Voluntary Planning Agreement

Penrith City Council

ABN 43 794 422 563

Lendlease Communities (Werrington) Pty Ltd

ACN 635 502 082

Draft

Sydney
Level 29, MLC Centre, 19 Martin Place, Sydney NSW 2000
PO Box Q1164, QVB Post Office, Sydney NSW 1230
t: +61 2 9373 3555 | f: +61 2 9373 3599 | DX 282 Sydney | www.sparke.com.au
adelaide | brisbane | canberra | darwin | melbourne | newcastle | perth | sydney | upper hunter

Contents

Parties 5

Background 5

Operative part 6

1 Definitions *6*

2 Interpretation *10*

3 Planning Agreement under the Act *11*

4 Application of this agreement *11*

5 Operation of this agreement *11*

5.1 Commencement 11

6 Contributions to be made under this agreement *11*

6.1 Works 11

6.2 Dedication of Land 13

6.3 Maintenance and Rectification of Defects 14

6.4 Access to Council owned land 14

6.5 Indemnity for Council acquisition of TfNSW Land 14

7 Application of s 7.11, s 7.12 and s 7.24 of the Act *15*

7.1 Application of s 7.11, s 7.12 and s 7.24 of the Act 15

7.2 Generation and application of Surplus Contribution Credits 15

7.3 Reporting and recording generation and retirement of Surplus Credits 17

8 Registration of this agreement *18*

8.1 Developer Interest 18

8.2 Registration of this agreement 18

8.3 Removal from Register 19

8.4 Caveat 20

9 Review of this agreement *20*

9.1 Review generally 20

10 Dispute Resolution *21*

10.1 Reference to Dispute 21

10.2 Notice of Dispute 21

10.3 Representatives of Parties to Meet 21

10.4 Further Notice if Not Settled 21

10.5 Mediation 21

10.6 Expert determination 22

Draft

10.7 Litigation 23

10.8 No suspension of contractual obligations 23

11 Enforcement and Security 23

11.1 Default 23

11.2 Security 23

11.3 Compulsory Acquisition 24

11.4 Restriction on the issue of Certificates 25

11.5 Sunset Date 25

11.6 General Enforcement 26

11.7 Breach of Obligations 26

12 Assignment and Dealings 27

12.1 Restrictions on dealings 27

13 Approvals and consents 28

14 No fetter 28

14.1 Discretion 28

14.2 No fetter 28

15 Notices 28

16 General 29

16.1 Relationship between parties 29

16.2 Time for doing acts 29

16.3 Further assurances 30

16.4 Variation 30

16.5 No assignment 30

16.6 Counterparts 30

16.7 Legal expenses, stamp duty and administration fees 30

16.8 Entire agreement 30

16.9 Representations and warranties 30

16.10 Severability 30

16.11 Invalidity 31

16.12 Waiver 31

16.13 GST 31

16.14 Governing law and jurisdiction 31

17 Reporting 31

Schedule 1 Scope of works 33

Schedule 2 Construction terms 39

Draft

Schedule 3 Easement Terms 49
Schedule 4 Summary of requirements (section 7.4) 50
Annexure A Plan showing Land 52
Annexure B Plan showing Dedication Land 54
Annexure C Plan showing Public Access Land 55
Annexure D Plans showing Works 56
Annexure E South Werrington Urban Village Map 57
Annexure F Vegetation Management Plan 58
Annexure G TfNSW Land 59
Annexure H Stage 1 Residential Lots

Draft

Agreement

Date

Parties

First party

Name	Penrith City Council (**Council**)
ACN	43 794 422 563
Contact	The General Manager
Telephone	02 4732 7777

Second party

Name	Lendlease Communities (Werrington) Pty Ltd (**Developer**)
ACN	635 502 082
Contact	Matt Sullivan
Telephone	0438 575 059

Draft

Background

A. The Developer purchased the Land on 4 June 2019.

B. On 14 October 2019, the Developer lodged DA19/0704 with Council.

C. On 17 February 2020, the Developer lodged DA 20-0081 with Council.

D. On 18 December 2020 DA19/0704 was approved by Council.

E. The Developer intends to lodge further Development Applications with Council in relation to the Development.

F. DA19/0704 was accompanied by a letter dated 7 February 2020 from the Developer to Council (**Letter of Offer**) offering to enter into this agreement to make contributions for public purposes if Development Consent is granted.

G. The Developer received a letter from Council dated 1 May 2020 which outlined the extent to which the offer in the Letter of Offer was accepted, and the conditions of the acceptance of that offer (**Letter of Acceptance**).

H. This agreement documents the agreement between the parties arising from the matters outlined in the Letter of Offer and Letter of Acceptance.

Operative part

1 Definitions

In this agreement, unless the context indicates a contrary intention:

Act means the *Environmental Planning and Assessment Act 1979* (NSW);

Address means a party's address set out in the Notices clause of this agreement;

Approval means any certificate, licence, consent, permit, approval or other requirement of any Authority having jurisdiction in connection with the activities contemplated by this agreement;

Authority means any government, semi-governmental, statutory, administrative, fiscal or judicial body, department, commission, authority, tribunal, public or other person;

Bank Guarantee means an irrevocable and unconditional undertaking that is not limited in time and does not expire by one of the following trading banks:

(a) Australia and New Zealand Banking Group Limited,

(b) Commonwealth Bank of Australia,

(c) Macquarie Bank,

(d) National Australia Bank,

(e) St George Bank Limited,

(f) Westpac Banking Corporation, or

(g) Other financial institution approved by the Council,

to pay an amount or amounts of money to the Council as agreed under this document and containing terms and conditions reasonably acceptable to the Council.

Bond means a documentary performance bond which must be denominated in Australian dollars and be an unconditional undertaking issued by an Australian Prudential Regulation Authority (APRA) regulated authorised deposit taking institution or an insurer authorised by APRA to conduct new or renewal insurance business in Australia that has at all times an investment grade security rating from an industry recognised rating agency;

Business Day means a day on which banks are open for general banking business in Sydney, excluding Saturdays and Sundays;

Certificate of Practical Completion means the written certificate confirming the Works, or part of the Works, have been completed to the Council's satisfaction, issued under Schedule 29.1(b)

Claim means any claim, loss, liability, damage, proceeding, order, judgment or expense arising out of the operation of this agreement;

Complying Development Certificate has the same meaning as in the Act;

Construction Certificate means a construction certificate as defined under section 6.4 of the Act;

Construction Terms means the terms set out in Schedule 2;

Contributions means the dedication of the Dedication Land or the carrying out of Works required under this agreement.

Contributions Plan has the same meaning as under the Act;

Draft

CPI means the All Groups Consumer Price Index applicable to Sydney published by the Australian Bureau of Statistics;

Damages means all liabilities, losses, damages, costs and expenses, including legal fees and disbursements and costs of investigation, litigation, settlement, judgment, interest and penalties;

DA19/0704 means the Development Application lodged with Council on 4 October 2019 and approved by the Sydney Western City Planning Panel on 18 December 2020 for the following development on the Land:

a) the staged subdivision of land to create 228 Residential Lots, 17 industrial lots, open space lots, 14 residue lots and road dedication; and

b) works including site preparation, vegetation removal, bulk earthworks, civil works, construction of roads, including the east-west collector road (Works Item T.52 in Table 1 of Schedule 1) and round-a-bout on Werrington road, stormwater infrastructure and basins (Works item W2.12 in Table 1 of Schedule 1).

DA 20-0081 means the Development Application lodged with Council on 17 February 2020 and approved on 2 November 2021 for the following development on the Land:

a) Construction of the Central Reserve, comprising a large area of retained Cumberland plain woodland vegetation, a planted bio-retention area and large informal grassed basin, children's play space areas, barbeque picnic areas and associated shelters, active recreation zone and pedestrian access paths including Werrington Train Station through-site link connection.

b) Construction of the Eastern Basin Park, comprising a planted bio-retention area and large informal grassed basin framed by planted embankments incorporating pedestrian access paths and passive seating and picnic shelter furniture elements.

c) Implementation of the proposed vegetation management measures outlined in Vegetation Management Plan to ensure the ongoing viability and conservation of the E2 Environmental Conservation reserve.

Dealing, in relation to the Land, means, without limitation, selling, transferring, assigning, mortgaging, charging, encumbering or otherwise dealing with the Land;

Dedication Land means that part of the Land to be dedicated to Council in accordance with this agreement, as identified in Part 2 of Tables 1 and 2 in Schedule 1 and shown on the plan at Annexure B;

Development means the development (including any Approvals granted in relation to DA19/0704 and DA20/0081 and any further Approvals, including a Development Consent in respect of the Land), which is generally described as subdivision of the Land for the purpose of residential and industrial uses and associated road infrastructure, and the subsequent development of the Land for residential and industrial purposes (and associated uses, including but not limited to open space, roads, drainage, services, display homes and carparks);

Development Application has the same meaning as in the Act;

Development Consent has the same meaning as in the Act;

Fax Number means a party's facsimile number set out in the Notices clause of this agreement;

GST has the same meaning as in the GST Law;

DRAFT

GST Law has the meaning given to that term in *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and any other Act or regulation relating to the imposition of or administration of the GST;

Handover means, with respect to any Works, the time Council takes possession of, and assumes responsibility for, the work in accordance with the Construction Terms;

Insolvent means, in relation to a party:

(a) that party makes an arrangement, compromise or composition with, or assignment for, the benefit of its creditors or a class of them;

(b) a receiver, receiver and manager, administrator, provisional liquidator, trustee, controller, inspector or analogous person is appointed in relation to, or over, all or any part of that party's business, assets or securities;

(c) a presumption of insolvency has arisen under legislation because of the party's failure to comply with a statutory demand or analogous process;

(d) an application for the winding up of, or for the appointment of a receiver to, that party, other than winding up for the purpose of solvent reconstruction or re amalgamation, is presented and not withdrawn or dismissed within [21] days (or such longer period agreed to by the parties), or an order is made or an effective resolution is passed for the winding up of, or for the appointment of a receiver to, that party, or any analogous application is made or proceedings initiated;

(e) any shareholder or director of that party convenes a meeting for the purpose of considering or passing any resolution for the winding up or administration of that party;

(f) that is an individual, a creditor's petition or a debtor's petition is presented to the Official Receiver or analogous authority in relation to that party;

(g) an execution or analogous process is levied or enforced against the property of that party;

(h) that party ceases or suspends, or threatens to cease or suspend, the conduct of all or a substantial part of its business;

(i) that party disposes of, or threatens to dispose of, a substantial part of its assets;

(j) that party stops or suspends, or threatens to stop or suspend, payment of all or a class of its debts; or

(k) that party is unable to pay the party's debts as and when they become due and payable.

Land means the part of Lot 1 DP 1226122 shown hatched and labelled "Land Subject to the VPA", and the part of Lot 2 DP 1176624 shown as hatched and shaded labelled "Land Subject to VPA on Lot 2 DP1176624" on the Land map at Annexure A.

Law means:

(a) any law applicable including legislation, ordinances, regulations, by-laws and other subordinate legislation;

(b) any Approval, including any condition or requirement under it; and

(c) any fees and charges payable in connection with the things referred to in paragraphs (a) and (b);

DRAFT

Maintain means works to bring an item to or keep an item in a state of reasonable condition and in accordance with relevant standards applicable at the time of construction of the item, including repairing any defects due to use of poor materials or due to poor workmanship, but does not include repairing normal wear and tear, removing graffiti or repairing any item damaged as a consequence of vandalism. **Maintained** and **Maintenance** have corresponding meanings.

Modification Application means any application to modify the Development Consent under section 4.55 of the Act;

Occupation Certificate means an occupation certificate as defined under section 6.4 the Act;

Public Access Land means that part of the Land to be made accessible to the public shown lined and labelled "Denotes Land for Public Access" on the plan in Annexure C;

Public Reserve has the same meaning as in the *Local Government Act 1993*;

Public Road has the same meaning as in the *Roads Act 1993*;

Register means the Torrens title register maintained under the *Real Property Act 1900* (NSW);

Regulation means the *Environmental Planning and Assessment Regulation 2021*;

Related Body Corporate has the meaning given to that term in s 9 of the *Corporations Act 2001* (Cth);

Residential Lot means a residential lot that is not capable of further subdivision.

South Werrington Urban Village means the area generally identified as such in Figure 2.2 on page 12 of the WELL CP, being the area of land shown on the South Werrington Urban Village Plan prepared by Cardno at Annexure E (comprised of the Land, Lot 1 DP1226122, Lot 2 DP 1176624, Lot 1 DP527752, Lot 1 DP 713280, Lot 1 DP 221780, Lot 1 DP 740520, Lot 2 DP 218959, Part of Lot 3 DP81099, Part of Lot 11 DP802940, and Lot 1 DP 132721).

Subdivision Certificate means a subdivision certificate defined under section 6.4 of the Act;

Subdivision Works Certificate means a subdivision works certificate defined under section 6.4 of the Act;

Sunset Date means, in respect of each item of Work, the expiry of the relevant period in the column entitled "Sunset Date" in Tables 1 and 2;

Surplus Credits means the surplus contribution credits generated and applied in accordance with clauses 7.2 and 7.3 of this agreement;

UWS North Werrington means the area generally identified as such in Figure 2.2 on page 12 of the WELL CP;

Vegetation Management Plan means the document titled "Lot 1 DP 1226122 Vegetation Management Plan" prepared by Niche Environment and Heritage for Lendlease dated 24 March 2021 enclosed at Annexure F;

WELL CP means the Werrington Enterprise Living and Learning (WELL) Precinct Development Contributions Plan (2008), a contributions plan prepared in accordance with section 7.11 of the Act; and

Works means the work set out in Part 1 of each of Tables 1 and 2 in Schedule 1.

Draft

2 Interpretation

In this agreement, unless the context indicates a contrary intention:

(a) (**documents**) a reference to this agreement or another document includes any document which varies, supplements, replaces, assigns or novates this agreement or that other document;

(b) (**references**) a reference to a party, clause, paragraph, schedule or annexure is a reference to a party, clause, paragraph, schedule or annexure to or of this agreement;

(c) (**headings**) clause headings and the table of contents are inserted for convenience only and do not affect interpretation of this agreement;

(d) (**person**) a reference to a person includes a natural person, corporation, statutory corporation, partnership, the Crown and any other organisation or legal entity and their personal representatives, successors, substitutes (including persons taking by novation) and permitted assigns;

(e) (**party**) a reference to a party to a document includes that party's personal representatives, executors, administrators, successors, substitutes (including persons taking by novation) and permitted assigns;

(f) (**president, General Manager, CEO or managing director**) the president, General Manager, CEO or managing director of a body or Authority means any person acting in that capacity;

(g) (**requirements**) a requirement to do any thing includes a requirement to cause that thing to be done, and a requirement not to do any thing includes a requirement to prevent that thing being done;

(h) (**including**) including and includes are not words of limitation, and a list of examples is not limited to those items or to items of a similar kind;

(i) (**corresponding meanings**) a word that is derived from a defined word has a corresponding meaning;

(j) (**singular**) the singular includes the plural and vice-versa;

(k) (**gender**) words importing one gender include all other genders;

(l) (**parts**) a reference to one or more things includes each part and all parts of that thing or group of things but nothing in this clause implies that part performance of an obligation constitutes performance of that obligation;

(m) (**rules of construction**) neither this agreement nor any part of it is to be construed against a party on the basis that the party or its lawyers were responsible for its drafting;

(n) (**legislation**) a reference to any legislation or provision of legislation includes all amendments, consolidations or replacements and all regulations or instruments issued under it;

(o) (**time and date**) a reference to a time or date in connection with the performance of an obligation by a party is a reference to the time and date in Sydney, Australia, even if the obligation is to be performed elsewhere;

Draft

(p) (**joint and several**) an agreement, representation, covenant, right or obligation:

i. in favour of two or more persons is for the benefit of them jointly and severally; and

ii. on the part of two or more persons binds them jointly and severally;

(q) (**writing**) a reference to a notice, consent, request, approval or other communication under this agreement or an agreement between the parties means a written notice, request, consent, approval or agreement;

(r) (**replacement bodies**) a reference to a body (including an institute, association or Authority) which ceases to exist or whose powers or functions are transferred to another body is a reference to the body which replaces it or which substantially succeeds to its power or functions;

(s) (**Australian currency**) a reference to dollars or $ is to Australian currency;

(t) (**month**) a reference to a month is a reference to a calendar month; and

(u) (**year**) a reference to a year is a reference to twelve consecutive calendar months.

3 Planning Agreement under the Act

(a) The parties agree that this agreement is a planning agreement within the meaning of section 7.4 of the Act.

(b) Schedule 4 of this agreement summarises the requirements for planning agreements under s 7.4 of the Act and the way this agreement addresses those requirements.

4 Application of this agreement

This agreement applies to:

(a) the Development; and

(b) the Land.

5 Operation of this agreement

5.1 Commencement

This agreement commences on and from the date this agreement has been executed by all parties.

6 Contributions to be made under this agreement

6.1 Works

(a) The Developer will carry out the Works in accordance with this agreement, including the Construction Terms, and any Development Consent or other Approval granted for the Works.

(b) The Works or any part of the Works required under this agreement will be taken to have been completed for the purposes of this agreement when a Certificate of Practical Completion has been issued for those Works.

Draft

(c) The Works or any part of the Works required under this agreement will be taken to have been delivered to Council on Handover in accordance with the Construction Terms, unless otherwise agreed between the parties.

(d) Each individual item comprising the Works must be delivered to the Council in accordance with the timeframes specified in the column entitled 'Timing' in the tables at Schedule 1.

(e) The parties agree and acknowledge that the Works serve the following public purposes;

i. Enabling the delivery of the following items outlined in Part D – Works schedules, maps and references in the WELL CP:

(A) Item OSR4.6a - Passive Open Space - South Werrington Urban Village Park (bushland park);

(B) Item OSR4.6b - Passive Open Space - South Werrington Urban Village Park (remainder);

(C) Item W2.12 – Claremont Creek Catchment - Sp3-w1, being the basin in Item OSR4.6b;

(D) Item T2.48 – Local Facilities – Transport Services – WELL Precinct Cycleways

(E) Item T2.52 – Local Facilities – Collector Road Construction – East-West Link collector road link through South Werrington Urban Village sub-precinct;

ii. Enabling the delivery of the following additional works not outlined in the WELL CP:

(A) Staged resurfacing of Chapman Street road pavement and associated public domain works;

(B) the works outlined in Part 5 – Management Actions of the Vegetation Management Plan for a period of 2 years following commencement of the Development; and

(C) construction of Werrington Road/Rance Road/ East West Collector Road (stub connection only) roundabout (see Works item 3 in Part 1 of Table 2 in Schedule 1).

(f) If any item of Work has been completed prior to the commencement of this agreement, the parties agree that:

i. once this agreement commences, that item of Work is taken to have been carried out or completed under this agreement; and

ii. the Developer will not be in breach of this agreement if the Construction Terms and procedures therein have not been observed in respect of that item of Work.

(g) If any item of Work has been commenced but not yet completed prior to the commencement of this agreement, the parties agree that:

i. once this agreement commences, the steps taken in carrying out the item of Work is taken to have been carried out under this agreement;

Draft

ii. the Developer will not be in breach of this agreement if the Construction Terms and procedures therein have not been observed in respect of that item of Work to date; and

iii. upon commencement of this agreement, the Developer will comply with the remaining applicable clauses of the Construction Terms in relation to that item of Work insofar as compliance does not delay the continuation of the carrying out of the item of Work.

6.2 Dedication of Land

(a) The Developer must dedicate or cause to be transferred to the Council, at no cost to the Council, each item of Dedication Land freed and discharged from all estates, interests, trusts, restrictions (excluding any restrictions required to be imposed on the Land in accordance with any conditions of a Development Consent), dedications, reservations, easements, rights, charges, rates and contracts in, over or in connection with the Dedication Land, including but not limited to, outstanding municipal rates and charges, water rates and land tax.

(b) The Developer must take all steps, prepare all documents and meet all costs required to dedicate the Dedication Land including, but not limited to:

i. removing any encumbrances on the title to the Dedication Land (excluding any encumbrances required to be imposed on the Dedication Land in accordance with any conditions of a Development Consent);

ii. creating an interest in land in favour of Council if required;

iii. creating a separate lot for the Dedication Land;

iv. preparing and lodging documents for registration;

v. obtaining the consent of any other parties to the registration of the relevant documents; and

vi. attending to any requisition relating to any dealing or document lodged for registration.

(c) The obligation to dedicate the land described in Item OSR2.6 in Part 2 of Table 1 in Schedule 1 will be taken to have been satisfied when that land is dedicated to Council by operation of the registration of a plan of subdivision in accordance with section 49 of the *Local Government Act 1993*.

(d) The obligation to dedicate the land described in Item T1.2 in Part 2 of Table 1 in Schedule 1 will be taken to have been satisfied when that land is dedicated to Council by operation of the registration of a plan of subdivision in accordance with section 9 of the *Roads Act 1993*.

(e) The obligation to dedicate each item of the Dedication Land (other than the land described in clauses 6.2(c) and 6.2(d) of this agreement) will be taken to have been satisfied in respect of each item when a Certificate of Title or electronic equivalent is issued by NSW Land Registry Services for that part of the Dedication Land identifying the Council as the registered proprietor of that land without encumbrances (excluding encumbrances required to be imposed on the Land in accordance with any conditions of consent in a Development Consent) as required by clause 6.3(a).

(f) For the avoidance of doubt, all Works required by this agreement on the Dedication Land must be completed in accordance with clause 6.2 prior to Council accepting the dedication.

(g) Each item of Dedication Land must be dedicated or transferred to Council in accordance with the timeframes set out for the dedication of each item of Dedication Land in the column entitled "Timing" in Part 2 of Table 1 and Part 2 of Table 2 in Schedule 1.

(h) The parties agree and acknowledge that the dedication of the Dedication Land in accordance with Part 2 of Table 1 and Part 2 of Table 2 in Schedule 1 serve the public purpose of the provision of community land and public roads.

6.3 Maintenance and Rectification of Defects

The Developer must Maintain the Works and rectify any defects after Handover of the Works in accordance with the Construction Terms.

6.4 Access to Council owned land

(a) The Council agrees to permit the Developer, upon receiving at least 10 Business Days' prior notice, to enter, pass through or occupy any Council owned or controlled land in order to enable the Developer to properly perform its obligations under this agreement. Nothing in this clause creates or gives the Developer any estate or interest in any part of the Council owned or controlled land.

(b) The Developer indemnifies the Council, its employees, officers, agents and contractors from and against all Claims in connection with the entry or access by the Developer to, or any presence of the Developer on, Council owned or controlled land for the purposes of performing their obligations under this agreement, except to the extent such Claim arises either directly or indirectly as a result of the Council or its employees, officers, agents, contractors or workmen's negligence, default, act or omission.

6.5 Indemnity for Council acquisition of TfNSW Land

(a) This clause applies to the portion of land shown shaded and labelled as "road widening" on the map at Annexure G (**TfNSW Land**) within Lot 12 DP 734612, which at the date of this agreement is owned by Transport for NSW (**TfNSW**).

(b) Council may seek to acquire, by whatever means it considers necessary and appropriate, the TfNSW Land. If it does so (at its discretion), the Developer agrees to indemnify the Council for its reasonable costs incurred as a result of Council acquiring the TfNSW Land (which includes the cost of obtaining legal advice, Council staff time, and other related reasonable costs), subject to compliance with this clause.

(c) As soon as practicable after receiving confirmation that the ownership of the TfNSW Land has been transferred to or acquired by Council, Council is to provide notice to the Developer which:

i. confirms that Council is the owner of the TfNSW Land, and provides proof of such ownership;

ii. advises the Developer as to the total costs incurred in acquiring the TfNSW Land (which must be reasonable), and provides proof of those costs (by way of itemised invoices) (**Acquisition Cost**).

(d) Within 20 Business Days of receiving a notice from Council under clause 6.5(c), the Developer is to pay to Council the Acquisition Cost.

(e) The Acquisition Cost payment must be paid by way of bank cheque in favour of Council or by deposit by means of electronic funds transfer into an account nominated by Council.

(f) The Acquisition Cost payment will be taken to have been made when the Council notifies the Developer in writing that the bank cheque has been received and cleared funds or electronic funds have been deposited in the Council's nominated bank account.

(g) The parties agree and acknowledge that the Acquisition Cost payment satisfies the obligation of the Developer to indemnify Council for its reasonable costs incurred in acquiring the TfNSW Land under clause 6.5(b) being land which forms part of the land upon which road upgrades are proposed by the Developer under DA19/0704.

7 Application of s 7.11, s 7.12 and s 7.24 of the Act

7.1 Application of s 7.11, s 7.12 and s 7.24 of the Act

(a) This agreement excludes the application of section 7.11 of the Act to the Development and the Land.

(b) This agreement excludes the application of section 7.12 of the Act to the Development and the Land.

(c) This agreement does not exclude the application of section 7.24 of the Act to the Development.

7.2 Generation and application of Surplus Contribution Credits

(a) The parties acknowledge and agree that:

i. Under the WELL CP:

(A) the Developer is obliged to make local infrastructure contributions to Council to the value of $30,000 per subdivided residential lot (or dwelling) and $167,778 p/ha of net developable area of subdivided industrial land; and

(B) the obligation to make monetary contributions arises when the Developer seeks the release of a subdivision certificate for residential or industrial lots approved under various Development Applications (or complying development certificates) for the Land.

ii. In lieu of making a monetary contribution under the WELL CP, the Developer has offered to make the Contributions under this agreement, which includes carrying out items of work and dedicating land identified in the WELL CP within the South Werrington Urban Village.

iii. Under this agreement, the value of the Contributions offered under this agreement may, at times throughout the Development, exceed the value of monetary contributions otherwise required to be made by the Developer under the WELL CP in relation to the Development.

(b) A Surplus Credit (calculated under this clause) will accrue if, at any stage of the Development, the total value of Contributions provided by the Developer exceeds

the total quantum of contributions otherwise required to be provided for the Development under the WELL CP at the particular time, determined using the contributions rates identified in clause 7.2(a)(A) above.

Surplus Credits are calculated as follows:

i. SC = CV – (RCO +ICO)

Where:

SC means the Surplus Credit

CV means the sum of the Contribution Values of the Work or Works in Schedule 1 that have been completed at the relevant time.

RCO means the residential contribution obligation, being the number of Residential Lots created on the Land at the relevant time multiplied by the residential contribution rate of $30,000.

ICO means the contribution obligation, being the area in ha of the net developable area of industrial lots that have been created at the relevant time multiplied by the industrial contribution rate, being $167,778.

(c) Reporting and recording of the generation and retirement of Surplus Credits must be undertaken in accordance with clause 7.3 of this agreement.

(d) If at any time Surplus Credits are agreed or taken to be agreed by Council under clause 7.3 to be available for use by the Developer, the Developer may request by written notice to the Council that Surplus Credits be retired by:

i. Council repaying amounts nominated by the Developer (subject to compliance with the process and the limitation on payment in clause 7.2(e) and clause 7.2(g)(iii)); or

ii. applying the Surplus Credits in satisfaction of contribution obligations of the Developer or any of its Related Body Corporates elsewhere within the South Werrington Urban Village or North Werrington.

(e) The parties agree that:

i. subject to clause 7.2(e)(ii), within twenty (20) Business Days of receipt of a written request from the Developer under clause 7.2(d) Council will reimburse the value of the nominated Surplus Credit to the Developer (drawing on any monetary contributions Council has received under s7.4, s7.11 or s7.12 of the Act as a result of residential development carried out by others in the South Werrington Urban Village and non-residential development in the North Werrington); and

ii. Council is only obliged to make the payment under this clause 7.2(e) if the value of the nominated Surplus Credit in the written request made under clause 7.2(d)(i) has been paid to Council under s7.4, s7.11 or s7.12 of the Act as a result of residential development carried out by others in the South Werrington Urban Village and non-residential development in the North Werrington.

(f) Within twenty (20) Business Days of receipt of a written request from the Developer under clause 7.2(d)(ii), Council agrees to provide confirmation that the

Draft

Surplus Credits may be applied in satisfaction of contribution obligations of the Developer or any of its Related Body Corporates elsewhere within UWS North Werrington and/or South Werrington Urban Village.

(g) Notwithstanding clauses 7.2(e) and 7.2(f) above,

i. The maximum value of Surplus Credits that can be generated under this agreement are capped at:

(A) $5,144,987 in respect of Works items T1.2 and T2.52 of Schedule 1; and

(B) $3,751,800 in respect of all other Works items other than T1.2 and T2.52 of Schedule 1.

ii. Surplus Credits generated in respect of Works items T1.2 and T2.52:

(A) can only be applied under this clause 7.2 once the Developer has achieved Practical Completion of Works Item T2.52 (as approved under DA19/0704); and

(B) can only be applied under clause 7.2(e) if the value of the nominated Surplus Credit in the written request made under clause 7.2(d)(i) has been paid to Council under s7.4, s7.11 or s7.12 of the Act as a result of non-residential development carried out by others in North Werrington only.

iii. Council is only obliged to reimburse the Developer under clause 7.2(e) if it receives monetary contributions from other developers in connection with the development of land within the South Werrington Urban Village Precinct and/or North Werrington Precinct and any such reimbursement/s will be paid to the Developer at a rate of:

(A) $28,860 for each residential lot in the South Werrington Urban Village Precinct and/or North Werrington Precinct for which monetary contributions have been paid to Council; and

(B) at the contribution rate per hectare of net developable land (calculated under clause 3.4.3 of the WELL CP) for non-residential land in the North Werrington Precinct for which monetary contributions have been paid to Council.

7.3 Reporting and recording generation and retirement of Surplus Credits

(a) From commencement of this agreement, the Developer must provide annual written reports to Council outlining:

i. which of the items in Table 1 of Schedule 1 have been completed;

ii. whether the completion of items in Table 1 of Schedule 1 results in the generation of Surplus Credits, and if so, the value of those Surplus Credits;

iii. the value of the Surplus Credits that have been retired (if any); and

iv. the value of remaining Surplus Credits.

(b) If Council does not dispute the content of the report provided under clause 7.3(a) within 10 Business Days of receiving the report, the values of the Surplus Credits in the report are taken as being agreed between the parties.

Draft

7.4 Recoupment of contributions paid or Security provided prior to execution of agreement

(a) In the event that the Developer has paid contributions, including by way of a monetary payment or Security, under the WELL CP in accordance with a condition of consent imposed in relation to the Development prior to the commencement of this agreement, Council agrees to reimburse or return the monetary payment or Security to the Developer within 20 Business Days of the registration of this agreement pursuant to clause 8.2 of this agreement.

(b) Once the monetary payment or Security referred to in cl 7.4(a) has been reimbursed or returned to the Developer, this agreement is to operate in accordance with its own terms.

(c) Prior to the monetary payment or Security referred to in cl 7.4(a) being reimbursed or returned to the Developer, the Developer must ensure that any Security required to be provided under this agreement is duly provided to the Council.

8 Registration of this agreement

8.1 Developer Interest

(a) The Developer represents and warrants to the Council that as of 28 February 2023, it was the registered proprietor of the Land, excluding:

i. The part of the Land shaded and labelled 'Stage 1 residential lots to be created under DA19 0704 & DA20 0200 on Annexure H; and

ii. part of the Land which, at the date of this agreement, was located in Lot 2 DP1176624 as shown hatched and shaded, and labelled as "Land Subject To VPA on Lot 2 DP1176624" on the Plan showing the Land at Annexure A.

8.2 Registration of this agreement

(a) The Developer agrees to procure the registration of this agreement under the *Real Property Act 1900* (NSW) in the relevant folios of the Register for the Land in accordance with section 7.6 of the Act, excluding:

i. any current and proposed Residential Lots, including but not limited to the lots shaded and labelled 'Stage 1 residential lots to be created under DA19 0704 & DA20 0200 on the plan at Annexure H; and

ii. part of the Land which, at the date of this agreement, was located in Lot 2 DP1176624 as shown hatched and shaded, and labelled as "Land Subject To VPA on Lot 2 DP1176624" on the Plan showing the Land at Annexure A.

(b) The Developer, at its own expense, must:

i. procure the lodgement of this agreement with the Registrar-General as soon as reasonably practicable after this agreement comes into operation, but in any event, no later than 10 Business Days after that date;

ii. procure the registration of this agreement by the Registrar-General in the relevant folios of the Register for the Land (subject to cl 8.2(a)) as soon as reasonably practicable after this agreement is lodged for registration; and

Draft

iii. provide documentary evidence that the registration of this agreement has been completed to Council within 5 Business Days of receiving confirmation that the registration has occurred.

(c) The Developer warrants that, as at the date of this agreement, it has obtained the consent of each person who has an estate or interest in the Land registered under the *Real Property Act 1900* (NSW) (excluding owners of any lot which is part of the Land shaded and labelled 'Stage 1 residential lots to be created under DA19 0704 & DA20 0200 on Annexure H) or is seized or possessed of an estate or interest in the Land to the registration of this agreement on title.

(d) The Developer, at its own expense will, promptly after the execution of this agreement, take all practical steps, and otherwise do anything that the Council reasonably requires to procure:

i. An acceptance of the terms of this agreement and an acknowledgement in writing from any existing mortgagee in relation to the Land that the mortgagee will adhere to the provisions of this agreement if it takes possession of the Land as mortgagee in possession,

ii. The execution of any documents; and

iii. The production of the relevant duplicate certificates of title or electronic equivalents,

to enable the registration of this agreement in accordance with clause 8.2ii.

(e) Council agrees to do all things necessary to allow the Developer to procure the registration of this agreement under the Real Property Act 1900 (NSW) in the relevant folios of the Register for the Land in accordance with section 7.6 of the Act.

8.3 Removal from Register

(a) From time to time, the Developer may request the Council to facilitate the progressive release and discharge of this document from the relevant folio(s) of the Register for the relevant part of the Land, for which at the date of the request:

i. in respect of land the subject of an item of Work, a Certificate of Practical Completion has been issued, and no further works are proposed on the Land the subject of the item of Work under this agreement; and

ii. in respect of an item of Dedication Land, a Subdivision Certificate has been granted for the subdivision of land which will facilitate the dedication of the relevant Dedication Land.

(b) Within 10 Business Days of receipt of a request from the Developer pursuant to clause 8.3(a), the Council will, at the Developer's cost, provide a release and discharge of this agreement so that it may be removed from the folios of the Register for the relevant part of the Land, provided the Council (acting reasonably) is satisfied that:

i. the Developer has duly fulfilled its obligations to provide Contributions under this agreement in respect of that part of the Land;

ii. there are no outstanding Contributions required to be delivered under this agreement in respect of that part of the Land.

Draft

8.4 Caveat

(a) The Developer acknowledges and agrees that:

i. when this agreement is executed, the Council is deemed to have acquired and the Developer is deemed to have granted, an equitable estate and interest in the parts of the Land for which it is the registered proprietor as at the date of this agreement for the purposes of section 74F(1) of the *Real Property Act 1900* (NSW) and consequently the Council will have a sufficient interest in that Land in respect of which to lodge a caveat over the Land notifying that interest;

ii. it will not object to the Council lodging a caveat in the relevant folios of the Register for the parts of the Land for which it is the registered proprietor as at the date of this agreement, nor will it seek to remove any caveat lodged by the Council provided the caveat does not prevent registration of any dealing or plan other than a transfer.

(b) The Council must, at Developer's cost, register a withdrawal of any caveat in respect of the Land within five Business Days after the Developer complies with clause 8.2(a).

(c) The Developer must notify the Council within 5 Business Days after the registration of any subdivision plan that creates a separate lot for the Dedication Land or any part of the Dedication Land.

(d) The Developer acknowledges and agrees that, in the event a separate lot is created for the Dedication Land or any part of the Dedication Land (and dedication of the Dedication Land is not affected upon registration of the plan of subdivision) it will not object to Council lodging a caveat in the relevant folios of the Register for that part of the Dedication Land, nor will it seek to remove any such caveat lodged by Council, until the relevant part of the Land is dedicated to Council in accordance with this agreement.

9 Review of this agreement

9.1 Review generally

(a) This agreement may be reviewed or modified.

(b) The parties acknowledge and agree that:

i. any review or modification of this agreement will be conducted in the circumstances and in the manner determined by the parties;

ii. no modification or review of this agreement will be of any force or effect unless it is in writing and signed by the parties to this agreement; and

iii. a party is not in breach of this agreement if it does not agree to an amendment to this agreement requested by a party in, or as a consequence of, a review.

(c) In the event that a Development Consent forming part of the Development is granted or modified following the commencement of this agreement which results in:

i. the Developer being unable to deliver any of the Contributions under this agreement;

ii. a need to change the scope or specification of any of the Contributions,

the parties agree to negotiate in good faith to expeditiously amend this agreement to reflect the Development Consent so the Contribution item can be delivered by the Developer.

10 Dispute Resolution

10.1 Reference to Dispute

If a dispute arises between the parties in relation to this agreement, the parties must not commence any court proceedings relating to the dispute unless the parties have complied with this clause, except where a party seeks urgent interlocutory relief.

10.2 Notice of Dispute

The party wishing to commence the dispute resolution process must give written notice (**Notice of Dispute**) to the other parties of:

(a) The nature of the dispute,

(b) The alleged basis of the dispute, and

(c) The position which the party issuing the Notice of Dispute believes is correct.

10.3 Representatives of Parties to Meet

(a) The representatives of the parties must promptly (and in any event within 20 Business Days of the Notice of Dispute) meet in good faith to attempt to resolve the notified dispute.

(b) The parties may, without limitation:

i. resolve the dispute during the course of that meeting,

ii. agree that further material or expert determination in accordance with clause 10.6 about a particular issue or consideration is needed to effectively resolve the dispute (in which event the parties will, in good faith, agree to a timetable for resolution); or

iii. agree that the parties are unlikely to resolve the dispute and, in good faith, agree to a form of alternative dispute resolution (including expert determination, arbitration or mediation) which is appropriate for the resolution of the relevant dispute.

10.4 Further Notice if Not Settled

If the dispute is not resolved within 20 Business Days after the nominated representatives have met, either party may give to the other a written notice calling for determination of the dispute (Determination Notice) by mediation under clause 10.5 or by expert determination under clause 10.6.

10.5 Mediation

If a party gives a Determination Notice calling for the dispute to be mediated:

(a) The parties must agree to the terms of reference of the mediation within 10 Business Days of the receipt of the Determination Notice (the terms shall include a requirement that the mediation rules of the Institute of Arbitrators and Mediators Australia (NSW Chapter) apply;

DRAFT

(b) The mediator will be agreed between the parties, or failing agreement within 10 Business Days of receipt of the Determination Notice, either Party may request the President of the Institute of Arbitrators and Mediators Australia (NSW Chapter) to appoint a mediator;

(c) The mediator appointed pursuant to this clause 10.5 must:

i. Have reasonable qualifications and practical experience in the area of the dispute; and

ii. Have no interest or duty which conflicts or may conflict with his or her function as a mediator, he or she being required to fully disclose any such interest or duty before his or her appointment;

(d) The mediator shall be required to undertake to keep confidential all matters coming to his or her knowledge by reason of his or her appointment and performance of his or her duties;

(e) The parties must within 10 Business Days of receipt of the Determination Notice notify each other of their representatives who will be involved in the mediation (except if a resolution of the Council is required to appoint a representative, the Council must advise of the representative within 15 Business Days of the resolution);

(f) The parties agree to be bound by a mediation settlement and may only initiate judicial proceedings in respect of a dispute which is the subject of a mediation settlement for the purpose of enforcing that mediation settlement; and

(g) In relation to costs and expenses:

i. Each party will bear its own professional and expert costs incurred in connection with the mediation; and

ii. The costs of the mediator will be shared equally by the parties unless the mediator determines that a party has engaged in vexatious or unconscionable behaviour in which case the mediator may require the full costs of the mediation to be borne by that party.

10.6 Expert determination

If the dispute is not resolved under clause 10.3 or clause 10.5, or the parties otherwise agree that the dispute may be resolved by expert determination, the parties may refer the dispute to an expert, in which event:

(a) The dispute must be determined by an independent expert in the relevant field:

i. Agreed upon and appointed jointly by the parties; and

ii. In the event that no agreement is reached or no appointment is made within 10 Business Days of the agreement to refer the dispute to an expert, appointed on application of a party by the then President of the Law Society of New South Wales;

(b) The expert must be appointed in writing and the terms of the appointment must not be inconsistent with this clause;

(c) The determination of the dispute by such an expert will be made as an expert and not as an arbitrator and will be in writing and contain the reasons for the determination;

DRAFT

(d) The expert will determine the rules for the conduct of the process but must conduct the process in accordance with the rules of natural justice;

(e) Each party will bear its own costs in connection with the process and the determination by the expert and will share equally the expert's fees and costs; and

(f) Any determination made by an expert pursuant to this clause is final and binding upon the parties except unless:

i. Within 10 Business Days of receiving the determination, a party gives written notice to the other party that it does not agree with the determination and commences litigation; or

ii. The determination is in respect of, or relates to, termination or purported termination of this agreement by any party, in which event the expert is deemed to be giving a non-binding appraisal.

10.7 Litigation

If the dispute is not *finally* resolved in accordance with this clause 10, then either party is at liberty to litigate the dispute.

10.8 No suspension of contractual obligations

Subject to any interlocutory order obtained under clause 10.1, the referral to or undertaking of a dispute resolution process under this clause 10 does not suspend the parties' obligations under this agreement.

11 Enforcement and Security

11.1 Default

(a) In the event a party considers another party has failed to perform and fulfil an obligation under this agreement, it may give notice in writing to the other party (**Default Notice**) giving all particulars of the matters in respect of which it considers default has occurred and by such notice require the default to be remedied within a reasonable time not being less than 21 days.

(b) In determining a reasonable time, regard must be had to both the nature of the default and the work or other action required to remedy it and whether or not the continuation of the default constitutes a public nuisance or raises other circumstances of urgency or emergency.

(c) If a party disputes the Default Notice it may refer the dispute to dispute resolution under clause 10 of this agreement.

11.2 Security

(a) In this clause 11.2, **Security** means a Bank Guarantee, Bond or cash deposit to be held by Council.

(b) Prior to the issue of the first Subdivision Works Certificate for each stage of the Development (as identified on the map at Annexure A), the Developer must provide to the Council Security in an amount equivalent to 125% of the agreed value of the items of Work (as outlined in the column entitled "Monetary contributions value*" in the tables in Schedule 1) to be delivered in that stage, as identified in column 3 (entitled "Stage of Development during which item will be carried out" in the tables in Schedule 1).

(c) The Council may call on a Security provided under this clause:

i. if the Developer is in material or substantial breach of this agreement and has failed to rectify the breach within a reasonable period of time after having been given reasonable notice (which must not be less than 21 Business Days) in writing to do so in accordance with clause 11.1 of this agreement; or

ii. if the Developer becomes insolvent.

(d) At any time following the provision of a Security under this clause, the Developer may provide the Council with one or more replacement Securities totalling the amount of all Securities required to be provided under this clause for the time being. On receipt of such replacement Security, the Council must release and return to the Developer, as directed, the Securities which it holds that have been replaced as soon as reasonably practicable.

(e) The Council must promptly return a Security provided under this clause if requested by the Developer and:

i. Handover has occurred for the particular item of Works or Dedication Land has been dedicated to which the Security relates; and

ii. the Developer has provided a Bond or Bank Guarantee required under the Construction Terms for defects liability and maintenance of that particular item of Works.

(f) For the avoidance of doubt, Council may retain a component of the Security it holds for an item of Works that is equivalent to 25% of the value of that item of Work, in satisfaction of the requirement to submit a Bank Guarantee or Bond under the Construction Terms for defects liability and maintenance.

(g) Nothing in this clause 11.2 prevents or restricts the Council from taking any enforcement action in relation to:

i. any obligation of the Developer under this agreement; or

ii. any associated liability, loss, cost, charge or expense directly or indirectly incurred by the Council because of the failure by the Developer to comply with this agreement,

that is not or cannot be satisfied by calling on a Security.

(h) Notwithstanding the above, the parties agree that the bond payable under condition 61 of the consent granted to DA19/0704 is taken to be Security in respect of Works item 3 in Table 2 of Schedule 1, and no additional Security is payable in respects of this item of Work under this agreement.

11.3 Compulsory Acquisition

(a) If the Developer does not dedicate an item of Dedication Land to Council by the relevant Sunset Date, the Council may compulsorily acquire the relevant land, in which case the Developer consents to the Council compulsorily acquiring that land for compensation in the amount of $1.00 without having to follow the pre-acquisition procedures in the Land Acquisition (Just Terms Compensation) Act 1991 and may recover any costs, including legal costs, incurred by the Council on acquisition of the land from the Developer.

Draft

(b) Clause 11.3(a) constitutes an agreement for the purposes of section 30 of the *Land Acquisition (Just Terms Compensation) Act 1991*.

(c) Except as otherwise agreed between the Developer and Council, the Developer must ensure the Dedication Land is freed and discharged from all estates, interests, trusts, restrictions, dedications, reservations, rights, charges, rates, strata levies and contracts, except as may be permitted by this agreement on the date that the Council will acquire the land in accordance with clause 11.3(a).

(d) The Developer indemnifies and keeps indemnified the Council against all Claims made against the Council as a result of any acquisition by the Council of the whole or any part of the relevant land under clause 11.3(a).

(e) The Developer must pay the Council, promptly on demand, an amount equivalent to all costs, including legal costs, incurred by the Council acquiring the whole or any part of the relevant land under clause 11.3(a) that are not or cannot be recovered by calling on a Security.

11.4 Restriction on the issue of Certificates

(a) In accordance with section 6.14 of the Act and clause 34 of the *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021* the following obligation under this agreement must be satisfied before a Subdivision Works Certificate is issued for the Development or any part of the Development:

i. Provision of Securities required under clause 11.2.

(b) In accordance with section 6.15(1)(d) of the Act, the following obligations under this agreement must be satisfied before a Subdivision Certificate is issued for the Development or any part of the Development:

i. Delivery of the Works in accordance with clause 6.1; and

ii. Dedication of the Dedication Land in accordance with clause 6.2.

11.5 Sunset Date

(a) The parties agree that the Sunset Date specifies the time by which the Developer must have delivered the relevant item of Work.

(b) In the event that a Certificate of Practical Completion has not been issued for an item of Work prior to the applicable Sunset Date in column 6 in Tables 1 and 2, Council may elect (by issue of a Notice to the Developer) to step-in and undertake or complete the item of Work (whichever is relevant) and may enter, occupy and use any land owned or controlled by the Developer in order to do so.

(c) Any costs incurred by the Council in undertaking an item of Work in accordance with this clause may be recovered by the Council by calling-up and applying the Security provided by the Developer under cl 11.2(b) of this agreement.

(d) In the event that Council exercises its step-in rights by issue of a Notice under clause 11.5(b) in respect of any item of Work, the parties agree that upon issue of the Notice, that item of Work is deemed to have been completed for the purposes of this agreement, in particular, for the purposes of Schedule 1 of this agreement.

11.6 General Enforcement

(a) Without limiting any other remedies available to the parties, this agreement may be enforced by any party in any Court of competent jurisdiction.

(b) Nothing in this agreement prevents:

i. a party from bringing proceedings in the Land and Environment Court to enforce any aspect of this agreement or any matter to which this agreement relates; and

ii. the Council from exercising any function under the Act or any other Act or law relating to the enforcement of any aspect of this agreement or any matter to which this agreement relates.

11.7 Breach of Obligations

(a) If the Council reasonably considers that the Developer is in breach of any obligation under this agreement, it may give a written notice to the Developer:

i. specifying the nature and extent of the breach,

ii. requiring the Developer to:

(A) rectify the breach if it reasonably considers it is capable of rectification, or

(B) pay compensation to the reasonable satisfaction of the Council in lieu of rectifying the breach if it reasonably considers the breach is not capable of rectification,

iii. specifying the period within which the breach is to be rectified or compensation paid, being a period that is reasonable in the circumstances.

(b) If the Developer fails to fully comply with a notice referred to in clause 11.7(a), the Council may, following 10 Business Days' notice to the Developer, call-up the Security provided by the Developer under this agreement and apply it to remedy the Developer's breach.

(c) If the Developer fails to comply with a notice given under clause 11.7(a) relating to the carrying out of Works under this agreement, the Council may step-in and remedy the breach and may enter, occupy and use any land owned or controlled by the Developer.

(d) Any costs incurred by the Council in remedying a breach in accordance with clause 11.7(b) or 11.7(c) may be recovered by the Council by either or a combination of the following means:

i. by calling-up and applying the Security provided by the Developer under this agreement, or

ii. as a debt due in a court of competent jurisdiction.

(e) For the purpose of clause 11.7(d), the Council's costs of remedying a breach the subject of a notice given under clause 11.7(a) include, but are not limited to:

i. the costs of the Council's employees, agents and contractors reasonably incurred for that purpose,

Draft

ii. all fees and charges necessarily or reasonably incurred by the Council in remedying the breach, and

iii. all legal costs and expenses reasonably incurred by the Council, by reason of the breach.

