

Birds Tree Consultancy

Consulting Arborist AQF5 • Horticultural Consultancy • Project Management • Resistograph Testing



UNSW Biological Sciences Project

ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT

15 November 2016 REVISION E

Prepared for Multiplex

Prepared by

Birds Tree Consultancy

Glenn Bird Dip. Hort (Arboriculture) (AQF5)

PO Box 3244 ROUSE HILL NSW 2155

PH 0438 892 634

glenn@birdstrees.com.au

www.birdstrees.com.au

ABN 31 105 006 657



Executive Summary

This Tree Assessment Report has been commissioned by Multiplex to report on trees within the construction area of the Bioscience Renewal Project Stage 2 Building D26, UNSW, Botany Street Kensington.

This report has been commissioned to report on the existing trees that are within the construction footprint of the proposed new building and the northern façade works of building D26

The subject trees are in good health and condition with high retention value.

Trees 61 and 62 are not viable to be retained due to the total encroachment of Tree Protection Zones. Trees 61 and 62 will be required to be removed due to the proposed construction works. Trees 61 and 62 are suitable to be transplanted.

Tree 60 is viable to be retained and protected on the condition that it is incorporated with the landscape treatment and there is no excavation within the Tree Protection Zones as shown in Appendix B.

Contents

Executive Summary	2
Contents.....	3
1.0 Scope of Works	4
2.0 Site Analysis.....	4
2.1 Site.....	4
2.2 Topography.....	4
2.3 Identification.....	4
2.4 Associated Documentation	4
2.4 Soils	4
3.0 Existing Trees.....	4
4.0 Impact of Development.....	5
4.1 Tree Protection Zone.....	5
4.2 Development Impact.....	5
5.0 Recommendations	5
6.0 Pre-Construction Tree Protection Measures.....	6
6.1 General	6
6.2 Identification.....	6
6.3 Protective Fence.....	6
Mulching	6
7.0 Site Management Issues	6
7.1 Soil Compaction.....	6
7.2 Site Access	7
7.3 Excavation within Tree Protection Area	7
7.4 Possible Contamination / Storage of Materials	7
8.0 Tree Protection Measures During Construction ..	7
8.1 Maintenance of Pre-Construction Tree Protection Measures	7
8.2 Possible Contaminants.....	7
8.3 Physical Damage.....	7
8.4 Compaction.....	7
8.5 Trenching.....	8
8.6 Irrigation/Watering	8
8.7 Site Sheds / Amenities/ Storage.....	8
9.0 Environmental / Heritage/ Legislative Considerations	8
10.0 References	8
11.0 Disclaimer	8
Appendix A – Tree Inspection Data.....	10
Appendix B – A01 - Tree Location Plan.....	11
A02 – Tree Location Plan 2	11

1.0 Scope of Works

This Tree Assessment Report has been commissioned by Multiplex to report on trees within the construction area of the Bioscience Renewal Project Stage 2 Building D26, UNSW, Botany Street Kensington. This report is supplemental to Birds Tree Consulting Report dated 27 January 2015 and includes tree not previously included in this report.

This report has been commissioned to report on the existing trees that are within the construction footprint of the proposed new building and the northern façade works of building D26.

On 04 October 2016 Glenn Bird of Birds Tree Consultancy attended site and inspected the subject trees from the ground. There was no aerial inspection carried out. We undertook a Visual Tree Assessment (VTA) (Mattheck & Breloer, 1994). Tree heights are measured using a Nikon Forestry 550 Heightmeter.

2.0 Site Analysis

2.1 Site

The subject site is the area in the vicinity of and within the proposed construction footprint of Bioscience Renewal Project Stage 2 Building D26, UNSW, Botany Street Kensington. The subject trees are in close proximity to Building D26.

2.2 Topography

The trees are currently in close proximity to the building and a retaining wall. The trees are located within pedestrian paving.

2.3 Identification

Trees as identified in the attached Tree location Plan A01 in Appendix B. Tree numbers are sequential to Birds Tree Consulting Report dated 27 January 2015.

2.4 Associated Documentation

The proposed Construction extent and landscape works are defined by Woods Bagot Drawings A2202 Rev E dated 23/09/16 as provided by Multiplex.

2.4 Soils

Soil material and horizons were not tested for this report.

3.0 Existing Trees

The following trees were inspected from the ground and the following items identified.

3.1 Tree 60 *Waterhousia floribunda*

This tree is a mature *Waterhousia floribunda* and is approximately 9m tall with canopy spread of 5m. The tree is in good health and condition with minimal deadwood and epicormic growth. The canopy is balanced.

