Australian Wood Duck	*Chenonetta jubata*		×		
			Rallidae				
		Lewin's Rail	*Rallus pectoralis*		×		
			Ardeidae				
		White-necked Heron	*Ardea pacifica*		×		
		White-faced Heron	*Egretta novaehollandiae*		×		
M		Cattle Egret	*Ardea ibis*		×		
M		Great Egret	*Ardea alba*		×		
M		Eastern Reef Egret	*Egretta sacra*		×		
		Striated Heron	*Butorides striatus*		×		
		Nankeen (Rufous) Night Heron	*Nycticorax caledonicus*		×		
			Threskiornidae				
		Australian White Ibis	*Threskiornis molluca*		×		
F			**Scolopacidae**				
		Whimbrel	*Numenius phaeopus*		×		
M		Wandering Tattler	*Hetroscelis incana*		×		
			Haematopodidae				
	V	Sooty Oystercatcher	*Haematopus fuliginosus*		×		
F			**Charadriidae**				
		Masked Lapwing	*Vanellus miles*		×		
F			**Recurvirostridae**				
		Black-winged Stilt	*Himantopus himantopus*		×		
		Red-necked Avocet	*Recurvirostra novaehollandiae*		×		
			Laridae				
M		Arctic Jaeger	*Stercorarius parasiticus*		×		
M		Long-tailed Jaeger	*Stercorarius Longicauda*		×		
		Silver Gull	*Larus novaehollandiae*		×		
		Pacific Gull	*Larus pacificus*		×		
M		Caspian Tern	*Sterna caspia*		×		
M		Common Tern	*Sterna hirundo*		×		
		White-fronted Tern	*Sterna striata*		×		
	V	Sooty Tern	*Sterna fuscata*		×		
		Crested Tern	*Sterna bergii*		×		
		Common Noddy	*Anous stolidus*		×		
F			**Accipitridae**				
		Black-shouldered Kite	*Elanus axillaris*		×		
M	V	Osprey	*Pandion haliaetus*		×		×
		Whistling Kite	*Haliastur sphenurus*		×		
M		White-bellied Sea-eagle	*Haliaeetus leucogaster*		×		
		Little Eagle	*Hieraaetus morphnoides*		×		
		Brown Goshawk	*Accipiter fasciatus*		×		
		Swamp Harrier	*Circus approximans*		×		
F			**Falconidae**				

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
		Peregrine Falcon	*Falco peregrinus*		x		
		Australian Hobby	*Falco longipennis*		x		
		Brown Falcon	*Falco berigora*		x		
		Nankeen Kestrel	*Falco cenchroides*		x		
			Columbidae				
	V	Superb Fruit-dove	*Ptilinopus superbus*		x		x
		Topknot Pigeon	*Lopholaimus antarcticus*		x		
		White-headed Pigeon	*Columba leucomela*		x		
		* Rock Dove	*Columba livia*		x	x	
		* Spotted Turtle-dove	*Streptopelia chinensis*		x	x	
		Brown Cuckoo-dove	*Macropygia amboinensis*		x		
		Bar-shouldered Dove	*Geopelia humeralis*		x		
		Brush Bronzewing	*Phaps elegans*		x		
		Crested Pigeon	*Ocyphaps lophotes*		x		
		Wonga Pigeon	*Leucosarcia melanoleuca*		x		
			Cacatuidae				
		Yellow-tailed Black Cockatoo	*Calyptorhynchus funereus*		x		
		Galah	*Eolophus roseicpilla*		x		
		Little Corella	*Cacatua sanguinea*		x		
		Sulphur-crested Cockatoo	*Cacatua galerita*		x		
			Psittacidae				
		Rainbow Lorikeet	*Trichoglossus haematodus*	x	x	x	
		Scaly-breasted Lorikeet	*Trichoglossus chlorolepidotus*		x		
		Little Lorikeet	*Glossopsitta pusilla*		x		
		Australian King Parrot	*Alisterus scapularis*		x		
		Red-winged Parrot	*Aprosmictus erythropterus*		x		
E	E	Swift Parrot	*Lathamus discolor*		x		
		Crimson Rosella	*Platycercus elegans*		x		
		Eastern Rosella	*Platycercus eximius*		x		
		Australian Ringneck	*Barnardius zonarius*		x		
		Red-rumped Parrot	*Psephotus haematonotus*		x		
			Cuculidae				
		Pallid Cuckoo	*Cuculus pallidus*		x		
		Brush Cuckoo	*Cuculus variolosus*		x		
		Fan-tailed Cuckoo	*Cuculus flabelliformis*		x		
		Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*		x		
		Shining Bronze-Cuckoo	*Chrysococcyx lucidus*		x		
		Common Koel	*Eudynamys scolopacea*		x		
		Channel-billed Cuckoo	*Scthrops novaehollandiae*		x		
			Centropodidae				
		Pheasant Coucal	*Centropus phasianinus*		x		
			Strigidae				
	V	Powerful Owl	*Ninox strenua*		x		x
		Southern Boobook	*Ninox novaeseelandiae*		x		
	V	Barking Owl	*Ninox connivens*		x		
			Tytonidae				