(f) Nothing in this clause 11.7 prevents the Council from exercising any rights it may have at law or in equity in relation to a breach of this agreement by the Developer, including but not limited to seeking relief in an appropriate court.

12 Assignment and Dealings

12.1 Restrictions on dealings

(a) Subject to subclause (c), a party must not:

i. assign or deal with any right or obligations under this agreement; or

ii. transfer, assign or dispose of the whole or any part of its right, title or interest in the Land (present or future) or in the Development;

to another person (**Transferee**), unless before it assigns, deals, sells, transfers or disposes of that right, obligation title or interest:

(A) the Developer has given the Council no less than 10 Business Days' notice in writing of the proposed sale, transfer, assignment or novation of its rights or obligations under this agreement;

(B) the Developer procures that the Transferee provides to the Council replacement security in favour of the Council,, in place of any such security provided by, or required to be provided by, the Developer which has not then been released;

(C) the Developer procures that any Transferee of the Developer's rights and obligations under this agreement promptly executes a deed in favour of the Council whereby:

(i) the Transferee becomes contractually bound with the Council to perform the Developer's obligations and have the benefit of the Developer's rights under this agreement; and

(ii) the Transferee is released from its obligations under this agreement.

(D) the Developer satisfies the Council that the rights of the Council will not be diminished or fettered in any way;

(E) the Developer is not in breach of this agreement.

(b) Any change of ownership or control (as defined in section 50AA of the *Commonwealth Corporations Act 2001*) of a party (excluding the Council) shall be deemed to be an assignment of this agreement for the purposes of this clause.

(c) Clauses 12.1(a) and 12.1(b) do not apply:

i. to any parts of the Land from which this agreement has been released or discharged;

ii. to any Residential Lots; or

DRAFT

iii. if the Transferee is Lendlease Communities (Werrington) Pty Ltd ACN 635 502 082 or a Related Body Corporate of Lendlease Corporation Limited ACN 000 226 228.

13 Approvals and consents

Except as otherwise set out in this agreement, and subject to any statutory obligations, a party may give or withhold an approval or consent to be given under this agreement in that party's absolute discretion and subject to any conditions determined by the party. A party is not obligated to give its reasons for giving or withholding consent or for giving consent subject to conditions.

14 No fetter

14.1 Discretion

This agreement is not intended to operate to fetter, in any manner, the exercise of any statutory power or discretion of the Council, including, but not limited to, any statutory power or discretion of the Council relating to the Development Application or any other application for Development Consent (all referred to in this agreement as a "**Discretion**").

14.2 No fetter

No provision of this agreement is intended to constitute any fetter on the exercise of any Discretion. If, contrary to the operation of this clause, any provision of this agreement is held by a court of competent jurisdiction to constitute a fetter on any Discretion, the parties agree:

(a) They will take all practical steps, including the execution of any further documents, to ensure the objective of this clause is substantially satisfied,

(b) In the event that (a) cannot be achieved without giving rise to a fetter on the exercise of a Discretion, the relevant provision is to be severed and the remainder of this agreement has full force and effect, and

(c) To endeavour to satisfy the common objectives of the parties in relation to the provision of this agreement which is to be held to be a fetter on the extent that is possible having regard to the relevant court judgment.

15 Notices

Any notice given under or in connection with this agreement (**Notice**):

(a) must be in writing and signed by a person duly authorised by the sender;

Draft

(b) must be addressed as follows and delivered to the intended recipient by hand, by prepaid post or by email at the address below, or at the address last notified by the intended recipient to the sender after the date of this agreement:

i. to Penrith City Council: PO Box 60, Penrith, NSW 2751
Fax: (02) 4732 7958
Email: council@penrith.city
Attention: The General Manager

ii. to Lendlease Communities (Werrington): Level 14, Tower Three, International Towers Sydney
Exchange Place, 300 Barangaroo Avenue, Barangaroo NSW 2000
Email: aucosec@lendlease.com
Attention: The Company Secretary

(c) is taken to be given or made:

i. in the case of hand delivery, when delivered;

ii. in the case of delivery by post, three Business Days after the date of posting (if posted to an address in the same country) or seven Business Days after the date of posting (if posted to an address in another country); and

iii. in the case of an email, when the sender receives an email acknowledgement from the recipient's information system showing the Notice has been delivered to the email address stated above; and

(d) if under clause (c) a Notice would be taken to be given or made on a day that is not a Business Day in the place to which the Notice is sent, or later than 4.00 pm (local time), it is taken to have been given or made at the start of business on the next Business Day in that place.

16 General

16.1 Relationship between parties

(a) Nothing in this agreement:

i. constitutes a partnership between the parties; or

ii. except as expressly provided, makes a party an agent of another party for any purpose.

(b) A party cannot in any way or for any purpose:

i. bind another party; or

ii. contract in the name of another party.

(c) If a party must fulfil an obligation and that party is dependent on another party, then that other party must do each thing reasonably within its power to assist the other in the performance of that obligation.

16.2 Time for doing acts

(a) If the time for doing any act or thing required to be done or a notice period specified in this agreement expires on a day other than a Business Day, the time

for doing that act or thing or the expiration of that notice period is extended until the following Business Day.

(b) If any act or thing required to be done is done after 5.00 pm on the specified day, it is taken to have been done on the following Business Day.

16.3 Further assurances

Each party must promptly execute all documents and do all other things reasonably necessary or desirable to give effect to the arrangements recorded in this agreement.

16.4 Variation

A provision of this agreement can only be varied by a later written document executed by or on behalf of all parties and in accordance with the provisions of the Act.

16.5 No assignment

A party cannot assign or otherwise transfer its rights under this agreement without the prior written consent of the other party.

16.6 Counterparts

(a) This agreement may be executed in any number of counterparts. All counterparts taken together constitute one instrument.

(b) Each party acknowledges and agrees that the other party may execute this agreement using an electronic method (for example, Docusign), and that an electronic copy of this agreement that contains the electronic signatures of the parties that have been affixed using such electronic method, will be treated as an original.

16.7 Legal expenses, stamp duty and administration fees

(a) The Developer must pay on demand Council's reasonable legal costs and disbursements in connection with the negotiation, preparation, execution, stamping, and release and discharge of this agreement, including the reasonable costs incurred by the Council in obtaining any advice about this agreement or the value of land or works to be delivered under this agreement.

(b) On execution of this agreement, the Developer must pay an administration, monitoring and enforcement fee to the Council in the amount of $100,000.00.

16.8 Entire agreement

The contents of this agreement constitute the entire agreement between the parties and supersede any prior negotiations, representations, understandings or arrangements made between the parties regarding the subject matter of this agreement, whether orally or in writing.

16.9 Representations and warranties

The parties represent and warrant that they have the power and authority to enter into this agreement and comply with their obligations under the agreement and that entry into this agreement will not result in the breach of any law.

16.10 Severability

If a clause or part of a clause of this agreement can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal,

DRAFT

enforceable and valid, it must be read in the latter way. If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this agreement, but the rest of this agreement is not affected.

16.11 Invalidity

(a) A word or provision must be read down if:

i. this agreement is void, voidable, or unenforceable if it is not read down;

ii. this agreement will not be void, voidable or unenforceable if it is read down; and

iii. the provision is capable of being read down.

(b) A word or provision must be severed if:

i. despite the operation of clause (a), the provision is void, voidable or unenforceable if it is not severed; and

ii. this agreement will be void, voidable or unenforceable if it is not severed.

(c) The remainder of this agreement has full effect even if clause 16.11(b) applies.

16.12 Waiver

A right or remedy created by this agreement cannot be waived except in writing signed by the party entitled to that right. Delay by a party in exercising a right or remedy does not constitute a waiver of that right or remedy, nor does a waiver (either wholly or in part) by a party of a right operate as a subsequent waiver of the same right or of any other right of that party.

16.13 GST

(a) Words and expressions which are not defined in this agreement but which have a defined meaning in GST Law have the same meaning as in the GST Law.

(b) Unless otherwise expressly stated, all prices or other sums payable or consideration to be provided under this agreement are exclusive of GST.

(c) If GST is imposed on any supply made under or in accordance with this agreement, the Developer must pay the GST or pay to the Council an amount equal to the GST payable on or for the taxable supply, whichever is appropriate in the circumstances.

16.14 Governing law and jurisdiction

(a) The laws applicable in New South Wales govern this agreement.

(b) The parties submit to the non-exclusive jurisdiction of the courts of New South Wales and any courts competent to hear appeals from those courts.

17 Reporting

(a) On or before 31 July in each calendar year after the execution of this agreement and until the Developer's obligations under this agreement are satisfied, the Developer must provide a written report to Council detailing the progress of the provision of Contributions under this agreement and the progress of the Development.

Draft

(b) Within 20 days of the issue of a Certificate of Practical Completion in respect of an Item of Work, the Developer must provide to Council a cost report/valuation of that Item of Work that complies with the requirements of section 206 of the Regulation as amended.

Draft

Schedule 1 Scope of works

Table 1 Proposed Contribution Item and Delivery – WELL CP items

Item No. (WELL CP works schedule reference)	Nature and extent of contribution	Stage of Development during which item will be carried out	Timing	Monetary contributions value*	Sunset Date
Part 1 - Works					
OSR4.6a	**Open Space:** Construction and embellishment of SWUV bushland park (i.e. Central Park).	Stage 2A	Central Reserve embellishment to be completed prior to the issue of subdivision certificate for the first Residential Lot in Stage 2A of the Development, as shown on the plans showing the Works at Annexure D	$475,045	3 years from issue of Subdivision Certificate for Stage 1A
OSR4.6b	**Open Space:** Construction and embellishment of SWUV park (remainder) (i.e. Eastern Park).	Stage 3	Eastern Park embellishment to be completed prior to the issue of subdivision certificate for the first Residential Lot in Stage 3 of the Development, as shown on the plans showing the Works at Annexure D	$468,711	3 years from issue of Subdivision Certificate for Stage 2A
W2.12	**Water Cycle Management:** Construction of water quality and detention basin (i.e. Eastern Park) – extent of works to also account for Central Park stormwater basin.	Stage 3	Eastern Park basin works (i.e. final design capacity) to be completed prior to the issue of subdivision certificate for first Residential Lot in Stage 3 of the Development, as shown on the plans showing the Works at Annexure D	$2,901,742 (based on WELL CP for Eastern Park basin only)	3 years from issue of Subdivision Certificate for Stage 2B

T2.48	**Traffic Management:** Construction of cycle ways – assumed 2.5m width at $75/m^2	See T2.52 below	Staged delivery of cycleways in line with local road network and open space and proposed staged delivery of East-West Collector Road (i.e. Road 11) (see Item T2.52 below).	$235,168	3 years from issue of Subdivision Certificate for Stage 2B
T2.52	**Traffic Management:** Construction East-West Collector Road (i.e. Road 11) – assumed 22m width at $109/m^2	a) Stage 2A b) Stage 2B c) Stage 4B	*Obligation commences once the Developer has obtained all required Approvals to carry out this Works item on the part of Lot 2 DP 1176624 within the Land shown on the plans at Annexure D.* Staged delivery of Road 11 as follows: a) between Road 07 and Werrington Road prior to the issue of subdivision certificate for lot in Stage 2A of the Development, as shown on the plans showing the Works at Annexure D. b) between Road 12 and Werrington Road prior to the issue of subdivision certificate for lot in Stage 2B of the Development, as shown on the plans showing the Works at Annexure D. c) between Road 07 and western boundary (i.e. Western Sydney University) prior to the issue of subdivision certificate for first IN2 industrial lot in Stage 4B of the Development, as shown on the plans showing the Works at Annexure D.	$3,809,920 comprised of 35% of this value for Stage 2A and 2B (with Security under clause 11.2(b) being payable prior to issue of the first Subdivision Works Certificate for Stage 2A only) and 65% of this value for Stage 4B (50% apportionment shared between WSU North Werrington and SWUV)	3 years from issue of Subdivision Certificate for Stage 4A

DRAFT

Part 2 - Dedication of Dedication Land					
OSR 2.6	**Open Space:** Land dedication of 2.92 ha of passive open space land (i.e. Central Park and Eastern Park).	a) Stage 2A b) Stage 3	At the completion of the embellishment works associated with respective open space areas as follows: a) Central Park – prior to the issue of subdivision certificate for first Residential Lot in Stage 2A of the Development, as shown on the plan showing the Dedication Land at Annexure B. b) Eastern Park – prior to the issue of subdivision certificate for first Residential Lot in Stage 3 of the Development, as shown on the plan showing the Dedication Land at Annexure B.	$6,819,499 (based on WELL CP 2.52 ha) (with Security under clause 11.2(b) being payable prior to issue of the first Subdivision Works Certificate for Stage 2A only)	For a) 3 years from issue of Subdivision Certificate for Stage 1A For b) 3 years from issue of Subdivision Certificate for Stage 2A
T1.2	**Traffic Management:** Land dedication of 2.35 ha of road corridor between Werrington Road and UWS boundary (i.e. proposed East-West Collector Road – i.e. Road 11)	a) Stage 2A b) Stage 4B	Following the completion of Road 11 works as follows: a) between Road 07 and Werrington Road at the time of the issue of the subdivision certificate for lot in Stage 2A of the Development, as shown on the plan showing the Dedication Lands at Annexure B. b) between Road 07 and western boundary (i.e. Western Sydney University) at the time of the issue of the subdivision certificate for the first IN2 industrial lot in Stage 4B of the Development, as shown on the plan showing the Works at Annexure B.	$5,953,531 (based on WELL CP – i.e. 22m x 1,000m) and comprised of 35% of this value for Stage 2A and 65% of this value for Stage 4B (50% apportionment shared between WSU North Werrington and SWUV)	3 years from issue of Subdivision Certificate for Stage 4A
Total contributions value				**$20,663,616**	

DRAFT

Other public purposes

In addition to the delivery of the above WELL CP items, Lendlease proposes to provide the following items as outlined in **Table 2** at nil cost to Council for public purposes, being road and stormwater drainage works and dedication of conservation lands.

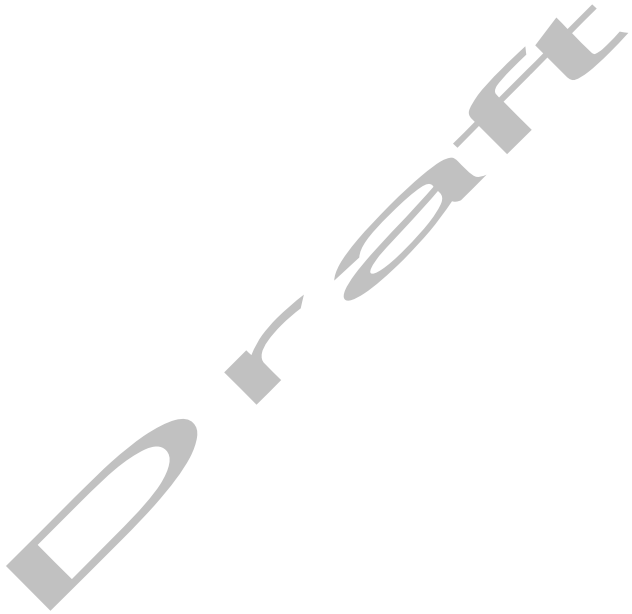
Table 2 - Proposed Contribution Item and Delivery – additional items

Item No.	Proposed nature and extent of works/land	Stage of Development during which item will be carried out	Timing	Value	Sunset Date
Part 1 - Works					
1.	**Traffic Management:** Staged resurfacing of Chapman Street road pavement and associated public domain works.	Stage 1	First layer prior to the issue of a subdivision certificate for the first Residential Lot in Stage 1 of the Development, as shown on the plan showing the Works at Annexure D.	$250,000	3 years from issue of Subdivision Certificate for Stage 1A
		Stage 2A	Final layer prior to the issue of a subdivision certificate for the first Residential Lot in Stage 2A of the Development, as shown on the plan showing the Works at Annexure D.		3 years from issue of Subdivision Certificate for Stage 1A
2.	**Works in accordance with Part 5 of Vegetation Management Plan** (See Annexure F	Stage 1	Undertake the works outlined in Part 5 – Management Actions in the Vegetation Management Plan for a period of two (2) years from the commencement of the Development.	N/A	3 years from issue of Subdivision Certificate for Stage 1A
3.	**Traffic Management:** Construction and dedication of Werrington	N/A (see clause 11.2)	Prior to the issue of a subdivision certificate for the first residential lot in Stage 2A and subsequent dedication in conjunction with the	$1,500,000	12 months from issue of Subdivision Certificate for Stage 1A

DRAFT

	Road/Rance Road/East-West Collect Road (stub connection only) roundabout as approved under DA19/0704.		delivery of the eastern portion of East-West Collector Road (i.e. Road 11).		
Part 2 - Dedication of Dedication Land					
1.	Dedication of at approximately 1.2 ha of E2 Environmental Conservation land shown on the plan showing the Dedication Land at Annexure B.		Following registration of E2 superlot subdivision certificate (i.e. proposed Lot 1000) as part of subdivision certificate for the first Residential Lot in Stage 1A of the Development.	$1,020,000 (at $85/m^2 for constrained land)	2 years from issue of Subdivision Certificate for Stage 1A
	Total value (nil cost to Council)			**$2,770,000**	

Draft


Draft

Schedule 2 Construction terms

1 Interpretation

For the purposes of this Schedule 2, the defined terms in clause 1 of this agreement and the Interpretation principles in clause 2 of this agreement will apply, unless context indicates a contrary intention.

Builder means any entity contracted under the Construction Contract to carry out the Works.

Construction Contract means the contract to carry out the Works (whether or not that is a contract for the Works only or forms part of a contract for the building of other components of the Development).

Defects Liability and Maintenance Period means in respect of each item of building works which together comprise the Works the period of 12 months from the date on which Handover of the Works occurs.

Detailed Design means the final specifications and finishes for the Works prepared in accordance with clause 6.2 of this Schedule 2, which cannot be inconsistent with any Development Consent and Construction Certificate and/or Subdivision Works Certificate granted in respect of the Works, and will include the design of the Works, the location for the Works, installation specifications and estimated costs of construction and/or installation.

Maintenance Schedule means a document which sets out the proposed maintenance works (which cannot be inconsistent with any Development Consent granted in respect of the Works) and estimated costs for the relevant part of the Works over the Maintenance Period.

Services means all water, gas, electricity, television, drainage, sewerage, cable TV, data communications, telecommunications and other services which are required under a development consent within the meaning of the Act or an Approval and which are necessary or desirable for the construction or operation of the Development.

Superintendent means the Superintendent appointed under any Construction Contract.

2 Application [not used]

3 Requirements of Authorities and Approvals

3.1 These Construction Terms must be read and construed subject to:

(a) any requirements or conditions of any Development Consent;

(b) the requirements of and conditions imposed by all relevant Authorities and all Laws relating to the Development and the construction of the Development.

3.2 If the Developer requires any Approvals in order to carry out the obligations under this agreement, then the Developer will acquire all Approvals necessary to carry out the Works at its own cost.

3.3 The Developer must ensure that the Works carried out under this agreement are carried out:

(a) in accordance with the relevant Development Consent for the Works and all Approvals and the requirements of all Laws, including without limitation, work health and safety legislation; and

Draft

(b) in a good and workmanlike manner and so that they are diligently progressed until completion.

It is acknowledged that to the extent that there is any inconsistency between this agreement and any Approval, the terms of the Approval shall take precedence.

4 Costs of Works

All costs of the Works must be borne by the Developer.

5 Project Management and Contractor Engagement

5.1 The Developer will be responsible for managing the Works.

5.2 The Developer will ensure that any contractor it engages to carry out the Works agrees to:

(a) carry out the Developer's obligations in these Construction Terms as part of any Construction Contract; and

(b) request a Council representative to be present at a fortnightly on-site meeting attended by the Superintendent by providing 3 business days' notice.

6 Design Development

6.1 **Concept Design**

Council and the Developer have worked in consultation with each other to prepare and agree the concept plans for the Works at Annexure D.

6.2 **Detailed Design**

(a) Prior to Works commencing the Developer must provide a copy of the draft Detailed Design to the Council for approval.

(b) Within 15 Business Days of receiving the Detailed Design, Council will respond to the Developer with any suggested amendments to the Detailed Design.

(c) Council and the Developer must work in consultation with each other to prepare and agree the Detailed Design and must both act reasonably and with due expedition in their consultations with each other.

(d) If the Detailed Design is not completed and agreed within 20 Business Days of Council providing its suggested amendments in accordance with clause 6.2(b) of this Schedule (unless the parties agree to allow further time for consultation under clause Schedule 26.2(c) of Schedule 2) the parties agree that:

(i) the dispute resolution process as set out in clause 10 of this agreement is to be utilised to finalise the Detailed Design; and

(ii) either party may issue the notice under clause 10.2 to commence the dispute resolution process.

(e) In undertaking dispute resolution under this clause and clause 10 of this agreement, the parties must use all reasonable endeavours to ensure that the final Detailed Design of any item of Work:

(i) is consistent with the obligation to carry out the Works and dedicate the Dedication Land under this agreement; and

(ii) is consistent with the Development Consent; and

Draft

(iii) does not materially and adversely affect the Development; and

(iv) is not unreasonable.

6.3 Any acceptance by the Council of the Detailed Design under this clause 6 is not to be taken as approval of or to any Construction Certificate for the Works.

6.4 **Good faith**

The parties must act promptly and in good faith to consult in relation to the Detailed Design.

7 Carrying out of Works

7.1 **Communication**

The Developer must notify Council on the commencement of the Works and keep Council reasonably informed of progress of the Works and provide to Council such information about the Works as Council reasonably requests.

7.2 **Standard of Works**

(a) Unless otherwise provided, the Developer shall, and must cause the Builder to, use suitable new materials and proper and tradesmanlike workmanship when carrying out the Works.

(b) The qualitative standard of the design and finishes for the Works must be no less than those described in the following documents:

(i) Any relevant Australian Standard;

(ii) Any relevant design standards or guidelines and any other requirements or policies applied by the Council from time to time in assessing the adequacy of any works or improvements proposed for the public domain or to be accessible to the public in accordance with this agreement.

(c) The Developer will obtain any relevant standards (including design standards), specifications, or guidelines and any other requirements or policies referred to in clause 7.2(b)(ii) of this Schedule from Council if the Council fails to deliver them to the Developer.

(d) The Developer may but is not obliged to reinstate any Works where damage or destruction is as a result of:

(i) Any act or omission of the Council or its employees, consultants or agents relating to any part of the Works under this agreement; or

(ii) The use or occupation by the Council or its employees, consultants or agents, Council's representatives or other contractor of the Council of any part of the Works.

7.3 **Damage to people, property & utilities**

(a) The Developer is to ensure to the fullest extent reasonably practicable that, in performing its obligations under this agreement:

(i) all necessary measures are taken to protect people and property;

(ii) unnecessary interference with the passage of people and vehicles is avoided; and

(iii) nuisances and unreasonable noise and disturbances are prevented.

(b) Without limiting clause 6.3(a) of this Schedule, the Developer is not to obstruct, interfere with, impair or damage any public road, public footpath, public cycleway or other public thoroughfare, or any pipe, conduit, drain, watercourse or other public utility or service on any land except as authorised in writing by the Council or any relevant Authority.

8 Inspection

(a) On completion of the Detailed Design, the Council will provide a schedule of inspections to be undertaken by Council (**Inspection Schedule**) to occur at specified stages of the construction of the Works (**Inspection Stage**).

(b) Five Business Days prior to reaching an Inspection Stage as set out in the Inspection Schedule, the Developer must notify the Council of the proposed inspection date (**Inspection Date**).

(c) On the Inspection Date, or other agreed date, the Developer must ensure that any employees, contractors, agents or representatives of Council have access to and may enter the Land to inspect the Works.

(d) In addition to carrying out inspections in accordance with the Inspection Schedule, the Council and its employees, contractors, agents or representatives may enter the Land or any part of the Land on which the Works are located to inspect the progress of the Works, subject to:

(i) the terms of the Construction Contract (save for any clause of the Construction Contract which prevents the Council from accessing the Land);

(ii) giving reasonable notice to the Developer;

(iii) complying with all reasonable directions of the Developer; and

(iv) being accompanied by the Developer or a nominee, or as otherwise agreed.

(e) The Council must, acting reasonably, within 5 Business Days of carrying out an inspection (either under clause 8(c) or 8(d) of this Schedule), notify the Developer of any defect or non-compliance in the Works and direct the Developer to carry out work to rectify that defect or non-compliance within a reasonable period of time. Such work may include, but is not limited to:

(i) removal of defective or non-complying material;

(ii) demolishing defective or non-complying work;

(iii) reconstructing, replacing or correcting any defective or non-complying work; and

(iv) not delivering any defective or non-complying material to the site of the Works.

(f) If Council does not notify the Developer of any defect or non-compliance in the Works under clause 8(e) of this Schedule, the Work is deemed to have no defect or non-compliance.

(g) If the Developer is issued a direction to carry out further work under clause 8(e) of this Schedule, the Developer must, at its cost, rectify the defect or non-

DRAFT

compliance specified in the Notice within the time period specified in the Notice, provided that it is reasonable having regard to the nature of the works.

(h) If the Developer fails to comply with a direction to carry out work given under clause 8(e) of this Schedule, the Council will be entitled to refuse to accept that the Works (or the relevant part of the Works) meet the Council's standards and specifications and may refuse to issue a Certificate of Practical Completion, until the required Works have been completed to the Council's satisfaction, acting reasonably.

(i) For the avoidance of doubt, any acceptance by the Council that the Developer has rectified a defect or non-compliance identified in a notice issued under clause 8(e) of this Schedule does not constitute:

(i) acceptance by the Council that the Works comply with all Approvals and Laws; or

(ii) an Approval by the Council in respect of the Works; or

(iii) an agreement or acknowledgment by the Council that the Works or the relevant part of the Works are complete and may be delivered to the Council in accordance with this agreement.

9 Completion

9.1 Practical Completion

(a) When the Developer considers that the Works, or any part of the Works, are complete, the Developer must send a Notice to the Council accompanied by complete works as executed plans, any relevant certificates or consents of any public utility authority and a request for written certification from the Council that the Works are complete.

(b) Within 10 Business Days of receipt of the notice under clause 9.1(a) of this Schedule, the Council will carry out an inspection of the Works and will, acting reasonably, either:

(i) provide written certification to the Developer that the Works have been completed, which will constitute a Certificate of Practical Completion; or

(ii) notify the Developer of any additional information required or matters which must be addressed by the Developer prior to the Certificate of Practical Completion being issued.

(c) If the Developer is required to provide additional information or address any matters under clause 9.1(b)(ii) of this Schedule, the Developer will provide that information to Council or address those matters within 10 Business Days of receiving the notice or within a reasonable period of time and make a further request under clause 9.1(a) of this Schedule for written certification that the Works have been completed.

(d) Practical completion will be achieved in relation to the Works or any part of the Works when a Certificate of Practical Completion has been issued for those Works.

Draft

9.2 **Handover**

(a) The Developer is responsible for the delivery and care of the Works at all times prior to Handover of the Works.

(b) Handover will occur and Council will assume responsibility for the Works:

(i) upon dedication to Council of the land on which Works are located; or

(ii) if Works are carried out on land already owned by Council, on the issue of a Certificate of Practical Completion for those Works.

(c) Notwithstanding clause (b), in the event that:

(i) Dedication to Council of land on which Works are located will be affected by registration of a plan of subdivision; and

(ii) the issue of a subdivision certificate for that subdivision requires prior Handover of certain Works such that the subdivision cannot take place,

Council agrees that within five (5) Business Day of receiving a notice from the Developer under this clause, it will release the relevant subdivision certificate to allow to subdivision (and therefore dedication of the relevant Dedication Land) to take place, at which time Handover under Schedule 29.2(b) of this Schedule will be affected.

9.3 **Delivery of documents**

(a) If it has not already done so, the Developer must as soon as practicable, and no later than 20 Business Days after the date on which the Certificate of Practical Completion is issued in respect of the Works or any part of the Works deliver to the Council, complete and legible copies of:

(i) all "as built" full-sized drawings, specifications and relevant operation and service manuals;

(ii) all necessary certificates including the certificates of any consultants of the Developer that the Council may reasonably require, and Approvals of any public utility authority (where relevant); and

(iii) copies of all Approvals required for use of the land subject to the Works.

(b) The Developer must as soon as practicable, and no later than 20 Business Days after the date on which the Certificate of Practical Completion is issued in respect of the Works or any part of the Works, provide the Council with a tour of the land subject to the Works and provide reasonable instructions on the operation and use of the Services on that land.

9.4 **Assignment of Warranties and Causes of Action**

(a) The Developer must assign (as beneficial owner) or cause to be assigned to Council the benefit of any warranties and guarantees obtained by the Developer and the Builder (and capable of assignment) with respect to any material or goods incorporated in or forming part of the Works.

(b) To the extent that any such warranties or guarantees cannot be assigned, the Developer must at the request of Council do anything reasonably required by Council to enforce such warranties or guarantees for the benefit of Council.

DRAFT

10 Defects Liability and Maintenance

10.1 Maintenance

(a) Prior to the issue of a Certificate of Practical Completion for any part of the Works, the Developer must provide to the Council a Maintenance Schedule.

(b) Within 10 Business Days of receiving the Maintenance Schedule, Council must issue a written notice to the Developer advising of any changes it requires to the Maintenance Schedule, which changes must be reasonable and in accordance with Council's usual practice for maintaining works of the same type and which cannot be inconsistent with any Development Consent, Construction Certificate or Subdivision Works Certificate granted in respect of the Works.

(c) Within 5 Business Days of receiving the Council's notice under clause 10.1(b) of this Schedule, the Developer must provide to Council a final Maintenance Schedule incorporating the Council's changes.

(d) The Works or any part of those works, must be Maintained by the Developer in accordance with the Maintenance Schedule for the Maintenance Period.

(e) The Developer must follow relevant Council policies and obtain all Approvals necessary to carry out the Maintenance required under this clause.

(f) The Council must give the Developer and its contractors any access required to carry out Maintenance in accordance with the Maintenance Schedule.

10.2 Defects Liability and Maintenance Period

(a) During the Defects Liability and Maintenance Period, the Council (acting reasonably) may give to the Developer a notice (**Rectification Notice**) in writing that identifies a defect in the Works or any Maintenance requirement that has not been complied with.

(b) The Rectification Notice must specify:

(i) action required to be undertaken by the Developer to rectify the defect or Maintain the Works (**Rectification Works**); and

(ii) the date on which the defect must be rectified, or the Maintenance work completed (**Rectification Date**).

(c) The Developer must comply with the Rectification Notice by:

(i) procuring the performance of the Rectification Works by the Rectification Date, or such other date as agreed between the parties;

(ii) keeping the Council reasonably informed of the action to be taken to rectify the defect or Maintain the Works; and

(iii) carrying out the Rectification Works.

(d) The Council must give the Developer and its contractors any access required to carry out the Rectification Works.

(e) When the Developer considers that the Rectification Works are complete, either the Developer must notify the Council and provide documentation, plans or invoices which establish that the Rectification Works were carried out.

DRAFT

(f) The Council may inspect the Rectification Works within 15 Business Days of receiving a Notice from the Developer under clause 10.2(e) of this Schedule and, acting reasonably:

(i) issue a further Rectification Notice if it is not reasonably satisfied that the Rectification Works are complete; or

(ii) notify the Developer in writing that it is satisfied the Rectification Works are complete.

(g) The Developer must meet all costs of and incidental to rectification of defects or Maintenance of Works under this clause 10.2.

(h) If the Developer fails to comply with a Rectification Notice, then the Council may do such things or take such action as is necessary to carry out the Rectification Works, including accessing and occupying any part of the Land without further notice to the Developer, and may:

(i) call upon any Bond or Bank Guarantee provided to the Council under clause 10.3 of this Schedule to meet its costs of carrying out Rectification Works; and

(ii) recover as a debt due to the Council by the Developer in a court of competent jurisdiction, any difference between the amount of the Bond or Bank Guarantee and the costs incurred by the Council in carrying out Rectification Works.

(i) The Developer must request that Council inspect the Works 28 days prior to the end of the Defects Liability and Maintenance Period. The Council must inspect the Works at any time after receiving the request from the Developer and before to the end of the Defects Liability and Maintenance Period.

10.3 **Security for Defects Liability**

(a) Prior to the issue of a Certificate of Practical Completion for each item of the Works the Developer must deliver to the Council Bonds or Bank Guarantees in an amount equivalent to 25% of the construction costs for the particular item of Works.

(b) The Developer discloses and the Council acknowledges that the Bonds or Bank Guarantees may be supplied by the Builder and form a part of the security held by the Developer from the Builder under the terms of the Construction Contract, provided that:

(i) any Bond or Bank Guarantee provided by the Builder benefits the Council and satisfies the requirements of this agreement; and

(ii) the Developer procures an agreement from the Builder that the Council will be entitled to call on any Bond or Bank Guarantee provided by the Builder, in accordance with the terms of this agreement and the terms of any Construction Contract.

(c) Within 10 Business Days after the Defects Liability and Maintenance Period for a particular item of Works has expired Council must (if it has not called on it) return the Bond or Bank Guarantee referred to in clause 10.3(a) of this Schedule for that item of Works (or any remaining balance of it) to the Developer.

(d) Notwithstanding clause 10.2(c) of this Schedule, if during the Defects Liability and Maintenance Period for a particular item of Works, the Council issues a Rectification Notice, then the Council need not deliver the balance of any Bonds or Bank Guarantees provided to it until the Rectification Notice has been complied with.

11 Risk

The Developer undertakes the Works entirely at its own risk.

12 Insurance

(a) Prior to the commencement of the construction of any of the Works, the Developer must ensure the Builder effects and the Developer must produce evidence to the Council of the following insurances issued by an insurer approved by the Council (acting reasonably) in a form approved by the Council (acting reasonably):

(i) construction works insurance for the value of the Works;

(ii) public risk insurance for at least $20 million;

(iii) workers compensation insurance as required by Law.

(b) The Developer must provide evidence of currency of insurance required by clause 12(a) of this Schedule 2 upon request by the Council, acting reasonably, throughout the term of this agreement.

13 Indemnities

The Developer indemnifies the Council, its employees, officers, agents and contractors from and against all Claims in connection with the carrying out by the Developer of the Works except to the extent such Claim arises either directly or indirectly as a result of the Council or its employees, officers, agents, contractors or workmen's negligence, default, act or omission.

14 Intellectual Property Rights

The Council acknowledges that the Developer or its contractors hold all rights to copyright and any intellectual property which may exist in the Works. To the extent the Developer have or receive intellectual property rights for the Works, and is legally able to assign such rights, the Developer shall assign those intellectual property rights to Council or permit use thereof

15 Risk of contamination

15.1 The Developer acknowledges and agrees in respect of land owned by the Developer:

(a) that it is responsible for the management and remediation of any contamination present upon or under the land on which the Works are to be carried out until the date that the Dedication Land is dedicated to Council in accordance with this agreement;

(b) it will attend to any necessary remediation at their own costs until the date that the Dedication Land is dedicated to Council in accordance with this agreement; and

(c) to the fullest extent permitted by Law indemnify and release the Council from any Claim which might arise from any contamination with respect to the land on which

Draft

the Works are to be carried out, until the date that the Dedication Land is dedicated to Council in accordance with this agreement.

15.2 The parties agree in respect of land not owned by the Developer:

(a) that the Developer will undertake the management and remediation of any contamination present upon or under the land on which the Works are to be carried out;

(b) the Developer will attend to any necessary remediation, however Council agrees to reimburse the Developer for half the cost of carrying out those works;

(c) to the fullest extent permitted by Law, Council will indemnify and release the Developer from any Claim which might arise from any contamination with respect to the land on which the Works are to be carried out.

16 Plans

The parties acknowledge and agree that further detail and refinement of plans and documents in connection with this agreement may be necessary having regard to the following matters:

(a) matters affecting Works not capable of identification on or before the date of this agreement; or

(b) by agreement between the parties.

Draft

Schedule 3 Easement Terms

[not used]

Draft

Schedule 4 Summary of requirements (section 7.4)

Subject and subsection of the Act	Planning Agreement
Planning instrument and/or Development Application – Section 7.4(1) The Developer has: (a) Sought a change to an environmental planning instrument (b) Made, or propose to make a Development Application (c) Entered into an agreement with, or are otherwise associated with, a person to whom paragraph (a) or (b) applies	 ☐ Yes ☒ No ☒ Yes ☐ No ☒ Yes ☐ No
Description of the land to which the planning Agreement applies – Section 7.4(3)(a)	The part of Lot 1 DP 1226122 shown hatched and labelled "Land Subject to the VPA", and the part of Lot 2 DP 1176624 shown hatched and shaded and labelled "Land Subject to VPA on Lot 2 DP1176624" on the map at Annexure A.
Description of the change to the environmental planning instrument or development to which the Planning Agreement applies - Section 7.4(3)(b)	N/A
The scope, timing and manner of delivery of contributions required by the Planning Agreement – Section 7.4(3)(c)	See Schedule 1
Applicability of section 7.11 of the Act – Section 7.4(3)(d)	This agreement excludes the application s7.11 to the Development and the Land
Applicability of section 7.12 of the Act – Section 7.4(3)(d)	This agreement excludes the application s7.12 to the Development and the Land
Applicability of section 7.24 of the Act – Section 7.4(3)(d)	This agreement does not exclude the application s7.24 to the Development or the Land
Whether the benefits are or are not to be taken into consideration in determining a	This agreement excludes the application s7.11 to the Development and the Land

Draft

development contribution under section 7.11 – Section 7.4(3)(e)	
Mechanism for dispute resolution – Section 7.4(3)(f)	Part 10
Enforcement of the Planning Agreement by a suitable means – Section 7.4(3)(g)	Part 11
Registration of the Planning Agreement – Section 7.6	Part 8
No obligation to grant consent or exercise functions – Section 7.4(9)	See clause 14 (no fetter)

*

Draft

Executed as an agreement

Executed for and on behalf of **Penrith City Council** by its authorised delegate in accordance with a resolution of the Council dated [insert date]:	)))

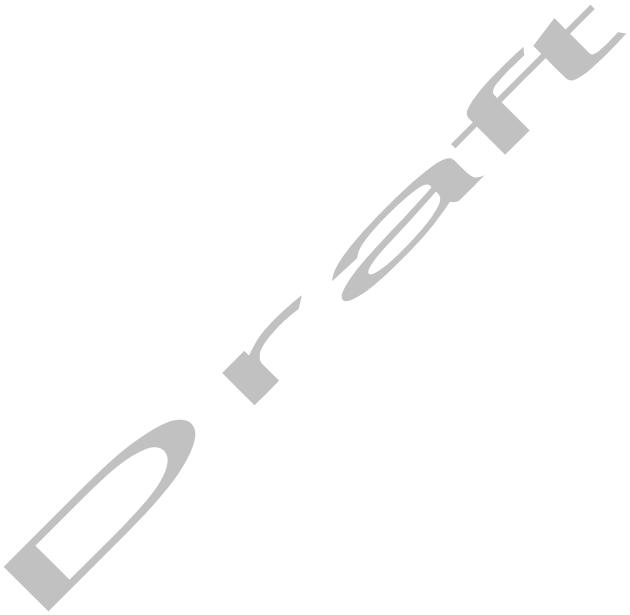
.....	.....
Signature of witness	Signature of Authorised Delegate Print position:
.....	.....
Print name	Print name

Signed by **Lendlease Communities (Werrington) Pty Ltd** in accordance with section 127 of the *Corporations Act 2001* (Cth) by:

Signature of director		Signature of director/secretary
Name of director (print)		Name of director/secretary (print)

Draft

Annexure A Plan showing Land



DATE PLOTTED: 30 July 2021 3:04 PM BY : GAVIN MURRAY



Rev.	Date	Description	Des.	Verif.	Appd.
12	30/03/2021	ISSUED FOR CLIENT REVIEW	JB	AG	
11	23/12/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
10	4/11/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
9	18/08/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
8	1/07/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
7	21/04/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
6	17/03/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
5	27/02/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
4	6/01/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
3	1/10/2019	FINAL CLIENT REVIEW	AG	AG	

0 25 50 75 100 125m
SCALE 1:1250 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno
Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	MDH	Date 25/09/2019
Checked		Date
Designed		Date
Verified		Date
Approved		

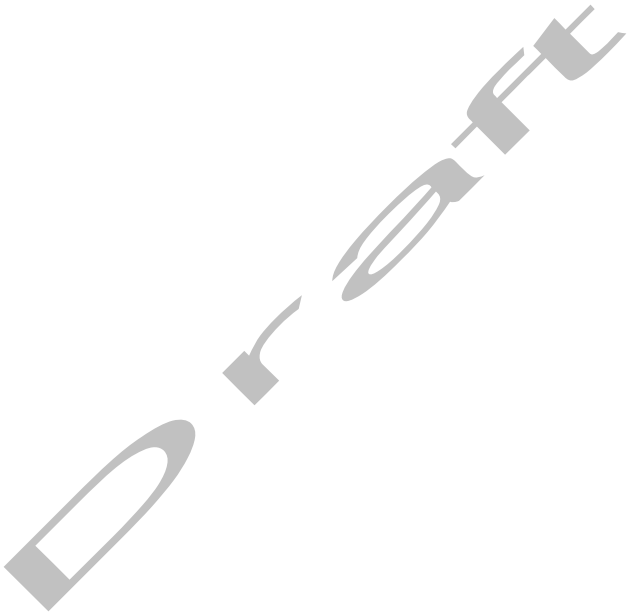
Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON CIVIL WORKS
Title: SUBDIVISION PLAN WITH STAGING
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DATUM		Scale	Size
AHD	SEP'19	1:1250	A1

Drawing Number: 80219053-001-SK080
Revision: 12

XREFs: XR-80219053-CI-SURVEY, XR-80219053-CI-APZ, XR-80219053-001-SK080 LOT LAYOUT, XR-80219053-CI-ROAD, XR-80219053-CI-LOT LAYOUT, XR-80219053-CI-EASEMENT
CAD File: N:\Urban\Norwest\$$ CARDNO HARD & FORESTER\CURRENT JOBS\80219053 - WERRINGTON\AUTOCAD MGA94\VPA PLANS\80219053-001-VPA.dwg

Annexure B Plan showing Dedication Land



DATE PLOTTED: 30-July-2021 11:42 AM BY - GAVIN MURRAY

MAIN WESTERN RAILWAY

E2 Environmental Conservation Land

STAGE 1A

AP2 (WIDTH: 7m)

SP 61673

RAILWAY ST

DENOTES LAND TO BE DEDICATED TO COUNCIL

NORTH

CHAPMAN STREET (18.1m WIDE)

CHAPMAN STREET

LANDERS ST

EASEMENT TO DRAIN WATER 20m WIDE

EXISTING TOWN HOUSES

SP 67312

SP 31607

WALKER ST

OP 1067

101 DP 1140594

Central Park PARK

1066 (RESIDUE)

1056 RESIDUE

1057 1058 1059 1060 1061 1062 1063 1064 1065 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212

1027 1028 1029 1030 1055 1031 1054 1032 1053 1033 1052 1034 1051 1035 1050 1036 1049 1037 1048 1038 1047 1039 1046 1040 1045 1044 1043 1042 1041

PEARTREE CIRCUIT (16.6m WIDE)

1001 RESIDUE 1002 1003 1026 1004 1025 1005 1024 1006 1023 1007 1022 1008 1021 1009 1020 1010 1019 1011 1018 1012 1017 1016 1015 1014 1013

MEYER STREET (16.6m WIDE)

CARGO STREET (16.6m WIDE)

1101 1102 1103 1104 1069 (RESIDUE) 1068

2259 (RESIDUE) 2259 (RESIDUE)

SPINIFEX ROAD (17.5m WIDE)

STAGE 2A

SPINIFEX ROAD (17.5m WIDE)

Eastern Park 3000

STAGE 3

3001 (RESIDUE)

STEAM LANE (16.6m WIDE)

3018 3019 3017 3020 3016 3021 3015 3022 3014 3023 3013 3012 3011 3010 3009 3008 3007 3006

3002 3003 3004 3005

8.0

TRAMWAY AVENUE (20.6m WIDE)

SPUR STREET (18.5m WIDE)

1 DP 740520

ROAD

RANCE

1 DP 132721

1 DP 527752

4000 (RESIDUE)

LOT 2 (CONT.)