- This tree has a single trunk with a diameter at breast height (DBH) of 280mm.
- 3.2 Tree 61** *Livistona australis*
This tree is a mature *Livistona australis* with canopy spread of approximately 4m. The tree is in good health and condition with minimal deadwood and epicormic growth.
- 3.3 Tree 62** *Livistona australis*
This tree is a mature *Livistona australis* with canopy spread of approximately 2m. The tree is in good health and condition with minimal deadwood and epicormic growth.

4.0 Impact of Development

4.1 Tree Protection Zone

Tree Protection Zones (TPZs) have been defined for the subject trees in order to define the encroachment of the proposed development in accordance with AS4970-2009. The TPZs required have been taken as a circular area with a radius 12 x the diameter at breast height of the tree. This requirement is in line with Australian Standard AS 4970-2009 Protection of Trees on Development Sites. This standard defines a maximum of 10% encroachment to be minimal encroachment. Any encroachment over 10% requires the site arborist to give consideration as to the viability of the tree due to the proposed development.

Tree no.	Species	TPZ Radius (m)	Encroachment (%)
60.	<i>Waterhousia floribunda</i>	3.36	0
61.	<i>Livistona australis</i>	2.5	100
62.	<i>Livistona australis</i>	2	100

4.2 Development Impact

Trees 61 and 62 are completely encroached by the proposed façade and canopy installation which are to be completed as part of the Stage 2 Works. These trees will not be viable to be retained.

5.0 Recommendations

The subject trees are in good health and condition with high retention value.

Trees 61 and 62 are not viable to be retained due to the total encroachment of Tree Protection Zones. Trees 61 and 62 will be required to be removed due to the proposed construction works. Trees 61 and 62 are suitable to be transplanted.

Tree 60 is viable to be retained and protected on the condition that it is incorporated with the landscape treatment and there is no excavation within the Tree Protection Zones as shown in Appendix B.

6.0 Pre-Construction Tree Protection Measures

6.1 General

All tree protection works shall be carried out before excavation, grading and site works commence. Tree protection works shall be inspected and approved by a Consulting Arborist meeting AQF Level 5 prior to construction works commencing.

Storage of materials, mixing of materials, vehicle parking, disposal of liquids, machinery repairs and refueling, site office and sheds, and the lighting of fires, stockpiling of soil, rubble or any debris shall not be carried out within the TPZ of existing trees. No backfilling shall occur within the TPZ of existing trees. Trees shall not be removed or lopped unless specific instruction is given in writing by the Superintendent.

6.2 Identification

All trees to be protected shall be clearly identified and all TPZs surveyed.

6.3 Protective Fence

Fencing is to be erected around existing trees to be retained. In addition to this protective fencing within the site, Protective Fencing is to be installed to the full extent of the TPZs within the site. This fencing is to be erected prior to any materials being brought on site or before any site, civil works or construction works commence. The fence shall enclose a sufficient area so as to prevent damage to the TPZ as defined on Appendix D Tree Protection Plan and as defined in 5.1 above. Fence to comprise 1800mm high chain wire mesh fixed to 50mm diameter Galvanised steel posts. Panels should be securely fixed top and bottom to avoid separation. No storage of building materials, tools, paint, fuel or contaminants and the like shall occur within the fenced area.

Mulching

Install mulch to the extent of all tree protection fencing. Use a leaf mulch conforming to AS 4454 which is free of deleterious and extraneous matter such as soil, weeds, sticks and stones and consisting of a minimum of 90% recycled content compliant with AS 4454 (1999) and AS 4419 (1998). All trees marked as to be removed on the proposed development are to be chipped and reused for this purpose. Place mulch evenly and to a depth of 100mm.

7.0 Site Management Issues

7.1 Soil Compaction

Plant and pedestrian traffic during the construction period will cause significant soil compaction. This will be exacerbated by increased water expected on these soils as result of adjacent construction and weather. Compaction of the soil within the TPZ will reduce the voids between soil peds or particles therefore will reduce the gaseous exchange capacity of the root system which will slow critical metabolic

processes such as respiration which produces Adenosine Triphosphate (ATP) which provides energy for the photosynthesis, which in turn provides photosynthates such as glucose. These photosynthates provide the carbohydrates required for tree extension growth, girth expansion, reproduction and pest and disease resistance. No pedestrian or plant access is permissible to the TPZ.

7.2 Site Access

Sufficient access is required to enable efficient construction. It is essential to delineate access zones or corridors which will provide suitable access without damaging the existing trees to be retained or causing compaction to the root zone.