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
		Barn Owl	*Tyto alba*		x		
			Podargidae				
		Tawny Frogmouth	*Podargus strigoides*		x		
			Apodidae				
M		White-throated Needletail	*Hirundapus caudacutus*		x		
M		Fork-tailed Swift	*Apus pacificus*		x		
			Alcedinidae				
		Azure Kingfisher	*Alcedo azurea*		x		
		Laughing Kookaburra	*Dacelo naxaeguineae*		x		
		Sacred Kingfisher	*Todiramphus sanctus*		x		
			Coraciidae				
		Dollarbird	*Eurystomus orientalis*		x		
			Menuridae				
		Superb Lyrebird	*Menura novaehollandiae*		x		
			Neosittidae				
		Varied Sittella	*Daphoenositta chrysoptera*		x		
			Maluridae				
		Superb Fairy-wren	*Malurus cyaneus*		x	x	
		Variegated Fairy-wren	*Malurus lamberti*		x		
			Pardalotidae				
		Spotted Pardalote	*Pardalotus punctatus*		x		
		Striated Pardalote	*Pardalotus striatus*		x		
		Rockwarbler	*Origma solitaria*		x		
		White-browed Scrubwren	*Sericornis frontalis*		x	x	
		White-throated Gerygone	*Gerygone olivacea*		x		
		Brown Gerygone	*Gerygone mouki*		x		
		Brown Thornbill	*Acanthiza pusilla*		x		
		Yellow Thornbill	*Acanthiza nana*		x		
		Striated Thornbill	*Acanthiza lineata*		x		
		Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*		x		
			Meliphagidae				
		Red Wattlebird	*Anthochaera carunculata*		x		
		Little (Brush) Wattlebird	*Anthochaera chrysoptera*	x	x		
		Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*		x		
		Noisy Friarbird	*Philemon corniculatus*		x		
		Little Friarbird	*Philemon citreogularis*		x		
ME	E	Regent Honeyeater	*Xanthomyza phrygia*		x		x
		Noisy Miner	*Manorina melanocephala*	x	x	x	
		Lewin's Honeyeater	*Meliphaga lewinii*		x		
		Yellow-faced Honeyeater	*Lichenostomus chrysops*		x		
		White-eared Honeyeater	*Lichenostomus leucotis*		x		
		Yellow-tufted Honeyeater	*Lichenostomus melanops*		x		
		White-plumed Honeyeater	*Lichenostomus pencillatus*		x		
		White-naped Honeyeater	*Melithreptus lunatus*		x		
		White-cheeked Honeyeater	*Phylidonyris nigra*		x		
		New Holland Honeyeater	*Phylidonryis novaehollandiae*		x		