1213 (RESIDUE) 1229 1214 1228 1215 1227 1216 1225 1217 1224 1218 1223 1222 1221 1220 1219

1230 (RESIDUE) 1245 1231 1244 1232 1243 1233 1242 1234 1241 1235 1240 1239 1238 1237 1236

2000 (RESIDUE) 1246 2001 1247 2002 1248 2003 1249 2004 1250 2005 1251 2006 1252 2009 2008 2007

2010 (RESIDUE) 2027 2011 2026 2012 2025 2013 2024 2014 2023 2015 2022 2016 2021 2020 2019 2018 2017

2200 (RESIDUE) 2028 2201 2029 2202 2030 2203 2031 2204 2032 2205 2033 2206 2207 2034 2035 2036 2209 2208

2210 (RESIDUE) 2229 2211 2228 2212 2227 2213 2226 2214 2225 2215 2224 2216 2223 2217 2222 2221 2220 2219 2218

2230 (RESIDUE) 2258 2231 2257 2232 2256 2233 2254 2234 2253 2235 2252 2236 2251 2237 2250 2238 2249 2239 2248 2240 2247 2241 2246 2245 2244 2243 2242

PLUMCOTT STREET (16.6m WIDE)

PALING STREET (16.6m WIDE)

APPLE STREET (16.6m WIDE)

PEARTREE CIRCUIT (16.6m WIDE)

PEARTREE CIRCUIT (16.6m WIDE)

1901 1902 1903 1904 1254 (RESIDUE) 1905 1906 1907 1908

STAGE 1B

1255 1909 (RESIDUE) 2901 2902 2903 2904 2037 (RESIDUE) 2905 2906 2907 2908 2038 2909 (RESIDUE) 3901 3902 3903 3904 2260 (RESIDUE) 3905 3906 3907 3908

STAGE 2B

CORYMBIA ROAD (25m WIDE)

Road 07

East-West Collector Rd

STAGE 4B

STAGE 4A

Road 12

GAUGE STREET (16.6m WIDE)

4017 4016 4015 4014 4013 4012 4011 4010 4009 4008 4007 4006 4005 4004 4003 4002 4001

LOT 2 1.119ha

4 WOLLEMI COLLEGE

1 DP 749982 COBHAM JUVENILE DETENTION CENTRE

1 DP 1176624

GIPPS STREET

WESTERN SYDNEY UNIVERSITY

Rev.	Date	Description	Des.	Verif.	Appd.
12	30/03/2021	ISSUED FOR CLIENT REVIEW	JB	AG	
11	23/12/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
10	4/11/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
9	18/08/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
8	1/07/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
7	21/04/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
6	17/03/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
5	27/02/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
4	6/01/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
3	1/10/2019	FINAL CLIENT REVIEW	AG	AG	

0 25 50 75 100 125m

SCALE 1:1250 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno
Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	MDH	Date 25/09/2019
Checked		Date
Designed		Date
Verified		Date
Approved		

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS

Title: SUBDIVISION PLAN WITH STAGING

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

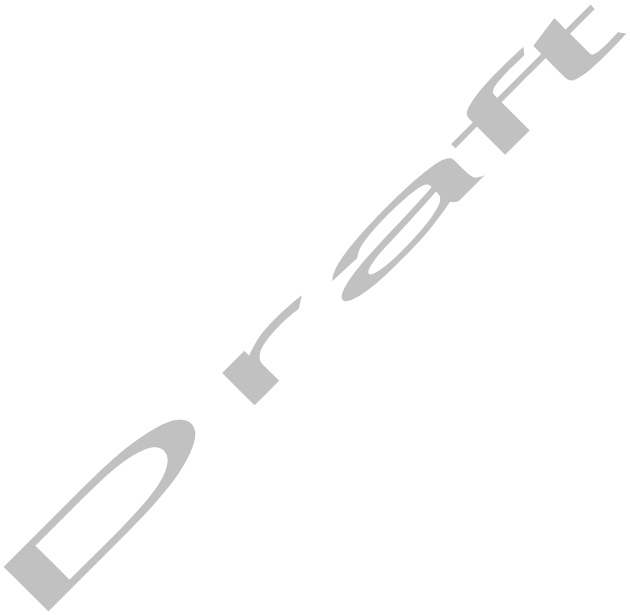
DATUM		Scale	Size
AHD	SEP'19	1:1250	A1

Drawing Number: 80219053-001-SK080

Revision: 12

XREFs: XR-80219053-CI-SURVEY; XR-80219053-CI-APZ; XR-80219053-CI-BOUNDARY; XR-80219053-001-SK080 LOT LAYOUT; XR-80219053-CI-ROAD; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-EASEMENT
CAD File: N:\Urban\Norwest\$$ CARDNO HARD & FORESTER\CURRENT JOBS\80219053 - WERRINGTON\AUTOCAD MGA94\VPA PLANS\80219053-001-SK080 SK082-SK091.dwg

Annexure C Plan showing Public Access Land



DATE PLOTTED: 30-July-2021 12:05 PM BY - GAVIN MURRAY

MAIN WESTERN RAILWAY

E2 Environmental Conservation Land

STAGE 1A

APZ (WIDTH: 7m)

SP 61673

RAILWAY ST

DENOTES LAND FOR PUBLIC ACCESS

NORTH

CHAPMAN STREET (18.1m WIDE)

CHAPMAN STREET

EASEMENT TO DRAIN WATER 20m WIDE

EXISTING TOWN HOUSES

SP 31607

SP 67312

LANDERS ST

WALKER ST

OP 1067

101 DP 1140594

1066 (RESIDUE)

1056 RESIDUE

1057 1058 1059 1060 1061 1062 1063 1064 1065 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212

PEARTREE CIRCUIT (16.6m WIDE)

1027 1028 1029 1030 1055 1031 1054 1032 1053 1033 1052 1034 1051 1035 1050 1036 1049 1037 1048 1038 1047 1039 1046 1040 1045 1044 1043 1042 1041

MEYER STREET (16.6m WIDE)

1001 RESIDUE 1002 1003 1026 1004 1025 1005 1024 1006 1023 1007 1022 1008 1021 1009 1020 1010 1019 1011 1018 1012 1017 1016 1015 1014 1013

CARGO STREET (16.6m WIDE)

Central Park

PARK

1068

1101 1102 1103 1104

1069 (RESIDUE)

2259 (RESIDUE) 2259 (RESIDUE)

Eastern Park

3000

1 DP 740520

SPINIFEX ROAD (17.5m WIDE)

STAGE 2A

SPINIFEX ROAD (17.5m WIDE)

1213 (RESIDUE) 1229 1214 1228 1215 1227 1216 1225 1217 1224 1218 1223 1222 1221 1220 1219

1230 (RESIDUE) 1245 1231 1244 1232 1243 1233 1242 1234 1241 1235 1240 1239 1238 1237 1236

2000 (RESIDUE) 1246 2001 2001 1247 2002 2002 1248 2003 2003 1249 2004 2004 1250 2005 2005 1251 2006 2006 1252 1252 2009 2008 2007

PLUMCOTT STREET (16.6m WIDE)

2010 (RESIDUE) 2027 2011 2026 2012 2025 2013 2024 2014 2023 2015 2022 2016 2021 2020 2019 2018 2017

PALING STREET (16.6m WIDE)

2200 (RESIDUE) 2028 2201 2029 2202 2030 2203 2031 2204 2032 2205 2033 2206 2207 2034 2035 2036 2209 2208

APPLE STREET (16.6m WIDE)

2210 (RESIDUE) 2229 2211 2228 2212 2227 2213 2226 2214 2225 2215 2224 2216 2223 2217 2222 2221 2220 2219 2218

PEARTREE CIRCUIT (16.6m WIDE)

2230 (RESIDUE) 2258 2231 2257 2232 2256 2233 2254 2234 2253 2235 2252 2236 2251 2237 2250 2238 2249 2239 2248 2240 2247 2241 2246 2245 2244 2243 2242

TRAMWAY AVENUE (20.6m WIDE)

STAGE 3

3001 (RESIDUE)

8.0

STEAM LANE

3018 3019 3017 3020 3016 3021 3015 3022 3014 3023 3013 3012 3011 3010 3009 3008 3007 3006

(16.6m WIDE)

3002 3003 3004 3005

SPUR STREET (18.5m WIDE)

1 DP 132721

1 DP 527752

4000 (RESIDUE)

ROAD

RANCE

1901 1902 1903 1904 1284 (RESIDUE) 1905 1906 1907 1908

STAGE 1B

1255 1909 (RESIDUE) 2901 2902 2903 2904 2037 (RESIDUE) 2905 2906 2907 2908 2038 2305 (RESIDUE) 3901 3902 3903 2260 3904 (RESIDUE) 3905 3906 3907 3908

STAGE 2B

PEARTREE CIRCUIT (16.6m WIDE)

CORYMBIA ROAD (25m WIDE)

CORYMBIA ROAD (25m WIDE)

STAGE 4B

4017 4016 4015 4014 4013 4012 4011 4010 4009 4008 4007 4006 4005

STAGE 4A

4004 4003 4002 4001

GAUGE STREET (19.6m WIDE)

LOT 2

1.119ha

LOT 2 (CONT.)

4 WOLLEMI COLLEGE

1 DP 749982

COBHAM JUVENILE DETENTION CENTRE

1 DP 1176624

GIPPS STREET

WESTERN SYDNEY UNIVERSITY

Rev.	Date	Description	Des.	Verif.	Appd.
12	30/03/2021	ISSUED FOR CLIENT REVIEW	JB	AG	
11	23/12/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
10	4/11/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
9	18/08/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
8	1/07/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
7	21/04/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
6	17/03/2020	ISSUED FOR CLIENT REVIEW	HLD	AG	
5	27/02/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
4	6/01/2020	ISSUED FOR CLIENT REVIEW	AG	AG	
3	1/10/2019	FINAL CLIENT REVIEW	AG	AG	

0 25 50 75 100 125m

SCALE 1:1250 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno
Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	MDH	Date 25/09/2019
Checked		Date
Designed		Date
Verified		Date
Approved		

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS

Title: SUBDIVISION PLAN WITH STAGING

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

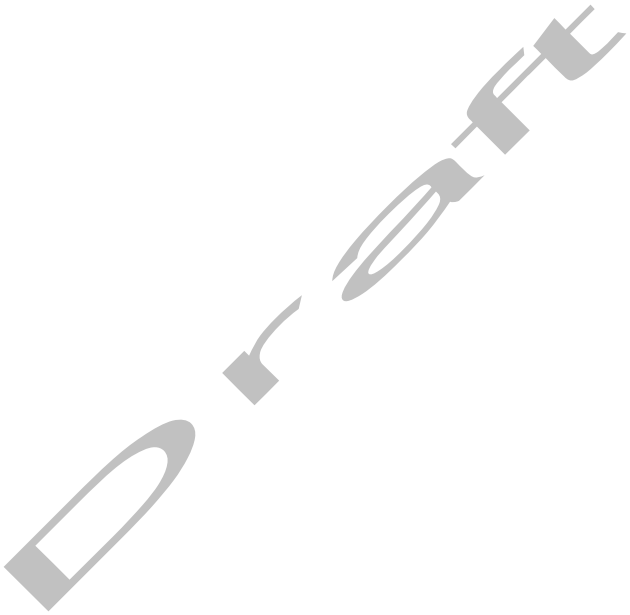
DATUM		Scale	Size
AHD	SEP'19	1:1250	A1

Drawing Number: 80219053-001-SK080

Revision: 12

XREFs: XR-80219053-CI-SURVEY, XR-80219053-CI-APZ, XR-80219053-001-SK080 LOT LAYOUT, XR-80219053-CI-ROAD, XR-80219053-CI-LOT LAYOUT, XR-80219053-CI-EASEMENT
CAD File: N:\Urban\Norwest\$$ CARDNO HARD & FORESTER\CURRENT JOBS\80219053 - WERRINGTON\AUTOCAD MGA94\VPA PLANS\80219053-001-PUBLIC ACCESS.dwg

Annexure D Plans showing Works



place
design
group.

16 CHAPMAN STREET, WERRINGTON NSW

Open Spaces DA Package

Prepared for

lendlease

Project Reference: 2519036

April 2021

place
design
group.

Australia
China
South East Asia

Follow us on

placedesigngroup.com

place design group.

Australia
China
South East Asia

Follow us on

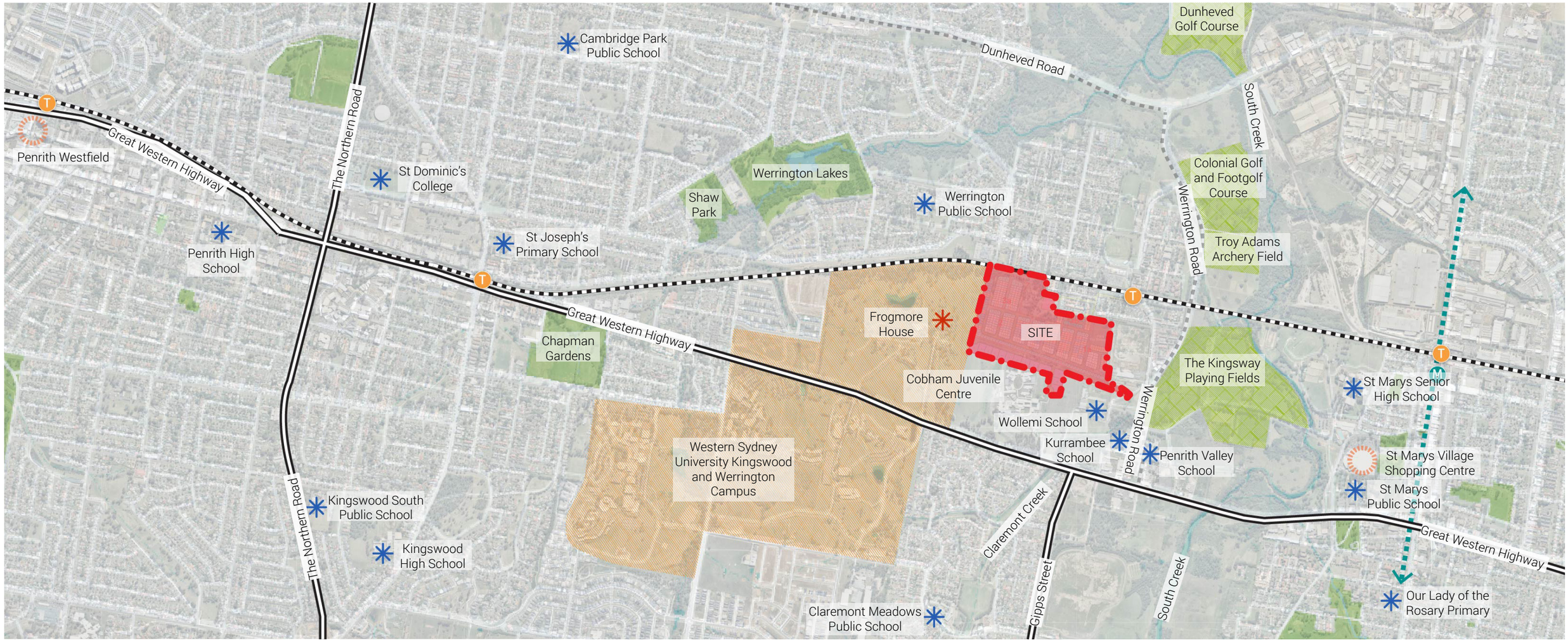
placedesigngroup.com

Report title	Open Spaces DA Package
Document number	2519036
Prepared for	Lendlease
Authors	Georgia McDonald
Revision number	07
Revision issue date	09th April 2021
Approved	Nick Ison
Reason for revision	N/A

Disclaimer: This report has been prepared in accordance with the scope of services described in the contract or agreement between Place Design Group Pty Ltd ACN 082 370063 and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Place Design Group accepts no responsibility for its use by other parties.

CONTENTS

SITE CONTEXT PLAN	3
DESIGN STATEMENT	4
SITE CONCEPT PLAN	5
CENTRAL RESERVE - OPEN SPACE CONCEPT PLAN	6
CENTRAL RESERVE - SECTIONS	7-10
CENTRAL RESERVE - PRECEDENT IMAGES	11
CENTRAL RESERVE - PLAYGROUND CONCEPT PLAN	12
CENTRAL RESERVE - PLAYGROUND - PLAY ELEMENTS	13
CENTRAL RESERVE - PLAY EQUIPMENT SCHEDULE	14
CENTRAL RESERVE - CHILDREN'S BIKE TRACK CONCEPT PLAN	15
CENTRAL RESERVE - ACTIVE SPACE CONCEPT PLAN	16
ACTIVE SPACE & BIKE TRACK - PRECEDENT IMAGES	17
EASTERN BASIN - OPEN SPACE CONCEPT PLAN	18
EASTERN BASIN - OPEN SPACE SECTIONS	19-21
WALKER STREET FEATURE WALL PERSPECTIVES	22
EASTERN BASIN - PRECEDENT IMAGES	23
OPEN SPACE - MATERIALS SCHEDULE	24
CENTRAL RESERVE - TREE PLANTING PLAN	25
EASTERN BASIN - TREE PLANTING PLAN	26
OPEN SPACE TREE SPECIES PALETTE	27
CENTRAL RESERVE - OPEN SPACE PLANTING PLAN	28
CENTRAL RESERVE PLANTING SCHEDULE	29
CENTRAL RESERVE PLANTING IMAGES	30
EASTERN BASIN PLANTING PLAN	31
EASTERN BASIN PLANTING SCHEDULE	32
EASTERN BASIN PLANTING IMAGES	33
OPEN SPACE TYPICAL DETAILS	34-41
OPEN SPACE TYPICAL MAINTENANCE SCHEDULES	42
MAINTENANCE SCHEDULE AND LIFE CYCLE COSTS	43-45



LEGEND

- Train line
- Train Station
- Major Roads
- UWS Werrington Campus
- Schools
- Major Shopping Centre/Villages
- Approximate location of Future Metro Line North-South to Airport
- Approximate location of future Metro Stations
- Significant sites
- Surrounding public open space
- Surrounding active recreational facilities

place design group.

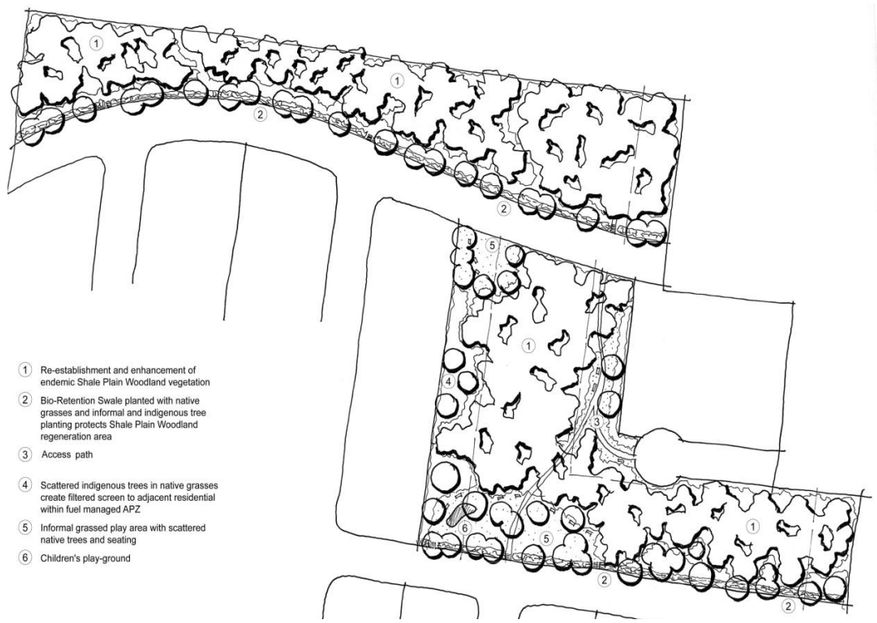
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

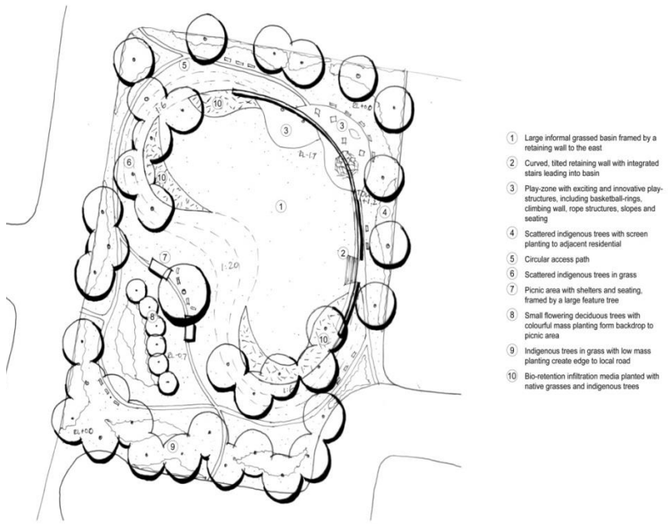
Site Context Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 3**

N NTS



1. Western Local Park Concept Plan (Figure E 12.18a, Penrith DCP 2014)



2. Eastern Local Park Concept Plan (Figure E 12.18b, Penrith DCP 2014)

The proposed development site is known as 16 Chapman Street Werrington and is located within the suburb of Werrington approximately 5km east of the Penrith Town Centre. The suburbs surrounding Werrington are; Caddens to the south, St Marys to the east, Cambridge Park to the north and Kingswood to the West. Major rail and road infrastructure service the site, with the Sydney Rail Werrington Station located approximately 200m to the north west and the Great Western Highway located approximately 500m to the south of the site. Bordering the site are the Western Sydney University Werrington Campus to the west and Cobham Juvenile Justice Centre to the south with Werrington Rd located to the east. Existing residential lots and environmentally sensitive Cumberland Plain Woodlands form the northern boundary of the site.

The Lendlease site covers an area of approximately 28ha and slopes predominantly towards the north east corner. It is mainly characterised by disturbed, remnant groups of Cumberland Shale Plains Woodland and disused agricultural land. The shale plains woodland is currently identified in the Vegetation Management Plan as a rare and significant ecological community and habitat for native species of fauna. Access to the site is from Chapman and Walker Streets with evidence of informal walking/ vehicular tracks.

Place Design Group were commissioned by Lendlease to undertake a landscape site appraisal and development of a landscape master plan for DA purposes of the site. The proposed development will contain a mix of 1 – 2 storey residential dwellings and a small portion of apartments adjacent to the eastern open space and in closer proximity to the railway station. In accordance with the Penrith City Council DCP two environmental reserves and a drainage reserve were proposed as part of the WELL Precinct's South Werrington Urban Village site wide masterplan. These reserves will provide opportunities for the rehabilitation of the Cumberland Shale Plains Woodland flora, provide habitat sanctuaries for native fauna and public/ recreational facilities for the wider community.

The E2 listed reserve to the north west of the site will be an area predominantly aimed at rehabilitating the Cumberland Shale Plains Woodland. No formal pedestrian access into the reserve is proposed.

The Central Reserve will be the main community open space facility will be nestled in and around the conservation zone proposed within the VMP. Either side of the designated conservation lands will sit an open lawn/ BBQ area, fitness station and half basketball court for active recreational uses. To the south west of the site a multi-age children's playground is proposed, nestled in amongst existing trees. To the north of the playground and separated by the conservation zone is a children's learn to ride track and small open space area. All facilities are linked via an accessible network of shared paths providing excellent circulation through the park and towards the train station, whilst also limiting the impact on existing trees and vegetation. The central reserve also requires the provision of a detention basin and bio-filtration zone to mitigate the impact of stormwater runoff through the site. The basin has been sensitively integrated within the parklands to reduce both its visual impact and disturbance of the surrounding native vegetation. The large open space of the basin doubles as passive open space amenity for use by residents and visitors.

The Eastern Reserve's primary function that of a detention basin to assist with the mitigation of stormwater runoff through the site. Proposed along the perimeter of the basin are a series of small shelters with picnic tables and small open space areas located along a loop path. Structured plantings around the top of the basins provide users with plantings that create visual interest and soften the overall expanse of the basin. Both able and disabled access is proposed to the base of the basin to access the large open space which can be utilised for either passive or unstructured active recreation.

Trees proposed for the open spaces will be predominately native and endemic species with a combination of ornamental and deciduous species. Deciduous species will be selected for colour change and visual interest at different times throughout the year. Evergreen species will be placed throughout the parks and basins providing a green tree canopy.

Place Design Group has worked with the client and all consultants to date to implement a detailed landscape open space concept plans that respond to the needs of future residents and visitors while adhering to Council's open space recommendations for the site and where permissible.

1. Eastern Basin

- Large informal, grassed basin framed by planted embankments to the north-west and south.
- Continuous retaining wall to top of the west, north and east embankments with planted beds to soften internal and external embankments.
- Scattered indigenous trees as screen planting to adjacent future residential development.*
- Continuous access path around basin.* (2.5m and 1.5m verge footpath)
- Small gathering area along the western boundary with shelter, picnic table and seating.
- Bio-retention area planted with sedges and rushes.
- Entry statement to Walker St frontage utilising the blade walls including low feature planting.
- Accessible 1:20 ramp down to basin to turfed passive zone.
- Gross Pollutant Trap with vehicular access from road.
- Native trees within basin including water tolerant species - Eucalyptus Tereticornis, Eucalyptus Moluccana and melaleuca styphelioides.
- Maintenance Access to basin.
- Apartment residents access path .

2. Central Reserve

- Additional/supplement plantings for the re-establishment and enhancement of endemic Shale Plain Woodland vegetation.*
- Stormwater detention and bio-retention basins.
- Access path through site.* (2.5m)
- Scattered indigenous trees in native grasses create filtered screen to adjacent residential with fuel managed APZ.*
- Informal grassed play area with scattered local trees.*
- Children's playground* including climbing structures, swings, slides and sensory play elements.
- Large sheltered picnic area.
- Multi-play area including half basketball court, table tennis and fitness station.
- Raised platforms and turfed mounds for social gathering.
- 'Brooklands Speedway' - Children's learn to ride bicycle circuit
- Picnic areas.
- Residents access path.
- Maintenance acccess to basin.
- Rural Fire Service vehicle access path outside the conservation area.
- Low grass planting to RFS maintain access path, within fuel managed 16m APZ zone.

3. VMP Area for Protection and Rehabilitation

4. E2 Zone for Protection and Rehabilitation

*Listed items within Penrith DCP 2014, pg. 67



Note:
For final layout of subdivision plan refer to DA19/0704

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Site Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 5**

N

Scale 1:1000 @ A3



Scale 1:750 @ A3

LEGEND

01 Main shared access path through site (2.5m)

02 Open space entry points with feature paving

03 Children's learn to ride bicycle loop 'Brooklands Speedway' interpretation, mounding & open space

04 Fenced children's play-space (1-10 years)

05 Central open lawn for informal active play or passive use

06 Active multi-sports zone with fitness station and parkour modules for older children/ youth

07 Sandstone log turf terraces/seating walls

08 Key path junction point with feature paving and basin maintenance access track

09 Large park shelter with 2 x picnic tables

9a Small park shelter with 1 x picnic tables

10 Concrete seating with mounding to active zone

11 Native grass mass planting buffer zone to perimeter of the conservation lands

12 Detention basin open lawn area

13 Bio filtration zone

14 4m wide Reinforced turf maintenance access track into basin. 1:10 slope

15 4m wide Concrete maintenance access track into bio-filtration basin.

16 Vegetated 1:3 embankments to reduce impact of basin walling and to sympathetically connect to conservation zone

17 CPW Conservation zone

18 CPW Conservation zone post & wire fence (1m high)

19 1.5m permeable decomposed granite access path

20 Future RFS staging area for access to APZ areas and conservation zones

21 Weir between bio-filtration basin and lower detention basin

22 Retaining wall approved under DA 19/0704

23 Access Ramp to future lots fronting parkland (1:20 gradient)

24 Accessible Parking

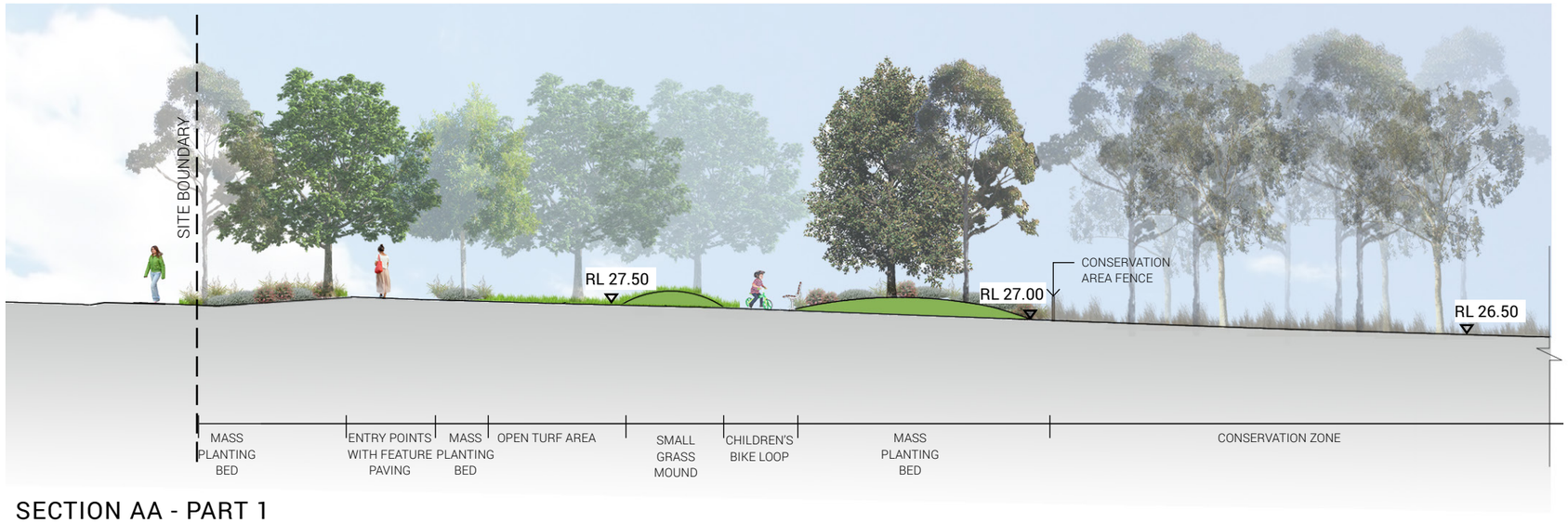
place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

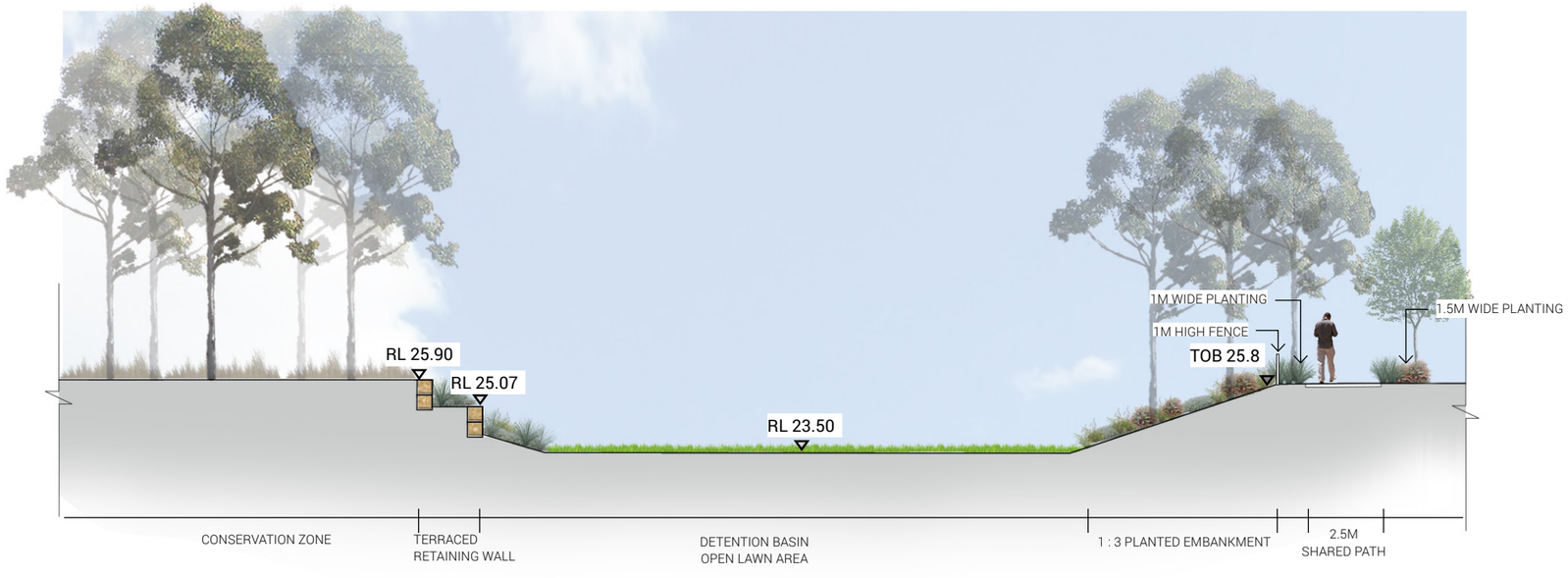
Central Reserve Open Space Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 6**

N



SECTION AA - PART 1



SECTION AA - PART 2



Key plan NTS

place design group.

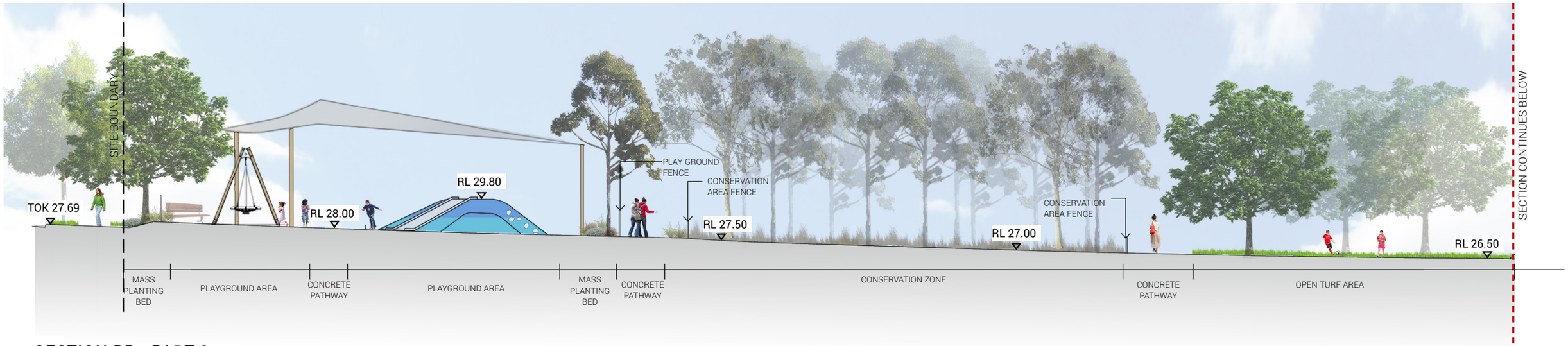
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

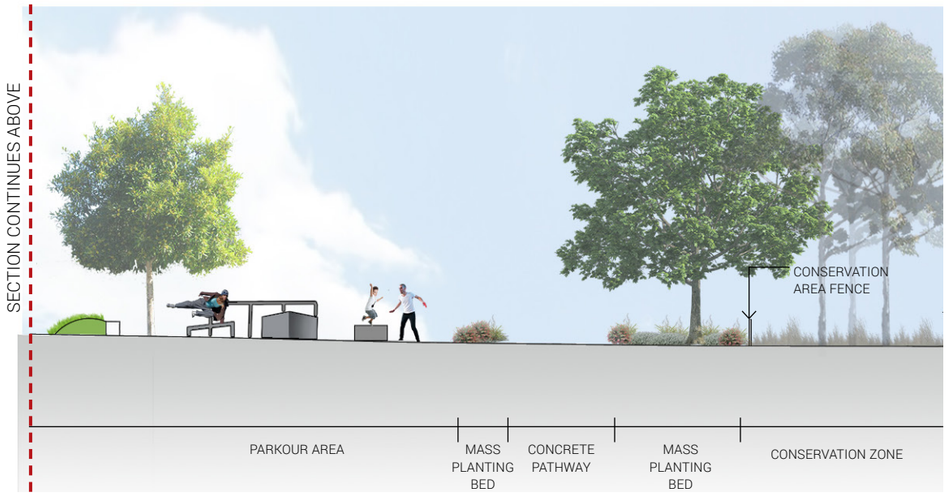
Central Reserve - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 7**

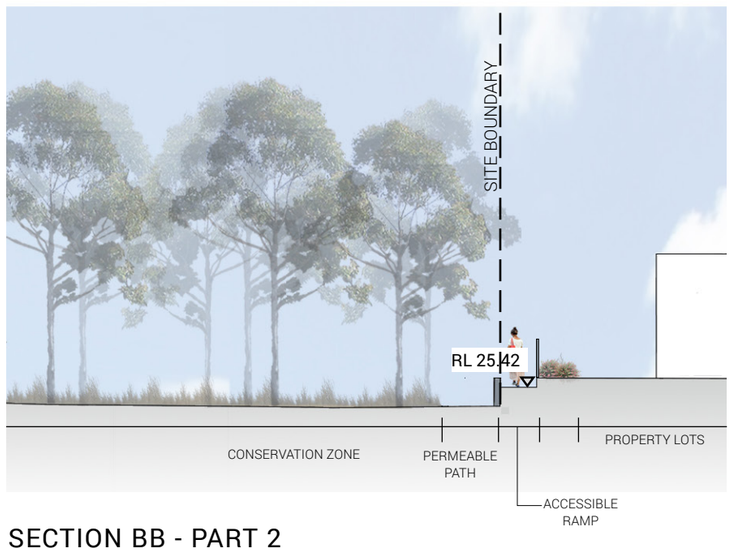
Scale 1:200 @ A3



SECTION BB - PART 1



SECTION BB - PART 1 CONTINUED



SECTION BB - PART 2



Key plan NTS

place design group.

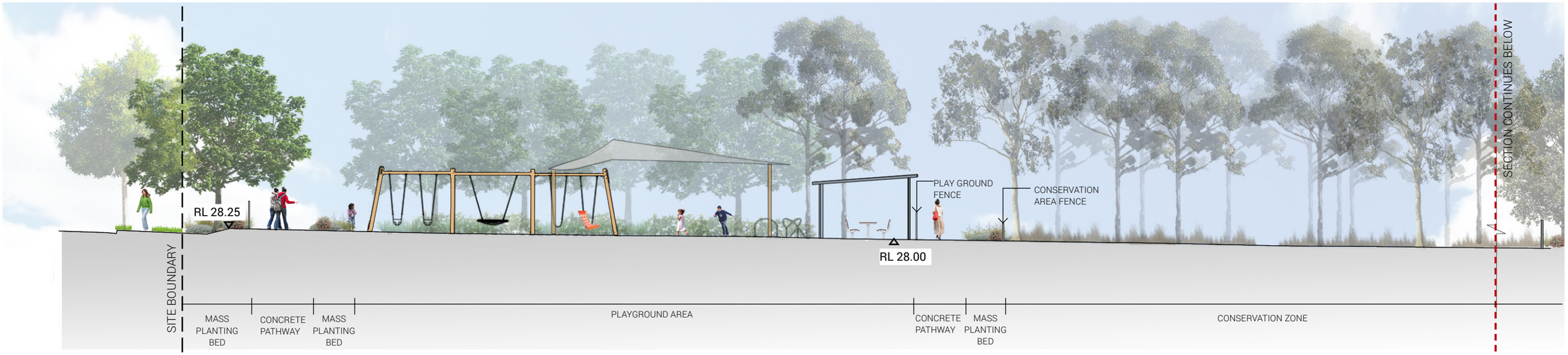
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

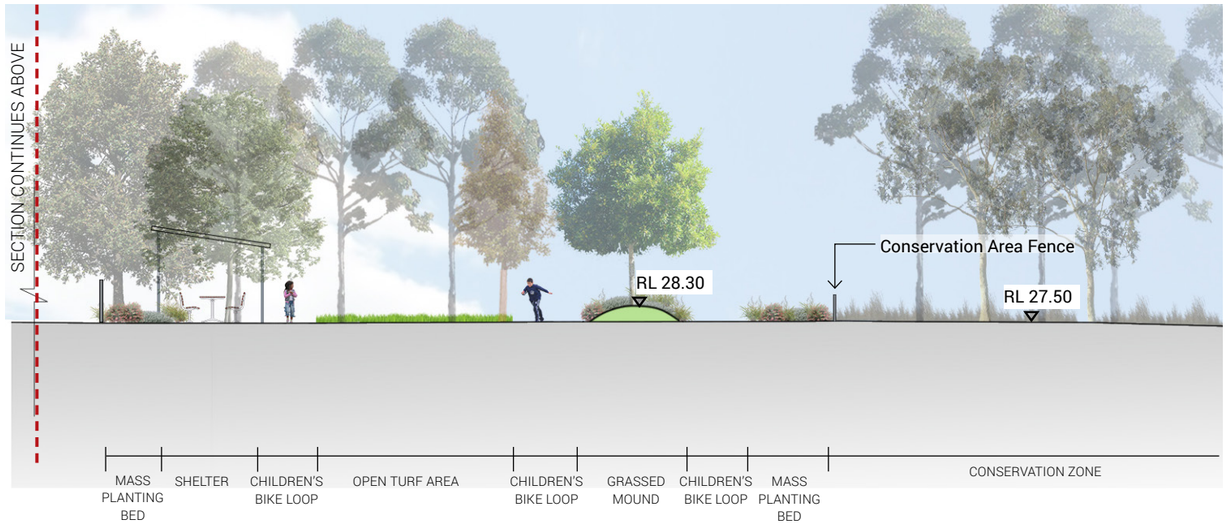
Central Reserve - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 8**

Scale 1:200 @ A3



SECTION CC - PART 1



SECTION CC - PART 1 CONTINUED



SECTION CC - PART 2



Key plan NTS

place design group.

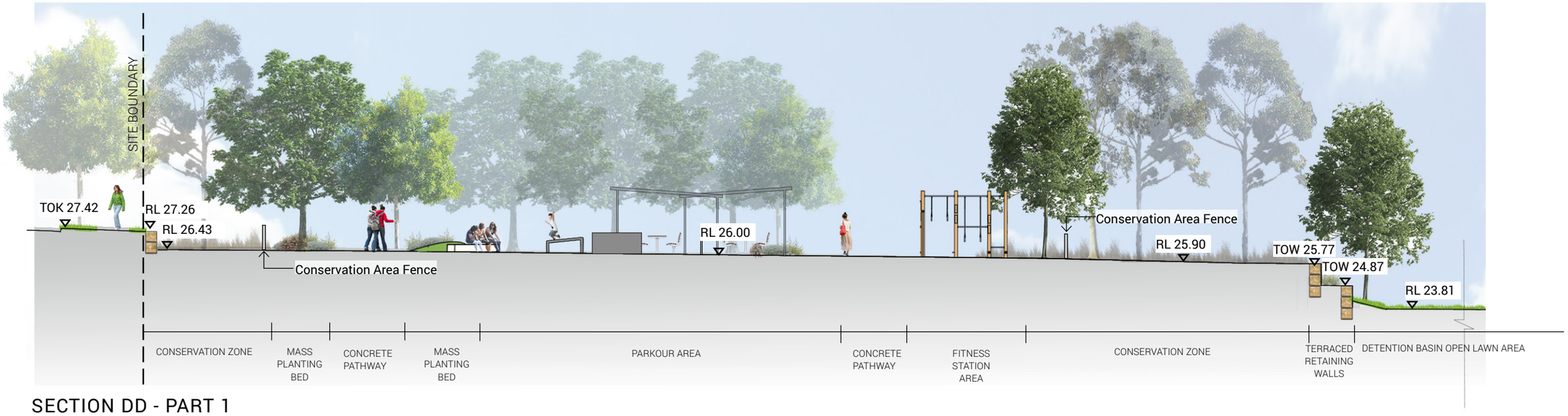
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 9**

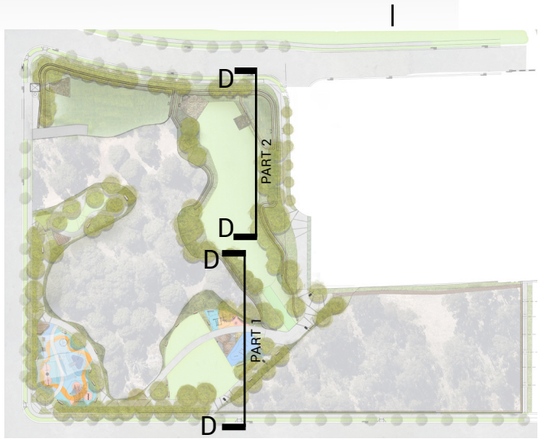
Scale 1:200 @ A3



SECTION DD - PART 1



SECTION DD - PART 2



Key plan NTS

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 10**

Scale 1:200 @ A3

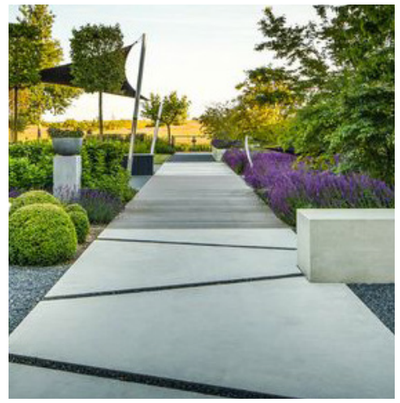
ACTIVE ZONES

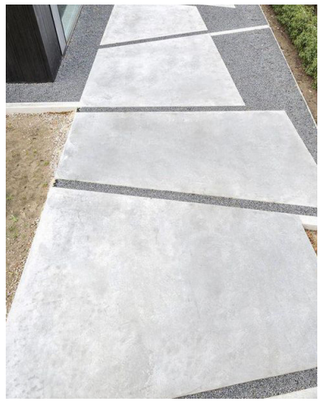






FEATURE PAVING





PICNICKING





INTERPRETATION -'BROOKLANDS SPEEDWAY' CHILDREN'S LEARN TO RIDE BICYCLE CIRCUIT







INTERPRETATION - GROVES/GRIDS





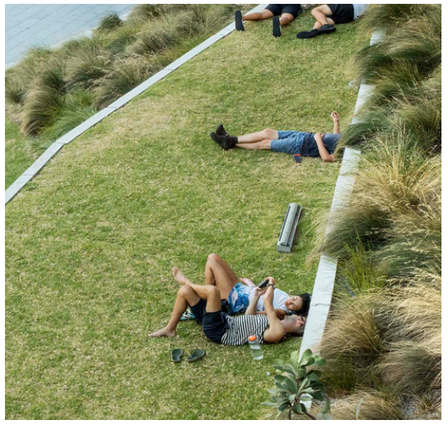
OPEN TURF AREA



SHELTERED PICNIC AREAS



TERRACING



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Precedent Images

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 11**



LEGEND

01 Playground entry gates

02 Small Shelter with picnic setting

03 'Explorer Dome' - Multi-play equipment (Corocord)

04 Central directional path

05 Bench seating to perimeter garden beds

06 Triple bay swing set with birds nest, normal, boat seat and toddlers swing (Accessible)

07 In-ground Trampoline area (Accessible)

08 1.8m high Rubber soft fall mound with climbing ropes, rock mounds and concrete double slide (Lypa)

09 Accessible carousel

10 Granulated rubber soft-fall with interpretive propeller pattern reflecting the sites previous use for joy flights

11 External 2.5m shared path

12 Street verge and footpath

13 Playground screen planting to street

14 Conservation area

15 Native grasses planting to buffer the conservation area with steel post & wire protection fence

16 Shade sails over playground in line with Councils shade smart policy

17 Accessible Parking and entrance

18 Potential feature wall location with interpretive sandblasted propeller pattern reflecting the sites previous use for joy flights

Conservation area fence

Playground fence

* Refer to drawing SK - 40 for detail

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

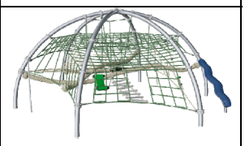
16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Playground Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 12**

N

Scale 1:750 @ A3

Play Equipment Schedule			
DESCRIPTION	**DIMENSIONS**	**SPECIFICATION**	**IMAGE**
Carousel	**Dia:**3150mm **H:** 870mm	**Description:** All Accessible Carousel **Product Code**: N-9070 **Fall Height:** 1500mm **Supplier:** Moduplay	
Swings	**L:** 9860mm **W:** 2800mm **H:** 2600	**Description**:3 bay portal swing with Birds nest rope swing, boat seat, toddler seat and normal seat **Finish:** Powdercoated galvanised steel pipe **Fixing**: Sub-surface fixed **Supplier:** Moduplay	
Explorer Dome	**L:** Varies **W:** 500mm **H:** Av 0.5m high	**Description**: Multiplay piece **Product Number:** COR86300 **Supplier:** Kompan	
Embankment Slide	**W:** 1200mm **H:** 1800mm	**Description**: Concrete embankment slide **Product Number:** L000202 **Supplier:** Lypa	
Custom Mountaineers Rope	**H:** 1800mm	**Description:** Mountaineers Climbing Rope **Product Number:** COROCORD16-2050-2C1 **Supplier:** Kompan	
Softfall climbing aids	**W:** 400mm **H:** 400mm	**Description:** Softfall lumps on mound	
In-ground Trampoline	Edge of frame 1950 x 1500mm (Mat 1500 x 1050mm)	**Description:** Wheelchair accessible trampoline 'Wheely' model in ground trampoline **Colour:** TBC **Fall Height:** 1500mm **Installation:** To manufacturer's details Supplier: All-in-Play	
Timber balancing beams and steppers	Dimensions vary	**Description:** Nature play hardwood timber balancing beams and steppers **Supplier:** Timber Creations	

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

PLAY ELEMENTS

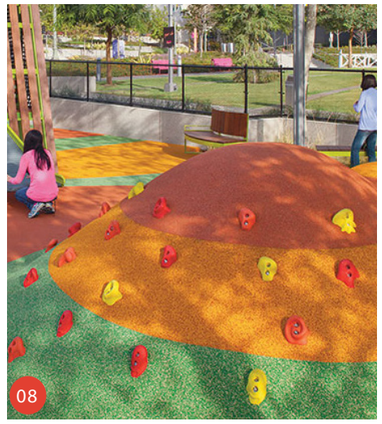

01


02

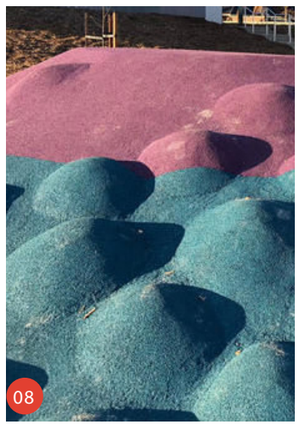

03

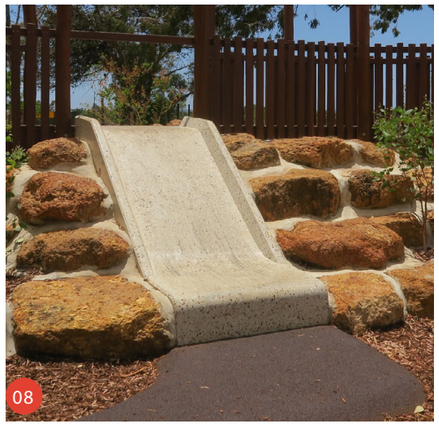

06


07


08


08


08


08


09

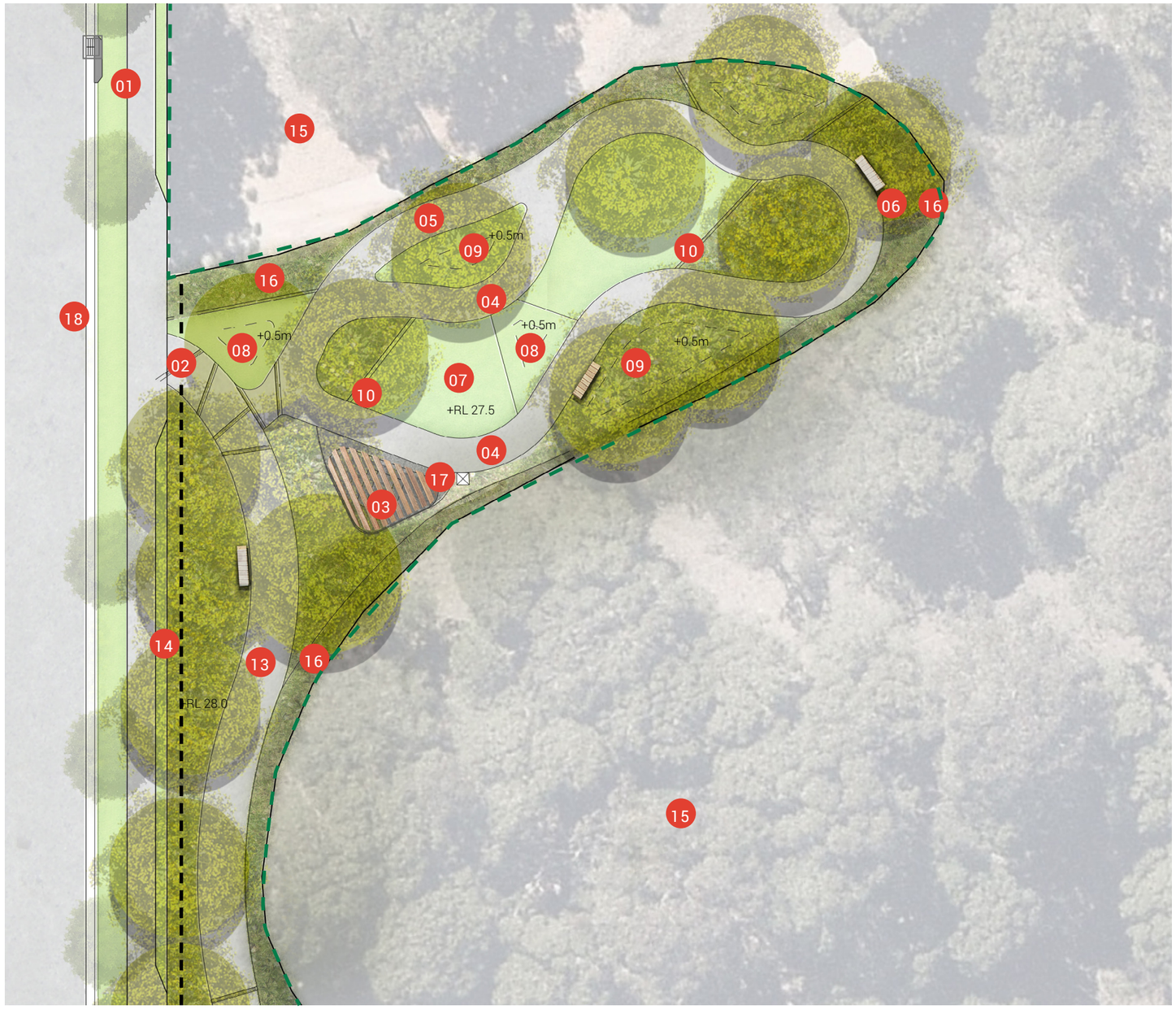
place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve Playground - Play Elements

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 14**



LEGEND

01 Street verge and footpath

02 Park entry with feature paving bands

03 Small Shelter with picnic setting

04 Children's Learn to ride track (flat)

05 Children's Learn to ride track (pump detour)

06 Bench seating to perimeter garden beds

07 Internal turf open space

08 Small turf mounds

09 Garden bed mounds

10 Concrete edge between turf and gardens

13 External 2.5m shared path

14 Screen planting to street

15 Conservation area

16 Native grasses planting to buffer the conservation area with steel post & wire protection fence

17 Bin

18 Accessible Parking

Conservation area fence

Playground fence

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Children's Bike Track Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 15**

N

Scale 1:750 @ A3



LEGEND

01 2.5m share way path through park

02 Park main entry points

03 Large shelter with two picnic settings

04 Main diagonal access path to and from Werrington Station . Path to be lit with 4m post top lights at 20m spacings

05 Feature 4m wide paving area to park entry to allow for RFS truck and council maintenance vehicles. Path to be lit with 4m post top lights at 20m spacings

06 Bench seating to perimeter garden beds

07 Active parkour area on granulated rubber surfacing

08 Fitness station on granulated rubber surfacing

09 Turf slope to back of 450mm high concrete seating walls

10 Concrete edging between garden beds and turf

11 Turf open space area for active and passive use

12 Street verge and footpath

13 Retaining wall with screen planting to street

14 Conservation area

15 Native grasses planting to buffer the conservation area with steel post & wire protection fence

16 Sandstone log turf terraces/seating walls

17 4m wide Reinforced turf maintenance access track into basin. 1:10 slope

18 5m high post top LED lights along main connection path to station.