7.3 Excavation within Tree Protection Area

No excavation is to be carried out within the TPZs of retained trees without the permission and supervision of the site arborist (AQF5)

7.4 Possible Contamination / Storage of Materials

The construction site will require the use of many chemicals and materials that are possible contaminants which if not managed will pose a risk to the existing trees. These possible contaminants include fuels, herbicides, solvents and the like. A site specific Environmental Management Plan shall be provided and this specific risk identified and addressed.

8.0 Tree Protection Measures During Construction

8.1 Maintenance of Pre-Construction Tree Protection Measures

The Pre-Construction Tree Protection Measures identified in 5.0 above are to be maintained in good and serviceable condition throughout the construction period.

8.2 Possible Contaminants

Do not store or otherwise place bulk materials and harmful materials under or near trees. Do not place spoil from excavations within the TPZs. Prevent wind-blown materials such as cement from harming trees. All possible contaminants are to be stored in a designated and appropriate area with secure chemical spill measures such as a bund in place.

8.3 Physical Damage

Prevent damage to tree. Do not attach stays, guys and the like to trees. No personnel, plant, machinery or materials are to be allowed within the tree protection fencing.

8.4 Compaction

No filling or compaction shall occur over tree roots zones within tree protection fenced areas. Where construction occurs close to or the TPZ of trees to be retained it shall be necessary to install protection to avoid compaction of the ground surface. This protection is to be planks supported clear of the ground fixed to scaffolding.

8.5 Trenching

No Trenching should be necessary within the TPZs or within tree protection fencing.

No further trenching is to be carried out without the approval of the Superintendent. Should any further trenching be required within the TPZs identified, this work is to be carried out by hand and under the supervision of a qualified Arborist.

8.6 Irrigation/Watering

Contractor is to install an automatic temporary irrigation system to ensure that soil moisture levels are adequately maintained. Apply water at an appropriate rate suitable for the species during periods of little or no rainfall. This automatic system is to comply with prevailing water restrictions.

8.7 Site Sheds / Amenities/ Storage

Site sheds, site amenities, ablutions and site storage shall be in the area clear of all TPZ. Chemicals and potential contaminants are to be stored appropriately and this storage area is to be enclosed by a chemical spill bund to prevent the potential run off of contaminants in the event of a spillage or accident.

9.0 Environmental / Heritage/ Legislative Considerations

None of the subject trees are identified as threatened species or elements of endangered ecological communities within the Threatened Species Conservation Act 1995.

10.0 References

Mattheck, C. Breloer, K. 1993, The Body Language of Trees: A Handbook for Failure Analysis, 12th Impression 2010 The Stationery Office.
AS4970-2009 Protection of Trees on Development Sites : Standards Australia

11.0 Disclaimer

This Appraisal has been prepared for the exclusive use of the Client and Birds Tree Consultancy.

Birds Tree Consultancy accepts no responsibility for its use by other persons. The Client acknowledges that this Appraisal, and any opinions, advice or recommendations expressed or given in it, are based on the information supplied by the Client and on the data inspections, measurements and analysis carried out or obtained Birds Tree Consultancy and referred to in the Appraisal. The Client should rely on the Appraisal, and on its contents, only to that extent.

Every effort has been made in this report to include, assess and address all defects, structural weaknesses, instabilities and the like of the subject trees. All inspections were made from ground level using only visual means and no intrusive or destructive means of inspection were used. For many structural defects such as decay and

inclusions, internal inspection is required by means of resistograph or similar. No such investigation has been made in this case. Trees are living organisms and are subject to failure through a variety of causes not able to be identified by means of this inspection and report.