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
		Eastern Spinebill	*Acanthorhynchus tenuirostris*		x		
		Scarlet Honeyeater	*Myzomela sanguinolenta*		x		
			Orthonychidae				
		Eastern Whipbird	*Psophodes olivaceus*		x		
			Petroicidae				
		Rose Robin	*Petroica rosea*		x		
		Eastern Yellow Robin	*Eopsaltria australis*		x		
		Jacky Winter	*Microeca fascinans*		x		
			Pachycephalidae				
		Crested Shrike-tit	*Falcunculus frontatus*		x		
		Grey Shrike-thrush	*Colluricincla harmonica*		x		
		Golden Whistler	*Pachycephala pectoralis*		x		
		Rufous Whistler	*Pachycephala rufiventris*		x		
			Dicruridae				
		Grey Fantail	*Rhipidura fuliginosa*		x		
M		Rufous Fantail	*Rhipidura rufifrons*		x		
		Willie Wagtail	*Rhipidura leucophrys*		x		
		Leaden Flycatcher	*Myiagra rubecula*		x		
M		Satin Flycatcher	*Myiagra cyanoleuca*		x		
M		Black-faced Monarch	*Monarcha melanopsis*		x		
M		Spectacled Monarch	*Monacrha trivirgatus*		x		
		Magpie Lark	*Grallina cyanoleuca*		x		
		Spangled Drongo	*Dicrurus bracteatus*		x		
			Oriolidae				
		Olive-backed Oriole	*Oriolus sagittatus*		x		
		Figbird	*Sphecotheres viridis*		x		
			Campephagidae				
		Black-faced Cuckoo-shrike	*Coracina novaehollandiae*		x		
			Artamidae				
		Grey Butcherbird	*Cracticus torquatus*		x		
		Pied Butcherbird	*Cracticus nigrogularis*		x		
		Australian Magpie	*Gymnorhina tibicen*	x	x	x	
		Pied Currawong	*Strepera graculina*	x	x		
			Corvidae				
		Australian Raven	*Corvus coronoides*		x		
			Hirundinidae				
		Welcome Swallow	*Hirundo neoxena*	x	x		
		Tree Martin	*Hirundo nigricans*		x		
			Motacillidae				
		Richard's Pipit	*Anthus naovaeseelandiae*		x		
F			**Sylviidae**				
		Golden-headed Cisticola	*Cisticola exilis*		x		
			Passeridae				
		* House Sparrow	*Passer domesticus*		x		
			Fringillidae				
		* European Goldfinch	*Carduelis carduelis*		x		

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
			Ploceidae				
		Red-browed Finch	*Neochmia temporalis*		x		
	V	Diamond Firetail	*Stagonopleura guttata*		x		
			Dicaeidae				
		Mistletoebird	*Dicaeum hirundinaceum*		x		
			Zosteropidae				
		Silvereye	*Zosterops lateralis*		x		
			Pycnonotidae				
		* Red-whiskered Bulbul	*Pycnonotus jocosus*		x		
F			**Muscicapidae**				
		Russet-tailed Thrush	*Zoothere heinei*		x		
		* Common Blackbird	*Turdus merula*		x		
			Sturnidae				
		* Common Starling	*Sturnus vulgaris*		x		
		* Common Myna	*Acridotheres tristis*		x		
		REPTILES					
			Chelidae				
		Eastern Snake-necked Turtle	*Chelodina longicollis*		x		
			Gekkonidae				
		Wood Gecko	*Diplodactylus vittatus*		x		
		Lesueur's Velvet Gecko	*Oedura lesueurii*	x	x		
		Southern Leaf-tailed Gecko	*Phyllurus platurus*		x		
		Thick-tailed Gecko	*Underwoodisaurus milii*		x		
			Pygopodidae				
		Burton's Snake-lizard	*Lialis burtonis*		x		
		Common Scaly-foot	*Pygopus lepidopodus*		x		
			Agamidae				
		Eastern Water Dragon	*Physignathus lesueurii*		x	x	
		Bearded Dragon	*Pogona barbata*		x		
			Varanidae				
	V	Heath (Rosenberg's) Goanna	*Varanus rosenbergi*		x		
			Scincidae				
		Red-throated Skink	*Bassiana platynota*		x		
		Wall Skink	*Cryptoblepharus virgatus*		x		
		Striped Skink	*Ctenotus robustus*		x		
		Copper-tailed Skink	*Ctenotus taeniolatus*		x		
		Eastern Water Skink	*Eulamprus quoyii*		x	x	
		Grass Skink	*Lampropholis delicata*	x	x	x	
		Garden Skink	*Lampropholis guichenoti*		x	x	
		Eastern Blue-tongued Lizard	*Tiliqua scincoides*		x	x	
		Rainbow Litter Skink	*Lygisaurus foliorum*		x		
			Boidae				
		Diamond Python	*Morelia spilota spilota*		x		
			Colubridae				
		Brown Tree Snake	*Boiga irregularis*		x		