19 Bin (Refer to Schedule pg.24)

20 Water Bubblers

Conservation area fence

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve - Active Space Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 16**

N

Scale 1:750 @ A3

ACTIVE ZONES






INTERPRETATION - 'BROOKLANDS SPEEDWAY' CHILDREN'S LEARN TO RIDE BICYCLE CIRCUIT






place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Active Space & Bike Track - Precedent Images

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 17**



Residual Lot

LEGEND

01 2.5m share way path through park

02 Park main entry points

03 Small shelter with picnic setting

04 1:20 equitable access path to basin turf open space

05 4m wide Concrete maintenance access track into basin. 1:6 slope

06 Concrete bench seating to perimeter garden beds or turf nodes

07 Concrete blade walls with interpretive sandblasted propeller pattern and hedge planting behind to 1:4 embankment

08 Formal structured planting beds to basin perimeter

09 Concrete edging between garden beds and turf

10 Turf open space area for active and passive use

11 Formal under-story planting, screening hedge and tree screen to residual lot

12 Sandstone walls to basin

13 Turf maintenance path with access ramp

14 Sandstone bund wall to bio-filtration area

15 Bio-filtration area

16 Basin lower embankment planting to reduce height of basin walls

17 Melaleuca trees species to base of basin

18 Storm water outlets and scour protection to basin

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Open Space Concept Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 18**

N

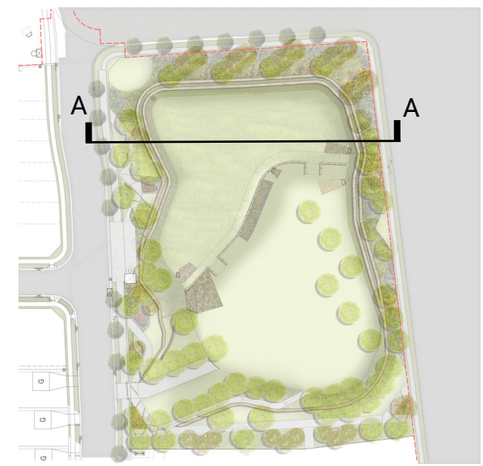
Scale 1:750 @ A3



EASTERN BASIN SECTION AA - PART 1



EASTERN BASIN SECTION AA - PART 2



Key plan NTS

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Open Space - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 19**

Scale 1:200 @ A3



EASTERN BASIN SECTION BB - PART 1



EASTERN BASIN SECTION BB - PART 2



Key plan NTS

place design group.

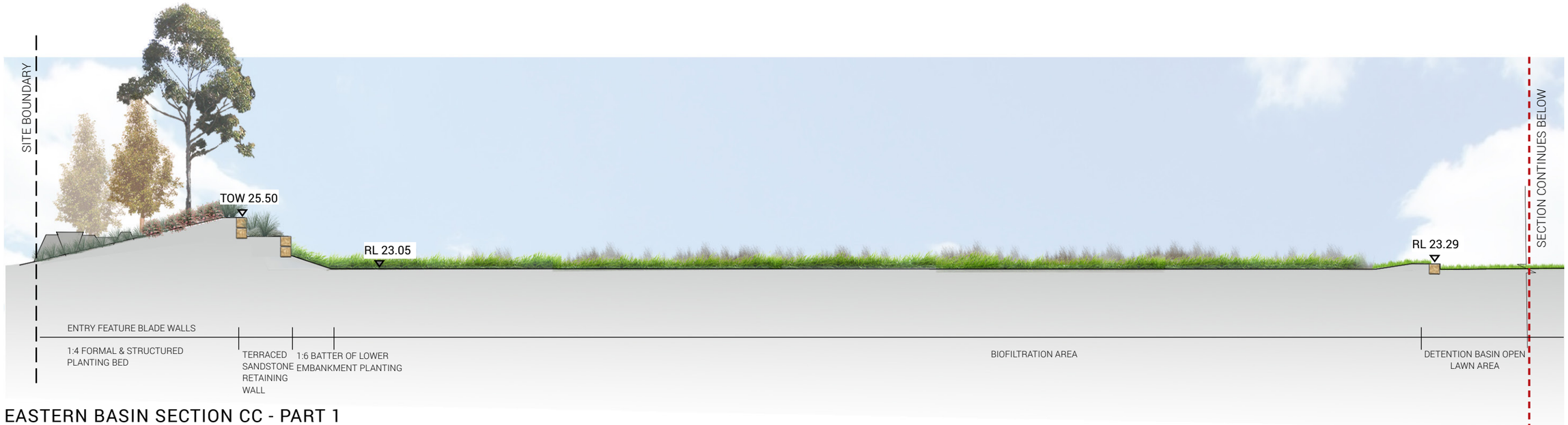
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Open Space - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 20**

Scale 1:200 @ A3



EASTERN BASIN SECTION CC - PART 1





Key plan NTS

EASTERN BASIN SECTION CC - PART 2

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Open Space - Sections

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 21**

Scale 1:200 @ A3



* Refer to drawing SK- 39 for detail

place design group.

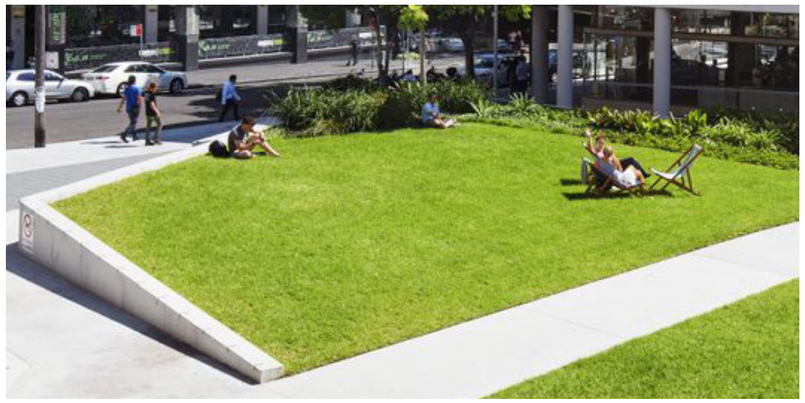
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

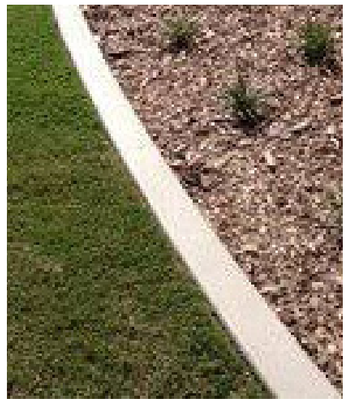
Walker Street Feature Wall Perspectives

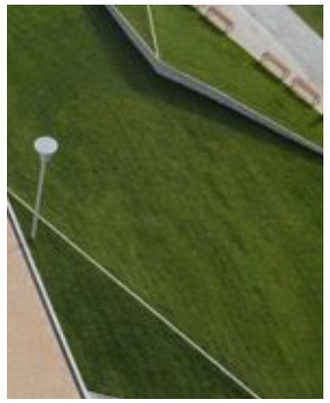
DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 22**

TURF MOUNDS WITH SEATING EDGE

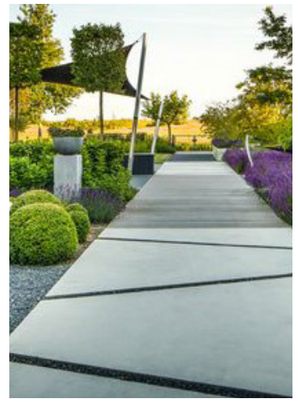


CONCRETE EDGE TO PLANTER





PAVING

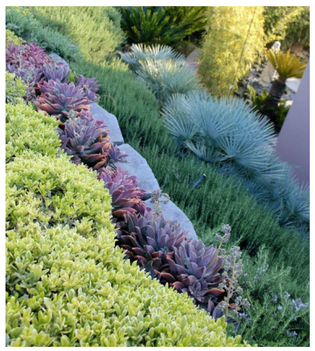




SHELTERED PICNIC AREAS

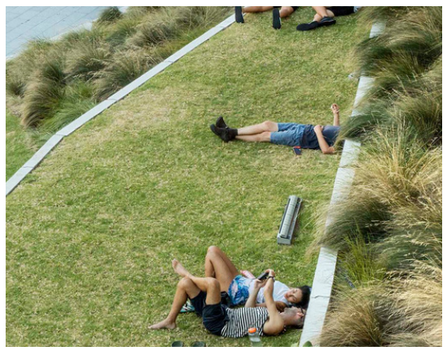


FEATURE PLANTING





TERRACING





INTERPRETATION - GROVES/GRIDS



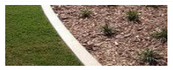
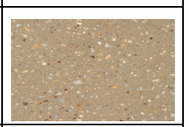


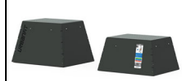
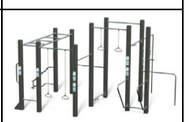
OPEN TURF AREA



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

DESCRIPTION	DIMENSIONS	SPECIFICATION	IMAGE
FIXTURES AND BOLLARDS			
Star Picket Fence to Conservation Area	**H:** 900mm	**Description**: Star picket galvanised steel and wire fence **Finish:** Galvanised steel and wire **Fixing**: As per manufacturers/suppliers recommendations	
Bollard Fencing	**H:** 700mm	**Description**: Brolga Bollard Fence **Finish:** Recycled plastic bollards and wire **Fixing**: As per manufacturers/suppliers recommendations	
Playground Fence	**H:** 1200mm **L:** 1500mm	**Description**: 1200mm high flat top playground fence **Panel length**: 2400mm **Finish**: Polyester powder coat (black) to AS4605 **Rail size:** 40 x 40 x 1.6mm **Post size**: 65 x 65 1800mm long (min) SHS **Picket spacing**: 87mm (19mm dia) **Material**: Pre galvanised steel to AS1450 **Fixing:** Concrete footing to engineer's detail	
Steel Removable Bollard	**H:** 900mm	**Description**: Removable Bollard **Finish:** Powdercoated galvanised steel pipe **Colour:** Black **Fixing**: Sub-surface fixed as per manufacturers recommendations	
WALLS AND EDGES			
Sandstone Log Retaining Wall	**L:** 200/1000mm **W:** 500mm **H:** 500mm	**Description**: Sandstone log retaining wall. **Finish:** Class A sandstone logs with split face and sawn tops and bottoms (Av 0.5m high)	
Concrete Block Wall	**L:** 400mm **W:** 200mm **H:** 200mm	**Description: R**einforced concrete block retaining wall to support residents concrete access path - Reinforced concrete footing; formwork; 1 layer of mesh reinforcement and concrete capping **Colour:** Sandstone **Finish:** Splitface	
Concrete Edge	**L:** Varies **W:** 150mm **H:** 200mm	**Description**: Concrete garden edge **Details:** Refer to drawings **Colour:** Standard Grey **Finish:** Steel trowel	
PAVEMENTS AND SURFACES			
Concrete Pavement	**W**: 1500, 1800, 2500mm **T:** Min 125mm	**Description**: Standard Concrete Pavement. 2.5m wide shared path - 25MPa reinforced concrete; formwork; 1 layer of mesh reinforcement. Expansion joints @ 6m centres - Connolly joints to be used. **Finish:** Sandblasted; expansion joints @ 6m centres - Connolly joints to be used. 125mm thick with SL82 mesh	
Concrete Pavement	**W**: 3500 - 4500mm **T:** Min 150mm	**Description**: Standard Concrete Pavement. 3.5-4.5m vehicular path - 30MPa reinforced concrete; formwork; 1 layer of mesh reinforcement. Expansion joints @ 6m centres - Connolly joints to be used. **Finish:** Sandblasted; expansion joints @ 6m centres - Connolly joints to be used. 150mm thick with SL82 mesh	
Granite Cobblestone Paving Bands	**L:** 90mm **W:** 90mm **H:** 50mm	**Description**: Granite Cobblestone bands **Finish:** Split Face **Colour**: Raven **Joint:** 10mm grout joint **Slip rating**: P5	
Coloured Concrete Pavement	**W**: 1500mm **T:** Min 125mm	**Description**: Coloured concrete path **Finish:** Sand blasted to expose aggregates **Colour**: CCS 'Biscuit' **Joint:** Expansion Joints every 6m, control joints every 1.5m **Slip rating**: P5	

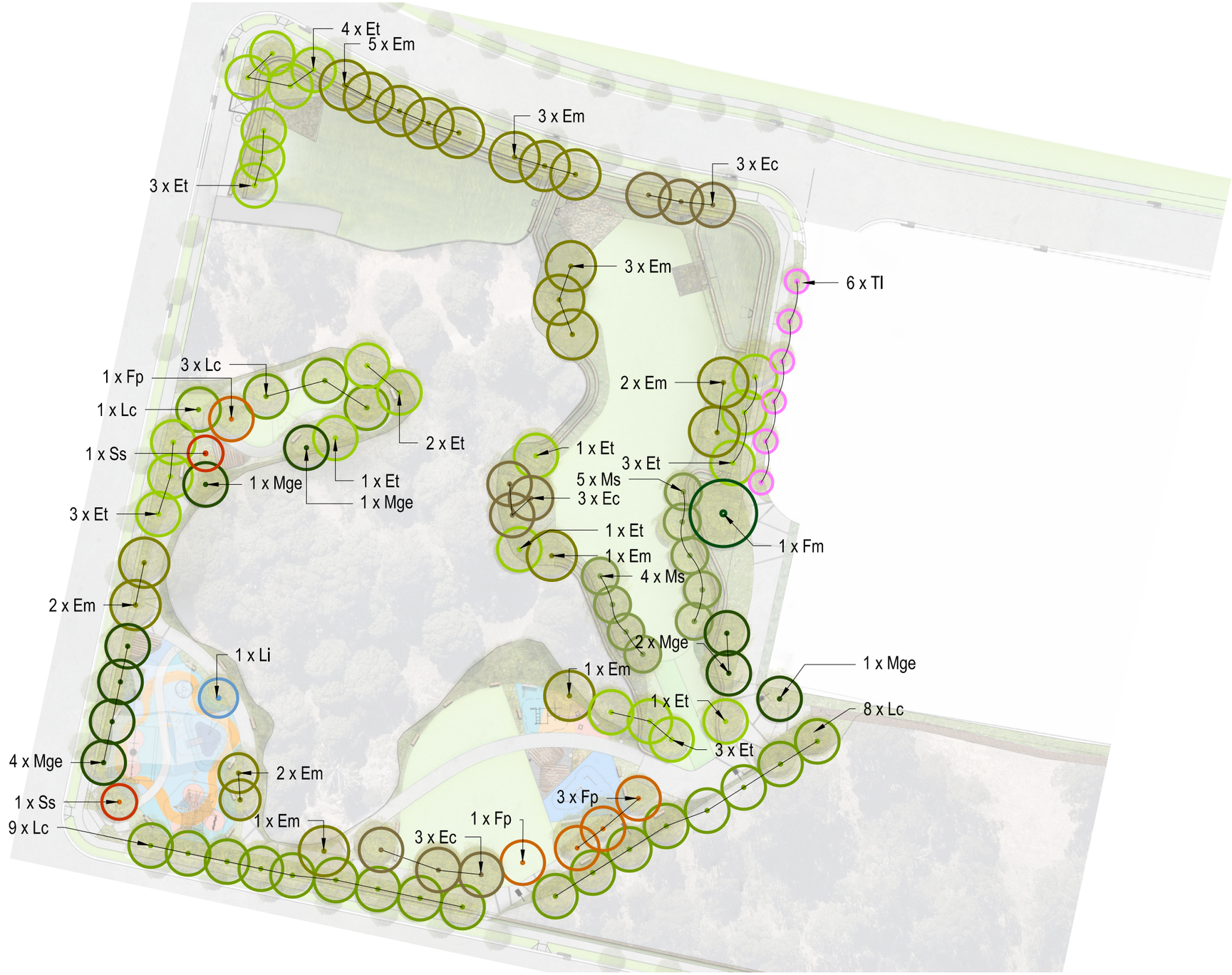
Softfall Rubber		**Description:** Ethylene Propylene Diene Monomer (EPDM) granule rubber softfall **Thickness**: to Critical Fall Height requirements **Colour:** TBC Rubber softfall is to be certified to AS 4422 -2016.	
Stairs	**Varies**	**Description**: In situ reinforced concrete stairs with 20mm recess on face of stair. Class 2 finish **Colour**: Natural Portland Grey Constrast & nosing strip to AS 1428.4 - Black Handrail: Stainless Steel . 50mm OD.	
FURNITURE AND FIXTURES			
Bins	**H:** 1340mm **W:** 770mm **D:** 860mm	**Description:** Citisytle Enclosure Bine 240L **Supplier:** Grillex / Unisite **Finish:** Anodised aluminium extrusion with red hood **Fixing:** Surface mounted	
Timber Bench	**W:** 2000mm **D:** 570mm **H**: 845mm	**Description:** Citistyle seat **Supplier:** Grillex / Unisite **Finish:** Timberimage aluminum **Mounting:** Surface Mounded **Frame and footing finish:** Frame poeder coated (colour ' Silver Pearl Kinetic')	
Timber Picnic Setting	**W:** 2000mm **D:** 1535mm **H**: 775mm	**Description:** Citistyle Table setting **Supplier:** Grillex / Unisite **Finish:** Timberimage aluminum **Mounting:** Surface Mounded **Frame and footing finish:** Frame poeder coated (colour ' Silver Pearl Kinetic')	
Timber Shelter	**L:** 4000mm **W:** 4000mm **H:** 2300mm	**Description:** Custom shelter **Materials:** Hardwood timberposts - dark stain. Colourband roofing **Fixings:** Hot-dipped galvanised brackets and fixings Installation: Bolt down post fixing to manufacturer's specification	
Playground Shade Sails	Varies	**Structure:** Hypar Shade Sails **Heights:** Minimum 2.5m above accessible parts of equipment and 1.5m above non-accessible parts **Steelwork:** CHS (round) posts with anti-climbing devices **Surface Coating:** Hot dipped galvanised posts **Footings:** Bored piers to be certified by suitable structural engineer **Cover:** Architec 400 with minimum 15yr warranty against UV degradation. 92% UVR rating. All fittings are rated galvanised chain. No turnbuckles or wire slings. **Colours:** TBC	
Concrete Seating Wall	**L:** Varies **W:** 500mm **H:** 450mm	**Description:** Cast in-situ Concrete seating wall **Finish:** Class 2 finish **Colour:** Natural Portland Grey	
Fitness - Jump Box	**L:** 3460mm (extent of fall zone) **W:** 4900mm (extent of fall zone) **H:** 450mm and 600mm	**Description:** Jump box (UrbanFiT Trekko) **Product code**: UFT -3609 **Supplier**: Moduplay	
Static Bench	**Varies**	**Description:** Urban fit Trekko - Static Bench UFT- 3601 **Materials:** Steel	
Fitness Station	**L:** 5440mm **W:** 3920mm **H:** 3150mm	**Description:** Body "Byron" (UrbanFiT Trekko) **Product code**: UFT -3616 **Supplier**: Moduplay	
Parkour module	**L:** 5440mm **W:** 3920mm **H:** 3150mm	**Description:** Dash Parkour module 1: Vault & jump **Product code**: 081760M **Supplier**: Lappset	

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Open Space - Materials Schedule

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 24**



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

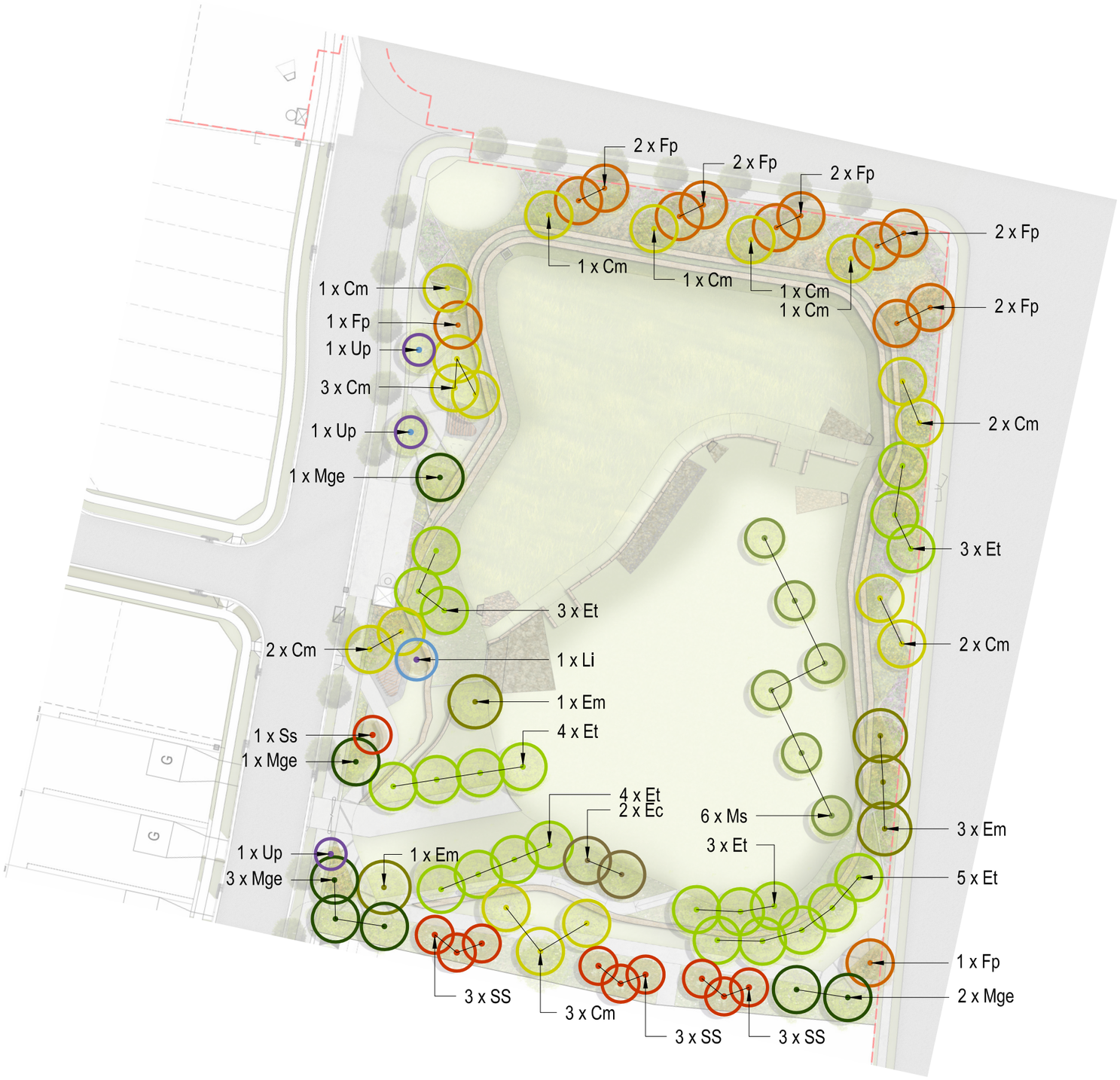
16 Chapman Street, Werrington Open Space DA Report

Central Reserve Tree Planting Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 25**

N

Scale 1:750 @ A3



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Tree Planting Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 26**

N

Scale 1:750 @ A3

16 Chapman St, Werrington - Central Reserve Open Space Tree Palette						
SYM	Botanical Name	Common Name	Mature Height	Pot Size	Spacing /m2	QTY
TREES - Evergreen						
Ec	*Eucalyptus crebra*	Forest Red Gum	20m	100L	As Shown	9
Em	*Eucalyptus moluccana*	Grey Box	20m	100L	As Shown	20
Et	*Eucalyptus tereticornis*	Forest Red Gum	25m	100L	As Shown	22
Fm	*Ficus microcarpa var. 'Hillii'*	Hills Weeping Fig	20m	200L	As Shown	1
Lc	*Lophostemon confertus*	Brush Box	15m	100L	As Shown	21
Mge	*Magnolia grandiflora 'Exmouth'*	Magnolia	12m	100L	As Shown	9
Ms	*Melaleuca styphelioides*	Prickly Leafed Paperbark	8m	100L	As Shown	9
Tl	*Tristaniopsis laurina*	Kanooka	12m	100L	As Shown	6
TREES - Deciduous						
Fp	*Fraxinus pennsylvanica 'Cimmzam'*	Cimmaron Ash	15m	200L	As Shown	5
Li	*Largerstroemia indica x fauriei 'Natchez'*	Crepe Myrtle	6m	100L	As Shown	1
Ss	*Sapium serbiferum*	Chinese Tallow	10m	200L	As Shown	2

16 Chapman St, Werrington - Eastern Basin Open Space Tree Palette						
SYM	Botanical Name	Common Name	Mature Height	Pot Size	Spacing /m2	QTY
TREES - Evergreen						
Cm	*Corymbia maculata*	Spotted Gum	20m	100L	As Shown	17
Ec	*Eucalyptus crebra*	Forest Red Gum	20m	100L	As Shown	2
Em	*Eucalyptus moluccana*	Grey Box	20m	100L	As Shown	5
Et	*Eucalyptus tereticornis*	Forest Red Gum	25m	100L	As Shown	22
Mge	*Magnolia grandiflora 'Exmouth'*	Magnolia	12m	100L	As Shown	7
Ms	*Melaleuca styphelioides*	Prickly Leafed Paperbark	8m	100L	As Shown	6
TREES - Deciduous						
Fp	*Fraxinus pennsylvanica 'Cimmzam'*	Cimmaron Ash	15m	200L	As Shown	12
Li	*Largerstroemia indica x fauriei 'Natchez'*	Crepe Myrtle	6m	100L	As Shown	1
Ss	*Sapium serbiferum*	Chinese Tallow	10m	200L	As Shown	10
Up	*Ulmus parvifolia*	Chinese Elm	10m	200L	As Shown	3

ENDEMIC TREE PLANTING



Corymbia. maculata



E. Crebra



E. Moluccana



E. Tereticornis



M. styphelioides.

EVERGREEN TREE PLANTING



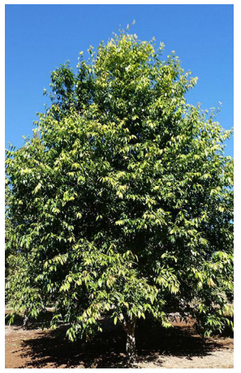
Ficus microcarpa 'Hillii"



Lophostemon confertus



Magnolia grandiflora 'Exmouth'



Waterhousia floribunda 'Green Ave'

DECIDUOUS TREE PLANTING



Fraxinus pennsylvanica 'Cimmzam'

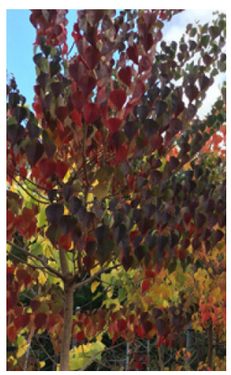




Lagerstroemia indica x frauriei 'Natchez'



Sapium sebiferum





Ulmus parvifolia

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Open Space Tree Species Palette

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 27**



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve Open Space Planting Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 28**

N

Scale 1:750 @ A3

SYM	Botanical Name	Common Name	Mature Height	Pot Size	Spacing /m2	QTY
PARK MIXES						
Mix 1						
Dc	*Dianella caerulea var. caerulea*	Flax Lily	0.8m	75mm	6	421
Dm	*Dichelachne micrantha*	Short-hair Plume Grass	1.2m	75mm	6	421
HS	*Hakea sericea*	Needlebush	3m	150mm	3	211
Ju	*Juncus usitatus*	Common Rush	0.9m	150mm	6	421
Ll	*Lomandra longifolia*	Spiny-headed Matt Rush	0.8m	75mm	6	421
Lf	*Lomandra filiformis*	Wattle Mat Rush	0.2m	75mm	6	421
MS	*Microlaena stipoides*	Weeping Meadow Grass	0.2m	75mm	6	421
Ka	*Kunzea ambigua*	Tick Bush	3m	150mm	3	211
Mix 2						
Cw	*Callistemon 'White Anzac'*	White Anzac Bottlebrush	1m	150mm	4	124
Dss	*Dianella ensiformis 'Silver Streak'*	Silver Streak flax lilly	0.5m	150mm	4	124
Dlj	*Dianella caerulea 'Little Jess'*	Blue flax lily	0.4m	150mm	5	154
Hm	*Hardenbergia violacea 'Meema'*	Meema	0.5m	150mm	3	92
Lt	*Lomandra longifolia ' Tanika'*	Tanika	0.5m	150mm	5	154
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	124
Wc	*Wahlenbergia communis*	Turfted Bluebell	0.75m	150mm	5	154
Mix 3						
Cbj	*Callistemon viminalis 'Better John'*	Bottleburhs	1.2m	150mm	4	84
De	*Doryanthes excelsa*	Gymea Lily	2m	150mm	2	42
Dtr	*Dianella tasmanica 'Tasred'*	Wide bladed flax lily	0.5m	150mm	4	40
Hs	*Hibbertia scandens*	Snake vine	0.3m	150mm	4	84
Mct	*Melaleuca linariifolia 'Claret Tops'*	Honey Myrtle 'Claret Tops'	0.9m	150mm	4	84
Pa	*Pennisetum alopecuroides 'Nafray'*	Swamp Foxtail	0.3m	150mm	6	128
Pe	*Poa labillardieri 'Eskdale'*	Tussock grass	0.6m	150mm	5	106
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	84
Mix 4						
Abr	Anigozanthos 'Bush Ranger'	Kangaroo Paw	0.5m	150mm	6	54
Aam	*Acmena smithii 'Allyn Magic'*	Lilly Pilly	0.6m	150mm	4	37
Ca	*Chrysocephalum apiculatum*	Yellow buttons	0.5m	150mm	4	36
De	*Doryanthes excelsa*	Gymea Lily	2m	150mm	2	18
Lt	*Lomandra longifolia ' Tanika'*	Tanika	0.5m	150mm	5	46
Mt	*Melaleuca thymifolia*	Thyme honey myrtle	1m	150mm	5	46
My	*Myoporum parvifolium 'Yareena'*	Boobialla	0.1m	150mm	4	37
Mix 5						
Bft	*Baloskion tetraphyllum 'Feather Top'*	Feather Rush	0.5m	75mm	6	987
Ju	*Juncus usitatus*	Common Rush	0.9m	75mm	6	987
Lkb	*Lomandra 'Katie Belles'*	Lomandra Katie Belles	1.5m	75mm	5	790
Ltb	*Lomandra 'Tropic Belle'*	Lomandra Tropic Belle	0.8m	75mm	5	790
Pe	*Poa labillardieri 'Eskdale'*	Tussock grass	0.6m	75mm	6	987
Pn	*Pennisetum 'Nafray'*	Swamp Foxtail Grass	0.6m	75mm	6	987
Ta	*Themeda australis*	Kangaroo Grass	0.5m	75mm	6	987
Mix 6						
Ca	*Carex appressa*	Sedge	1.3m	75mm	6	798
Dc	*Dianella caerulea*	Blue flax lily	0.5m	75mm	6	798
Fn	*Ficinia nodosa*	Knobby Club Rush	0.8m	75mm	6	798
Jf	*Juncus flavidus*	Mat Rush	1.0m	75mm	6	798
Ju	*Juncus usitatus*	Common Rush	1.0m	75mm	6	798
La	*Lepironia articulata*	Grey rush	0.9m	75mm	6	798
Li	*Lomandra longifolia*	Mat Rush	1.2m	75mm	6	798
Mix 7						
Bs	*Banksia spinulosa ' Birthday candles'*	Banksia	0.5m	150mm	3	27
Ca	*Chrysocephalum apiculatum*	Yellow buttons	0.5m	150mm	4	36
Dlj	*Dianella caerulea 'Little Jess'*	Blue flax lily	0.4m	150mm	4	36
De	*Doryanthes excelsa*	Gymea Lily	2m	300mm	2	18
Hs	*Hibbertia scandens*	Snake vine	1m	150mm	4	36
Ljr	*Liriope muscari 'Just right'*	Turf Lilly	0.65m	150mm	4	36
LKB	*Lomandra* 'Katie Belles'	Lomandra Katie Belles	1.5m	150mm	4	36
Pa	*Pennisetum alopecuroides 'Nafray'*	Swamp Foxtail	0.3m	150mm	6	56
Sh	*Scaevola humilis 'Purple Fusion'*	Scaevola	0.2m	150mm	5	47
Mix 8						
Aam	*Acmena smithii 'Allyn Magic'*	Lilly Pilly	0.6m	150mm	4	479
Lt	*Lomandra longifolia ' Tanika'*	Tanika	0.5m	150mm	6	720
LL	*Lomandra longifolia*	Spiny-headed Matt Rush	0.8m	150mm	4	479
Mct	*Melaleuca linariifolia 'Claret Tops'*	Honey Myrtle 'Claret Tops'	0.9m	150mm	4	479
Pe	*Poa labillardieri 'Eskdale'*	Tussock grass	0.6m	150mm	6	720
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	479
Screening hedge						
Pr	*Photinia Red Robin*	Red Tip Photinia	3m	300mm	0.6m c/c	45

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve Planting Schedule

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 29**

MIX 1



Dichelachne micrantha
Short-hair Plume Grass



Kunzea ambigua
Tick Bush



Microlaena stipoides
Weeping Meadow



Hakea sericea
Needlebush

MIX 2



Callistemon 'White Anzac'
White Anzac Bottle-



Acmena smithii 'Allyn Magic'
Lilly Pilly

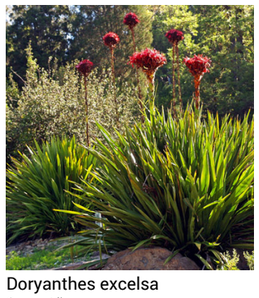


Dianella ensiformis 'Silver Streak'
Silver Streak flax lilly



Wahlenbergia communis
Turfted Bluebell

MIX 3



Doryanthes excelsa
Gymea Lily



Melaleuca linariifolia 'Claret Tops'
Honey Mytle



Myoporum parvifolium
Creeping boobialla



Lomandra longifolia
'Tanika'

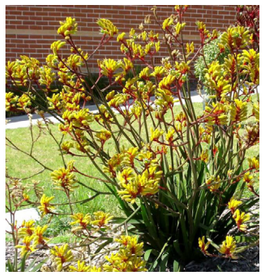
MIX 4



Lomandra longifolia
'Tanika'



Acmena smithii 'Allyn Magic'
Lilly Pilly



Anigozanthos 'Bush Bonanza'
Kangaroo Paw

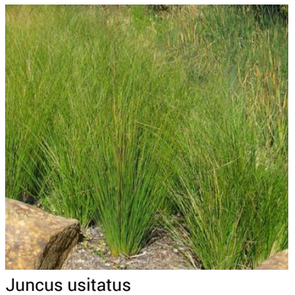


Chrysocephalum apiculatum
Yellow buttons

MIX 5 - BANKS



Baloskion tetraphyllum
Feather Rush



Juncus usitatus
Common Rush



Poa labillardieri 'Eskdale'
Tussock grass



Themeda australis
Kangaroo grass

MIX 6 FILTRATION MEDIUM



Carex appressa
Sedge



Ficinia nodosa
Knobby Club Rush



Lepironia articulata
Grey rush



Juncus flavidus
Mat Rush

MIX 7 - PLAYGROUND PLANTING



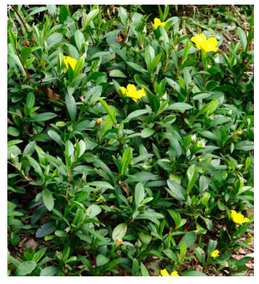
Pennisetum alopecuroides
Swamp Foxtail



Dianella 'Little Jess'
Blue Flax Lily Little Jess



Banksia spinulosa ' Birthday candles'
Blue Flax Lily Little Jess



Hibbertia scandens
Snake vine



Scaevola humilis 'Purple Fusion'
Scaevola

MIX 8



Acmena smithii 'Allyn Magic'
Lilly Pilly



Lomandra longifolia
'Tanika'

SCREENING



Poa labillardieri 'Eskdale'
Tussock grass



Photinia 'Red Robin'
Red Tips Photinia

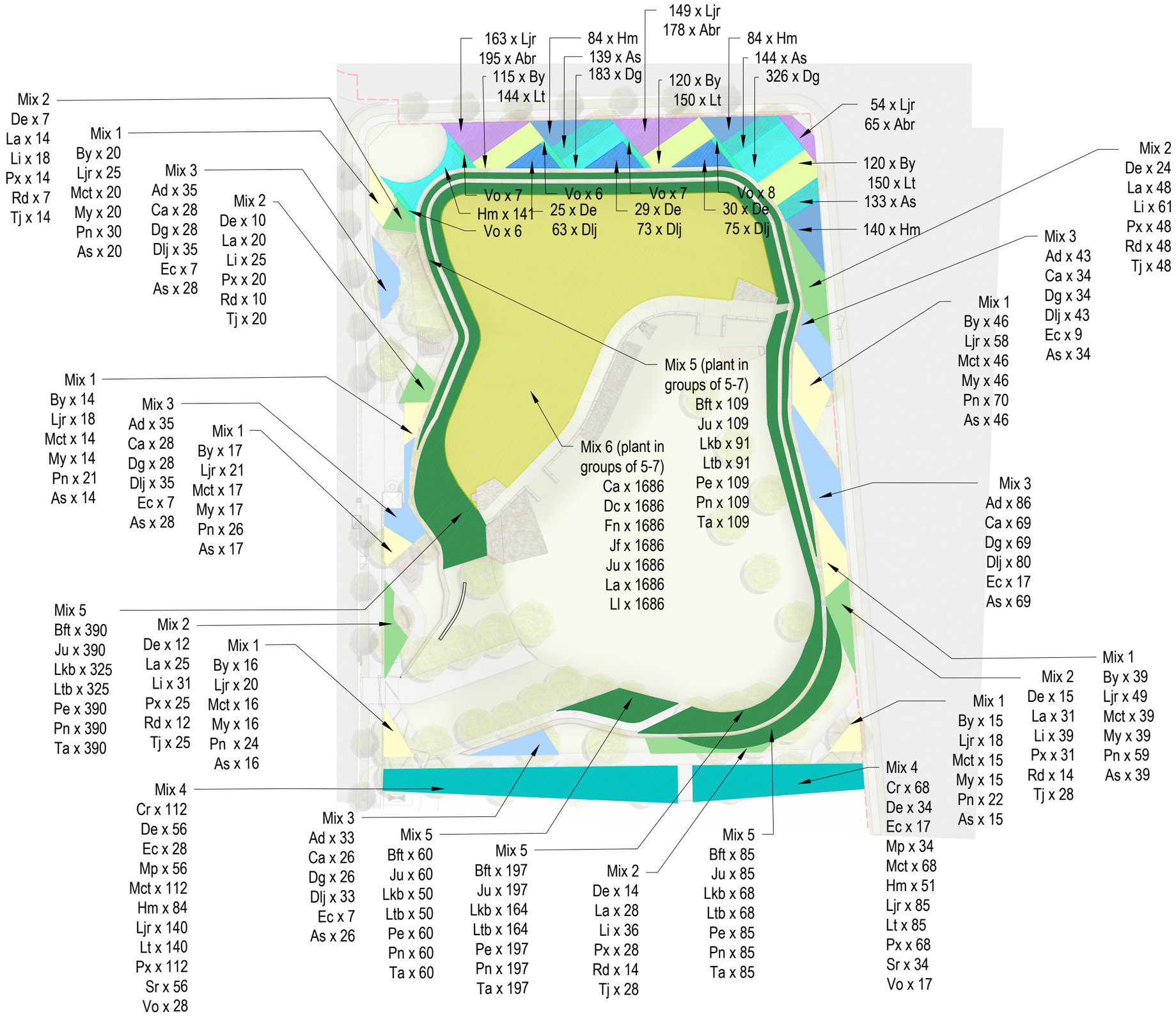
place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Central Reserve Planting Images

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 30**



place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Eastern Basin Open Space Planting Plan

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 31**

N

Scale 1:750 @ A3

SYM	Botanical Name	Common Name	Mature Height	Pot Size	Spacing /m2	QTY
FEATURE PLANTING						
Abr	*Anigozanthos 'Bush Bonanza'*	Kangaroo Paw	0.6m	150mm	6	438
By	*Beschorneria yuccoides*	Mexican Lily	1.5m	150mm	4	355
Dg	*Dietes grandiflora*	Wild Iris	0.5m	150mm	4	509
De	*Doryanthes excelsa*	Gymea Lily	2m	300mm	2	84
Dlj	*Dianella caerulea 'Little Jess'*	Blue flax lily	0.4m	150mm	5	211
Hm	*Hardenbergia violacea 'Meema'*	Meema	0.5m	150mm	3	449
Ljr	*Liriope muscari 'Just right'*	Turf Lilly	0.65m	150mm	5	366
Lt	*Lomandra longifolia ' Tanika'*	Tanika	0.5m	150mm	5	444
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	416
Vo	*Viburnum odoratissimum*	Sweet Viburnum	4m	300mm	1	34
Mix 1						
By	*Beschorneria yuccoides*	Mexican Lily	1.5m	150mm	4	167
Ljr	*Liriope muscari 'Just right'*	Turf Lilly	0.65m	150mm	5	209
Mct	*Melaleuca linariifolia 'Claret Tops'*	Honey Myrtle 'Claret Tops'	0.9m	150mm	4	167
My	*Myoporum parvifolium 'Yareena'*	Boobialla	0.1m	150mm	4	167
Pn	*Pennisetum alopecuroides 'Nafray'*	Swamp Foxtail	0.3m	150mm	6	252
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	167
Mix 2						
De	*Doryanthes excelsa*	Gymea Lily	2m	300mm	2	82
La	*Lavandula dentata*	French Lavender	0.5m	150mm	4	166
Li	*Liriope muscari 'Isabella'*	Lilly Turf 'Isabella'	0.4m	150mm	5	210
Px	*Philodendron xanadu*	Xanadu	0.5m	150mm	4	166
Rd	*Rhaphiolepis delacourii*	Hybrid Indian Hawthorn	1m	150mm	2	82
Tj	*Trachelospermum jasminoides*	Star Jasmine	0.5m	150mm	4	166
Mix 3						
Ad	*Alternanthera dentata 'Little ruby'*	Little ruby	0.6m	150mm	5	189
Ca	*Chrysocephalum apiculatum*	Yellow buttons	0.5m	150mm	4	151
Dg	*Dietes grandiflora*	Wild Iris	0.5m	150mm	4	151
Dlj	*Dianella caerulea 'Little Jess'*	Blue flax lily	0.4m	150mm	5	189
Ec	*Echium candicans*	Pride of Madeira	1m	300mm	1	38
As	Acmena Smithii 'Allyn Magic'	Lilly Pilly	1m	150mm	4	151
Mix 4						
Cr	*Carpobrotus rossii*	Pig Face	0.2m	150mm	4	180
De	*Doryanthes excelsa*	Gymea Lily	2m	300mm	2	90
Ec	*Echium candicans*	Pride of Madeira	1m	300mm	1	45
Mp	*Murraya paniculata*	Orange jassamine	3m	300mm	2	90
Mct	*Melaleuca linariifolia 'Claret Tops'*	Honey Myrtle 'Claret Tops'	0.9m	150mm	4	180
Hm	*Hardenbergia violacea 'Meema'*	Meema	0.5m	150mm	3	135
Ljr	*Liriope muscari 'Just right'*	Turf Lilly	0.65m	150mm	5	225
Lt	*Lomandra longifolia ' Tanika'*	Tanika	0.5m	150mm	5	225
Px	*Philodendron xanadu*	Xanadu	0.5m	150mm	4	180
Sr	*Strelitzia reginae*	bird of paradise	1m	300mm	2	90
Vo	*Viburnum odoratissimum*	Sweet Viburnum	4m	300mm	1	45

Mix 5						
Bft	*Baloskion tetraphyllum 'Feather Top'*	Feather Rush	0.5m	75mm	6	841
Ju	*Juncus usitatus*	Common Rush	0.9m	75mm	6	841
Lkb	*Lomandra 'Katie Belles'*	Lomandra Katie Belles	1.5m	75mm	5	698
Ltb	*Lomandra 'Tropic Belle'*	Lomandra Tropic Belle	0.8m	75mm	5	698
Pe	*Poa labillardieri 'Eskdale'*	Tussock grass	0.6m	75mm	6	841
Pn	*Pennisetum 'Nafray'*	Swamp Foxtail Grass	0.6m	75mm	6	841
Ta	*Themeda australis*	Kangaroo Grass	0.5m	75mm	6	841
Mix 6						
Ca	*Carex appressa*	Sedge	1.3m	75mm	6	1686
Dc	*Dianella caerulea*	Blue flax lily	0.5m	75mm	6	1686
Fn	*Ficinia nodosa*	Knobby Club Rush	0.8m	75mm	6	1686
Jf	*Juncus flavidus*	Mat Rush	1.0m	75mm	6	1686
Ju	*Juncus usitatus*	Common Rush	1.0m	75mm	6	1686
La	*Lepironia articulata*	Grey rush	0.9m	75mm	6	1686
Li	*Lomandra longifolia*	Mat Rush	1.2m	75mm	6	1686