Appendix A – Tree Inspection Data

Birds Tree Consultancy

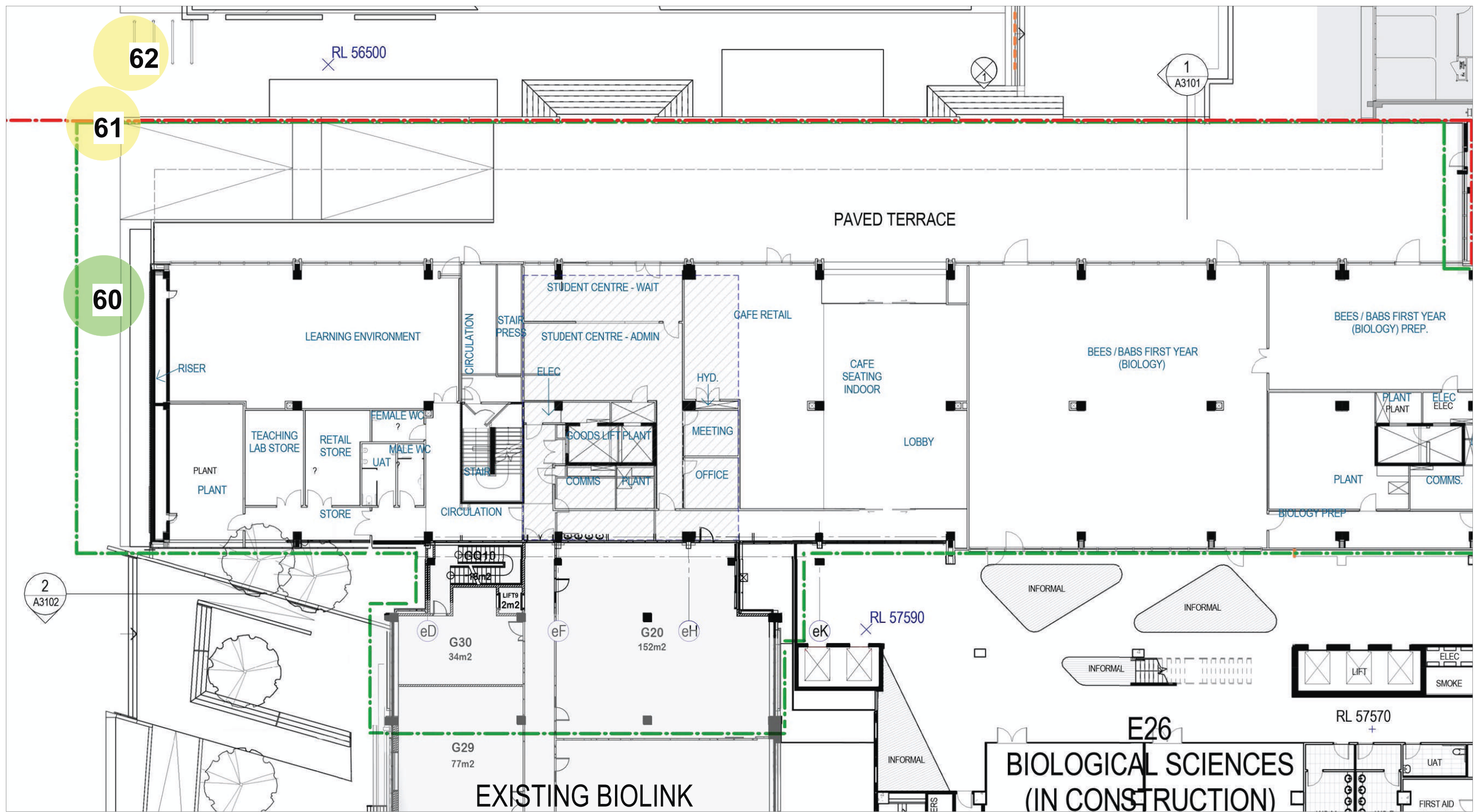
Consulting Arborist • Project Management • Horticultural Consultancy • Landscape Management

Inspection Data 22-Jan-15
Building D26

Tree no.	Species	Height (m)	Spread (m)	DBH (mm)	TPZ Radius (m)	Maturity	Trunk (single, twin, multiple @)	Trunk lean	Form/Crown shape	Branching Habit	Crown Distribution	Distortion Due	Stability	Branching Structure	Pruning History	Defects	Damage	Overall Health & Vigour	Canopy Density	Foliage	Deadwood	Epicormic Growth	Pest Infestation	Disease	Life expectancy	Env. & Landcape significance	Retention Value
60	Waterhousia floribunda	9	5	280	3.36	Mature	Single	NIL	Normal	Normal	N	Building	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Moderate	Moderate
61	Livistona australis		2	n/a	2.5	Mature	Single	NIL	Normal	Normal	N	Building	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Moderate	Moderate
62	Livistona australis		2	n/a	1.5	Mature	Single	NIL	Normal	Normal	N	Building	Stable	Stable	No evidence	Nil	Nil	Good	Normal	Normal	<5%	<5%	No evidence	No evidence	15-40y	Moderate	Moderate