A	B	COMMON NAME	SCIENTIFIC NAME	1	2	3	4
		Common Tree Snake	*Dendrelaphis punctulata*		x	x	
			Elapidae				
		Golden Crowned Snake	*Cacophis squamulosus*		x		
		Yellow-faced Whip Snake	*Demansia psammophis*		x		
		Eastern Tiger Snake	*Notechis scutatus*		x		
		Red-bellied Black Snake	*Pseudechis porphyriacus*		x		
		Eastern Brown Snake	*Pseudonaja textilis*		x		
		Bandy Bandy	*Vermicella annulata*		x		
		AMPHIBIANS					
			Myobatrachidae				
		Common Eastern Froglet	*Crinia signifera*	x	x	x	
V	V	Giant Burrowing Frog	*Heleioporus australiacus*		x		
		Eastern Banjo Frog	*Limnodynastes dumerilii*		x		
		Ornate Burrowing Frog	*Limnodynastes ornatus*		x		
		Striped Marsh Frog	*Limnodynastes peronii*		x	x	
		Spotted Grass Frog	*Limnodynastes tasmaniensis*		x		
	V	Red-crowned Toadlet	*Pseudophryne australis*		x		x
			Hylidae				
		Green Tree Frog	*Litoria caerulea*		x		
		Peron's Tree Frog	*Litoria peronii*		x		
		Leaf Green Tree Frog	*Litoria phyllochroa*		x		

Appendix 3. Threatened fauna species known to have been previously recorded within this portion of the Manly Local Government Area.