Refer to Planting Plan - Shrubs, Grasses and Ground-covers on page 16

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

FEATURE PLANTING



Beschorneria yuccoides
Mexican Lily



Lomandra longifolia ' Tanika'
Tanika



Dietes grandiflora
Wild Iris



Doryanthes excelsa
Gymea Lily



Acmena smithii 'Allyn Magic'
Lilly Pilly



Hardenbergia violacea 'Meema'
Meema



Liriope muscari 'Just right'
Turf Lilly



Dianella 'Little Jess'
Blue Flax Lily Little Jess



Anigozanthos 'Bush Bonanza'
Kangaroo Paw

MIX 1



Melaleuca linariifolia 'Claret Tops'
Honey Mytle



Myoporum parvifolium
Creeping boobialla



Pennisetum alopecuroides
Swamp Foxtail

MIX 2



Lavandula dentata
French Lavender



Rhaphiolepis delacourii
Hybrid Indian Hawthorn



Liriope muscari 'Isabella'
Lilly Turf 'Isabella'



Philodendron xanadu
Xanadu

MIX 3



Alternanthera dentata 'Little Ruby'
Little Ruby



Chrysocephalum apiculatum
Yellow buttons



Echium candicans
Pride of Madeira

MIX 4



Strelitzia reginae
bird of paradise



Carpobrotus rossii
Pig Face



Murraya paniculata
Orange jassamine

BANK PLANTING



Baloskion tetraphyllum
Feather Rush



Juncus usitatus
Common Rush



Poa labillardieri 'Eskdale'
Tussock grass



Themeda australis
Kangaroo grass

FILTRATION MEDIUM



Carex appressa
Sedge



Ficinia nodosa
Knobby Club Rush



Lepironia articulata
Grey rush



Juncus flavidus
Mat Rush

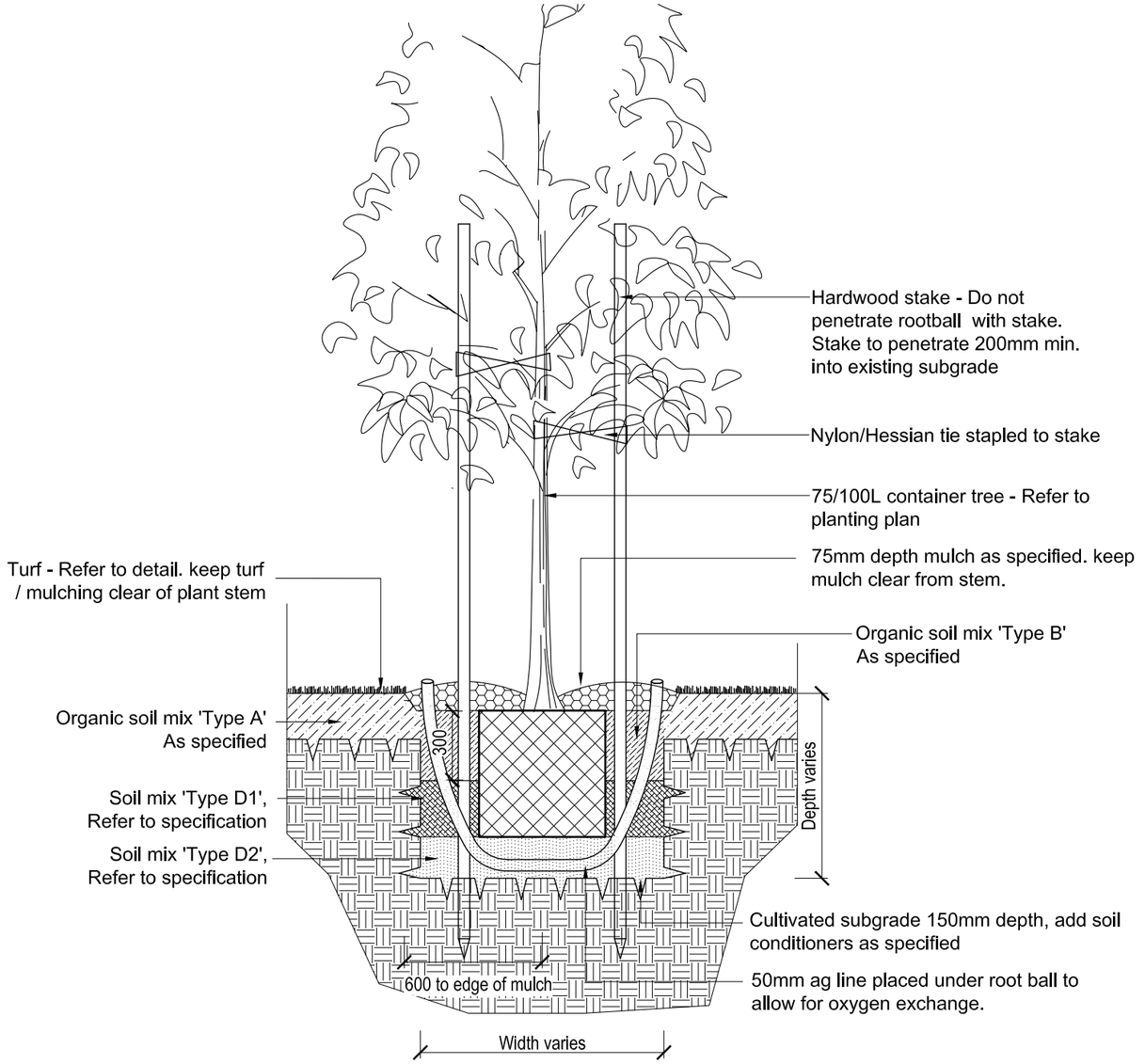
place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

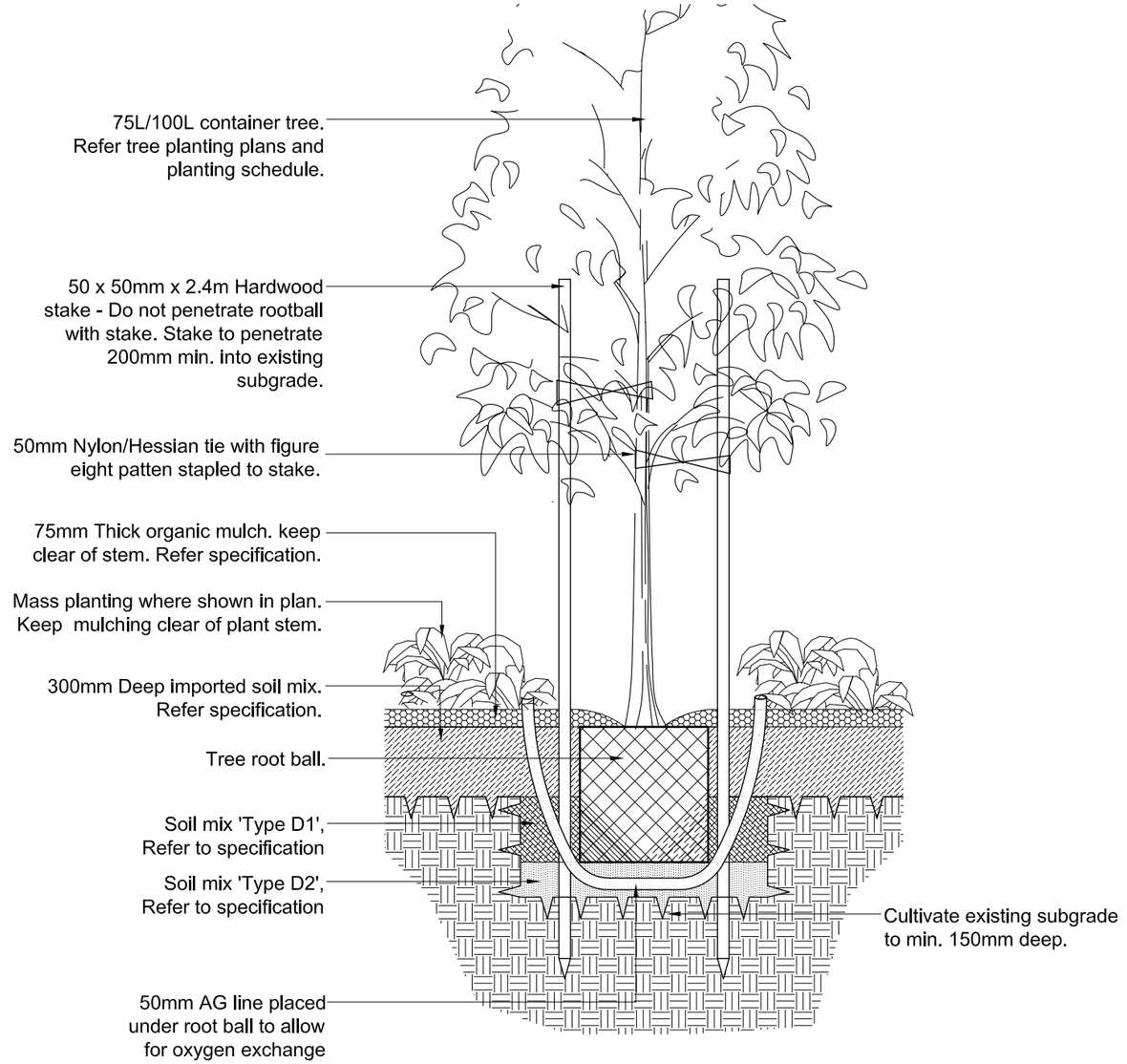
Eastern Basin Planting Images

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 33**



Note: Tree planting hole dimensions according to container size: Width min. 2 x root ball diameter (min. 820 / 1100 / 1400mm for 45/75/100L containers) and depth min. 150mm below root ball depth.

1 TYPICAL TREE PLANTING IN TURF DETAIL
SCALE 1:25



Note: Tree planting hole dimensions according to container size: Width min. 2 x root ball diameter (min. 820 / 1100 / 1400mm for 45/75/100L containers) and depth min. 150mm below root ball depth.

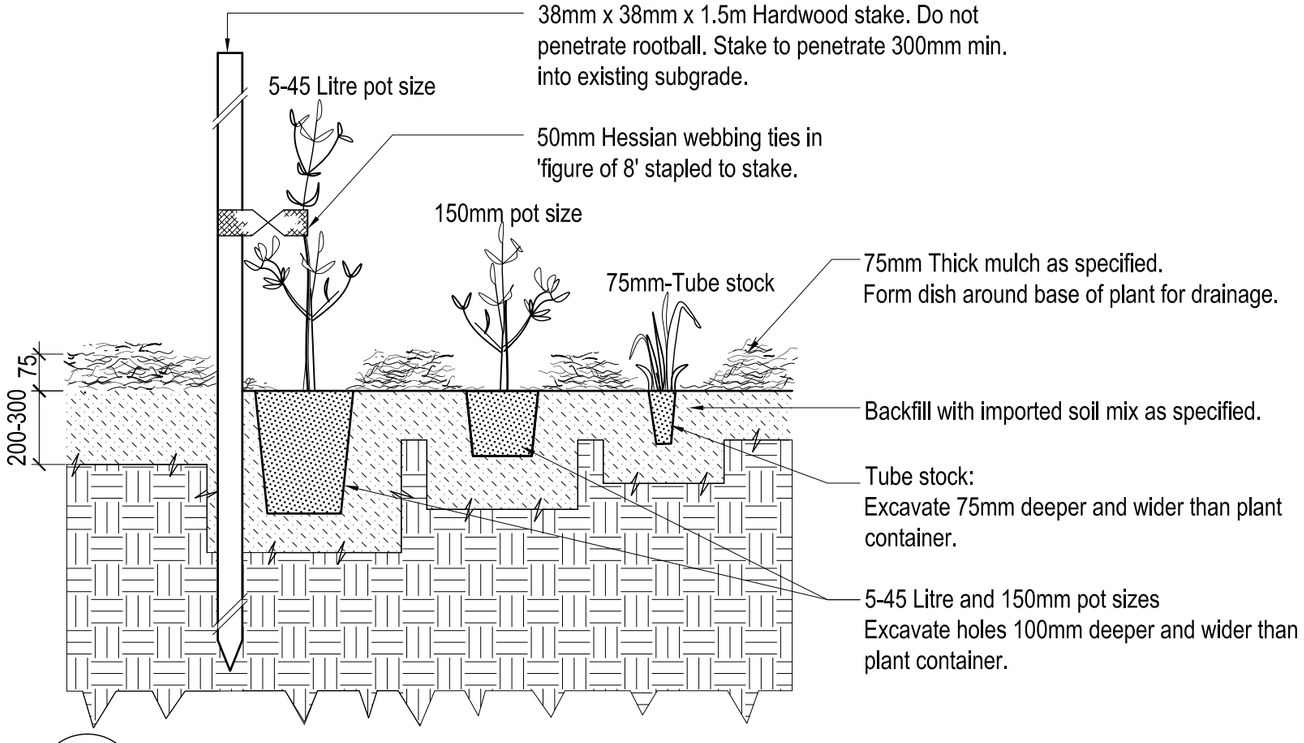
2 TYPICAL TREE PLANTING IN MASS PLANTING DETAIL
SCALE 1:25

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

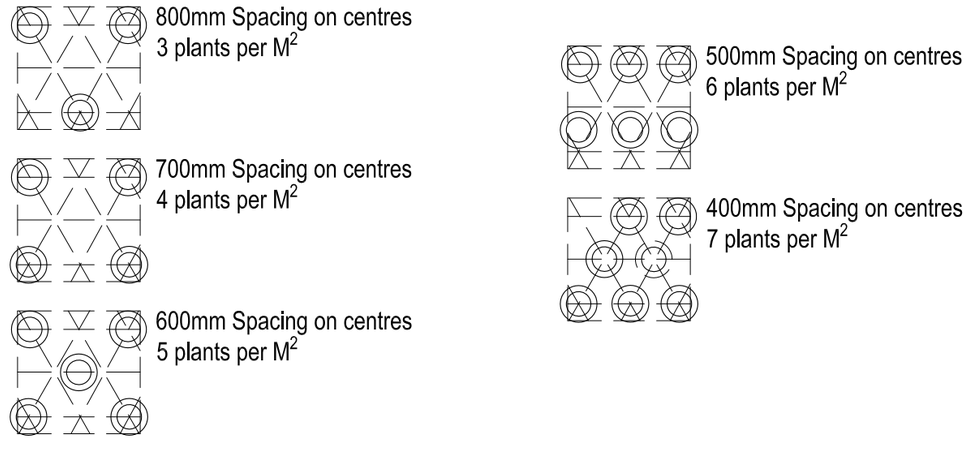
16 Chapman Street, Werrington Open Space DA Report

Open Space Typical Details - Softscapes

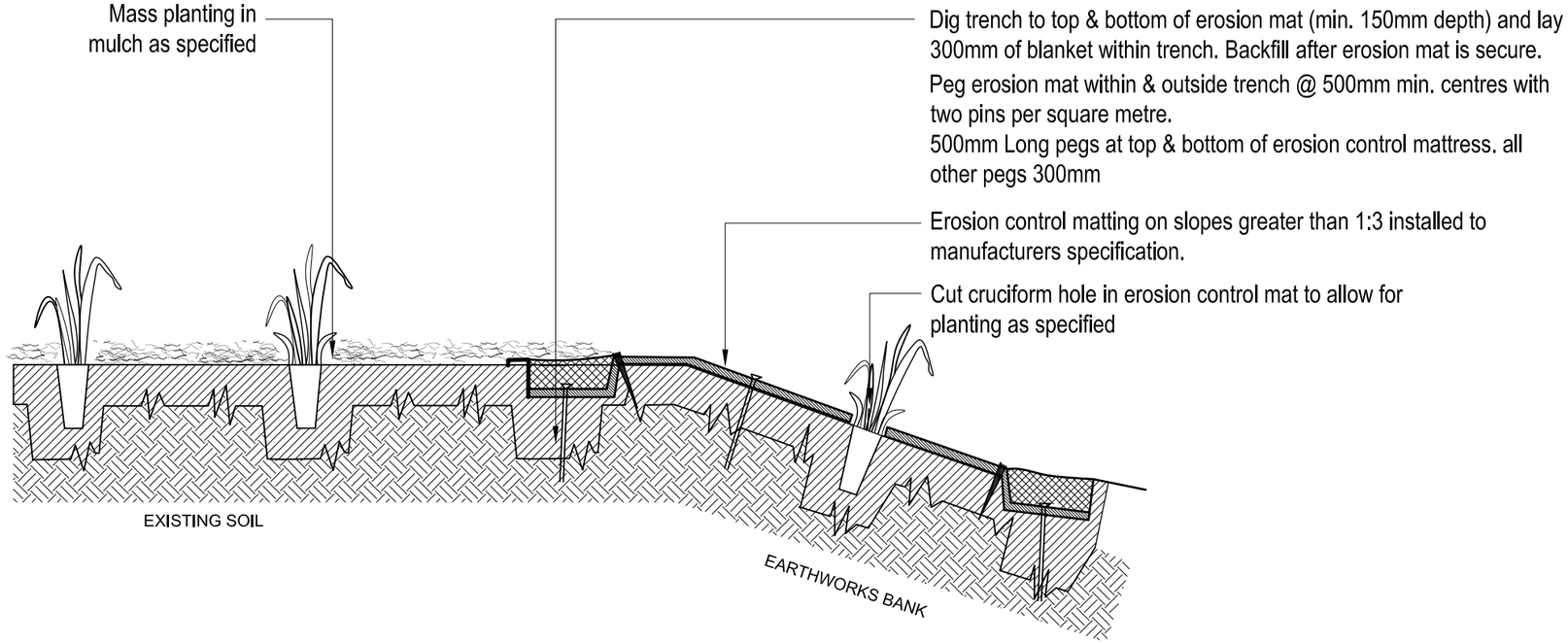
DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 34**



1 TYPICAL MASS PLANTING DETAIL
SCALE 1:25



2 TYPICAL PLANTING ARRANGEMENT DETAIL
SCALE 1:50



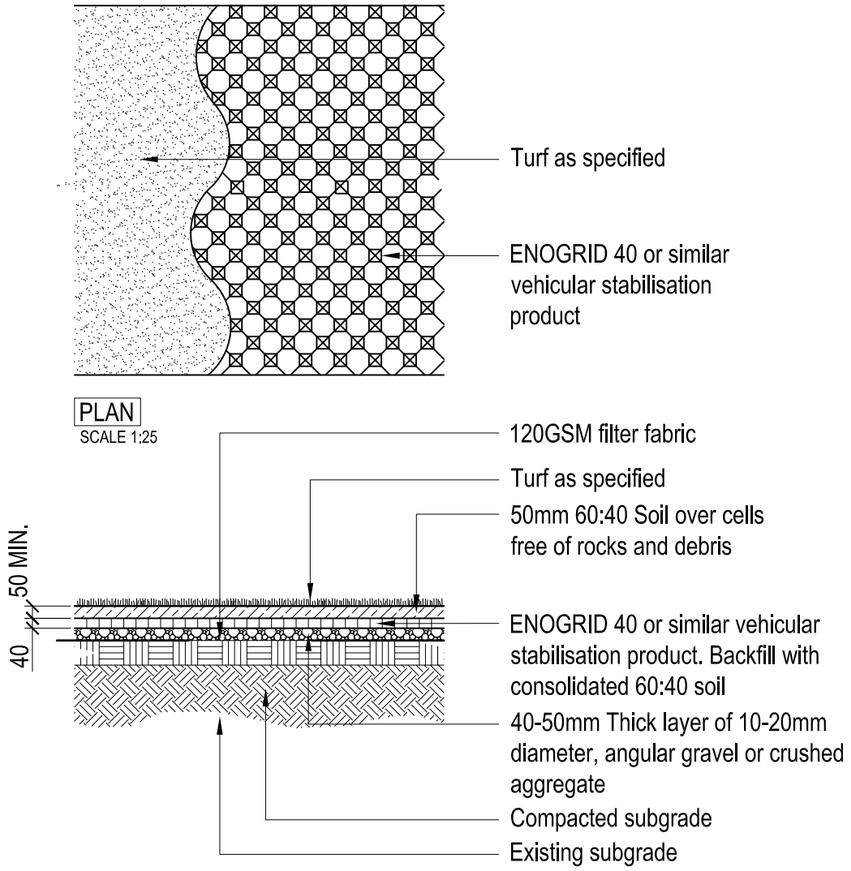
3 TYPICAL STEEP EMBANKMENT PLANTING DETAIL
SCALE 1:25

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

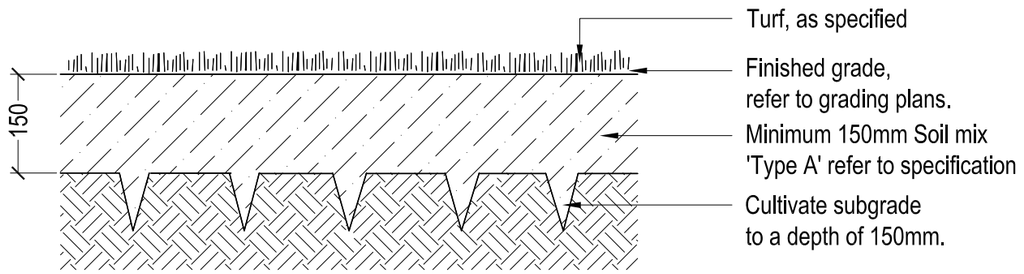
16 Chapman Street, Werrington Open Space DA Report

Open Space Typical Details - Softscapes

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 35**



1 TYPICAL REINFORCED TURF DETAIL
SCALE 1:25



General Notes:

Regularly remove weed growth throughout planted and mulched areas during the course of project contruction.

Lightly tamp or roll surface of turf after installation to ensure that turf roots are in contact with topsoil.

Turf on low side of any path or edge to finish 10mm below finished path/edge level.

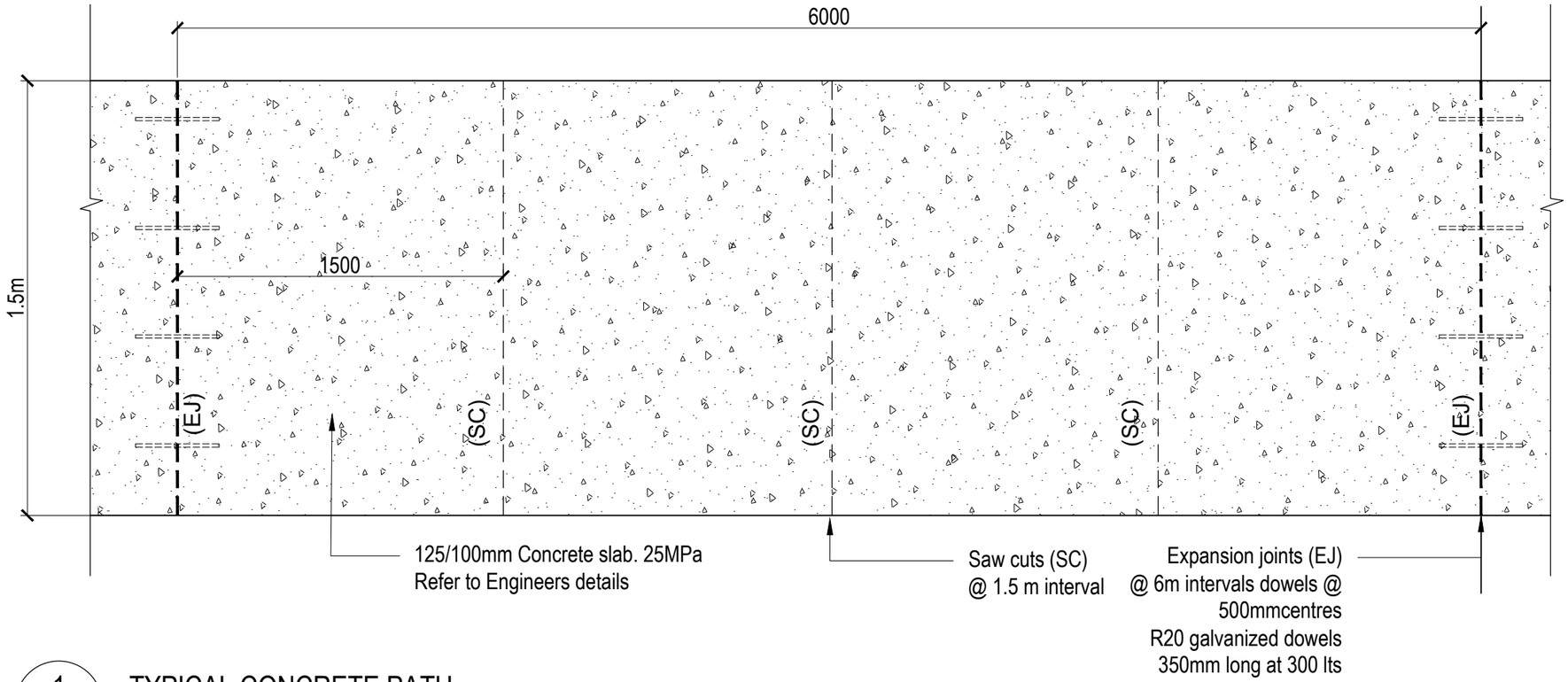
2 TYPICAL TURF DETAIL
SCALE 1:10

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

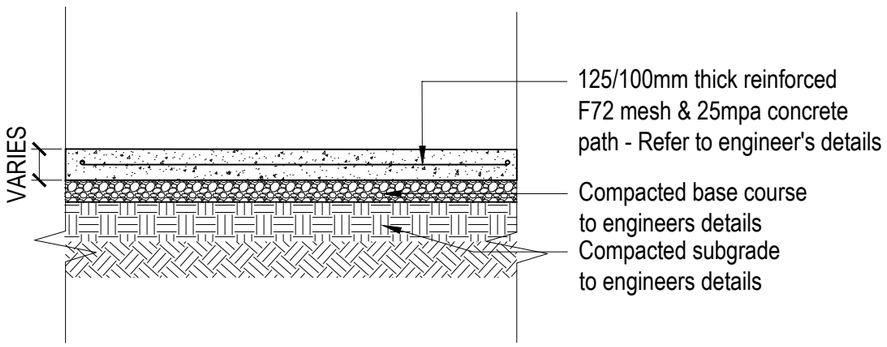
Open Space Typical Details - Softscapes

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 36**

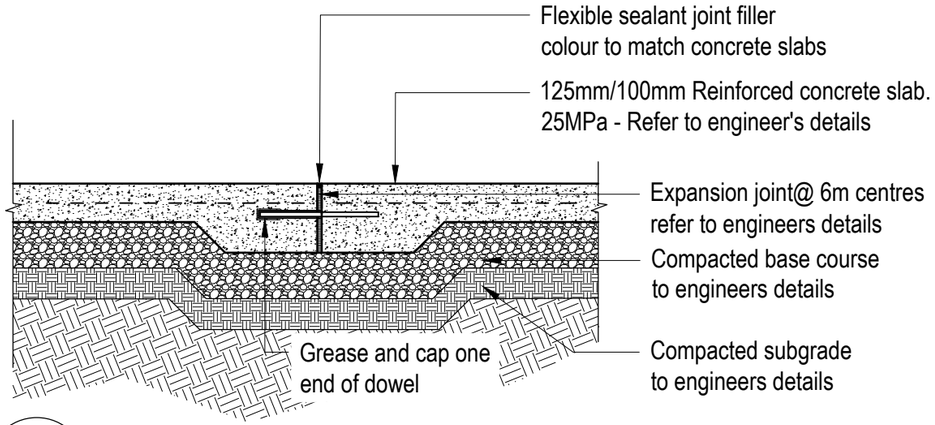


1 TYPICAL CONCRETE PATH
SCALE 1:25

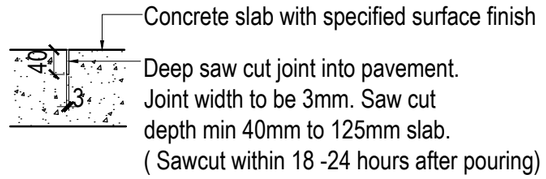
Note:
Expansion joint to extend across the path width every 6 meters.
Control joints (saw cut joints)to extend across the path every 1.5m.



2 TYPICAL CONCRETE PATH
SCALE 1:20



3 TYPICAL EXPANSION JOINT
SCALE 1:20



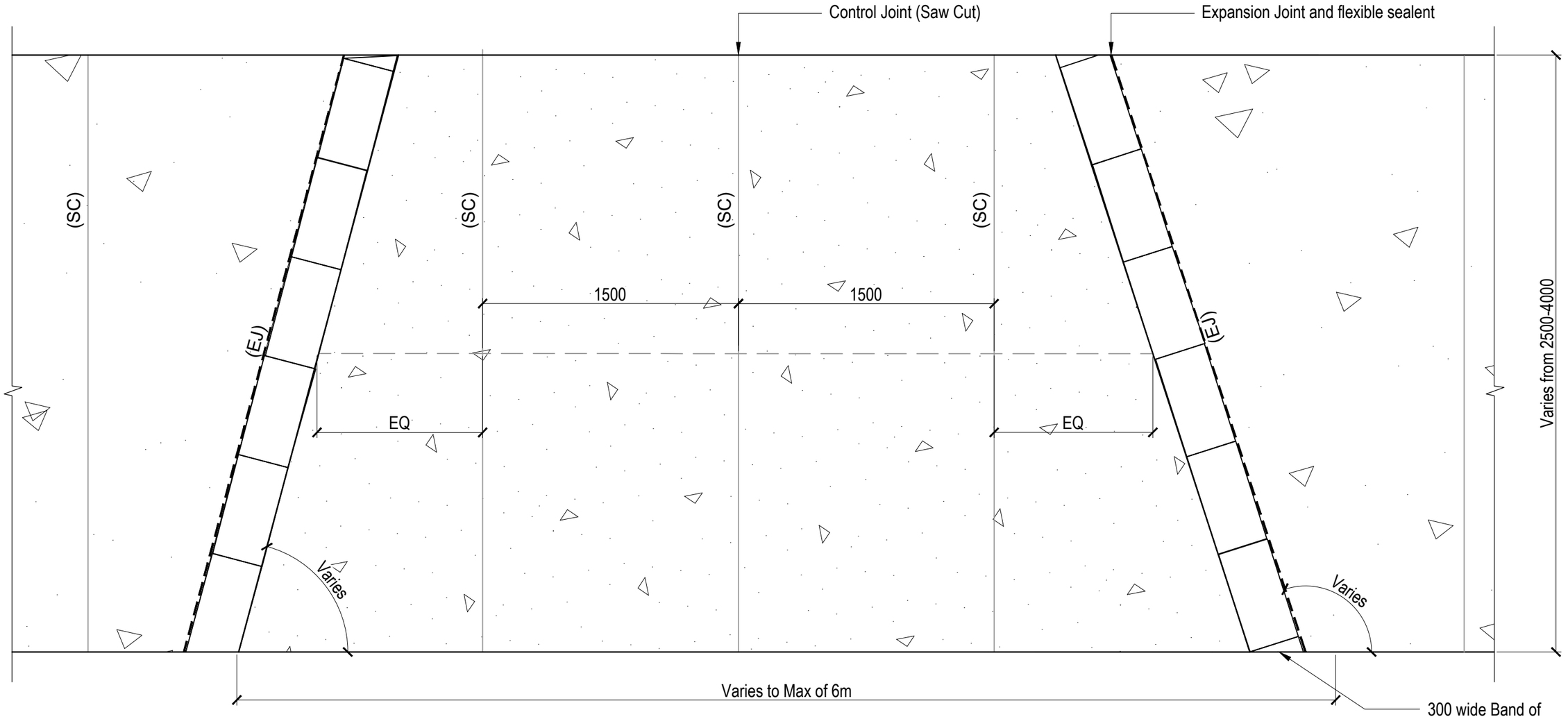
4 TYPICAL CONCRETE SAW CUT
SCALE 1:10

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

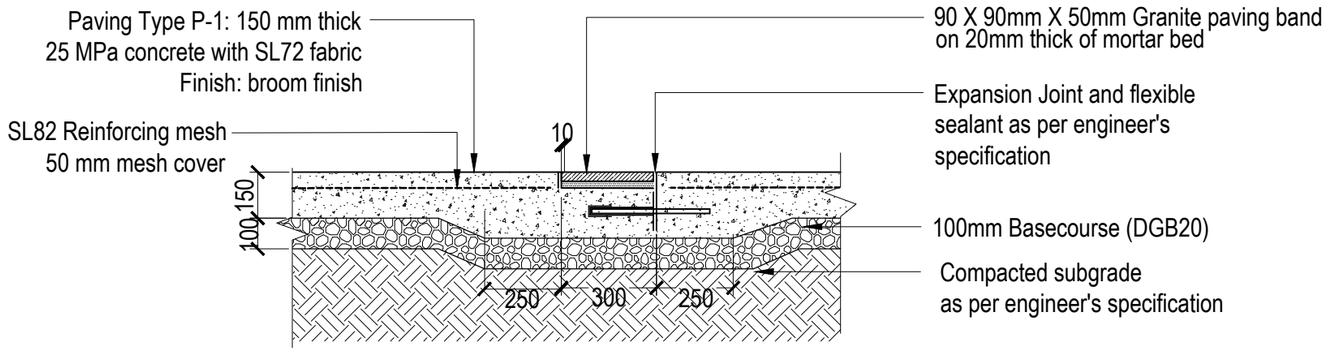
16 Chapman Street, Werrington Open Space DA Report

Open Space Typical Details -Hardscapes

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 37**



1 TYPICAL CONCRETE PATH WITH GRANITE BANDING
SCALE 1:25



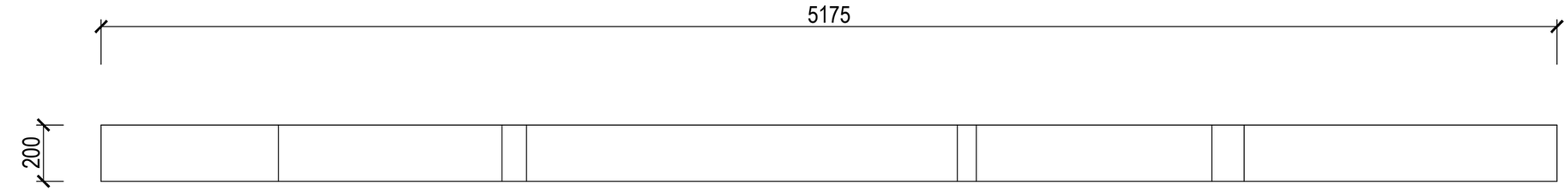
2 TYPICAL CONCRETE PATH WITH GRANITE BANDING
SCALE 1:20

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

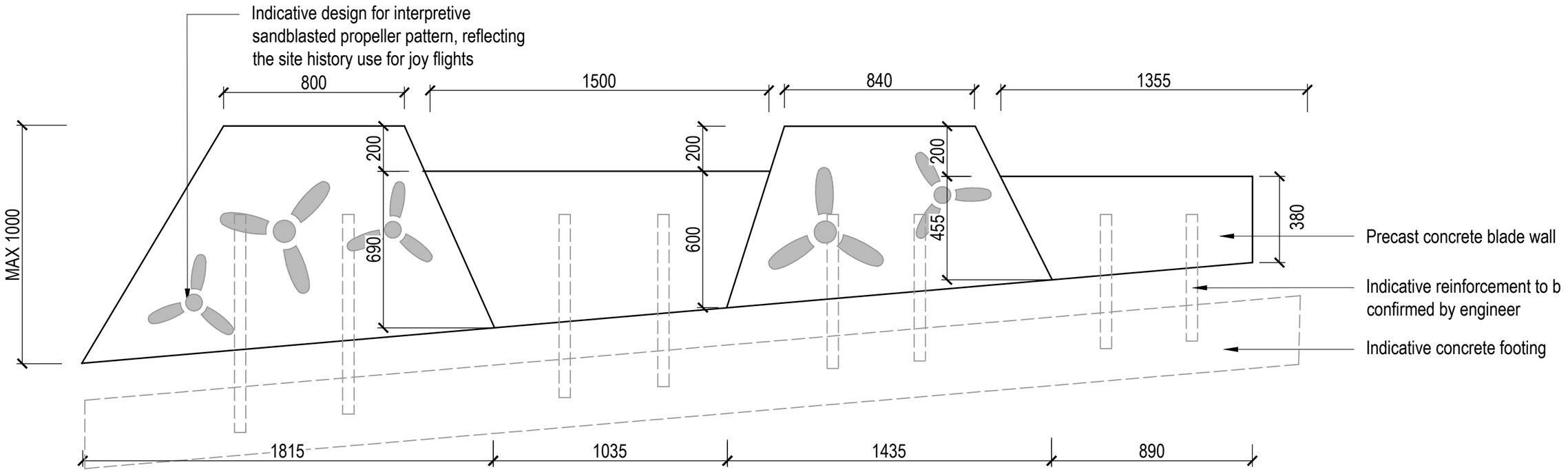
Open Space Typical Details -Hardscapes

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 38**



Note:
The feature walls reference the heritage of the site dating back to 1920s when it was used for joy flights. The interpretive elements include the shape of the wall blades reflecting the wings of the planes and sandblasted patterns emulating propellers.

1 EASTERN BASIN FEATURE WALL - PLAN
SCALE 1:20



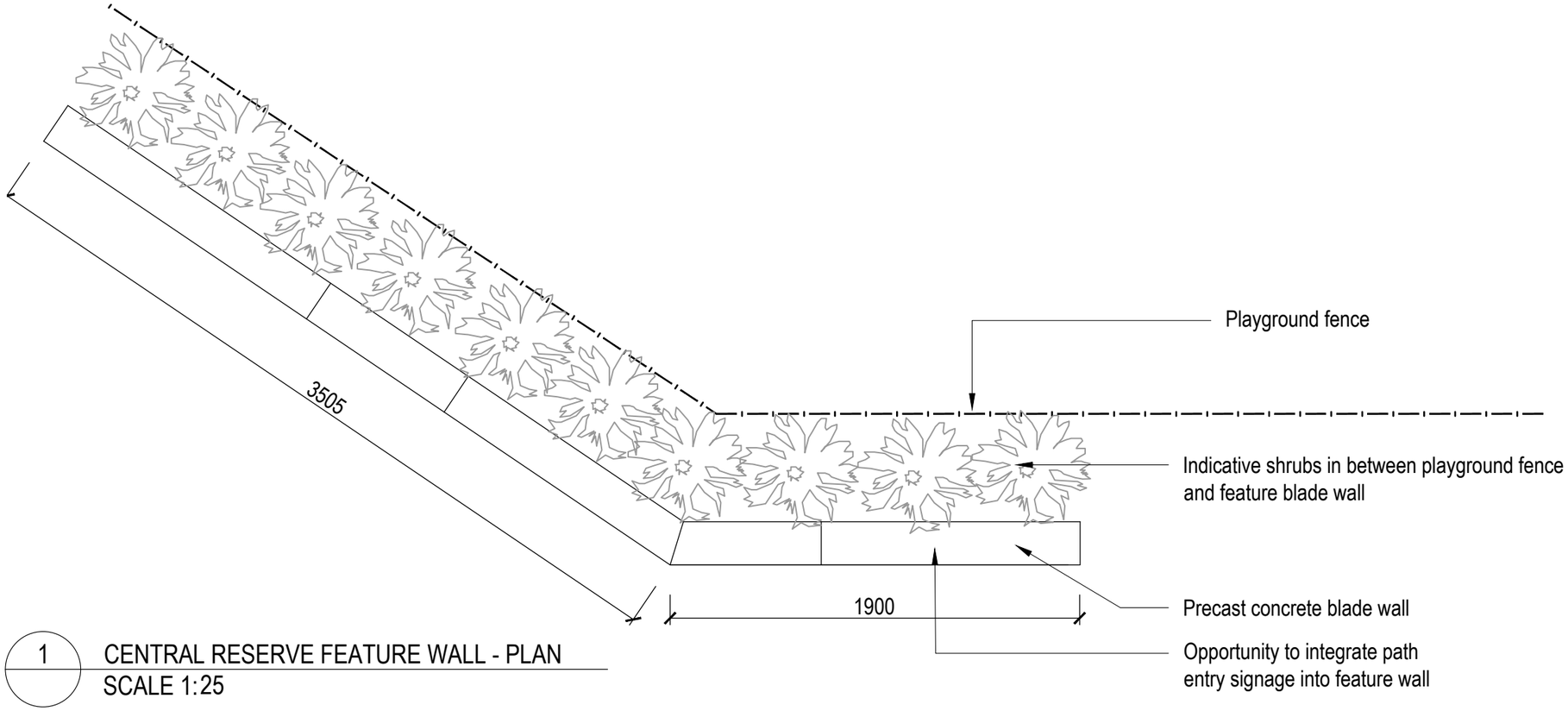
2 EASTERN BASIN FEATURE WALL WITH INTERPRETIVE ARTWORK - ELEVATION
SCALE 1:20

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

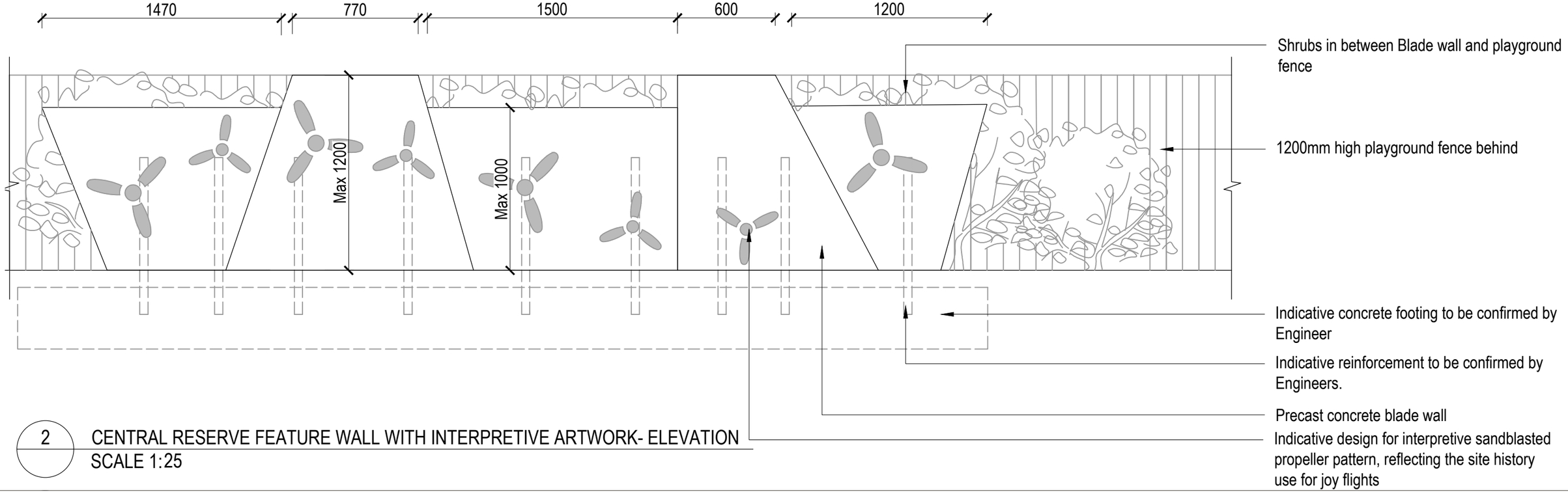
Open Space Typical Details -Eastern Reserve Feature Wall Details

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 39**



1 CENTRAL RESERVE FEATURE WALL - PLAN
SCALE 1:25

Note:
The feature walls reference the heritage of the site dating back to 1920s when it was used for joy flights. The interpretive elements include the sandblasted shapes reflecting plane propellers.