Appendix B – A01 - Tree Location Plan

A02 – Tree Location Plan 2

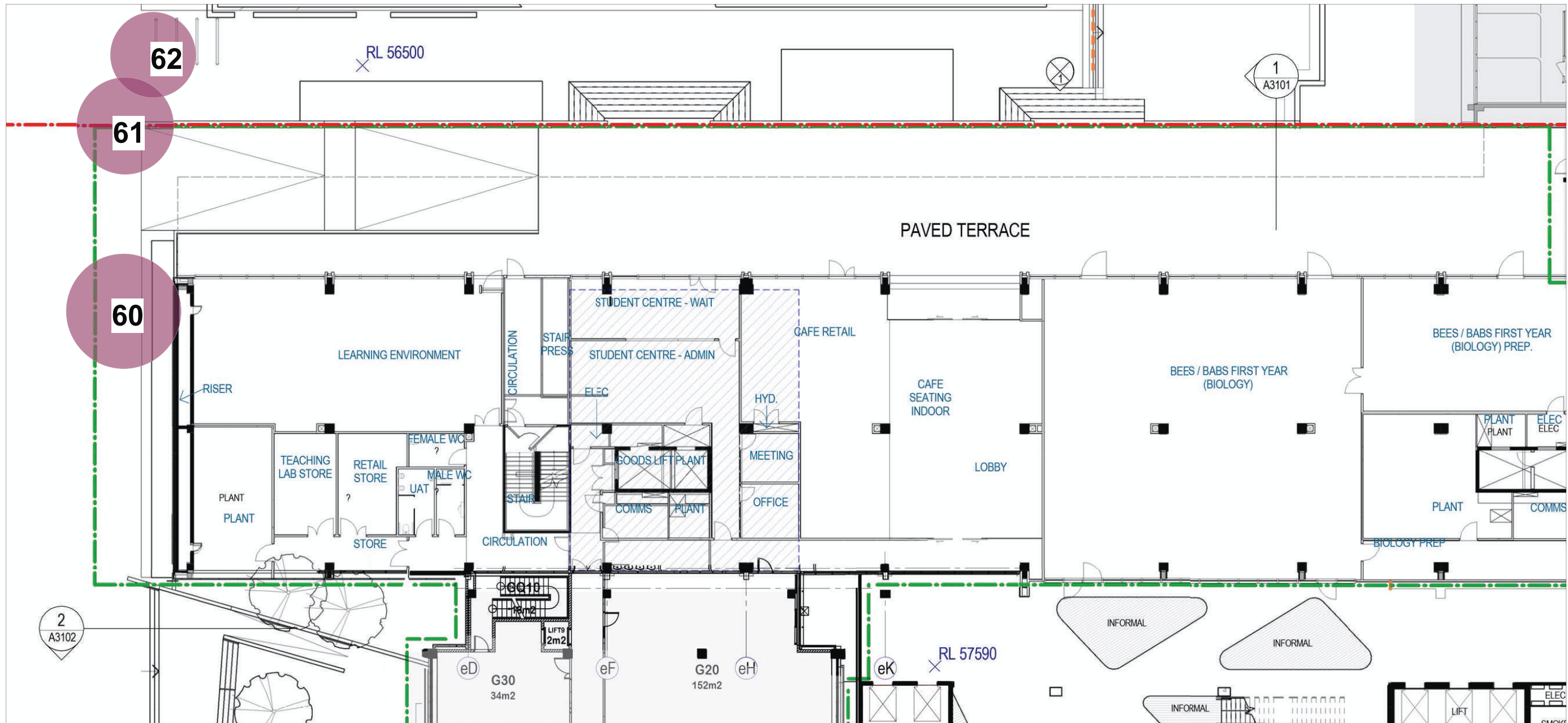


Legend

- Tree to be Retained and Protected
- Tree required to be removed due to proposed development
- Tree to be Removed
- Tree Protection Zone (TPZ) in accordance with AS4970-2009

Birds Tree Consultancy
 0438 892 634
 glenn@birdstrees.com.au
 www.birdstrees.com.au

Project: UNSW Bioscience Renewal D26
 Client: Multiplex
 DWG: A01 REV D
 Plan: Tree Location Plan
 Date: 15 Nov 2016 Scale : Not to Scale



Legend

- Tree to be Retained and Protected
- Tree required to be removed due to proposed development
- Tree to be Removed
- Tree Protection Zone (TPZ) in accordance with AS4970-2009

Birds Tree Consultancy
 0438 892 634
 glenn@birdstrees.com.au
 www.birdstrees.com.au

Project: UNSW Bioscience Renewal D26
 Client: Multiplex
 DWG: A02 REV D
 Plan: Tree Protection Plan
 Date: 15 Nov 2016 Scale : Not to Scale