Key

EPBC Act M – species listed as migratory under the *EPBC Act.*

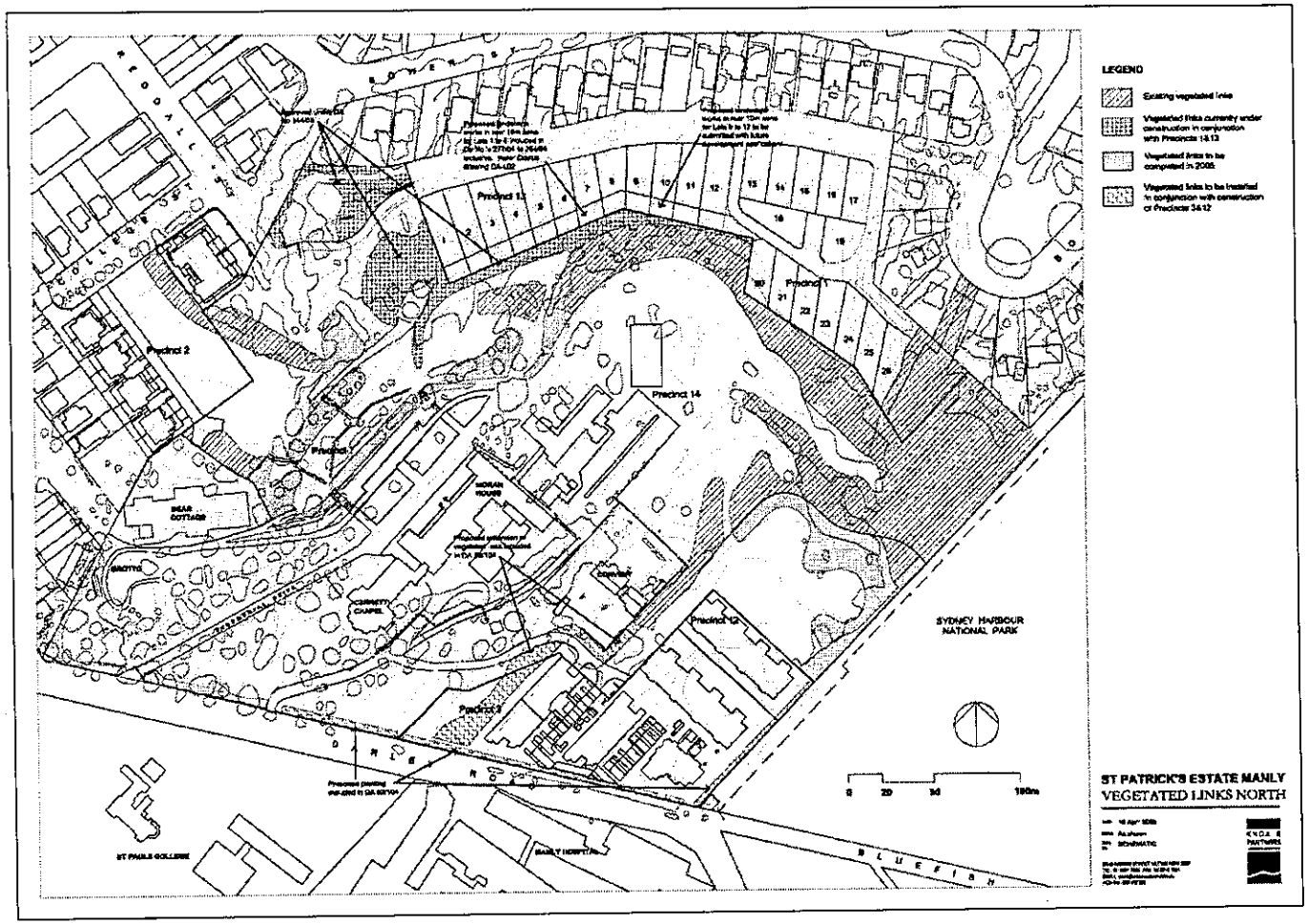
EPBC Act TM – Species listed as threatened and migratory under the *EPBC Act.*

* - habitat requirements were generally extracted from Frith (1997), Cogger (2000), Strahan (1995), NPWS (1999), NPWS (2000) and the NSW Scientific Committee (2007), with other references used being identified in the bibliography.

Common and Scientific Name	Legislation	Habitat Requirements*	Presence Consideration and Potential Impacts
BIRDS			
White-bellied Sea-eagle *Haliaeetus leucogaster*	*EPBC Act* M	The White-bellied Sea-eagle is associated with coastal areas and bays all around Australia, and inland areas of large rivers, lakes and swamps. It spends most of its time soaring above these water bodies hunting for fish, tortoises, sea snakes, waterfowl and sometimes rabbits on land.	Unlikely to be present due to a lack of its necessary habitat requirements. Therefore, this species would not be disturbed as a result of the undertaking of the Proposal.
Regent Honeyeater *Xanthomyza phrygia*	*EPBC Act TM* *TSC Act*	The principle habitat of the Regent Honeyeater is temperate eucalypt woodland and open forest with stands of over mature, dominant trees. These trees are used as central places for nesting and feeding territories. This species feeds primarily on four eucalypt species (Red Ironbark *Eucalyptus sideroxylon*, White Box *E. albens*, Yellow Box *E. melliodora* and Yellow Gum *(E. leucoxylon)* as well as heavy infestations of mistletoe. Distributed from southern Queensland through central Victoria to South Australia, the western slopes of the Great Dividing Range, NSW, appears to be this species current stronghold.	This species may traverse the site during its foraging movements; however the absence of preferred Eucalypts would negate the presence of this bird. Therefore, this species would not be disturbed as a result of the undertaking of the Proposal.
Diamond Firetail *Stagonopleura guttata*	*TSC Act*	This species occupies open eucalypt woodlands and fringing mallee where a grassy understorey is present. This bird must drink frequently throughout the day therefore requiring a permanent water supply. Feeds almost exclusively on seeds (both native and exotic plants are consumed), though occasionally the green vegetation of leaves and shoots will also be consumed. Diamond Firetail populations appear unable to persist in areas which lack remnants of native vegetation larger than 200ha in size.	This species was not observed during the field surveys. The size and disturbed condition of the bushland present on the subject site would negate the occurrence of this bird.