2 CENTRAL RESERVE FEATURE WALL WITH INTERPRETIVE ARTWORK- ELEVATION
SCALE 1:25

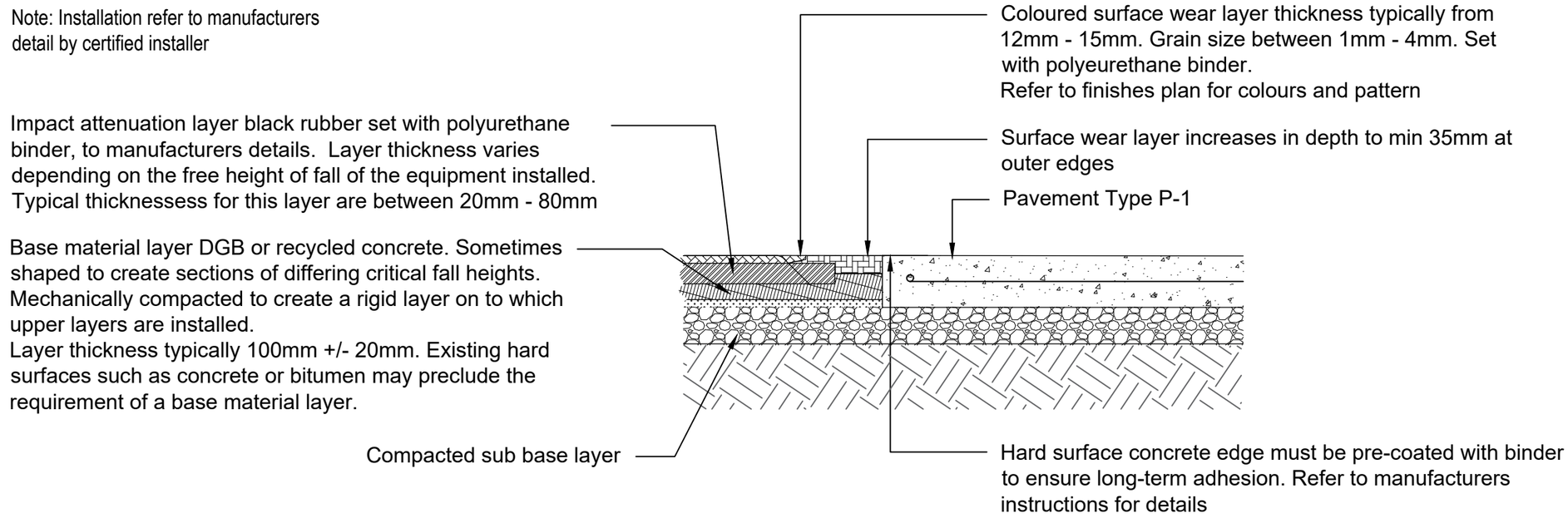
place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

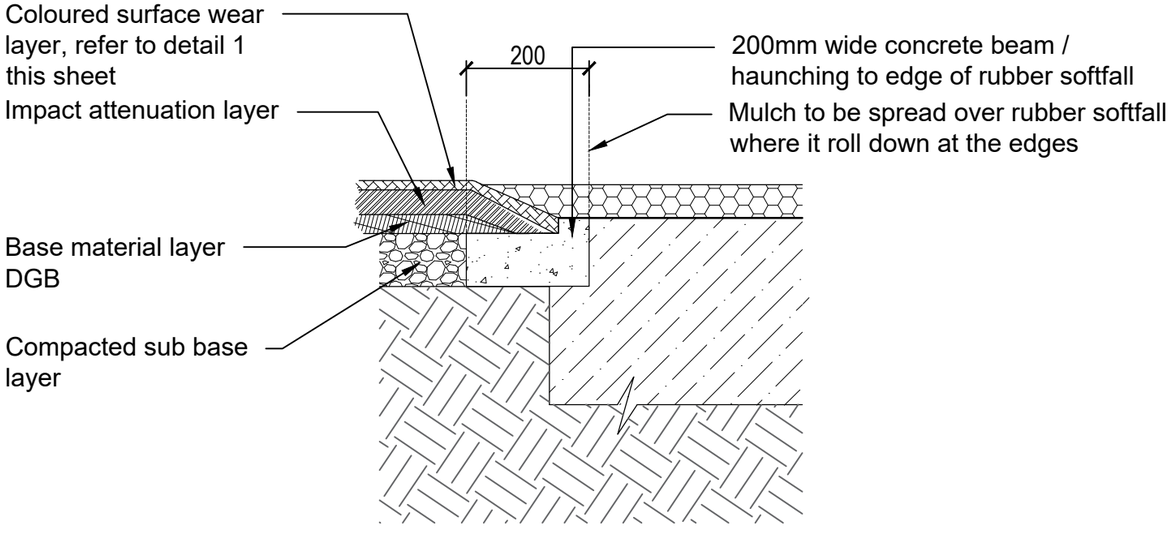
Open Space Typical Details - Central Reserve Feature Wall Details

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 40**

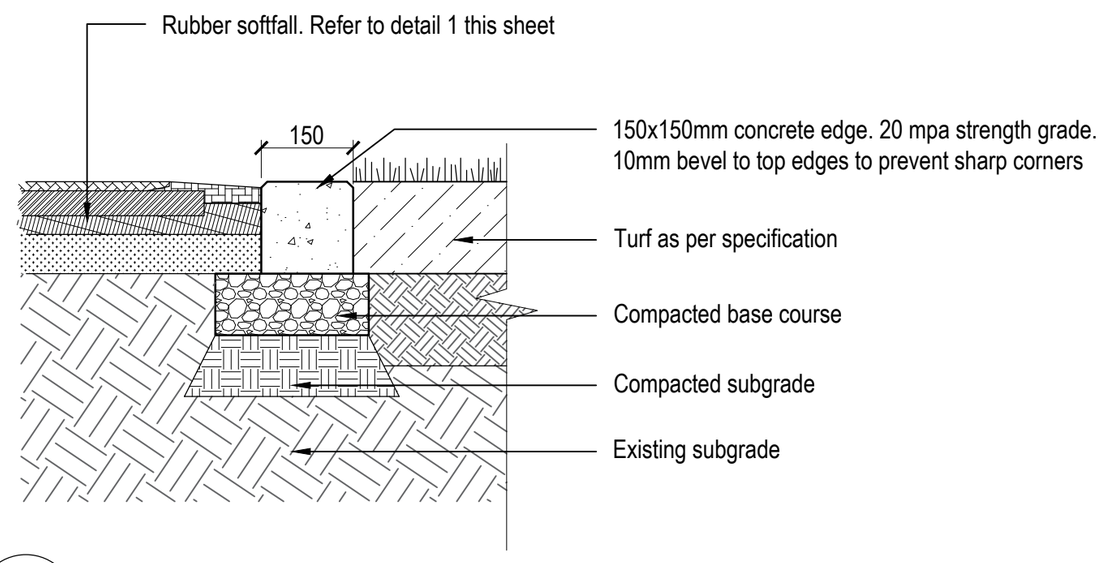
Note: Installation refer to manufacturers detail by certified installer



1 TYPICAL RUBBER SOFT FALL DETAIL
SCALE 1:10



2 TYPICAL RUBBER SOFT FALL WITH ROLLED EDGE
SCALE 1:10



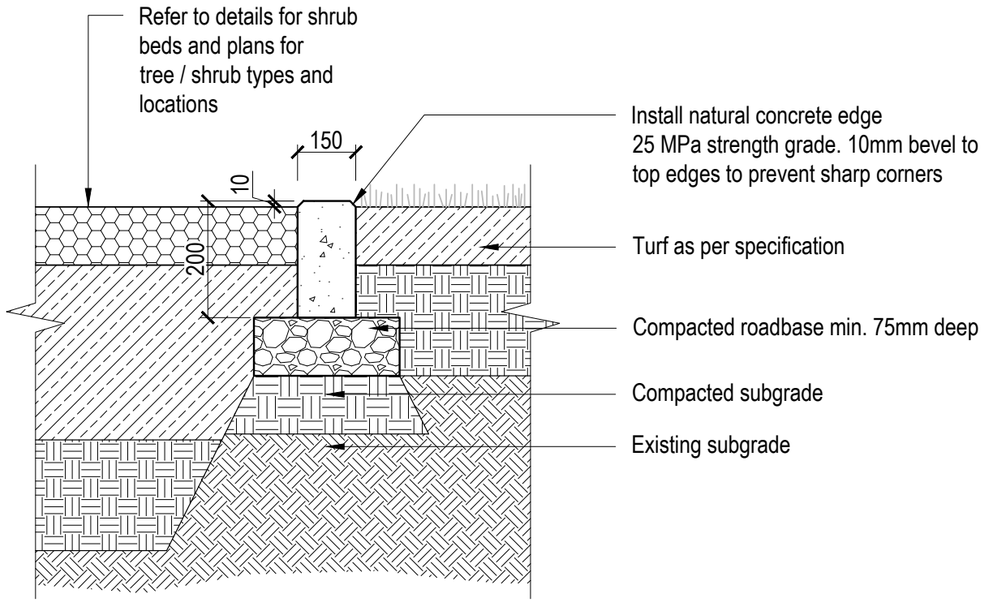
3 TYPICAL RUBBER SOFT FALL WITH CONCRETE EDGE
SCALE 1:10

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

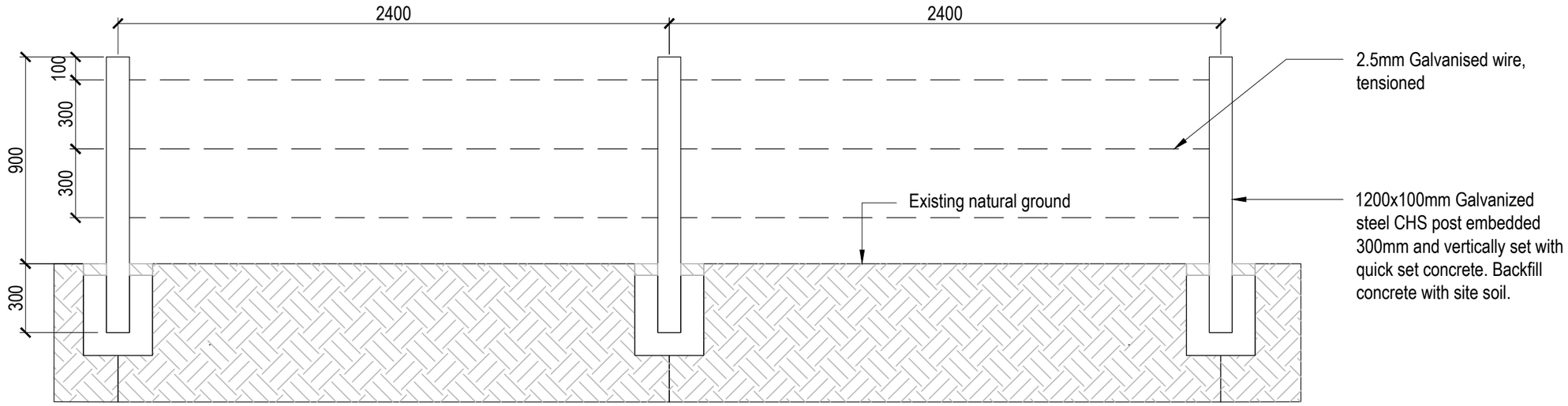
Open Space Typical Details -Soft Fall Details

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 41**



Note:
1. Garden edges to be installed to all junctions between planted areas and turf refer to plans for locations;
2. The edging section is increased to 200x300 mm at the locations where maintenance vehicles are proposed to access gardens;
3. Dummy joints every 1.5m, expansion joints every 6.0m

1 TYPICAL CONCRETE EDGE DETAIL
SCALE 1:10



2 TYPICAL GALV. STEEL POST & WIRE FENCE DETAIL FOR CONSERVATION AREA
SCALE 1:20

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

16 Chapman Street, Werrington Open Space DA Report

Open Space Typical Details - Miscellaneous Details

DATE	PROJECT NO.	REVISION	DWG NO.
09/04/2021	2519036	07	**SK - 42**

Place Design Group Pty Ltd

DEVELOPER MAINTENANCE & DEFECTS LIABILITY PROGRAM

Client: Lendlease

Project Name: 16 Chapman Street, Werrington NSW

Precinct Name: Central reserve & Eastern Basin Open Space

Works Description: Maintenance for all Hard Landscape areas

Maintenance Period: 12 Months from Practical Completion

HARDSCAPE AREAS:

TASK DESCRIPTION:	FREQUENCY: 0-6 Months	FREQUENCY: 6 - 12 Months
Concrete pavements, walls & edging		
Visual inspection of all pavements for damage, cracks or chips	*Fortnightly*	*Monthly*
Visual inspection of all pavements for efflorescence (Salt deposits)	*Fortnightly*	*Monthly*
Visual inspection of all pavements for colour consistancy and stains	*As Required*	*As Required*
Leaf and debris clearance with blower	*Monthly*	*Quarterly*
Paved Surfaces		
Visual inspection of all paving for damage, cracks or stains	*Fortnightly*	*Monthly*
Visual inspection of all paving for lifting of sub base	*Fortnightly*	*Monthly*
Visual inspection of all paving for mortar damage / re-pointing		
Clean in accordance with manufacturers recommendations and warranties	*As required*	*As required*
Replace failed or damaged paving and resin bound gravels	*As required*	*As required*
Soft Fall Surfaces		
Visual inspection of all rubber soft fall for damage, cracks, joint separation or stains	*Fortnightly*	*Monthly*
Visual inspection of all rubber soft fall for lifting of sub base and wearing course	*Fortnightly*	*Monthly*
Visual inspection of all rubber soft fall for colour fade	*Fortnightly*	*Monthly*
Clean and repair in accordance with manufacturers recommendations and warranties	*As required*	*As required*
Shelter and Play Equipment		
Inspect, maintain & repair all defects to steel shelter and roof in accordance to the manufacturers recommendations and warranties	*Monthly/ As required*	*Quarterly*
Inspect, maintain & repair all defects to all play equipment in accordance to the manufacturers recommendations and warranties	*Monthly/ As required*	*Quarterly*
Clean in accordance with manufacturers recommendations and warranties	*As Required*	*As Required*
Allow for re-application of timber exterior paint or oil based stain every two years where timber is used		*2 years*
Furniture		
Inspect, maintain & repair all furniture elements in accordance to the manufacturers recommendations and warranties	*Monthly/ As required*	*Monthly/ As required*
Allow for re-application of timber exterior paint or oil based stain every two years where timber is used		*2 years*
Bollards		
Inspect, maintain & repair all defects to removable Steel bollards & collars	*Monthly*	*Monthly/ As required*
Clean stains in accordance with manufacturers recommendations	*As Required*	*As Required*
Allow for re-application of timber exterior paint or oil based stain every two years where timber is used		*2 years*
Drainage		
Replace failed or damaged surface drains or grates	*As required*	*As required*
Replace failed or damaged sub surface drains or outlets	*As required*	*As required*
Remove all leaf and debris from field gullies & surface drains	*Monthly*	*Quarterly*
Clear away all Leaf and debris with blower	*Monthly*	*Quarterly*
Irrigation (if required)		
Inspect, maintain & repair all defects to lines & emitters	*Monthly/ As required*	*Quarterly*
Inspection of water storage tank	*Bi-Annually*	*Annually/ As Required*
Inspection & service of irrigation pump and UV filter	*Monthly*	*Quarterly*
Inspection & service of irrigation control panel	*Monthly*	*Quarterly*
Urgent works		
Report any theft, damage or vandalism	*Weekly*	*As required*

ADDITIONAL WORKS / COMMENTS:

Site Foreman

Place Design Group Pty Ltd

PROPOSED MAINTENANCE SCHEDULE

Client: Lendlease

Project Name: 16 Chapman Street, Werrington NSW

Precinct Name: Central reserve & Eastern Basin Open Space

Works Description: Maintenance of Hard and Soft Landscape Areas

Maintenance Period: 12 Months from Practical Completion

SOFTSCAPE AREAS:

TASK DESCRIPTION:	FREQUENCY: 0-6 Months	FREQUENCY: 6 - 12 Months
Trees		
Visual inspection of all trees	*Fortnightly in summer/ Monthly in Winter*	Monthly in summer/ Once in Winter
Manually inspect water levels to trees	*Fortnightly in summer/ Monthly in Winter*	Monthly in summer/ Once in Winter
Inspect damage to trees	*Fortnightly in summer/ Monthly in Winter*	Monthly in summer/ Once in Winter
Replace any taping to trees	*Fortnightly in summer/ Monthly in Winter*	Monthly in summer/ Once in Winter
Prune dead or damaged branches	*Fortnightly in summer/ Monthly in Winter*	Monthly in summer/ Once in Winter
Check for and report pests & diseases	*Fortnightly*	Monthly
Replace failed or damaged trees	*Fortnightly/ As required*	Monthly/ As required
Spray in accordance with manufacturers recommendations	*As required*	As required
Adjust &/ or replace stakes & ties where necessary	*As required*	As required
Turf		
Mow all turf areas to maintain height between 25-35mm	*Weekly in Summer/ Monthly in Winter*	Fortnightly in Summer/ Every 2 Months in Winter
Trim edges of all turf areas	*Weekly in Summer/ Monthly in Winter*	Fortnightly in Summer/ Every 2 Months in Winter
Remove clippings from site	*Weekly in Summer/ Monthly in Winter*	Fortnightly in Summer/ Every 2 Months in Winter
Remove litter & debris from turf areas	*Weekly in Summer/ Monthly in Winter*	Fortnightly in Summer/ Every 2 Months in Winter
Check for and report pests & diseases	*Fortnightly*	Monthly
Spray in accordance with manufacturers recommendations	*As required*	As required
Monitor and apply fertiliser to turf areas	*6 month intervals - Autumn/ Spring*	Yearly - Spring
Mulch		
Remove litter & debris from mulch areas	*Fortnightly*	Monthly
Remove weed growth in mulch areas	*Fortnightly*	Monthly
Top up mulch levels	*Annually*	Annually
Plants		
Check for and report pests & diseases	*Fortnightly*	Monthly
Spray in accordance with manufacturers recommendations	*Fortnightly*	Monthly
Prune damaged or dead branches	*Fortnightly*	Monthly
Remove weed growth in plant areas	*Fortnightly*	Monthly
Replace failed or damaged plants	*Fortnightly/ As required*	Monthly/ As required
Adjust &/ or replace stakes & ties where necessary	*Fortnightly/ As required*	Monthly/ As required
General Watering to all street trees Irrigation by water cart or hosecock as required to maintain plant vigor & health	Weekly first 6 months/ Fortnightly there after dependent on rainfall conditions	Monthly dependent on rainfall conditions
Urgent works		
Report any theft, damage or vandalism	*Weekly*	As required

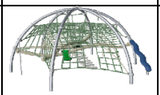
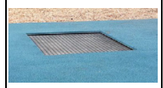
ADDITIONAL WORKS / COMMENTS:

Site Foreman

place design group.

Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

Playground / Amenities Maintenance Schedule & Opinion of Probable Life Cycle Costs

DESCRIPTION	DIMENSIONS	SPECIFICATION	IMAGE	WARRANTY INFORMATION	NUMBER	TOTAL REPLACEMENT COST (PER ITEM)
Carousel	**Dia:**3150mm **H:** 870mm	**Description:** All Accessible Carousel **Product Code**: N-9070 **Fall Height:** 1500mm **Supplier:** Moduplay		**Warranty** Moving Parts and Non structural rope items: 2 Years Static Metal Play: 10 Years	1	$26,410
Swings	**L:** 9860mm **W:** 2800mm **H:** 2600	**Description**:3 bay portal swing with Birds nest rope swing, boat seat, toddler seat and normal seat **Finish:** Powdercoated galvanised steel pipe **Fixing**: Sub-surface fixed **Supplier:** Moduplay		**Warranty** Steel Post: 12 Years Moving Parts and Non structural rope items: 2 Years Static Metal Plat components: 10 Years	1	$11,490 (Include boat seat)
Explorer Dome	**L:** Varies **W:** 500mm **H:** Av 0.5m high	**Description**: Multiplay piece **Product Number:** COR86300 **Supplier:** Kompan		**Warranty** Corocord Rope: 10 Years S-Clamps: 10 Years Aluminium Clamps: 10 Years Plastic Activities: 5 Years Spare parts guaranteed: 10 Years	1	$ 73,500.00
Embankment Slide	**W:** 1200mm **H:** 1800mm	**Description**: Concrete embankment slide **Product Number:** L000202 **Supplier:** Lypa		**Warranty** Panels: Lifetime Post: 10 Years Spare parts guaranteed 10 Years		$ 8,832.00
Custom Mountaineers Rope	**H:** 2000mm	**Description:** Mountaineers Climbing Rope **Product Number:** COROCORD 16-2050-2C1 **Supplier:** Kompan		**Warranty** Corocord Rope: 10 Years Post: 10 Years Plastic Activities: 5 Years Spare parts guaranteed: 10 Years	1	$ 6,500.00
Softfall climbing aids	**W:** 400mm **H:** 400mm	**Description:** Softfall lumps on mound		**Warranty** Mechanical and chemical integrity Durapol-28 EPDM for a period of 5 years	Approx 4-7	$ 400.00
In-ground Trampoline	Edge of frame 1950 x 1500mm (Mat 1500 x 1050mm)	**Description:** Wheelchair accessible trampoline 'Wheely' model in ground trampoline **Colour:** TBC **Fall Height:** 1500mm **Installation:** To manufacturer's details Supplier: All-in-Play		**Warranty** Warranted Lifespan: Five Years	2	$8,500
Playground Fence	**H:** 1200mm **L:** 1500mm	**Description**: 1200mm high flat top playground fence **Panel length**: 2400mm **Finish**: Polyester powder coat (black) to AS4605 **Rail size:** 40 x 40 x 1.6mm **Post size**: 65 x 65 1800mm long (min) SHS **Picket spacing**: 87mm (19mm dia) **Material**: Pre galvanised steel to AS1450 **Fixing:** Concrete footing to engineer's detail		**Warranty** 10 year colour warranty		$450 per lm
Softfall Rubber		**Description:** Ethylene Propylene Diene Monomer (EPDM) granule rubber softfall **Thickness**: to Critical Fall Height requirements **Colour:** TBC Rubber softfall is to be certified to AS 4422 -2016.		**Warranty** Mechanical and chemical integrity Durapol-28 EPDM for a period of 5 years		$350 per m2
FURNITURE AND FIXTURES						
Bins	**H:** 1340mm **W:** 770mm **D:** 860mm	**Description:** Citisytle Enclosure Bine 240L **Supplier:** Grillex / Unisite **Finish:** Anodised aluminium extrusion with red hood **Fixing:** Surface mounted		**Warranty** 20 year warranty	3	$1,936
Timber Bench	**W:** 2000mm **D:** 570mm **H:** 845mm	**Description:** Citistyle seat **Supplier:** Grillex / Unisite **Finish:** Timberimage aluminum **Mounting:** Surface Mounded **Frame and footing finish:** Frame poeder coated (colour ' Silver Pearl Kinetic')		**Warranty** 20 year warranty	20	$1,174
Timber Picnic Setting	**W:** 2000mm **D:** 1535mm **H:** 775mm	**Description:** Citistyle Table setting **Supplier:** Grillex / Unisite **Finish:** Timberimage aluminum **Mounting:** Surface Mounded **Frame and footing finish:** Frame poeder coated (colour ' Silver Pearl Kinetic')		**Warranty** 20 year warranty	4	$2,481
Timber Shelter	**L:** 4000mm **W:** 4000mm **H:** 2300mm	**Description:** Custom shelter **Materials:** Hardwood timberposts - dark stain. Colourband roofing **Fixings:** Hot-dipped galvanised brackets and fixings Installation: Bolt down post fixing to manufacturer's specification			3	$80,000-$12,5000
Playground Shade Sails		**Structure:** Hypar Shade Sails **Heights:** Minimum 2.5m above accessible parts of equipment and 1.5m above non-accessible parts **Steelwork:** CHS (round) posts with anti-climbing devices **Surface Coating:** Hot dipped galvanised posts **Footings:** Bored piers to be certified by suitable structural engineer **Cover:** Architec 400 with minimum 15yr warranty against UV degradation. UV rating of a minimum of 90%. All fittings are rated galvanised chain. No turnbuckles or wire slings. **Colours:** TBC		**Warranty** Shade Australia: 10 Years Pro rata against UV + stitching degradation.		$ 80,000.00
FITNESS EQUIPMENT						
Fitness Station	**Varies**	**Description:** Urban fit Trekko - Body "Byron" UFT- 3616 **Materials:** Steel			1	$ 16,000.00
Jump Box	**Varies**	**Description:** Urban fit Trekko - Jump Box UFT- 3609 **Materials:** Steel			1	$ 3,000.00
Static Bench	**Varies**	**Description:** Urban fit Trekko - Static Bench UFT- 3601 **Materials:** Steel			1	$ 3,400.00
Parkour module	**L:** 5440mm **W:** 3920mm **H:** 3150mm	**Description:** Dash Parkour module 1: Vault & jump **Product code**: 081760M **Supplier**: Lappset		**Warranty** Steel components: 20 Years concrete partss: 10 Years	1	$ 43,712.00

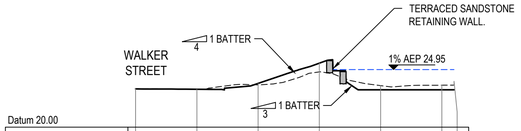
Note:
Costs provided are approximate only and informed by current supplier costs (November 2020). These costs are subject to change based on supply, lead times, and availability of products, construction methodology, final design and Council requirements.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Swings											$ 1,000				
Explorer Dome													$ 5,000		
Embankment Slide															
Custom Mountaineers Rope							$ 1,500			$ 1,500					
Softfall climbing aids						$ 2,000						$ 2,000			
In-ground Trampoline									$ 1,000				$ 10,000		
Playground Fence													$ 2,000		
Softfall Rubber								$ 3,000							$ 50,000
Litter Bin Enclosure			$ 1,000			$ 1,000			$ 1,000			$ 1,000			
Timber Bench			$ 1,000			$ 1,000			$ 1,000			$ 1,000			
Picnic Setting			$ 1,000			$ 1,000			$ 1,000			$ 1,000			
Timber Shelter					$ 2,000					$ 2,000					$ 1,000
Playground Shade Sails														$ 40,000	
Fitness Station				$ 500							$ 500				
Jump Box				$ 500							$ 500				
Parkour module				$ 500							$ 500				
Static Bench				$ 500							$ 500				
Total	$ -	$ -	$ 3,000	$ 2,000	$ 2,000	$ 5,000	$ 1,500	$ 3,000	$ 4,000	$ 3,500	$ 3,000	$ 5,000	$ 17,000	$ 40,000	$ 51,000

Note:
Costs provided are approximate only and informed by current supplier costs (November 2020). These costs are subject to change based on supply, lead times, and availability of products, construction methodology, final design and Council requirements.

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, Sydney, NSW 2017
T + 61 2 9290 3300
F + 61 7 3852 4766

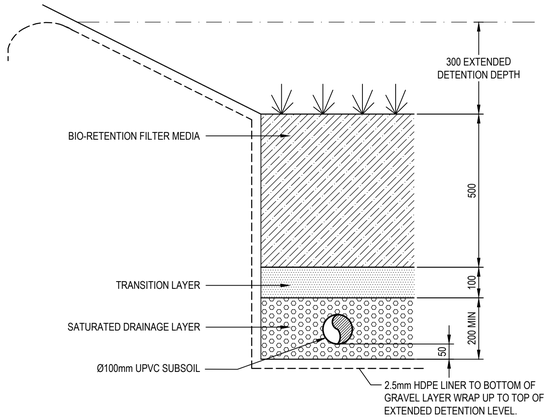
XREFs: XR-80219053-CI-ROAD; XR-80219053-CI-EXST CONTOURS-500; XR-80219053-CI-TREES; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-OSD-PLAN; XR-80219053-CI-CONTROL; XR-80219053-CI-CENTRAL PARK STAIRS; XR-80219053-CI-STORMWATER
CAD File: N:\Projects\802\FY19\053_Chapman St-Werrington\Drawings\Build\000 Masterplan\Sketches\80219053-001-SK125-SK127.dwg
DATE PLOTTED: 20 November 2020 3:01 PM BY - THOMAS BLEASDALE



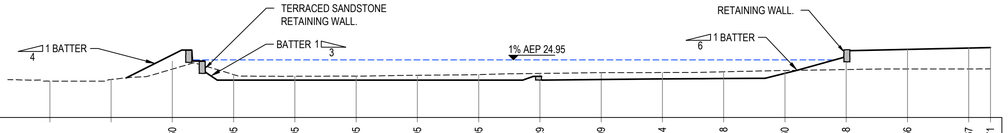
Datum 20.00

CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	51.982
DESIGN LEVEL	23.12	23.09	23.57	25.22	23.05	23.05	23.05
EXISTING LEVEL	23.14	23.09	23.44	24.51	23.39	23.42	23.42

BASIN A SECTION 4
V 1:250
H 1:500



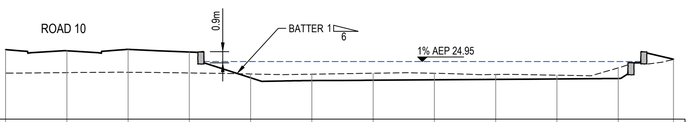
TYPICAL BIO RETENTION FILTER LAYER
SCALE 1:10



Datum 20.00

CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	163.556
DESIGN LEVEL			24.60	23.05	23.05	23.05	23.05	23.05	23.29	23.09	23.14	23.18	23.60	25.48	25.56	25.67	25.71	
EXISTING LEVEL		22.97	23.10	23.95	23.50	23.36	23.38	23.44	23.50	23.59	23.66	23.67	23.73	23.83	23.91	23.96	23.96	23.97

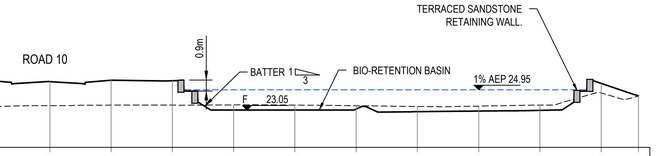
BASIN A SECTION 3
V 1:250
H 1:500



Datum 20.00

CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	109.027
DESIGN LEVEL	25.67	25.58	25.70	25.48	23.37	23.15	23.18	23.21	23.25	23.28	23.32	24.89
EXISTING LEVEL	23.76	23.80	23.83	23.77	23.68	23.67	23.75	23.74	23.64	23.59	24.18	24.87

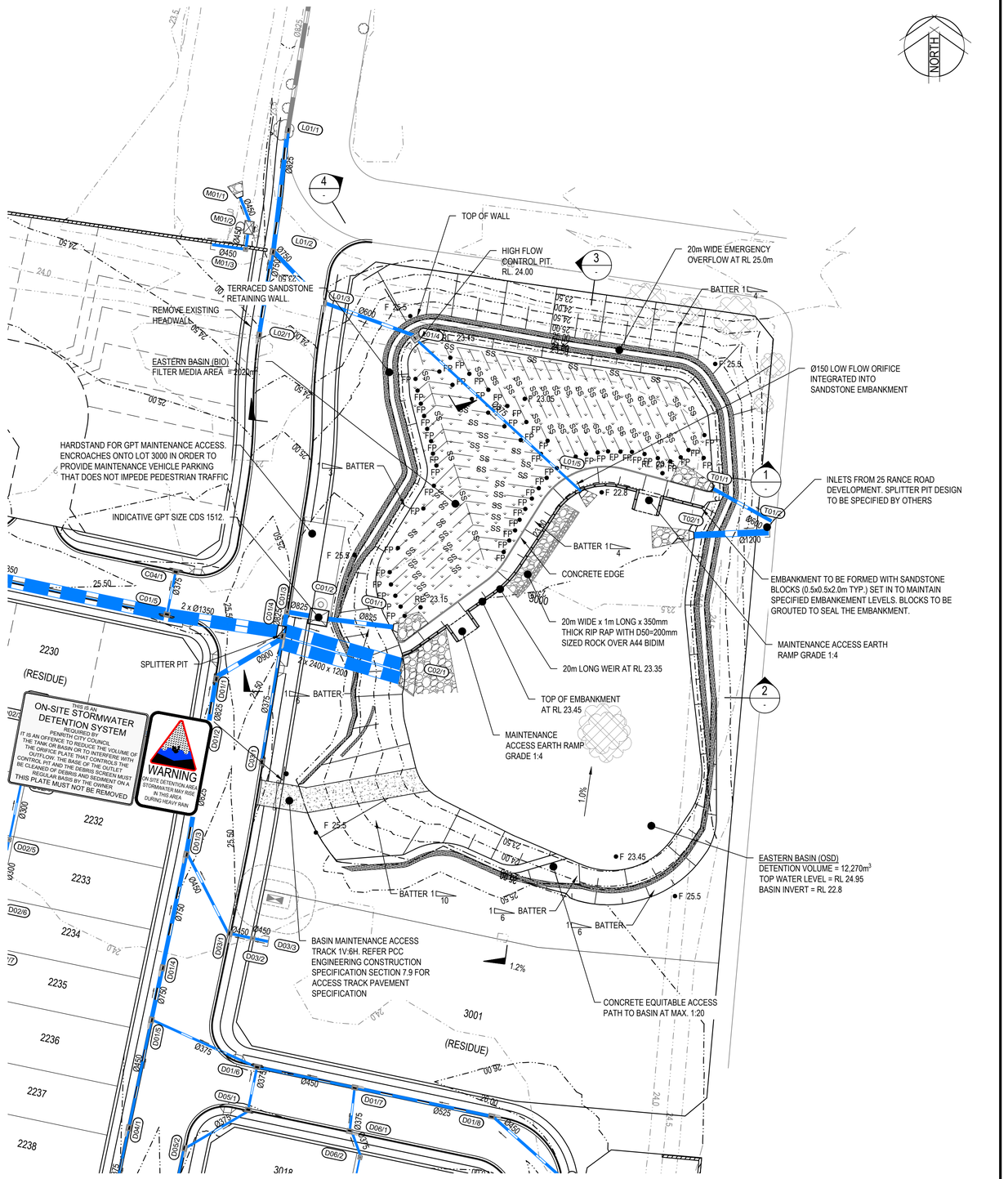
BASIN A SECTION 2
V 1:250
H 1:500



Datum 20.00

CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	106.082
DESIGN LEVEL	25.46	25.37	25.48	25.44	23.05	23.05	23.13	22.91	22.97	23.02	25.22	24.21
EXISTING LEVEL	23.32	23.41	23.45	23.45	23.47	23.45	23.40	23.34	23.37	23.45	24.45	24.18

BASIN A SECTION 1
V 1:250
H 1:500



EASTERN OSD BASIN PLAN
SCALE 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
4	6/11/2020	ISSUED FOR INFORMATION	HLD	AG	
3	13/02/2020	ISSUED FOR INFORMATION	HLD		
2	19/12/2019	ISSUED FOR INFORMATION	HLD		
1	13/12/2019	ISSUED FOR INFORMATION	HLD		

0 0.2 0.4 0.6 0.8 1m
SCALE 1:10 @A1
0 5 10 15 20 25m
SCALE 1:250 @A1
0 10 20 30 40 50m
SCALE 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	HLD	13/12/2019
Checked	AG	13/12/2019
Designed	HLD	13/12/2019
Verified		Date
Approved		

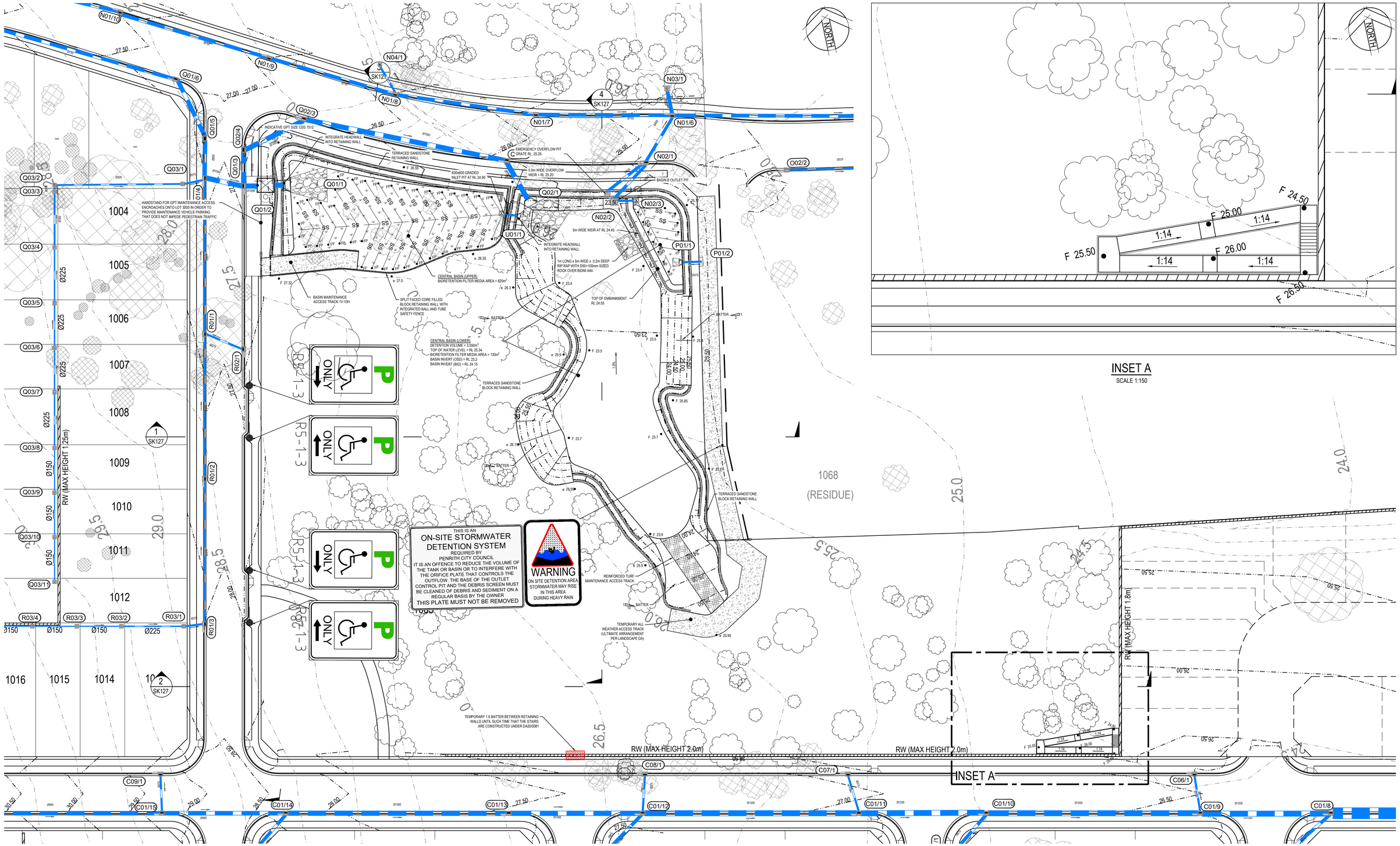
Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON CIVIL WORKS
Title: EASTERN OSD BASIN PLAN AND SECTIONS

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

	Scale	Size
DEC'19	AS SHOWN	A1

Drawing Number: 80219053-001-SK125
Revision: 4

XREF's: XR-80219053-CI-ROAD; XR-80219053-CI-EXIST CONTOURS-500; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-TREES; XR-80219053-CI-CENTRAL PARK STAIRS; XR-80219053-CI-CONTROL; XR-80219053-CI-OSD-PLAN; XR-80219053-CI-RETAINING WALL PLAN
CAD File: N:\Projects\802\PY19053_Chapman St-Werrington\Drawings\Build\000 Masterplan\Sketches\80219053-001-SK125-SK127.dwg
DATE PLOTTED: 20 November 2020 2:59 PM BY: - THOMAS BLEASDALE



INSET A
SCALE 1:150

CENTRAL OSD BASIN PLAN
SCALE 1:400

Rev.	Date	Description	Des.	Verif.	Appd.
5	6/11/2020	ISSUED FOR INFORMATION	HLD	AG	
4	14/02/2020	AMENDED ACCESS TRACK NOTE	HLD		
3	13/02/2020	ISSUED FOR INFORMATION	HLD		
2	19/12/2019	ISSUED FOR INFORMATION	HLD		
1	13/12/2019	ISSUED FOR INFORMATION	HLD		

0 5 10 15m
SCALE 1:150 @A1

0 10 20 30 40m
SCALE 1:400 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

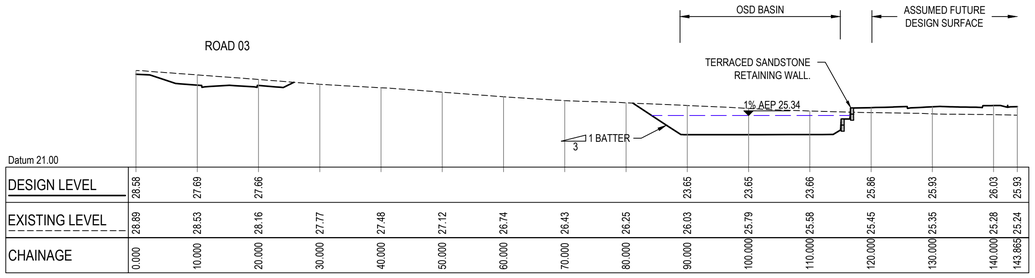
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	HLD	13/12/2019
Checked	AG	13/12/2019
Designed	HLD	13/12/2019
Verified		Date
Approved		

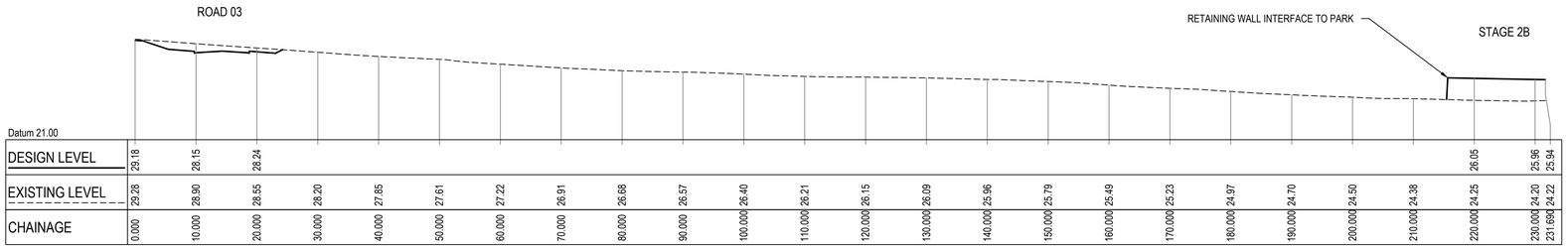
Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
Title: CENTRAL OSD BASIN PLAN

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DEC'19 | Scale: AS SHOWN | Size: A1
Drawing Number: 80219053-001-SK126 | Revision: 5

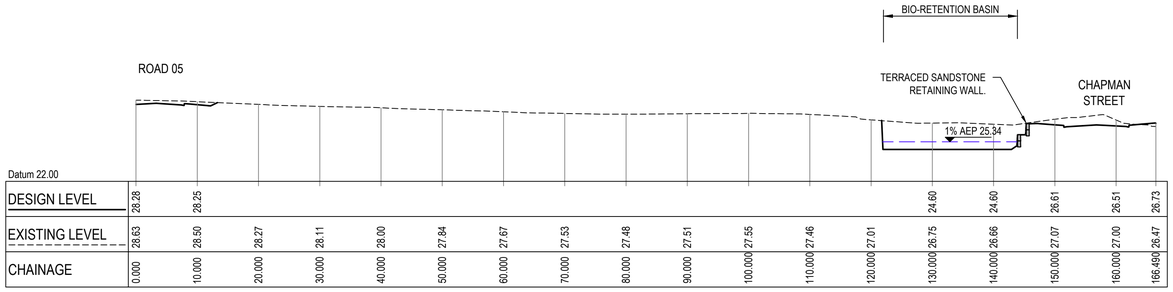
XREF's: XR-80219053-CI-ROAD; XR-80219053-CI-EXST CONTOURS-500; XR-80219053-CI-TREES; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-OSD-PLAN; XR-80219053-CI-CONTROL; XR-80219053-CI-CENTRAL PARK STAIRS; XR-80219053-CI-STORMWATER
CAD File: N:\Projects\802\PY19053_Chapman St-Werrington\Drawings\Build\000 Masterplan\Sketches\80219053-001-SK125-SK127.dwg
DATE PLOTTED: 20 November 2020 3:01 PM BY - THOMAS BLEASDALE



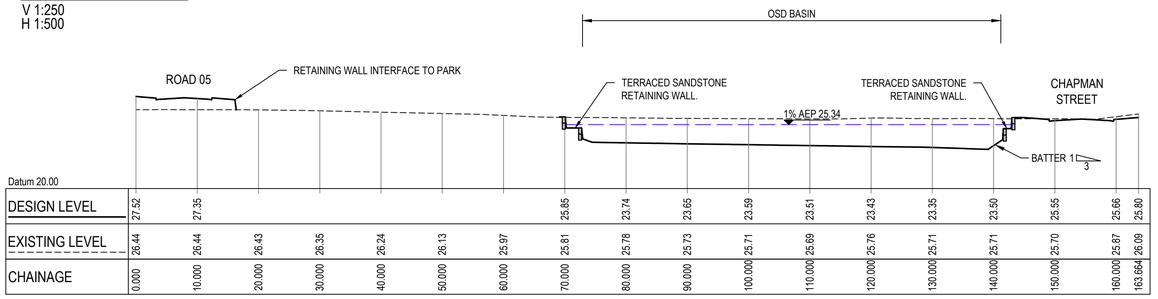
BASIN B SECTION 1
V 1:250
H 1:500



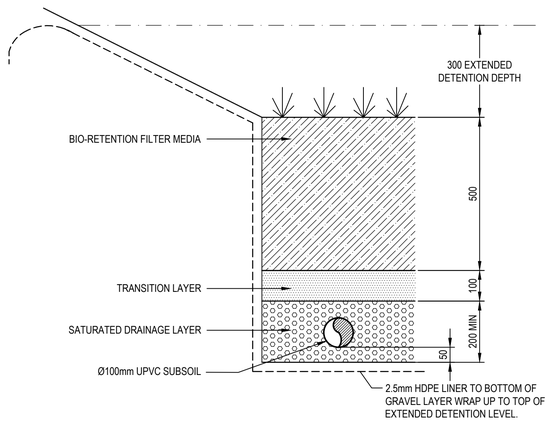
BASIN B SECTION 2
V 1:250
H 1:500



BASIN B SECTION 3
V 1:250
H 1:500



BASIN B SECTION 4
V 1:250
H 1:500



TYPICAL BIO RETENTION FILTER LAYER
SCALE 1:10

Rev.	Date	Description	Des.	Verif.	Appd.
4	6/11/2020	ISSUED FOR INFORMATION	HLD	AG	
3	13/02/2020	ISSUED FOR INFORMATION	HLD		
2	19/12/2019	ISSUED FOR INFORMATION	HLD		
1	13/12/2019	ISSUED FOR INFORMATION	HLD		

SCALE 1:10 @A1 (0 0.2 0.4 0.6 0.8 1m)
SCALE 1:250 @A1 (0 5 10 15 20 25m)
SCALE 1:500 @A1 (0 10 20 30 40 50m)

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

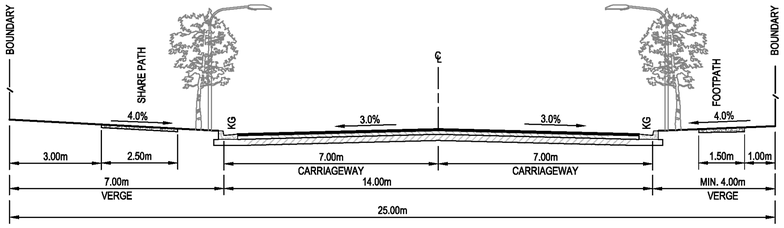
		Date
Drawn	HLD	13/12/2019
Checked	AG	13/12/2019
Designed	HLD	13/12/2019
Verified		Date
Approved		

Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON CIVIL WORKS
Title: CENTRAL OSD BASIN SECTIONS
Status: FOR INFORMATION ONLY NOT TO BE USED FOR CONSTRUCTION PURPOSES
DEC'19 | Scale: AS SHOWN | Size: A1
Drawing Number: 80219053-001-SK127
Revision: 4

DATE PLOTTED: 13 November 2020 4:38 PM BY: YIN NWE LWIN

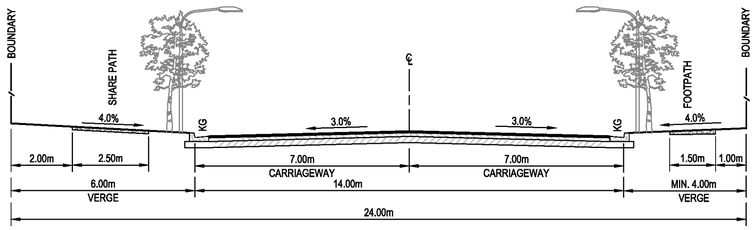
PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

EAST-WEST COLLECTOR ROAD SECTION

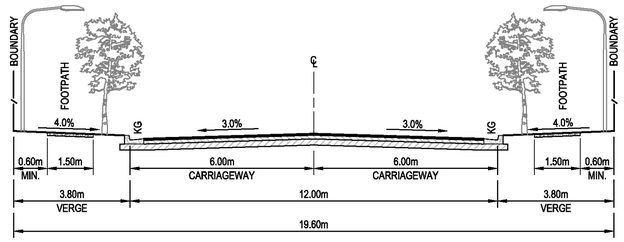


TYPICAL SECTION - EAST-WEST LINK ROAD
(MAJOR COLLECTOR ROAD)
ROAD 11: CH0.000 - CH750.000
SCALE 1:100

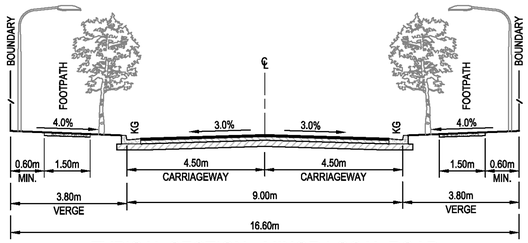
EAST-WEST COLLECTOR ROAD SECTION



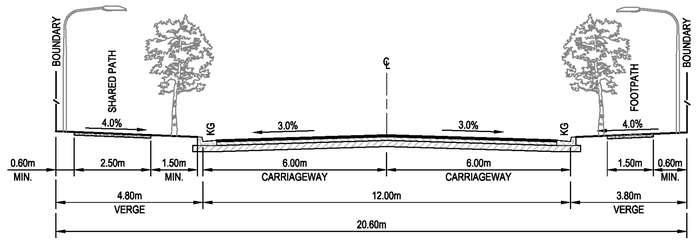
TYPICAL SECTION - EAST-WEST LINK ROAD
(MAJOR COLLECTOR ROAD)
ROAD 11: CH750.000 - CH972.497
SCALE 1:100



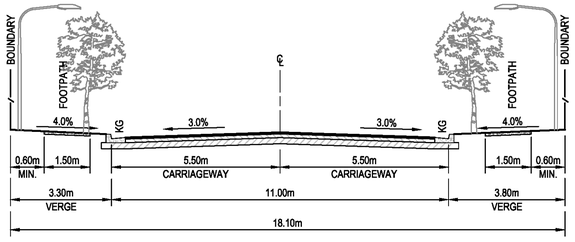
TYPICAL SECTION - NORTH SOUTH ROAD
(MINOR COLLECTOR ROAD)
ROAD 12
SCALE 1:100



TYPICAL SECTION - MINOR LOCAL ROAD
ROAD 01, 02, 03, 04, 05, 06, 10
SCALE 1:100



TYPICAL SECTION - NORTH SOUTH ROAD
(MINOR COLLECTOR ROAD)
ROAD 07
SCALE 1:100



TYPICAL SECTION - LOCAL ROAD
ROAD 08, 13
SCALE 1:100

Rev.	Date	Description	Des.	Verif.	Appd.
7	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
6	23/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 1 2 4 6 8 10m
SCALE 1:100 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	YNL	1/10/2019
Checked	PL	1/10/2019
Designed	HLD	1/10/2019
Verified	PL	1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION
Title: ROAD TYPICAL CROSS SECTION

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	1:100	A1

Drawing Number: 80219053-DA001-CI-1251
Revision: 7

XREFs:
CAD File: N:\Projects\80\2\FY19\053_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-1251 ROAD TYPICAL CROSS SECTIONS.dwg

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OR OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

XREFs: XR-80219053-CI-BOUNDARY; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-STORMWATER; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-SURVEY; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-QSD-PLAN; XR-80219053-CI-SITEWORKS; XR-80219053-CI-VPORTS; XR-80219053-CI-EXST CONTOURS-500; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-QSD-PLAN; XR-80219053-CI-SITEWORKS; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-BOUNDARY; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-VPORTS; XR-80219053-CI-SURVEY; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-STORMWATER; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-SURVEY; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-QSD-PLAN; XR-80219053-CI-SITEWORKS; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-BOUNDARY
CAD File: N:\Projects\80\2\PY190\53_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-1301-1307 SITEWORKS AND STORMWATER PLAN.dwg
DATE PLOTTED: 13 November 2020 5:27 PM BY - YIN NWE LWIN

JOINS DRG 1301

JOINS DRG 1304

TIERED RETAINING WALL

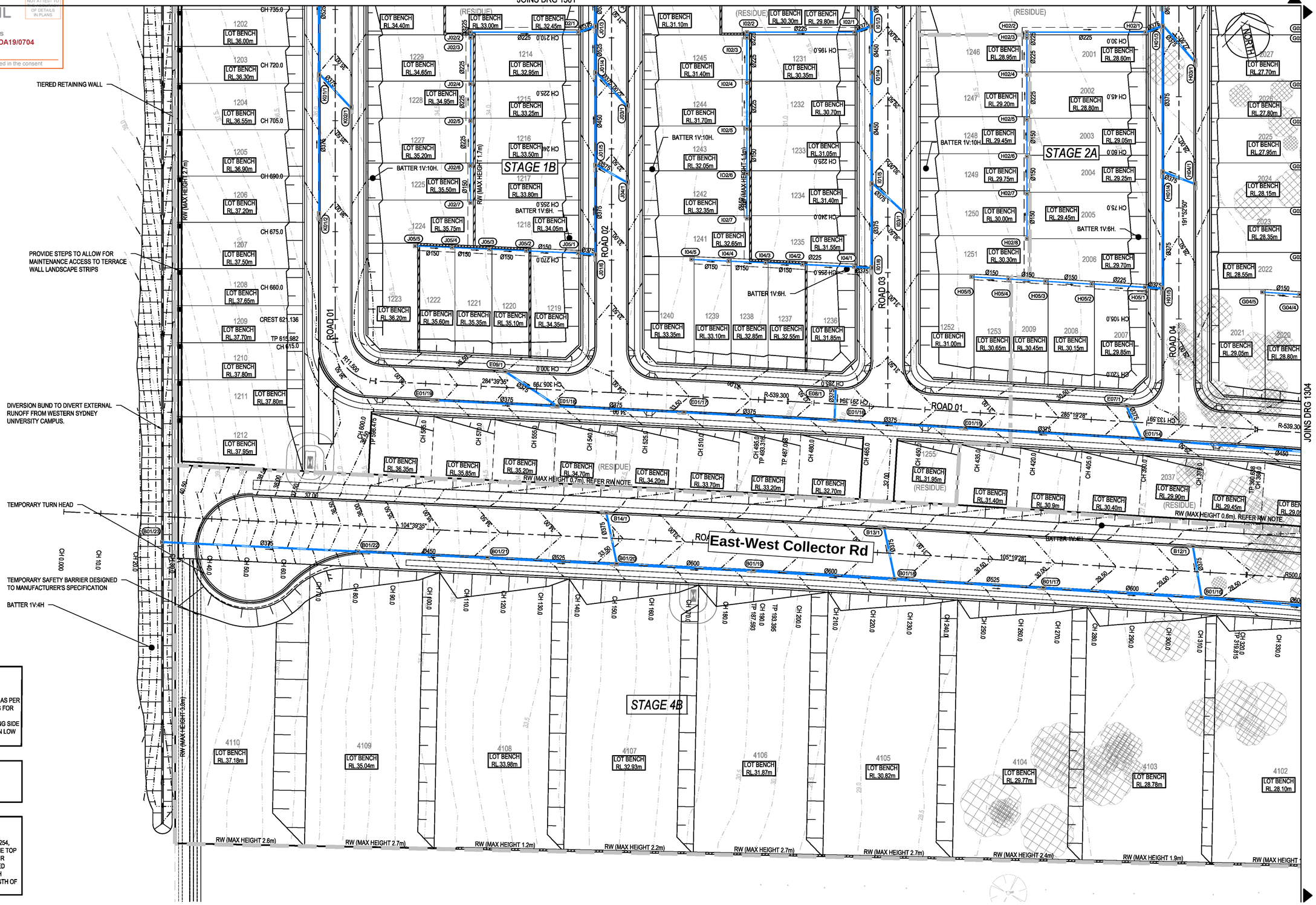
PROVIDE STEPS TO ALLOW FOR MAINTENANCE ACCESS TO TERRACE WALL LANDSCAPE STRIPS

DIVERSION BUND TO DIVERT EXTERNAL RUNOFF FROM WESTERN SYDNEY UNIVERSITY CAMPUS.

TEMPORARY TURN HEAD

TEMPORARY SAFETY BARRIER DESIGNED TO MANUFACTURER'S SPECIFICATION

BATTER 1V:4H



NOTE

1. REFER DRG. 1011 FOR NOTES AND LEGEND.
2. SUBSOIL DRAINAGE LINES TO BE PROVIDED AS PER PENRITH CITY COUNCIL DESIGN GUIDELINES FOR ENGINEERING WORKS.
3. BENCHED LOTS FEATURE 1:4 BATTERS ALONG SIDE BOUNDARY. TOE OF BATTER IS SITUATED ON LOW SIDE BOUNDARY

BENCHED LOTS

BENCH LEVELS STATED HERE ON ARE ONLY ACCURATE TO ±300mm

RW NOTE

THE BENCHED PADS SHOWN ON RESIDUE LOTS 1254, 1255, 2307, 2308 AND 2260 ARE AT GRADE WITH THE TOP OF THE LANDSCAPE BATTER OF ROAD 11 ON THEIR WESTERN SIDE. RETAINING WALLS ARE PROPOSED ONLY TO MANAGE THE LEVEL DIFFERENCE WHICH EXISTS EAST FROM THAT POINT ALONG THE LENGTH OF EACH PAD.

Rev.	Date	Description	Des.	Verif.	Appd.
9	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
8	18/08/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
7	17/07/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
6	23/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 10 20 30 40 50m
SCALE 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno® Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	YNL	1/10/2019
Checked	PL	1/10/2019
Designed	HLD	1/10/2019
Verified	PL	1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION
Title: SITEWORKS AND STORMWATER PLAN
SHEET 3 OF 7

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	1:500	A1

Drawing Number: 80219053-DA001-CI-1303
Revision: 9

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

JOINS DRG 1302

JOINS DRG 1303

JOINS DRG 1305

JOINS DRG 1306

STAGE 2A

STAGE 2B

STAGE 3

FUTURE APARTMENTS

(RESIDUE)

STAGE 4B

ROAD 01

ROAD 05

ROAD 06

ROAD 07

ROAD 10

ROAD 12

East-West Collector Rd

BASIN A

REFER DRG. 2001 FOR DETAIL.

PROVIDE STUB FOR FUTURE CONNECTION

NORTH

RW (MAX HEIGHT 1.9m)

RW (MAX HEIGHT 2.1m)

PENRITH CITY COUNCIL

COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS

This plan / document relates to Development Consent: DA19/0704

Subject to the conditions outlined in the consent

NOTE

1. REFER DRG. 1011 FOR NOTES AND LEGEND.
2. SUBSOIL DRAINAGE LINES TO BE PROVIDED AS PER PENRITH CITY COUNCIL DESIGN GUIDELINES FOR ENGINEERING WORKS.
3. BENCHED LOTS FEATURE 1:4 BATTERS ALONG SIDE BOUNDARY. TOE OF BATTER IS SITUATED ON LOW SIDE BOUNDARY

BENCHED LOTS

BENCH LEVELS STATED HERE ON ARE ONLY ACCURATE TO ±300mm

RW NOTE

THE BENCHED PADS SHOWN ON RESIDUE LOTS 1254, 1255, 2307, 2308 AND 2280 ARE AT GRADE WITH THE TOP OF THE LANDSCAPE BATTER OF ROAD 11 ON THEIR WESTERN SIDE. RETAINING WALLS ARE PROPOSED ONLY TO MANAGE THE LEVEL DIFFERENCE WHICH EXISTS EAST FROM THAT POINT ALONG THE LENGTH OF EACH PAD.

Rev.	Date	Description	Des.	Verif.	Appd.
9	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
8	18/08/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
7	17/07/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
6	23/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 10 20 30 40 50m

SCALE 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno® Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	YNL	Date 1/10/2019
Checked	PL	Date 1/10/2019
Designed	HLD	Date 1/10/2019
Verified	PL	Date 1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION

Title: SITEWORKS AND STORMWATER PLAN
SHEET 4 OF 7

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	1:500	A1

Drawing Number: 80219053-DA001-CI-1304

Revision: 9

XREFs: XR-80219053-CI-BOUNDARY; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-VPORTS; XR-80219053-CI-SURVEY; XR-80219053-CI-SITEWORKS; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-STORMWATER; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-QSD-PLAN; XR-80219053-CI-EXST CONTOURS-500; XR-80219053-CI-ROAD; XR-80219053-CI-TREES; XR-80219053-CI-CONTROL; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-STORMWATER; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-SITEWORKS; XR-80219053-CI-SURVEY; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-CONTROL; XR-80219053-CI-BOUNDARY; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-VPORTS

CAD File: N:\Projects\80\2CFY19\053_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-1301-1307 SITEWORKS AND STORMWATER PLAN.dwg

DATE PLOTTED: 13 November 2020 5:27 PM BY: YIN NWE LWIN

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

XREFs: XR-80219053-CI-BOUNDARY; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-LOTPORTS; XR-80219053-CI-STORMWATER; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-SITEWORKS; XR-80219053-CI-SURVEY; XR-80219053-CI-TREES; XR-80219053-CI-ROAD; XR-80219053-CI-QSD-PLAN; XR-80219053-CI-EXST CONTOURS-500; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-CONTROL;
CAD File: N:\Projects\80\2PY190\53_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-1301-1307 SITEWORKS AND STORMWATER PLAN.dwg
DATE PLOTTED: 13 November 2020 5:27 PM BY - YIN NWE LWIN

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0634
Subject to the conditions outlined in the consent

JOINS DRG 1304

JOINS DRG 1307

TRAFFIC BARRIER

EXTENT OF WORK

CH 92.063
CH 90.0
CH 80.0
CH 70.0
CREST 65.037
CH 60.0
TP 53.411
CH 50.0
CH 40.0
CH 30.0
CH 20.0
CH 10.0
CH 0.000

ROAD 13

STAGE 2A

East-West Collector Rd

ROAD 11

RANCE ROAD

WERRINGTON ROAD

4000
(RESIDUE)

DP 218959
DP 527752

MAKE SMOOTH TRANSITION WITH EXISTING ROAD

EXISTING ISLANDS TO BE DEMOLISHED AND RECONSTRUCTED TO SUIT PROPOSED WORKS

EXISTING STORMWATER PIT TO BE RELOCATED

EXISTING ELECTRICAL OVERHEAD LINE TO BE RELOCATED

EXISTING LIGHT POLE TO BE RELOCATED

EXISTING WATER MAIN TO BE POTHOLED TO CHECK AGAINST PROPOSED LEVELS

APPROXIMATE PROPOSED BOUNDARY ADJUSTMENT

EXISTING SIGN POST TO BE RELOCATED

EXISTING GUARDRAILTO BE REALIGNED TO SUIT PROPOSED ROUNDABOUT LAYOUT

EXISTING STORMWATER HEADWALL

EXISTING BOUNDARY FROM SIX MAP CLIP AND SHIP BOUNDARY ALIGNMENT CONFIRMATION SUBJECT TO FUTURE SURVEY

REFER DRG. 2003 FOR DETAIL

RW (MAX HEIGHT 1.2m)

R-100.000
R200.000
SAG 11.231

NOTE

1. REFER DRG. 1011 FOR NOTES AND LEGEND.
2. SUBSOIL DRAINAGE LINES TO BE PROVIDED AS PER PENRITH CITY COUNCIL DESIGN GUIDELINES FOR ENGINEERING WORKS.
3. BENCHED LOTS FEATURE 1:4 BATTERS ALONG SIDE BOUNDARY. TOE OF BATTER IS SITUATED ON LOW SIDE BOUNDARY

BENCHED LOTS

BENCH LEVELS STATED HERE ON ARE ONLY ACCURATE TO ±300mm

RW NOTE

THE BENCHED PADS SHOWN ON RESIDUE LOTS 1254, 1255, 2307, 2308 AND 2260 ARE AT GRADE WITH THE TOP OF THE LANDSCAPE BATTER OF ROAD 11 ON THEIR WESTERN SIDE. RETAINING WALLS ARE PROPOSED ONLY TO MANAGE THE LEVEL DIFFERENCE WHICH EXISTS EAST FROM THAT POINT ALONG THE LENGTH OF EACH PAD.

Rev.	Date	Description	Des.	Verif.	Appd.
9	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
8	18/08/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
7	17/07/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
6	23/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

SCALE 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno
Shaping the Future
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	YNL	1/10/2019
Checked	PL	1/10/2019
Designed	HLD	1/10/2019
Verified	PL	1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION

Title: SITEWORKS AND STORMWATER PLAN
SHEET 5 OF 7

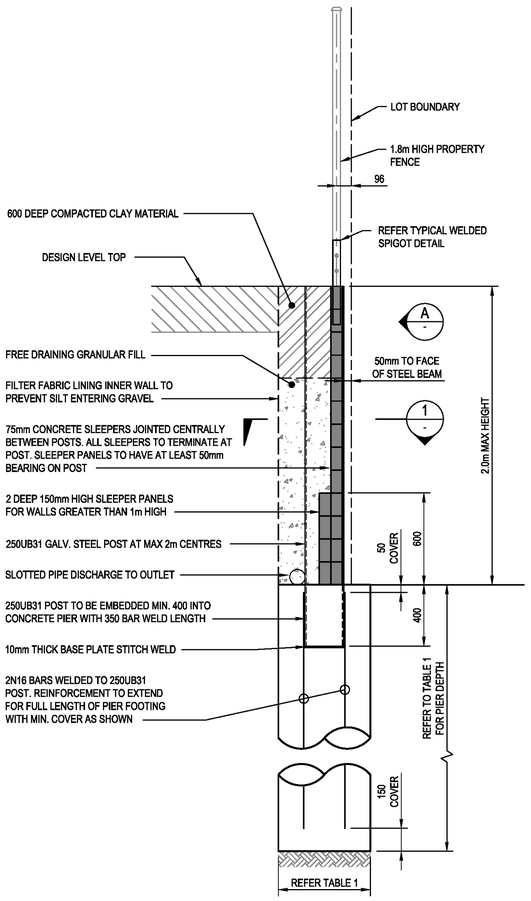
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	1:500	A1

Drawing Number: 80219053-DA001-CI-1305
Revision: 9

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Must be in accordance with all conditions outlined in the consent



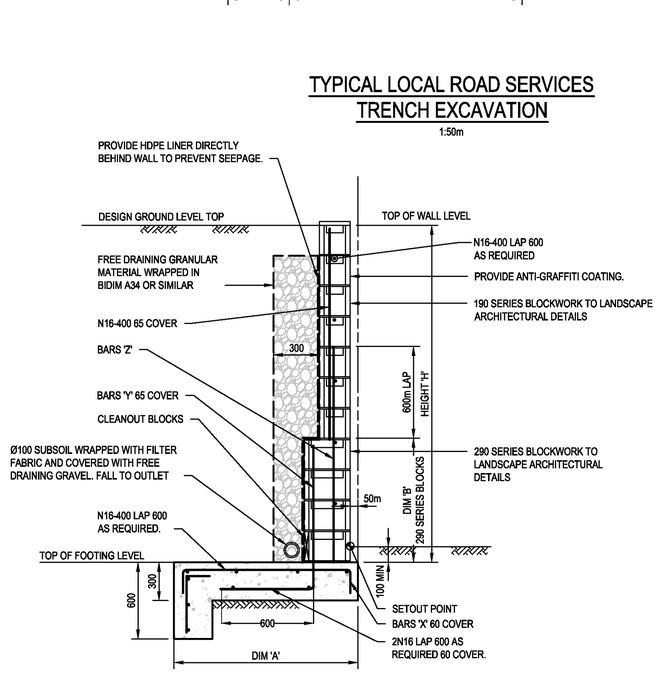
TYPICAL CONCRETE SLEEPER RETAINING WALL SECTION - MAX 2.0m HIGH

ALL OTHER WALLS EXCEPT ON COBHAM JUVENILE JUSTICE CENTRE BOUNDARY

SCALE 1:20

TABLE 1		
WALL HEIGHT	PIER DIAMETER	PIER DEPTH
0m - 1.0m	450Ø*	1200
1.0m - 2.0m	600Ø	2400

* MIN. 600Ø FOR PIERS AT CORNERS, JUNCTIONS AND SERVICE CROSSINGS

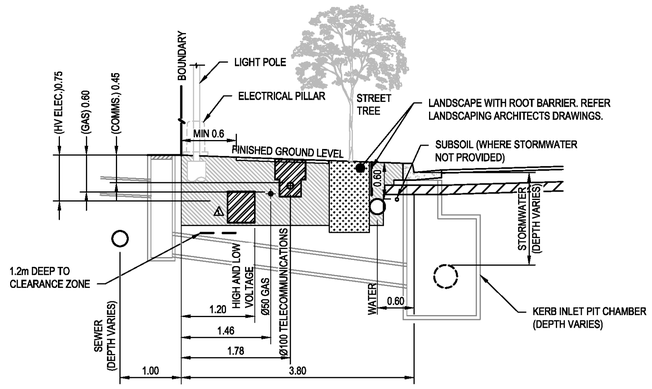


BLOCKWORK RETAINING WALL 2.0m TO 3.5m

WALL TYPE ALONG BOUNDARY WITH COBHAM JUVENILE JUSTICE CENTRE

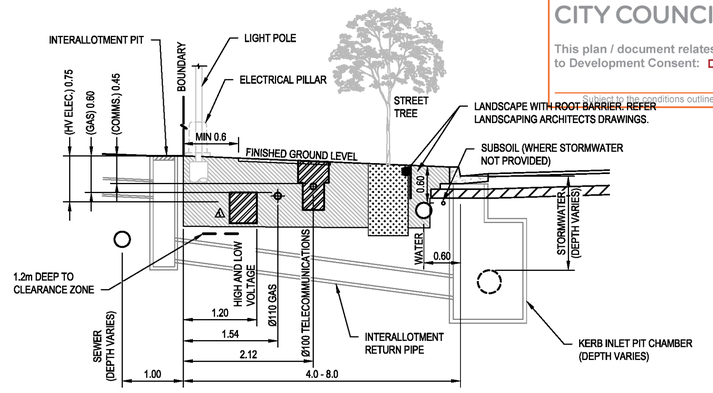
SCALE 1:20

H DIM	A DIM(1)	B DIM	BARS X	BARS Y	BARS Z
1800 < H ≤ 2200	1500	800	N16-400	N16-400	N16-400
2200 < H ≤ 2600	1900	1000	N16-200	N16-200	N16-200
2600 < H ≤ 3000	2300	1000	N16-200	N16-200	N16-200
3000 < H ≤ 3500	2400	1600	N20-200	N16-200	N20-200



TYPICAL LOCAL ROAD SERVICES TRENCH EXCAVATION

1:50m



TYPICAL COLLECTOR ROAD SERVICES TRENCH EXCAVATION

1:50m

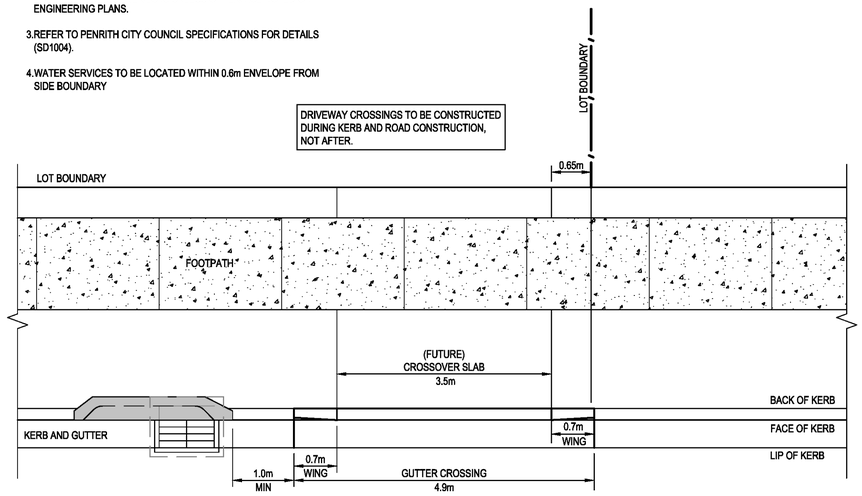
NOTE

1. FINAL SERVICES ALLOCATION TO BE COORDINATED WITH SERVICES AUTHORITIES.

NOTE:

1. DRAINAGE PITS TO BE LOCATED MINIMUM 1.0m FROM EDGE OF DRIVEWAY.
2. LAYBACKS TO BE CONSTRUCTED ON PRIMARY DRIVEWAY FRONTAGE FOR CORNER LOTS UNLESS OTHERWISE NOTED ON ENGINEERING PLANS.
3. REFER TO PENRITH CITY COUNCIL SPECIFICATIONS FOR DETAILS (SD1004).
4. WATER SERVICES TO BE LOCATED WITHIN 0.6m ENVELOPE FROM SIDE BOUNDARY

DRIVEWAY CROSSINGS TO BE CONSTRUCTED DURING KERB AND ROAD CONSTRUCTION, NOT AFTER.



TYPICAL DRIVEWAY LOCATION DETAIL

1:50m

Rev.	Date	Description	Des.	Verif.	Appd.
5	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	YNL	1/10/2019
Checked	PL	1/10/2019
Designed	HLD	1/10/2019
Verified	PL	1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION

Title: ROAD TYPICAL DETAILS
SHEET 1 OF 2

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	AS SHOWN	A1

Drawing Number: 80219053-DA001-CI-1601
Revision: 5

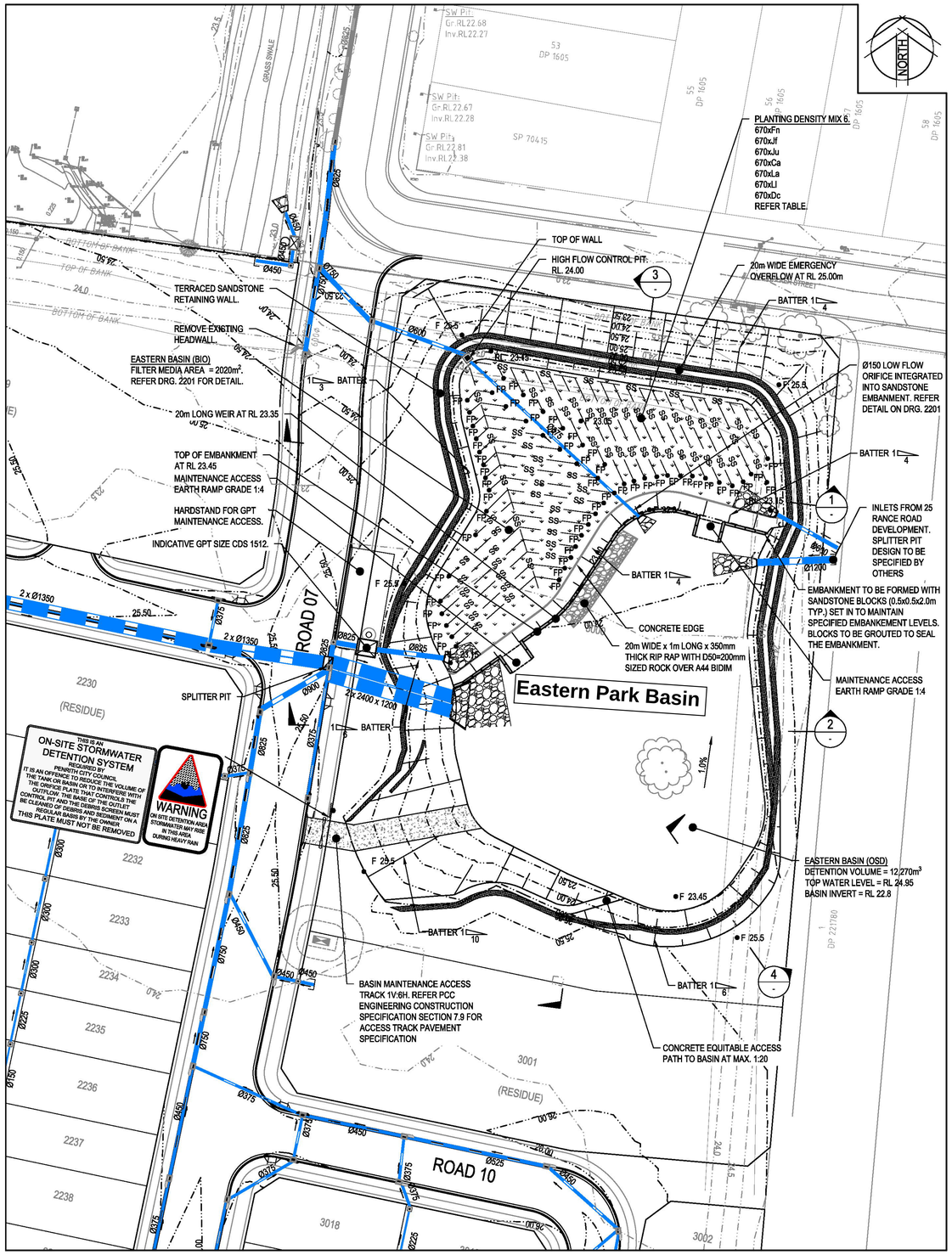
DATE PLOTTED: 13 November 2020 4:43 PM BY: - YIN NWE LWIN

XREFs: XR-80219053-CI-ROAD; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-EXST CONTOURS-250; XR-80219053-CI-DRIVEWAY; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-RETAINING WALL PLAN; XR-80219053-CI-RETAINING WALL PLAN
CAD File: N:\Projects\80\20\FY19\053_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-1601-1602 ROAD TYPICAL DETAILS.dwg

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

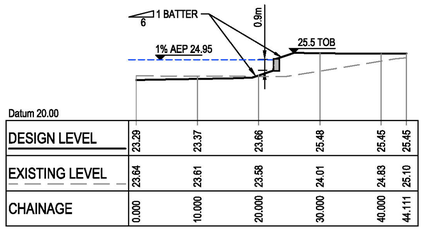
DATE PLOTTED: 13 November 2020 4:46 PM BY: - YIN NIME LWIN

XREFs: XR-80219053-CI-QSD-PLAN; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-SURVEY; XR-80219053-CI-ROAD; XR-80219053-CI-STORMWATER; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-EXIST CONTOURS-500; XR-80219053-CI-ROUNDABOUT
CAD File: N:\Projects\802\PY119053_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-2001-2003 DETENTION BASIN PLAN AND SECTIONS.dwg



DETENTION BASIN A PLAN

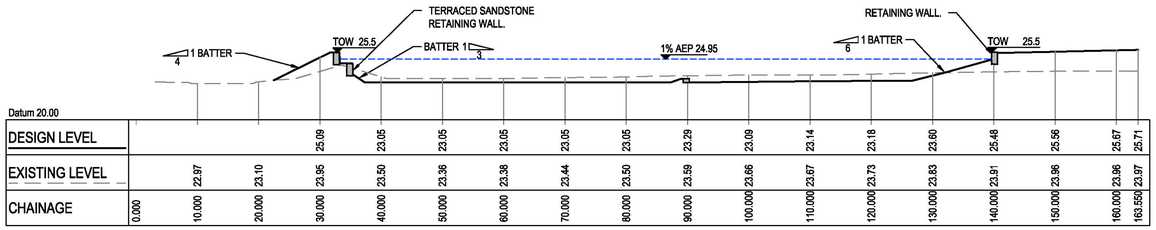
SCALE 1:500



Datum 20.00						
DESIGN LEVEL	23.29	23.37	23.66	25.48	25.45	25.45
EXISTING LEVEL	23.64	23.61	23.58	24.01	24.83	25.10
CHAINAGE	0.000	10.000	20.000	30.000	40.000	44.111

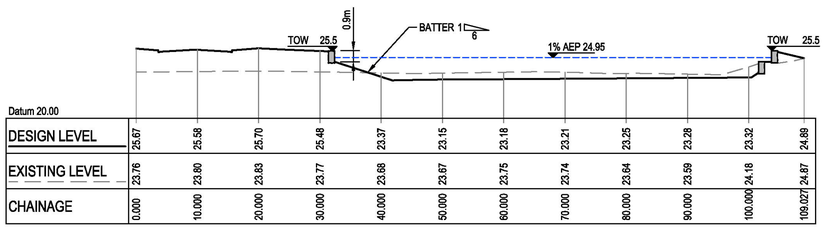
SECTION 4
SCALE 1:250V 1:500H

Mix 6						
Ca	*Carex appressa*	Sedge	1.3m	75mm	6	808
Dc	*Dianella caerulea*	Blue flax lily	0.5m	75mm	6	808
Fn	*Ficinia nodosa*	Knobby Club Rush	0.8m	75mm	6	808
Jf	*Juncus flavidus*	Mat Rush	1.0m	75mm	6	808
Ju	*Juncus usitatus*	Common Rush	1.0m	75mm	6	808
La	*Lepironia articulata*	Grey rush	0.9m	75mm	6	808
Li	*Lomandra longifolia*	Mat Rush	1.2m	75mm	6	808



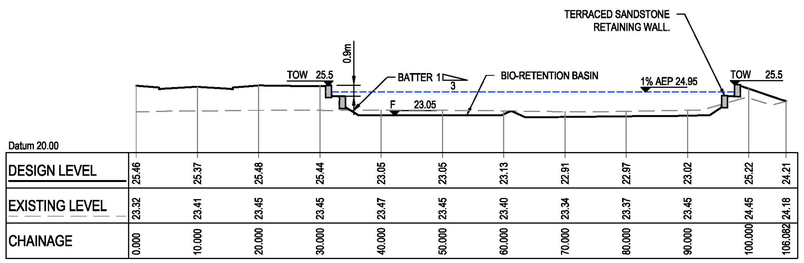
Datum 20.00																
DESIGN LEVEL			25.09	23.05	23.05	23.05	23.05	23.05	23.29	23.09	23.14	23.18	23.60	25.48	25.56	25.67	25.71
EXISTING LEVEL		22.97	23.10	23.95	23.50	23.36	23.38	23.44	23.50	23.59	23.66	23.67	23.73	23.83	23.91	23.98	23.96	23.97
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	163.550

SECTION 3
SCALE 1:250V 1:500H



Datum 20.00																
DESIGN LEVEL	25.67	25.58	25.70	25.48	23.37	23.15	23.18	23.21	23.25	23.28	23.32	24.99				
EXISTING LEVEL	23.76	23.80	23.83	23.77	23.68	23.67	23.75	23.74	23.64	23.59	24.18	24.87				
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	109.027				

SECTION 2
SCALE 1:250V 1:500H



Datum 20.00																
DESIGN LEVEL	25.46	25.37	25.48	25.44	23.05	23.05	23.13	22.91	22.97	23.02	25.22	24.21				
EXISTING LEVEL	23.32	23.41	23.45	23.45	23.47	23.45	23.40	23.34	23.37	23.45	24.45	24.18				
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	106.082				

SECTION 1
SCALE 1:250V 1:500H

NOTE:
1. REFER DRG. 2201 FOR OUTLET DETAILS
2. REFER LANDSCAPE ARCHITECT DRAWINGS FOR OPEN SPACE ESTABLISHMENT DETAILS

PENRITH CITY COUNCIL

COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS

This plan / document relates to Development Consent: DA19/0704

Subject to the conditions outlined in the consent

Rev.	Date	Description	Des.	Verif.	Appd.
6	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 2 4 6 8 10m
SCALE: 1:100 @A1

0 10 20 30 40 50m
SCALE: 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

	Date
Drawn YNL	1/10/2019
Checked PL	1/10/2019
Designed HLD	1/10/2019
Verified PL	1/10/2019
Approved AJG	1/10/2019

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION

Title: BIORETENTION / OSD BASIN PLAN AND SECTIONS
SHEET 1 OF 3

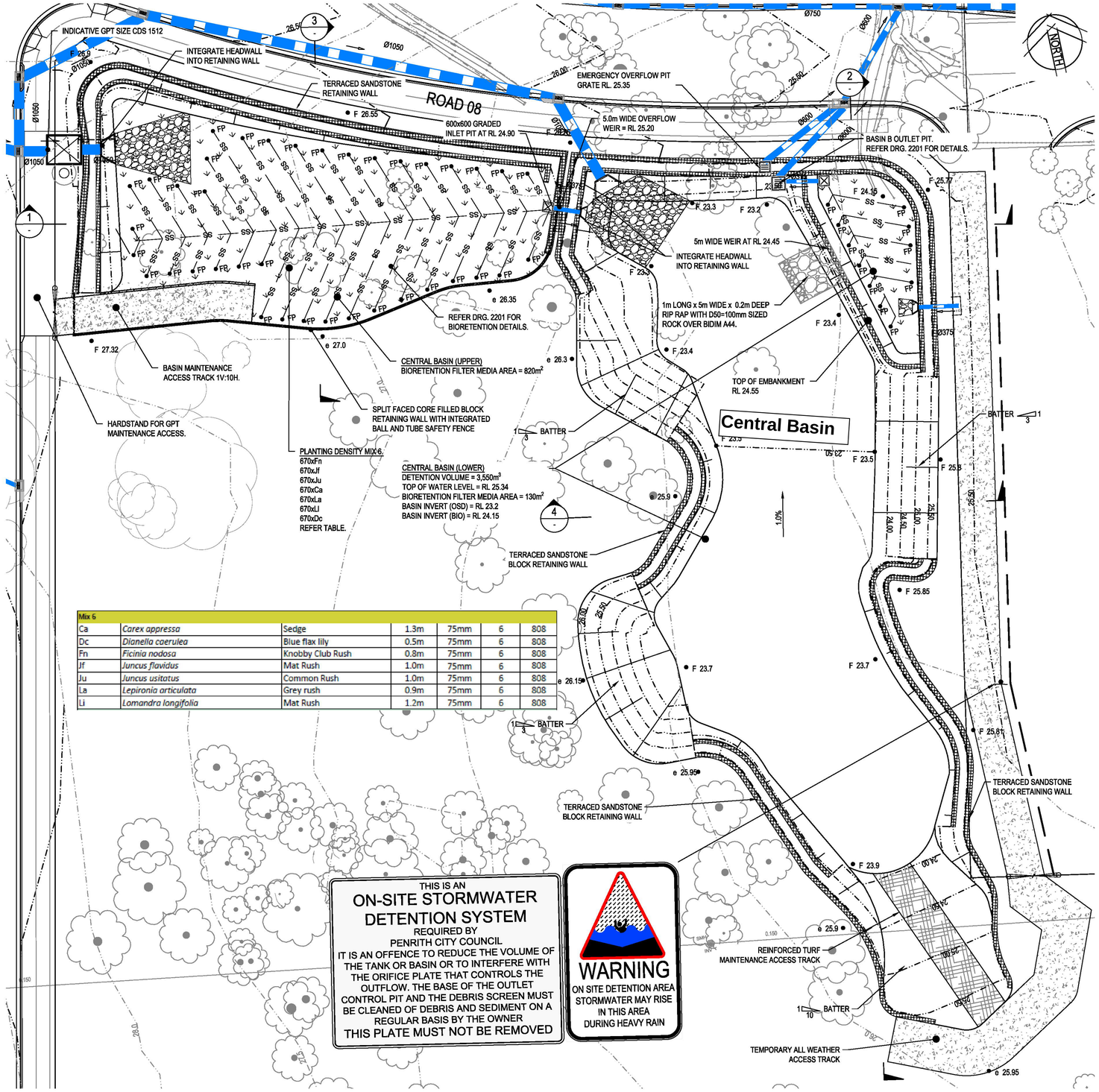
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	AS SHOWN	A1

Drawing Number: 80219053-DA001-CI-2001
Revision: 6

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

DATE PLOTTED: 13 November 2020 4:46 PM BY: YIN NIVE LWIN
XREFs: XR-80219053-CI-QSD-PLAN; XR-80219053-CI-LOT LAYOUT; XR-80219053-CI-SURVEY; XR-80219053-CI-ROAD; XR-80219053-CI-STORMWATER; XR-80219053-CI-DESN CONTOURS-500; XR-80219053-CI-EXIST CONTOURS-500; XR-80219053-CI-ROUNDABOUT
CAD File: N:\Projects\802\PY19\053 Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-2001-2003 DETENTION BASIN PLAN AND SECTIONS.dwg

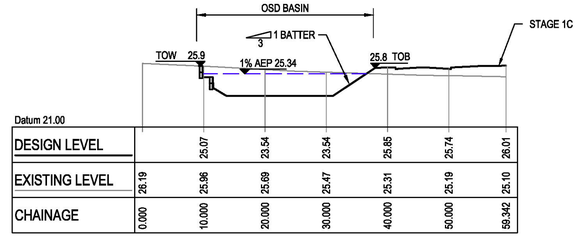


Mix 6						
Ca	*Carex appressa*	Sedge	1.3m	75mm	6	808
Dc	*Dianella caerulea*	Blue flax lily	0.5m	75mm	6	808
Fn	*Ficinia nodosa*	Knobby Club Rush	0.8m	75mm	6	808
Jf	*Juncus flavidus*	Mat Rush	1.0m	75mm	6	808
Ju	*Juncus usitatus*	Common Rush	1.0m	75mm	6	808
La	*Lepironia articulata*	Grey rush	0.9m	75mm	6	808
Ll	*Lomandra longifolia*	Mat Rush	1.2m	75mm	6	808

THIS IS AN
ON-SITE STORMWATER DETENTION SYSTEM
REQUIRED BY
PENRITH CITY COUNCIL
IT IS AN OFFENCE TO REDUCE THE VOLUME OF THE TANK OR BASIN OR TO INTERFERE WITH THE ORIFICE PLATE THAT CONTROLS THE OUTFLOW. THE BASE OF THE OUTLET CONTROL PIT AND THE DEBRIS SCREEN MUST BE CLEANED OF DEBRIS AND SEDIMENT ON A REGULAR BASIS BY THE OWNER
THIS PLATE MUST NOT BE REMOVED

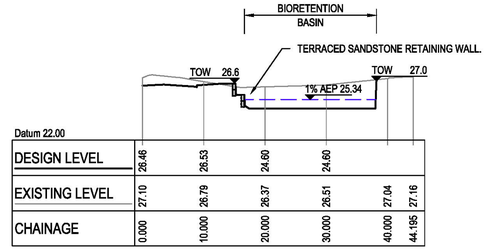
WARNING
ON SITE DETENTION AREA STORMWATER MAY RISE IN THIS AREA DURING HEAVY RAIN

DETENTION BASIN B PLAN
SCALE 1:250



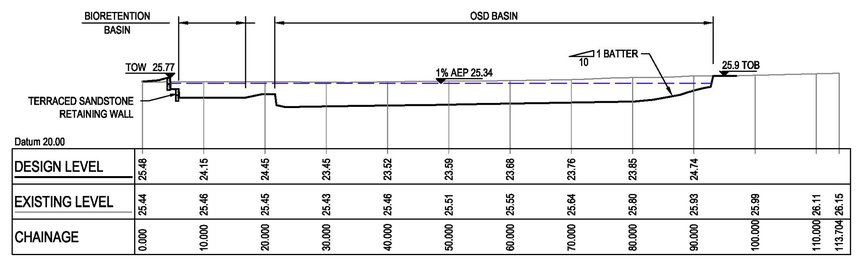
Datum 21.00							
DESIGN LEVEL		25.07	23.54	23.54	25.85	25.74	26.01
EXISTING LEVEL	26.19	25.86	25.69	25.47	25.31	25.19	25.10
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	59.342

SECTION 4
SCALE 1:250V 1:500H



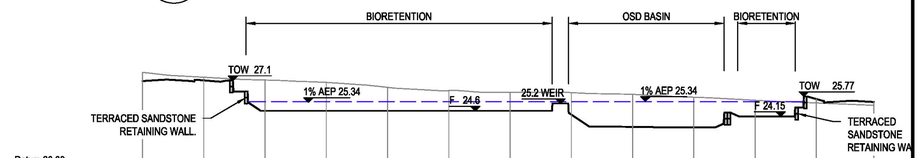
Datum 22.00						
DESIGN LEVEL	26.46	26.53	24.60	24.60		
EXISTING LEVEL	27.10	26.79	26.37	26.51	27.04	27.16
CHAINAGE	0.000	10.000	20.000	30.000	40.000	44.195

SECTION 3
SCALE 1:250V 1:500H



Datum 20.00												
DESIGN LEVEL	25.48	24.15	24.45	23.45	23.52	23.69	23.88	23.76	23.85	24.74		
EXISTING LEVEL	25.44	25.46	25.45	25.43	25.46	25.51	25.55	25.64	25.80	25.93	25.99	26.11	26.15
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	113.704

SECTION 2
SCALE 1:250V 1:500H



Datum 20.00												
DESIGN LEVEL	27.03	27.08	24.60	24.60	24.60	24.60	24.60	24.29	23.29	23.25	24.15	25.56	25.32
EXISTING LEVEL	27.74	27.34	27.11	26.82	26.52	26.25	26.10	26.09	25.95	25.71	25.46	25.24	25.05
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	119.380

SECTION 1
SCALE 1:250V 1:500H

NOTE:
1. REFER DRG. 2201 FOR OUTLET DETAILS
2. REFER LANDSCAPE ARCHITECT DRAWINGS FOR OPEN SPACE ESTABLISHMENT DETAILS

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

Rev.	Date	Description	Des.	Verif.	Appd.
6	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
5	1/04/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

SCALE: 1:100 @A1
SCALE: 1:250 @A1
SCALE: 1:500 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	YNL	Date 1/10/2019
Checked	PL	Date 1/10/2019
Designed	HLD	Date 1/10/2019
Verified	PL	Date 1/10/2019
Approved	AJG	1/10/2019

Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION
Title: BIORETENTION / OSD BASIN PLAN AND SECTIONS
SHEET 2 OF 3

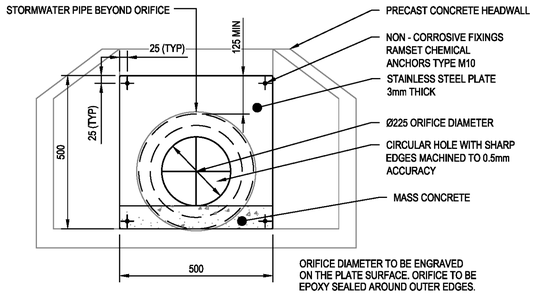
Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	AS SHOWN	A1

Drawing Number: 80219053-DA001-CI-2002
Revision: 6

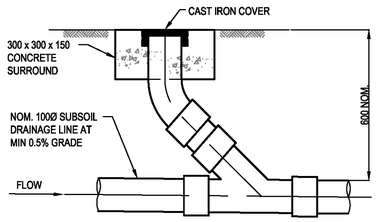
Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

DATE PLOTTED: 13 November 2020 4:47 PM BY: YIN NIME LWIN



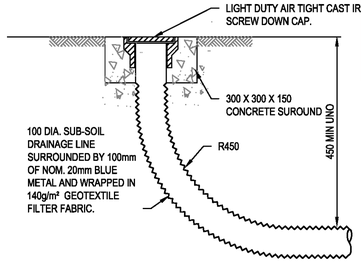
ORIFICE PLATE DETAIL FOR BASIN A OUTLET

SCALE 1:10



INTERMEDIATE RISER

SCALE 1:10



FLUSHING POINT

SCALE 1:10

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

BIO-FILTRATION FILTER MEDIA SPECIFICATION

MATERIALS:

BIO-FILTRATION FILTER MEDIA, TRANSITION LAYER AND DRAINAGE LAYERS TO BE IN ACCORDANCE WITH CURRENT VERSION OF FAWB DOCUMENT "STORMWATER BIO-FILTRATION SYSTEMS ADOPTION GUIDELINES" AND THE FOLLOWING:

A) BIO-FILTRATION FILTER MEDIA

1. BIO-FILTRATION MEDIA IS TO BE FREE OF RUBBISH AND DELETERIOUS MATERIAL.
2. BIO-FILTRATION FILTER MEDIA SATURATED HYDRAULIC CONDUCTIVITY TO BE A MAXIMUM OF 125mm/hr USING TEST METHOD ASTM F1815-06.
3. IT IS DESIRABLE THAT THE BIO-FILTRATION FILTER MEDIA PARTICLE SIZE DISTRIBUTION IS AS FOLLOWS:

CLAY & SILT	<3%	(<0.05mm)
VERY FINE SAND	5-30%	(0.05-0.15mm)
FINE SAND	10-30%	(0.15-0.25mm)
MEDIUM TO COARSE SAND	40-60%	(0.25-1.0mm)
COARSE SAND	7-10%	(1.0-2.0mm)
FINE GRAVEL	<3%	(2.0-3.4mm)

THE COMBINED PERCENTAGE OF CLAY AND SILT MUST NOT EXCEED 3% (W/W) UNDER ANY CIRCUMSTANCES.

4. BIO-FILTRATION FILTER MEDIA IS TO BE TESTED AND COMPLY WITH THE FOLLOWING REQUIREMENTS:
   - a) ORGANIC MATTER CONTENT IN ACCORDANCE WITH AS4419 AT LEAST 3% (W/W)
   - b) TOTAL NITROGEN (TN) CONTENT <800mg/kg
   - c) ORTHOPHOSPHATE (PO_4) CONTENT = 40mg/kg WHERE PLANTS WITH MODERATE PHOSPHOROUS SENSITIVITY ARE TO BE USED, TOTAL PHOSPHOROUS CONCENTRATION SHOULD BE <20mg/kg.
   - d) AS SPECIFIED FOR "NATURAL SOILS AND SOIL BLENDS" AS4419 - pH 5.5-7.5 (pH 1.5 IN WATER)
   - e) ELECTRICAL CONDUCTIVITY (EC) AS SPECIFIED FOR "NATURAL SOILS AND SOILS BLENDS" AS4419 <1.2ds/m
   - f) DISPENSABILITY - AS SPECIFIED FOR 'NATURAL SOILS AND SOIL BLENDS' AS4419 CATEGORY 1 OR 2
   - g) TEXTURE - LOAMY SAND AS PER AS4419

5.PRIOR TO PLACEMENT OF THE FILTER MEDIA A STATEMENT IS TO BE SUBMITTED FROM A QUALIFIED HORTICULTURIST CONFIRMING THAT THE SOIL IS CAPABLE OF SUPPORTING A HEALTHY COMMUNITY OF VEGETATION.

6.TESTS CONFIRMING THE REQUIREMENTS OF ITEMS 1 TO 4 ARE TO BE SUBMITTED FOR APPROVAL PRIOR TO PLACEMENT OF FILTER MEDIA.

B) TRANSITION LAYER

1) TRANSITION LAYER MATERIAL SHALL BE A CLEAN, WELL GRADED SAND MATERIAL CONTAINING <2% FINES.
2) THE PARTICLE SIZE DISTRIBUTION OF THE SAND TO BE ASSESSED TO ENSURE. D_{15} (TRANSITION LAYER) LESS THAN OR EQUAL TO 5 x D_{85} (FILTER MEDIA)

WHERE: D_{15} (TRANSITION LAYER) IS THE 15TH PERCENTILE PARTICLE SIZE IN THE TRANSITION LAYER MATERIAL (I.e, 15% OF THE SAND IS SMALLER THAN D_{15} mm), AND D_{85} (FILTER MEDIA) IS THE 85th PERCENTILE PARTICLE SIZE IN THE FILTER MEDIA.

C) DRAINAGE LAYER

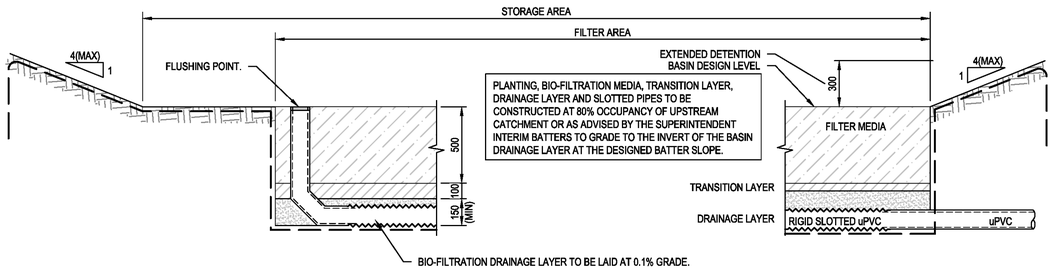
DRAINAGE LAYER MATERIAL IS TO BE CLEAN, FINE GRAVEL, SUCH AS A 5mm WASHED SCREENINGS. THE PARTICLE SIZE DISTRIBUTION TO BE:
D_{15} (DRAINAGE LAYER) < 5 x D_{85} (TRANSITION LAYER)
WHERE: D_{15} (DRAINAGE LAYER) IS THE 15TH PERCENTILE PARTICLE SIZE IN THE TRANSITION LAYER MATERIAL (I.e, 15% OF THE SAND IS SMALLER THAN D_{15} mm), AND D_{85} (TRANSITION LAYER) IS THE 85th PERCENTILE PARTICLE SIZE IN THE FILTER MEDIA.