Common and Scientific Name	Legislation	Habitat Requirements*	Presence Consideration and Potential Impacts
MAMMALS			
Long-nosed Bandicoot *Perameles nasuta*	*TSC Act* E	The Long-nosed Bandicoot has been recorded in woodlands, rainforests, wet and dry forests, open areas, heathlands and grasslands. Within these habitats they shelter during the day in a nest that is lined with grass and leaves, a number of which may be utilised in a given area. This species is known to be tolerant of major disturbances and is consistently recorded in urban environments. The Long-nosed Bandicoot feeds on a variety of invertebrates, as well as some plant material and fungi. Mating occurs throughout the year in the Sydney region. The home ranges of the Long-nosed Bandicoot are in the order of 4.4 ± 0.8ha for males and 1.7 ± 0.2ha for females.	Whilst this species may be present on occasion, no evidence to suggest its occurrence was obtained during the field investigation (i.e. no characteristic conical diggings were observed). The degraded and essentially cleared nature of the site is expected to limit the occurrence of this species. Whilst this is the case, due to its nearby presence, based on a precautionary approach an assessment, using the seven part test as provided under Section 5A of the *Environmental Planning and Assessment Act 1979*, has been provided within Section 9.2 of this report.
Grey-headed Flying-fox *Pteropus poliocephalus*	*EPBC Act* *TSC Act*	A canopy-feeding frugivore, blossom-eater and nectarivore which inhabits a variety of habitats. Roosts and breeds communally in 'camps', with these camps containing between 500 and 5,000 individuals. Individuals generally exhibit a high fidelity to traditional camps and return annually to give birth and rear offspring. Foraging occurs opportunistically on both native and exotic plants, often at distances between 30 and 70 km from camps.	During the field investigation, no active or historic flying-fox camps were identified. Individuals of this species known to forage within the vicinity of the subject site on occasion. Based on a precautionary approach an assessment, using the criteria provided under the *EPBC Act* and Section 5A of the *Environmental Planning and Assessment Act 1979*, has been provided within Section 9 of this report.
Eastern Bentwing-bat *Miniopterus schreibersii*	*TSC Act*	This species is the dominant cave-dwelling bat in south-eastern Australia. It occurs in a variety of habitats and roosts in caves, storm water channels, mines and houses. Feeds on insects caught on the wing from within eucalypt woodlands and forests.	The absence of caves and other suitable roosting site would negate the presence of this species. Therefore, this species would not be disturbed as a result of the undertaking of the Proposal.

Appendix 4. Early works planting associated with Precint 1.



Aim: To minimise bandicoot mortality and injury and to protect bandicoot habitat in areas not subject to construction activity.

- Ensure that all retained areas are clearly identified and marked to avoid any accidental damage/destruction
- Erect temporary chain wire fencing around the construction site. Gaps of at least 20-30 cm are to be provided at the bottom of the fencing, so as not to impede bandicoot movement around and through the construction site.
- All construction workers on the site, including sub contractors and visitors to the work site, are to be made aware of the presence of bandicoots through induction training by a suitably qualified and experienced person.
- A systematic clearing approach must be determined by a suitably qualified and experienced person prior to the commencement of clearing that is to include progression of clearing in one direction towards areas of retained habitat.
- Vegetation clearing to be undertaken using hand tools in the first instance and checking or likely shelter sites (at the base of vegetation and under deep litter) so as to cause bandicoots to be flushed from sheltering sites to other retained areas. Ideally all clearance to be completed within one day so that bandicoots do not re occupy partially cleared areas overnight.
- Earth moving or other large machinery is not to be used until the level of vegetation clearance achieved cannot support a bandicoot sheltering or nesting. Appropriate level of clearance to be determined by a suitably qualified person.
- If cleared vegetation is stockpiled on the site temporarily, then its removal from the site must be undertaken by hand, not large machinery.
- Operating hours are to be confined to 0700 to 1800 on weekdays and 0700 to 1300 on Saturdays to limit disturbance. No machinery is to be used within one half hour of dusk.
- 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.
- Undertake monitoring of the vegetated links throughout construction as per Monitoring Protocol.

Department of Environment and Climate Change (NSW)

NEWS RELEASE NEWS RELEASE NEWS RELEASE

August 12, 2004

Bright future for North Head bandicoots

Measures taken by the Department of Conservation and Environment (DEC) to protect the endangered long-nosed bandicoot population of North Head are reaping rewards, with bandicoot numbers on the rise.

Results of the latest survey found the population had grown to between 130 and 160 individuals, up from an estimated 100 in the 2002 bandicoot census.

The five-day survey involved local DEC staff, threatened species officers, volunteers, and researchers from the University of NSW setting 276 live traps across the entire headland.

DEC Threatened Species Manager, Robert Humphries, said the results of the survey were extremely encouraging.

"Over the last few years we have put in place a range of measures to help in the recovery of these highly endangered native animals," Mr Humphries said.

"We have maintained an extensive fox baiting program, greatly reducing the major threat from this predator.

"The installation of speed bumps and restriction of night time access to North Head since 1998 are also helping by reducing road kills at night when the bandicoots are most active.

"In late 2003, local staff undertook a number of hazard reduction burns that have rejuvenated some of the long unburnt heath on North head. A number of bandicoots were found foraging in these areas.

"There had been concerns that the drought may be having detrimental effects on the colony but the increase points to a population who is faring well.

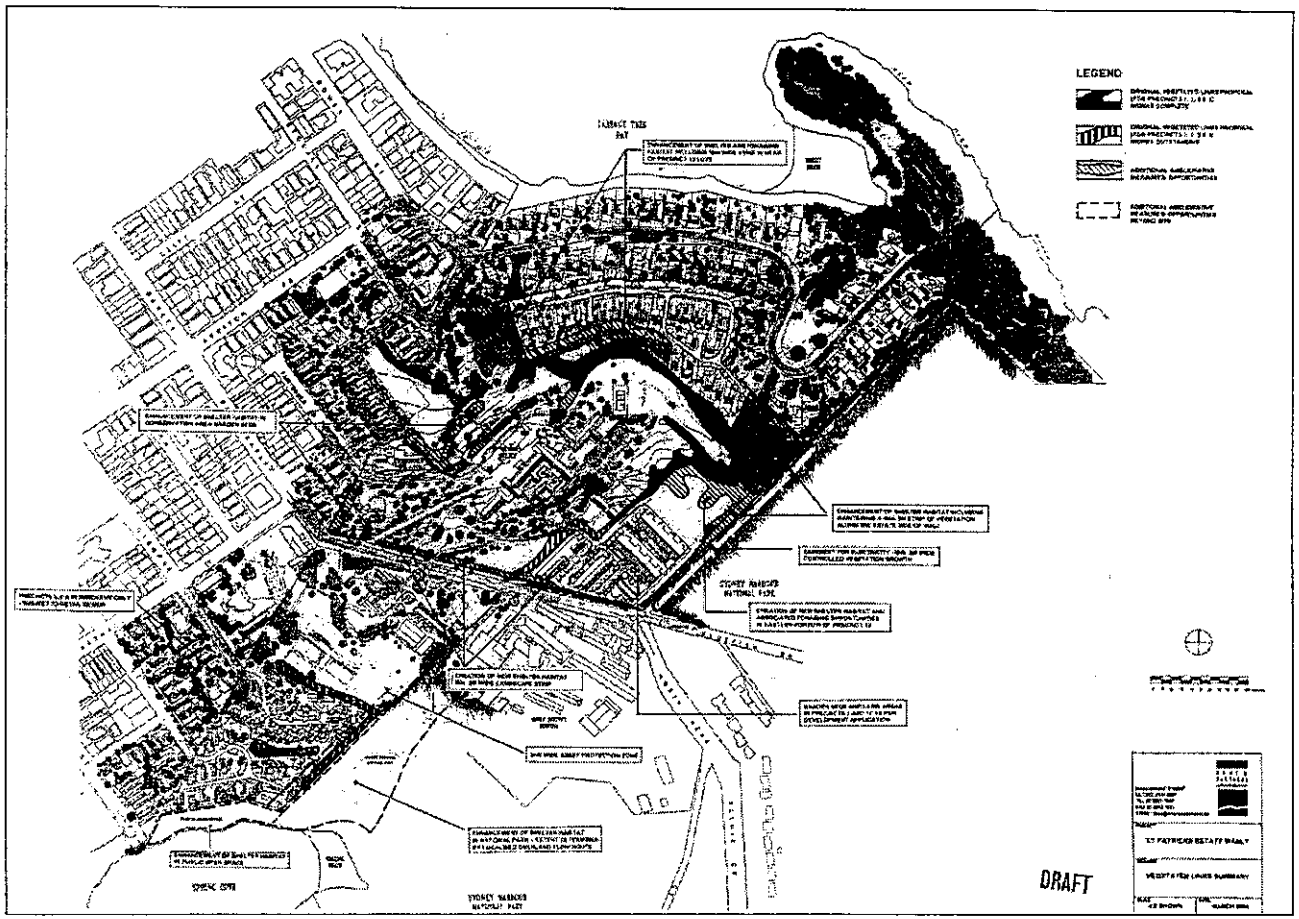
"Whilst wild populations naturally undergo seasonal and annual variations in abundance, the results have found a good sex ratio and distribution of age classes across the population – a sign of a healthy colony. "

The long nosed bandicoot is the most common bandicoot species in NSW, however like Manly's Little Penguin population, the North Head bandicoot population is surviving in isolation in the heart of Sydney.

It was declared an endangered population by the independent NSW Scientific Committee in 1997.

Department of Environment and Conservation news releases are on the web:
www.epa.nsw.gov.au/media/

Appendix 7. Vegetated links summary plan.



Appendix 8. Habitat assessment for Lots 13-19.

Lot number	13-19
Total Area of Lots	4082 m^2
Foraging habitat	232.4 m^2
Shelter habitat	717.5 m^2
Shelter Habitat within Eastern Corridor	191 m^2
Sandstone outcrop	0 m^2
Ecotone	Na
Permeability of fencing to bandicoots	All perimeter fencing (S, E and W) raised at least 150 mm; boundary fencing defined by a wire fence with 150 mm high gaps every 3 m; no front fencing; impermeable to the north due to retaining walls and steps.
Water bodies	A pool option is proposed on the northern end of each rear courtyard. As the pools would be raised and surrounded by decking, it would be inaccessible to bandicoots.
Environmental weeds	No environmental weeds are proposed for planting.
Local native species	Indicative plant list (Oculus, 2007) contains predominantly native species although some non-invasive exotic species will be used to highlight specific areas. Plants were chosen for their aesthetic values, bushfire resistance and/or suitability as bandicoot shelter (including *Grevillea* and *Themeda*). Eight native tree species are proposed for planting.
Bright lights/motion detectors	No light dimming recommendations are given.
Retaining walls	Terraced front gardens running parallel to the northern boundary will act as partial barrier to bandicoot movement between Lots 13 and 19. Gaps will be incorporated into the rest of the boundary fence. The design and alignment of those retaining walls located within the northern portion of the properties are not considered to be a barrier to the movement patterns of nay bandicoots that may be utilising the subject site and adjacent habitat on occasion.
Dogs/cats	No dogs or cats are permitted under the lease agreement.
Feeding	Leaseholders would be discouraging from feeding bandicoots by means of an education and awareness program. A package of information describing the natural values of North Head and outlining the responsibilities of residents in maintaining these values would be distributed as part of the lease agreement.
Insecticides/fertilizers/snail baits	The indicative plant list comprises mainly local heath species that thrive on skeletal soils of the site. Although these species have some resistance to pest and snail attack, garden maintenance guidelines included as part of the lease agreement would recommend low toxicity alternatives to control disease and/or pests.