D) VEGETATION

VEGETATION TO BE PLANTED AT MINIMUM DENSITY 8 PLANTS PER SQUARE METRE. PLANT SPECIES TO BE SELECTED FROM LIST IN SECTION 6.1 OF PENRITH CITY COUNCIL WSUD TECHNICAL GUIDELINES VERSION 3 - JUNE 2015

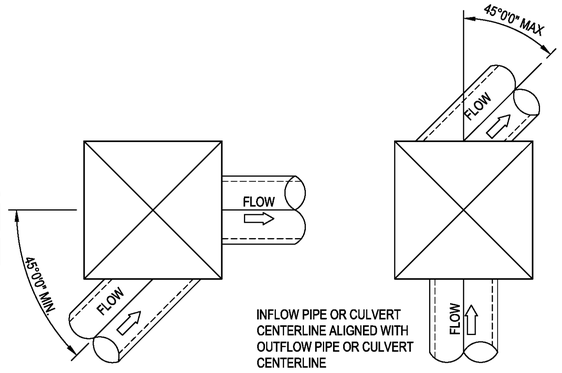
INSTALLATION:

FILTER MATERIAL IS TO BE LIGHTLY COMPACTED (E.G. A SINGLE PASS WITH A DRUM LAWN ROLLER) UNDER NO CIRCUMSTANCES SHOULD HEAVY EQUIPMENT OR MULTIPLE PASSES BE MADE. FILTER MEDIA SHOULD BE INSTALLED IN TWO LIFTS UNLESS THE DEPTH IS LESS THAN 500mm.



BIO-FILTRATION BASIN TYPICAL SECTION

SCALE 1:20



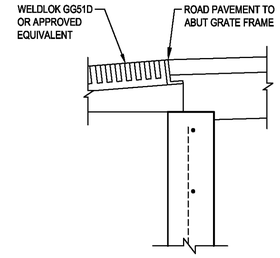
DIRECTION ANGLE GREATER THAN 45° (SIDE OF PIT) PIT ALIGNMENT REQUIREMENTS

SCALE 1:25

TYPICAL DETAILS OF STORMWATER PIPE OR CULVERT ALIGNMENTS THROUGH STORMWATER PITS. STORMWATER PIPE OR CULVERT ALIGNMENTS NOT SHOWN SHOULD BE CONSTRUCTED SIMILARLY IN ORDER TO STREAMLINE FLOWS FROM UPSTREAM TO DOWNSTREAM AND MINIMISE HEADLOSS.

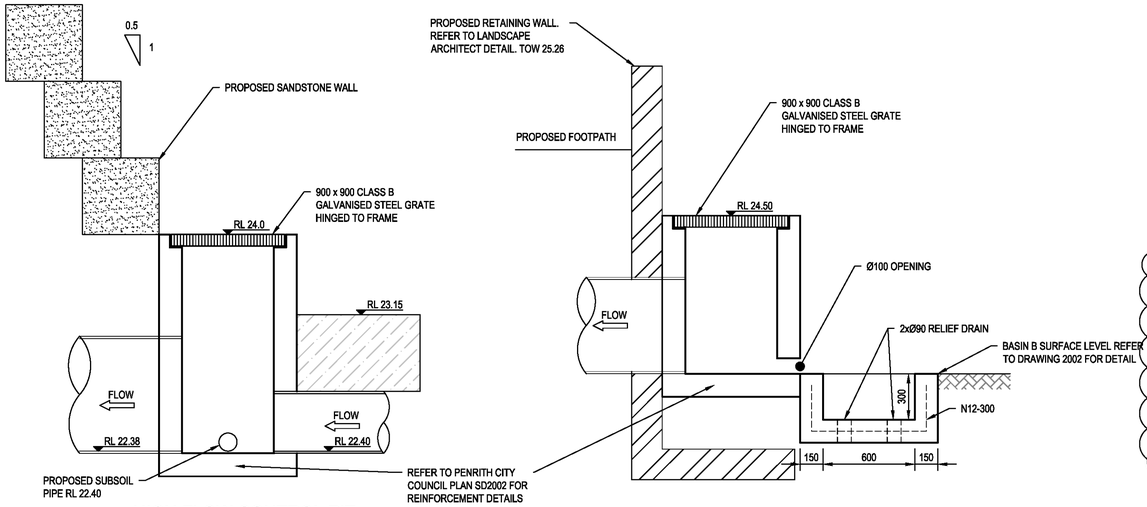
NOTES

1. ALL PITS EXCEEDING 1.0m DEPTH TO BE FITTED WITH STEP IRONS TO COUNCIL SPECIFICATION. REFER PCC STANDARD DRAWING SD3001 FOR DETAILS.
2. CONSTRUCT 1m APRON AROUND PIT IN ACCORDANCE WITH PCC STANDARD DRAWING SD2002.
3. ALL GRATES TO BE WELDLOK OR EQUIVALENT HEAVILY GALVANISED STEEL GRATE WITH HINGED ENTRY AND LOCK DOWN "J" BOLT TO MANUFACTURERS DETAIL. ALL GRATES TO BE CLASS "N".
4. ALL GRATES TO BE CONSTRUCTED IN ACCORDANCE WITH PCC STANDARD DRAWING SD2002.



DETAIL A

SCALE 1:10



HIGH FLOW CONTROL PIT (BASIN A)

SCALE 1:20

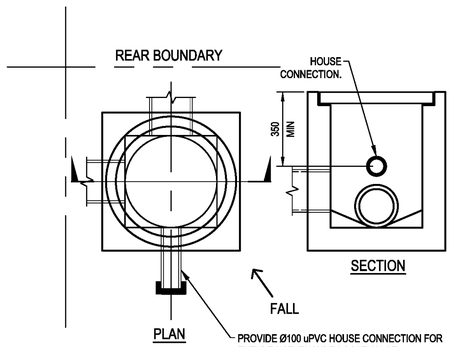
BASIN B OUTLET PIT

SCALE 1:20

OSD MODELLING RESULT DATA

AEP %	PSD	Q	STAGE		VOLUME (m^3)	
			BASIN A	BASIN B	BASIN A	BASIN B
50	0.66	0.66	24.05	24.32	5800	1300
20	1.84	1.23	24.2	24.56	6600	1800
5	3.2	2.00	24.33	24.60	7500	1900
1	4.8	3.64	24.95	25.34	11900	3660

NOTE
OSD CALCULATED AT THE INTERSECTION OF LANDERS STREET AND CHAPMAN STREET.



PENRITH CITY COUNCIL STANDARD INTERALLOTMENT DRAINAGE PIT

SCALE 1:20

Rev.	Date	Description	Des.	Verif.	Appd.
5	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
4	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
3	1/10/2019	ISSUED FOR DA APPROVAL	HLD	PL	AJG
2	27/09/2019	ISSUED FOR INFORMATION (90% DA)	HLD		
1	9/08/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 200 400 600 800 1000mm
SCALE 1:10 @A1
0 500 1000 1500 2000mm
SCALE 1:20 @A1
0 0.5 1 1.5 2 2.5m
SCALE 1:25 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	YNL	Date 1/10/2019
Checked	PL	Date 1/10/2019
Designed	HLD	Date 1/10/2019
Verified	PL	Date 1/10/2019
Approved	AJG	Date 1/10/2019

Client: LENDLEASE COMMUNITIES
Project: CHAPMAN STREET WERRINGTON CIVIL WORKS DEVELOPMENT APPLICATION
Title: STORMWATER DRAINAGE DETAILS SHEET 1 OF 2
Status: FOR APPROVAL — NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Oct' 2019	AS SHOWN	A1

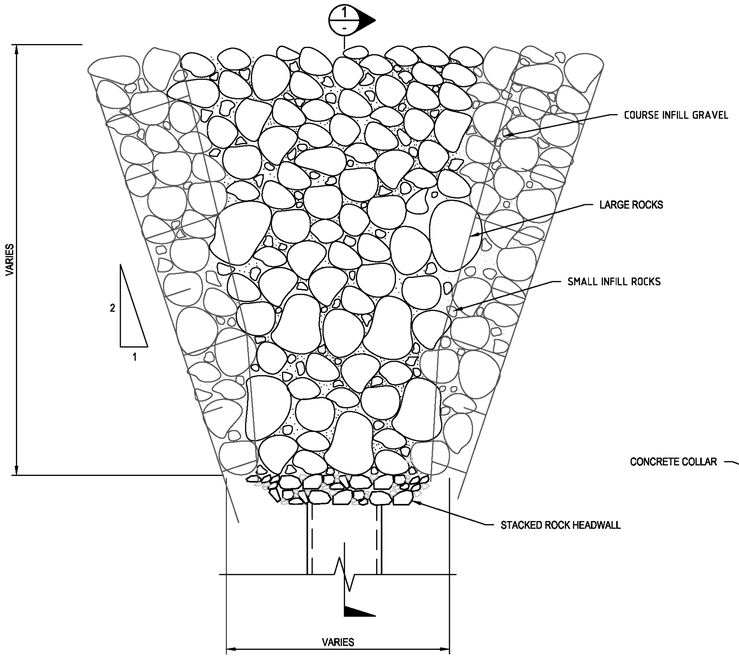
Drawing Number: 80219053-DA001-CI-2201
Revision: 5

XREF's:
CAD File: N:\Projects\80219053_Chapman St-Werrington\Drawings\Build\001 CIVIL WORKS\DA\80219053-DA001-CI-2201 STORMWATER DRAINAGE DETAILS.dwg

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

DATE PLOTTED: 13 November 2020 4:47 PM BY : YIN NWE LWIN

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent



TYPICAL OUTLET HEADWALL SCOUR PROTECTION PLAN

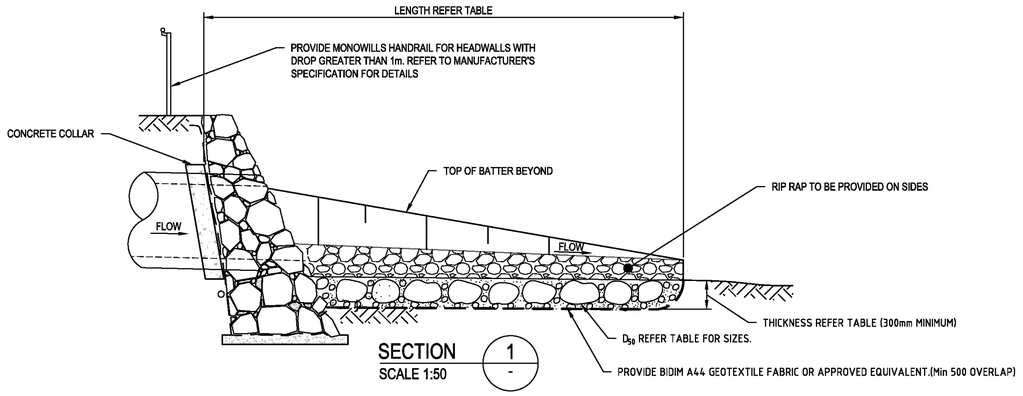
SCALE 1:50

HEADWALL RIP-RAP SCOUR PROTECTION (MINIMUM DIMENSIONS)

OUTLET NUMBER	LENGTH (mm)	WIDTH (mm)	THICKNESS (mm)	D_{50} (mm)
A01 /1	9600	3600	500	300
B01 /1	7200	3600	400	200
C01 /1	5000	2500	400	200
C02 /1	10800	4100	500	300
P01 /1	1500	1200	400	200
Q01 /1	8500	3200	500	300
T01 /1	5000	2500	400	200
T02 /1	7200	3600	400	200

NOTE:

1. LAY SCOUR PROTECTION AT CHANNEL BED AND 0.5m UP FROM THE TOE OF BATTER TO PREVENT BANK EROSION.



TYPICAL OUTLET HEADWALL SCOUR PROTECTION DETAIL

SCALE 1:50

Rev.	Date	Description	Des.	Verif.	Appd.
3	13/11/2020	RE-ISSUED FOR DA APPROVAL	HLD	AG	AJG
2	4/03/2020	RE-ISSUED FOR DA APPROVAL	HLD	PL	AJG
1	16/12/2019	ISSUED FOR INFORMATION (50% DA)	HLD		

0 1 2 3 4 5m
SCALE 1:50 @A1

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

		Date
Drawn	TPB	16/12/2019
Checked	PL	16/12/2019
Designed	HLD	16/12/2019
Verified	PL	16/12/2019
Approved	AJG	16/12/2019

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS
DEVELOPMENT APPLICATION

Title: STORMWATER DRAINAGE DETAILS
SHEET 2 OF 2

Status: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Datum	Date	Scale	Size
A.H.D	Dec' 2019	AS SHOWN	A1

Drawing Number: 80219053-DA001-CI-2202
Revision: 3

XREFs:
CAD File: N:\Projects\80\20\FY19\053_Chapman St-Werrington\Drawings\Build\0001 CIVIL WORKS\DA\80219053-DA001-CI-2201 STORMWATER DRAINAGE DETAILS.dwg

Document Set ID: 9377466
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent



LEGEND

STREET TREES LEGEND

- *E. sideroxylon rosea*
- *Melaleuca linariifolia 'Snow in Summer'*
- *Waterhousea floribunda 'Green Avenue*
- *Pyrus calleryana 'Chanticlear'*
- *Tristaniopsis laurina 'Luscious'*
- *Fraxinus pennsylvanica 'Urbdell' Urbanite*
- *Lophostemon confertus*
- *Cupaniopsis anacardioides*
- East West Collector Road Options
  - *Liquidambar styraciflua*
  - *Jacaranda mimosifolia*
  - *Liriodendron tulipifera*

LANDSCAPE BUFFER ZONE

- *E. sideroxylon rosea*
- *Melaleuca linariifolia 'Snow in Summer'*
- *Tristaniopsis laurina 'Luscious'*
- *Callistemon viminalis*

TRANSITION PLANTING

- *Eucalyptus tereticornis*
- *Eucalyptus crebra*
- *Eucalyptus moluccana*

PEDESTRIAN THROUGH SITE LINK

- *Lagerstroemia indica x fauriei 'Natchez'*
- *Fraxinus pennsylvanica 'Urbdell'*
- *Lagerstroemia indica x fauriei 'Sioux'*
- *Ulmus parvifolia 'Todd'*
- Site Boundary

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, NSW
2017 Australia
T + 61 2 9290 3300
F + 61 2 9262 6108

Street Tree Master Plan

16 Chapman Street, Werrington - Landscape Concept and Street Tree DA Report

N

DATE	PROJECT NO.	REVISION	DWG NO.
13/11/2020	2519036	04	SK-4

0 10 20 30 40 50M

SCALE 1:1250 @ A1

Document Set ID: 9377469
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

BOTANICAL NAME	COMMON NAME	HEIGHT	SPACING	SIZE
STREET TREES				
Lophostemon confertus	Brushbox	7m	As Shown	100L
Melaleuca linariifolia 'Snow in summer'	Snow in summer	10m	As Shown	100L
Eucalyptus sideroxylon rosea	Red Ironbark	15m	As Shown	100L
Pyrus calleryana	Callery Pear	11m	As Shown	100L
Waterhousia floribunda 'Green avenue'	Weeping Lily Pilly	7m	As Shown	100L
Fraxinus pennsylvanica 'Urbdell'	Urbanite Ash	11m	As Shown	100L
Tristaniopsis laurina 'Luscious'	Kanooka Gum	8m	As Shown	100L
Cupaniopsis anacardioides	Tuckeroo	8m	As Shown	100L
Liquidambar styraciflua	American Sweetgum	15m	As Shown	100L
Jacaranda mimosifolia	Jacaranda	10m	As Shown	100L
Liriodendron tulipifera	Tulip Tree	20m	As Shown	100L
LANDSCAPE BUFFER ZONE				
Melaleuca linariifolia	Snow in Summer	3m	As Shown	200-400L*
Tristaniopsis laurina 'Luscious'	Kanooka Gum	8m	As Shown	200-400L*
Callistemon viminalis	Weeping bottlebrush	8m	As Shown	200-400L*
Eucalyptus sideroxylon rosea	Red Flowering Ironbark	15m	As Shown	200-400L*
PEDESTRIAN THROUGH SITE LINK				
Lagerstroemia indica x fauriei 'Natchez'	Crepe Myrtle (White)	6m	As Shown	100L
Lagerstroemia indica x fauriei 'Sioux'	Crepe Myrtle (Hot musk pink)	5m	As Shown	100L
Fraxinus pennsylvanica 'Urbdell'	Urbanite Ash	13m	As Shown	100L
Ulmus parvifolia 'Todd'	Chinese Elm	10m	As Shown	100L
TRANSITION PLANTING				
Eucalyptus tereticornis	Forest Red Gum	30m	As Shown	100L
Eucalyptus crebra	Narrow leaved ironbark	35m	As Shown	100L
Eucalyptus moluccana	Grey Box	25m	As Shown	100L

*50L trees will be procured and grown inground in a secure location onsite or at a nursery. Trees will be maintained for the duration and removed from the ground to be planted where specified at a size between 200-400L.

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, NSW
2017 Australia
T + 61 2 9290 3300
F + 61 2 9262 6108

Street Tree Planting Schedule

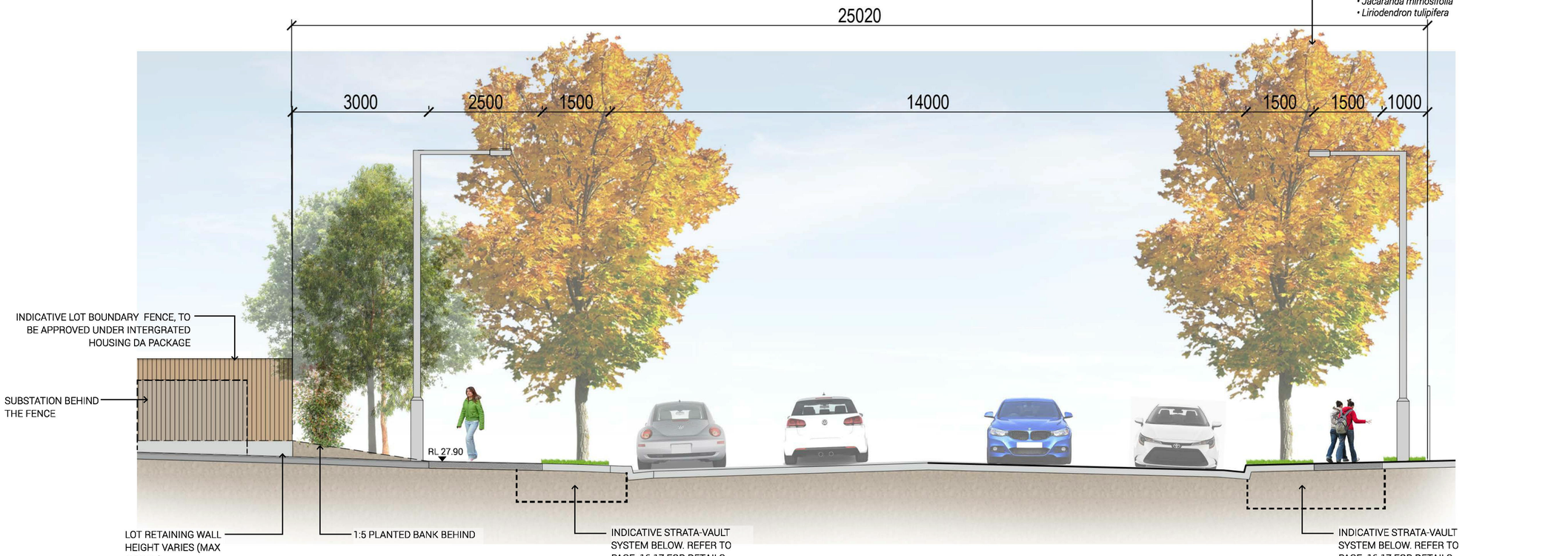
16 Chapman Street, Werrington - Landscape Concept and Street Tree DA Report

DATE	PROJECT NO.	REVISION	DWG NO.
13/11/2020	2519036	04	SK-5

Document Set ID: 9377469
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

East-West Collector Road



place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, NSW
2017 Australia
T + 61 2 9290 3300
F + 61 2 9262 6108

East-west Collector Road Section

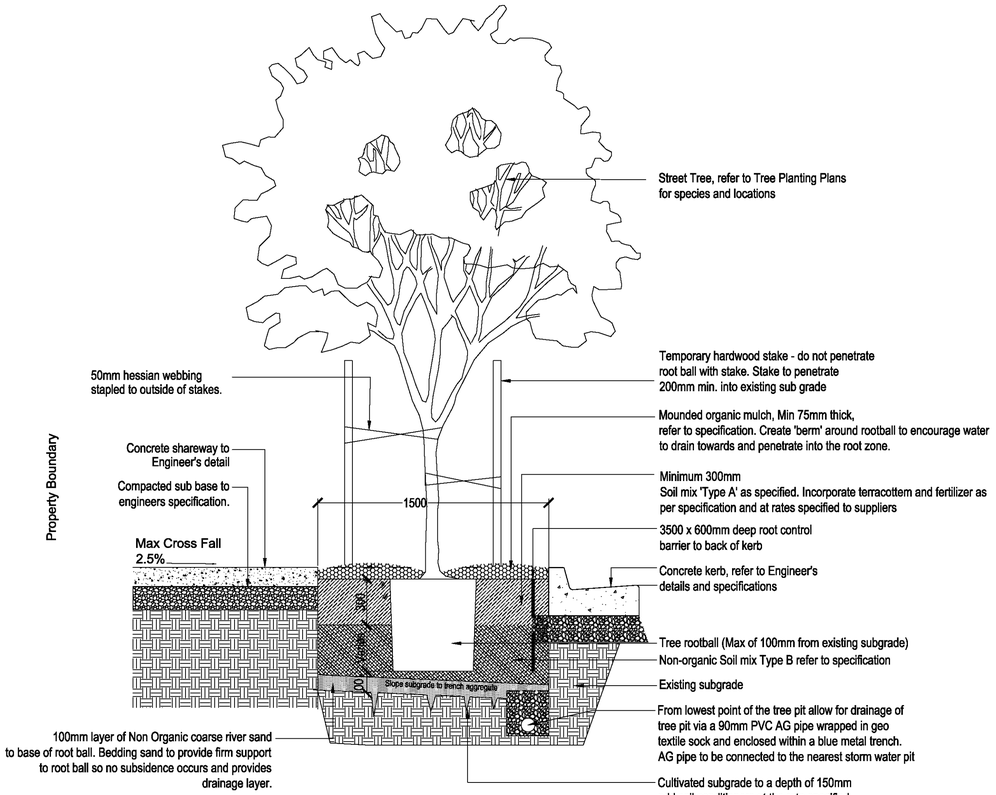
16 Chapman Street, Werrington - Landscape Concept and Street Tree DA Report

DATE	PROJECT NO.	REVISION	DWG NO.
13/11/2020	2519036	04	SK-13

0 1 2 3 4 5M/ 1:100@A1

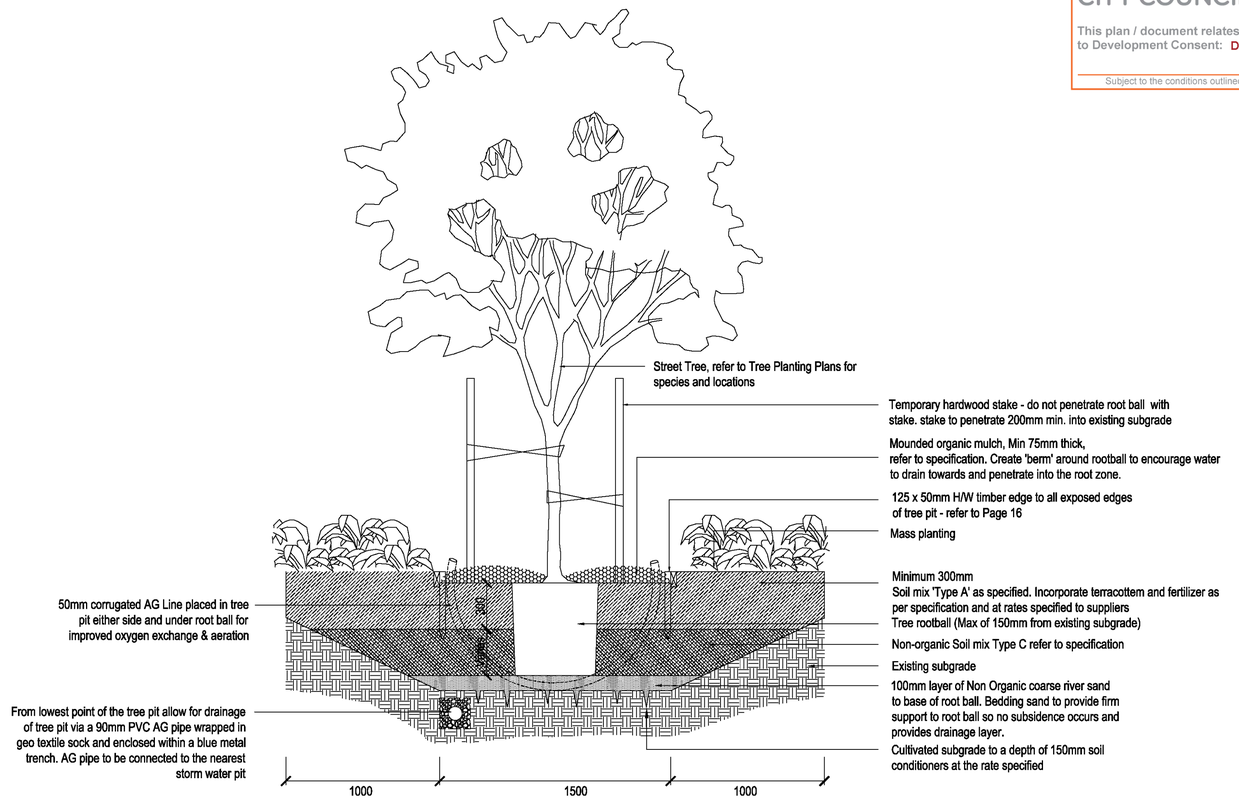
Document Set ID: 9377469
Version: 1, Version Date: 16/11/2020

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent

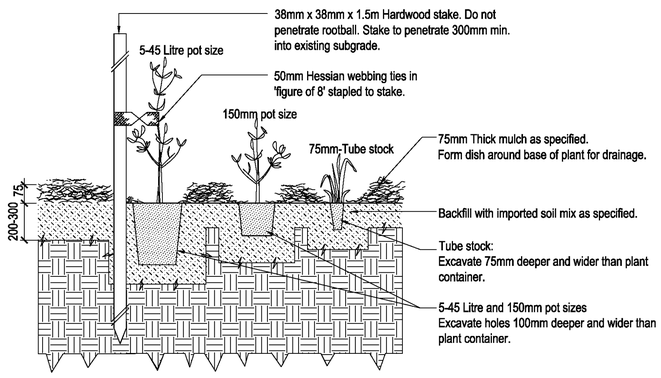


Notes: Refer to page 16 for detail on proprietry systems to extend root zone where necessary (East - west collector road)

1 TYPICAL STREET TREE DETAIL
SCALE 1:25



2 TYPICAL TREES IN MULCH DETAIL
SCALE 1:25



3 TYPICAL MASS PLANTING DETAIL
SCALE 1:25

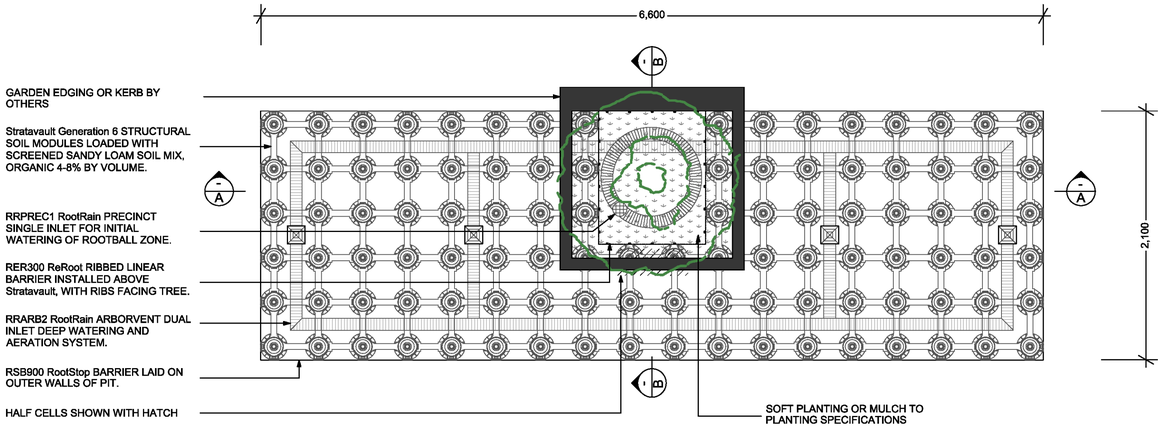
place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, NSW
2017 Australia
T + 61 2 9290 3300
F + 61 2 9262 6108

Typical Details - Softscape

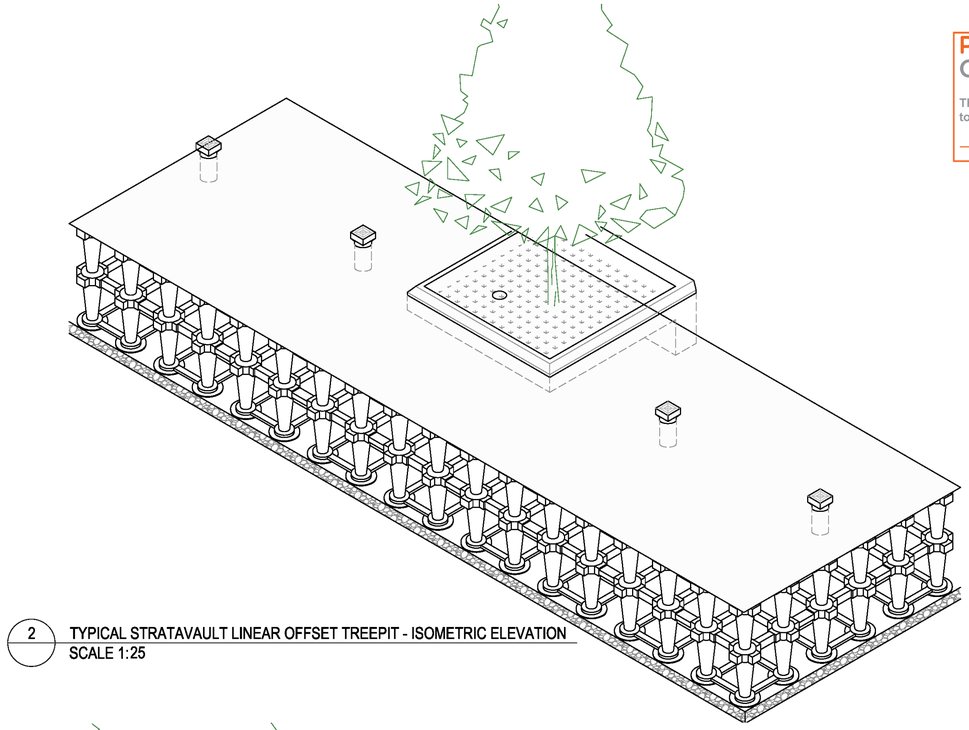
16 Chapman Street, Werrington - Landscape Concept and Street Tree DA Report

DATE	PROJECT NO.	REVISION	DWG NO.
13/11/2020	2519036	04	SK-16

Document Set ID: 9377469
Version: 1, Version Date: 16/11/2020

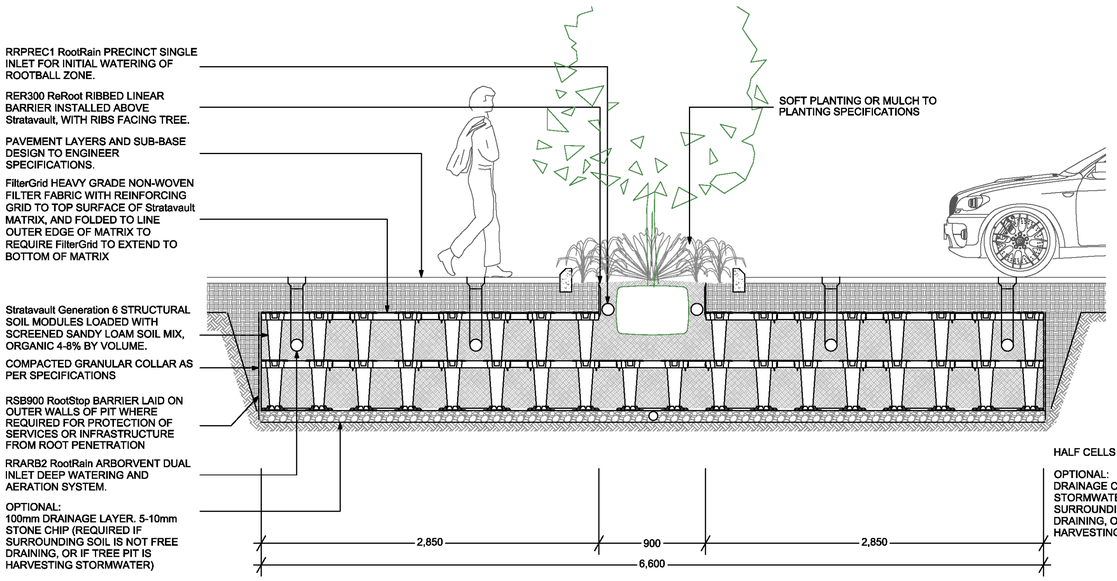


1 TYPICAL STRATAVAULT LINEAR OFFSET TREEPIT PLAN
SCALE 1:25

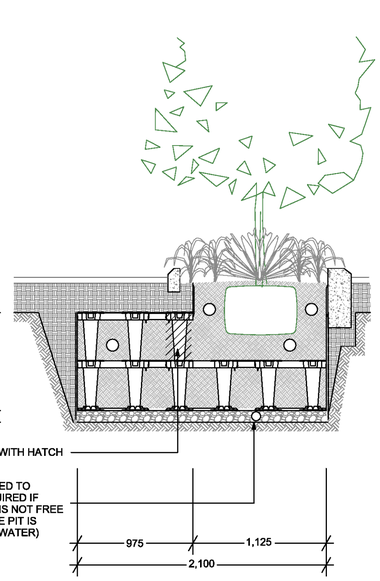


2 TYPICAL STRATAVAULT LINEAR OFFSET TREEPIT - ISOMETRIC ELEVATION
SCALE 1:25

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS
This plan / document relates to Development Consent: DA19/0704
Subject to the conditions outlined in the consent



3 TYPICAL STATAVAULT CROSS SECTION AA
SCALE 1:25



4 TYPICAL STATAVAULT CROSS SECTION BB
SCALE 1:25

EAST-WEST COLLECTOR ROAD TREE PLANTING OPTIONS AND SOIL VOLUME REQUIREMENT

SPECIES	COMMON NAME	MATURE CANOPY WIDETH (mtrs) per sp.	IDEAL TARGET GROWING MEDIA (m3) per sp.	minimum growing media (m3) per sp.
Liquidambar styraciflua	American Sweetgum	7	23.09m3	18m3
Jacaranda mimosifolia	Jacaranda	8	30.16 m3	20m3
Liriodendron tulipifera	Tulip Tree	8	30.16m3	20m3

Note: Typical details provided by Citygreen

place design group.
Place Design Group Pty Ltd
3B/830-832 Elizabeth Street
Waterloo, NSW
2017 Australia
T + 61 2 9290 3300
F + 61 2 9262 6108

Typical Stratavault Details

16 Chapman Street, Werrington - Landscape Concept and Street Tree DA Report

DATE	PROJECT NO.	REVISION	DWG NO.
13/11/2020	2519036	04	SK-17

Document Set ID: 9377469
Version: 1, Version Date: 16/11/2020

Annexure E South Werrington Urban Village Map

Draft

DATE PLOTTED: 30 July 2021 2:25 PM BY : GAVIN MURRAY



Rev.	Date	Description	Des.	Verif.	Appd.
1	19/11/2020	ISSUED FOR INFORMATION		AG	

© Cardno Limited All Rights Reserved.
This document is produced by Cardno Limited solely for the benefit of and use by the client in accordance with the terms of the retainer. Cardno Limited does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Cardno®
Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St. Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

Drawn	TPB	Date 19/11/2020
Checked	AG	Date 19/11/2020
Designed		Date
Verified		Date
Approved		

Client: LENDLEASE COMMUNITIES

Project: CHAPMAN STREET WERRINGTON
CIVIL WORKS

Title: SOUTH WERRINGTON URBAN VILLAGE PLAN

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

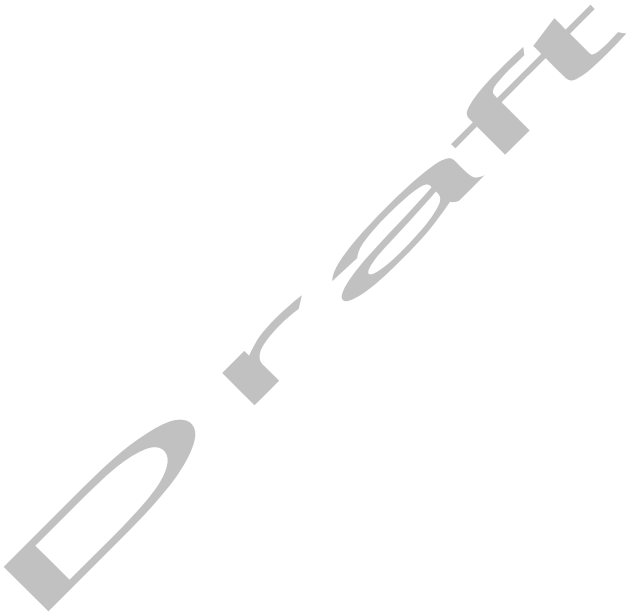
DATUM		Scale	Size
AHD	NOV'20	1:2250	A1

Drawing Number: 80219053-001-SK213

Revision: 1

XREF's: XR-80219053-CI-SURVEY; XR-80219053-CI-CONTROL
CAD File: N:\Urban\Norwest$$ CARDNO HARD & FORESTER\CURRENT JOBS\80219053 - WERRINGTON\AUTOCAD MGA94\VPA PLANS\80219053-SWUP.dwg

Annexure F Vegetation Management Plan



Excellence in your environment

niche Environment and Heritage

Lot 1 DP1226122
Vegetation Management Plan

Werrington

Prepared for Lendlease | 26 May 2021



niche-eh.com

Excellence in your environment

Document control

Project number	Client	Project manager	LGA
5194	Lendlease	Amanda Griffith	Penrith City Council

Version	Author	Review	Status	Date
D1	Yogesh Nair	Cairo Forrest	Draft	10 December 2019
Rev1	Yogesh Nair	Cairo Forrest	Final	10 December 2019
Rev2	Patrick McEvoy	Daniel Nay (Lendlease)	Final	16 January 2020
Rev3	Patrick McEvoy	Minor changes	Final	22 January 2020
Rev4	Amanda Griffith		Final	25 March 2020
Rev5	Amanda Griffith	Additional APZ and EPBC variation	Final	12 November 2020
Rev6	Jessie Bear, Kayla Asplet	Amanda Griffith	As per PCC conditions	March 2021

© Niche Environment and Heritage Pty Ltd (ACN 137 111 721) 2018

Copyright protects this publication. All rights reserved. Except for purposes permitted by the Australian *Copyright Act 1968*, reproduction, adaptation, electronic storage, transmission and communication to the public by any means is prohibited without our prior written permission. Any third party material, including images, contained in this publication remains the property of the specified copyright owner unless otherwise indicated, and is used subject to their licensing conditions.

Disclaimer

While Niche Environment and Heritage Pty Ltd uses care and diligence in the preparation of this report, it is not responsible or liable for any mistakes, misprints, omissions or typographical errors. None of Niche Environment and Heritage Pty Ltd, nor its editors or authors are responsible for the results of any actions taken on the basis of information in this publication. Niche Environment and Heritage Pty Ltd and its editors and authors expressly disclaim all and any liability and responsibility to any person or organisation in respect of, or as a consequence of, anything done or omitted to be done by any person or organisation in reliance, whether wholly or partially, upon the whole or part of any of the contents of this publication, including any photographs, statements or descriptions. No representation is made as to the suitability of this publication for any particular purpose. The views expressed in this publication are not necessarily endorsed by this publication, its editors or authors, or the owners or management of Niche Environment and Heritage Pty Ltd.

Enquiries should be addressed to:

Sydney Head Office
Niche Environment and Heritage
02 9630 5658
info@niche-eh.com
PO Box 2443 North Parramatta
NSW 1750 Australia

Executive summary

Project outline

Niche Environment and Heritage Pty Ltd (Niche) were commissioned by Lendlease to develop a Vegetation Management Plan (VMP) for Lot 1 DP1226122 (site) at 16 Chapman Street, Werrington, NSW 2747.

This VMP provides details of the works and management actions required to maintain or improve the biodiversity values of the site over a maintenance period of two (2) years. After the maintenance period with timing subject to the approval of a Voluntary Planning Agreement, the ecological and open space areas of the site are to be dedicated to Penrith City Council from which point Council will be the sole owner of the land.

The Site

The site to which this management plan applies is 2.13 hectares (ha) and includes two areas of remnant native vegetation to be retained within the development. It includes the Plant Community Type (PCTs) PCT 849 - *Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion.*

PCT 849 is commensurate with *Cumberland Plain Woodland in the Sydney Basin Bioregion*, listed as a critically endangered ecological community (CEEC), on the *NSW Biodiversity Conservation Act 2016* and *Environment Protection and Biodiversity Conservation Act* 1999.

The site has the potential to provide habitat for a number of flora and fauna species. Threatened species with the potential to occur were determined from the NSW BioNet database using a 10 kilometre search area. BioNet database records indicate eleven (11) threatened flora and thirty-four (34) threatened fauna species have been previously recorded in or in close proximity to the site.

Management issues

The site has varying degrees of disturbance and weed infestation. The main disturbances are past land use including agriculture (i.e. farming), clearing of native vegetation, fragmentation, encroachment of weeds and degradation of the quality of remaining native vegetation remnants, unauthorised vehicle access and illegal dumping. The areas affected by this disturbance are the boundaries adjacent to public roads, where tracks and rubbish have impacted on the vegetation condition. Woody weed and exotic grass infestations were prevalent and severe along the edges and drainage lines of the site. Weeds are present in varying densities across all management zones within the site.

The site contains an ephemeral wetland along the eastern boundary of MZ4.

The main access to the VMP site within Lot 1 DP1226122 is currently via gate located off the corner of Walker Street and Landers Street. Pedestrian access is located at the eastern end of Chapman Street.

Goals and management actions

Section 4 outlines the goals of this management plan and provides details of the works and management actions required to maintain or improve the biodiversity values of the site over a maintenance period of two (2) years. Section 5 outlines the required management actions and associated recommendations made by Niche from findings during field investigations.

Glossary and list of abbreviations

Term or abbreviation	Definition
BC Act	*Biodiversity Conservation Act 2016* (NSW)
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan (Niche 2020)
DEE	Department of Environment and Energy
DoE	Department of Environment (formerly), now Department of Agriculture Water and the Environment.
EES	NSW Department of Environment, Energy and Science.
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
FACMP	Feral Animal Control and Monitoring Plan (Niche 2021a)
FMP	Fauna Management Plan (Niche 2021b)
ha	Hectare/s
LEP	Local Environmental Plan
Maintenance Period	Period of time covering the management of vegetation in the site under the recommendations of this VMP. The maintenance period for this VMP is 2 years.
MZ	Management Zone
NSCS	Native Seed Collection Strategy (Niche 2021c)
OEH	Office of Environment and Heritage (formerly DECCW, DECC, DEC, now Department of Planning, Industry and Environment)
PCT	Plant Community Type
Property	Land in Werrington - Lot 1 DP1226122
PW	Priority Weed
RFS	Rural Fire Service
Site	Area covered by the VMP
TEC	Threatened Ecological Community
VMP	The Vegetation Management Plan setting out management actions for the conservation of the site located within Lot 1 DP1226122 during the Maintenance Period
WMP	Weed Management Plan (Niche 2021d)
WONS	Weed of National Significance

Table of Contents

Executive summary ..... **i**

Project outline i

The Site i

Management issues i

Goals and management actions i

Glossary and list of abbreviations ..... **i**

1. Introduction **1**

1.1 Site location 1

1.2 Administrative and legislative context 1

1.3 Land ownership 2

1.4 Definitions 2

2. Background Information **3**

1.1 Planning and landscape context 3

2.1 Existing native vegetation 3

2.2 Natural values 4

3. Management Issues **6**

3.1 Habitat management / threatened species 6

3.2 Feral animals 6

3.3 Weeds 7

3.4 Hydrology 10

3.5 Fire management 10

3.6 Disturbed areas 10

3.7 Track maintenance 10

3.8 Signage 11

3.9 Annual monitoring and reporting 11

4. Management plan objectives and strategies **12**

4.1 Objectives 12

4.2 Strategies 12

4.3 Implementation of Management Actions 16

5. Management Actions **17**

References **32**

Annex 1. Figures **34**

Annex 2. Werrington CPW Native Flora Species List (Niche 2019) 38

Annex 3. Indicative VMP implementation costings 40

Annex 4. Nest Box Plan 46

List of Tables

Table 1: Vegetation on the site 3

Table 2: Threatened species previously recorded within/close proximity to and with potential habitat at the site 4

Table 3: Weeds species in the site 7

Table 4: Management actions, timing and frequency 17

Table 5: Indicative Timetable of Works over a Two (2) Year Maintenance Period 29

Table 6: Native flora species recorded at the site 38

Table 7. Management costings for VMP implementation 40

Table 8. Costing for revegetation plantings 45

Table 9: Nest Box type, target species and installation details 47

1. Introduction

Niche Environment and Heritage Pty Ltd (Niche) was commissioned by Lendlease Communities (Lendlease) to develop a Vegetation Management Plan (VMP) for the site situated within Lot 1 DP1226122, at 16 Chapman Street, Werrington, NSW. The site includes a Conservation Reserve (1.15 ha) and Open Space/Recreation Area (1.77 ha) which support areas of remnant native vegetation which are to be retained within the residential/commercial development at the site (the project)

The overall aims of this VMP are to conserve and regenerate/rehabilitate areas of remnant *Cumberland Plain Woodland in the Sydney Basin Bioregion* (CPW), listed as a critically endangered ecological community (CEEC), on the *NSW Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (OEH 2019a, NSW Government 2019a, Commonwealth of Australia 2019) to improve habitat for native fauna including threatened species, and provide an educational resource for the local community.

Management of potential impacts to areas of remnant vegetation during the construction process are addressed in detail in the Construction Environmental Management Plan (CEMP)previously prepared for the site (Niche 2020). Additionally, the following supporting management plans have also been prepared for the site to satisfy the Conditions of Consent of the Penrith City Council Notice of Determination (PCC 2020) for the Development Application (DA19/0704):

- Feral Animal Control and Monitoring Plan (FACMP, Niche 2021a, Condition 96)
- Fauna Management Plan (FMP, Niche 2021b, Condition 91)
- Native Seed Collection Strategy (NSCS, Niche 2021c, Condition 92)
- Nest Box Plan (NBP, Annex 4, Condition 16)
- Weed Management Plan (WMP, Niche 2021d, Condition 95).

Subsequent to submission of this VMP with the Development Application, this VMP has been to meet all components of Condition 16 of the Conditions of Consent of the Penrith City Council Notice of Determination (PCC 2020) and link the document with the supporting management plans listed above.

1.1 Site location

The main access to the VMP site within Lot 1 DP1226122 is currently via a gate located off the corner of Walker Street and Landers Street, Werrington 2747. Pedestrian access is located at the eastern end of Chapman Street (Figure 1).

1.2 Administrative and legislative context

A portion of Lot 1 DP1226122 Werrington is covered by an existing DA approval under NSW state legislation. The proposed development (the Project) was referred to the Commonwealth under the EPBC Act Referral process and was approved under the EPBC Act with conditions on 29 July 2020 (EPBC 2019/8552). Subsequent to this approval, the Project required the addition of an Asset Protection Zone (APZ), within land covered by the VMP. This VMP includes the additional APZ which has been subject to review and approval by the Commonwealth, with the conditions of approval for the Project updated accordingly. Condition 9 of the updated approval is relevant to this VMP and stipulates:

9. Within one year of the date of this approval, the approval holder must either:

    a. provide the **Department** with documentation which the **Department** accepts in writing as being sufficient evidence that a responsible authority (for example the Penrith City Council) has agreed to accept responsibility to continue to implement the **VMP** for

conservation purposes in respect to the five areas designated as 'VMP area' shown in Figure 3, at least until the date of the expiry of this approval; or

b. submit, for the **Minister**'s approval, a Biodiversity Offset Strategy which describes how compensation will be provided for **impacts** to 1.55 ha of **CPW** within the referral boundary designated as 'Subject Area' in the map at Figure 1 (in addition to **impact**s otherwise addressed through the CPWOMP), in accordance with the **EPBC Act Environmental Offsets Policy.**

This VMP provides details of the rehabilitation/re-vegetation works and management actions required to maintain or improve the biodiversity values of the CPW remnants within the site over a maintenance period of two (2) years. After the maintenance period, the site covered by this VMP within Lot 1 DP1226122 is to be dedicated to Penrith City Council.

The CEMP (Niche 2020) prepared for the site specifically details the management of potential direct and indirect impacts of construction on the retained areas of native vegetation.

1.3 Land ownership

The site is owned by Lendlease. After the maintenance period (see Section 1.4) with timing subject to the approval of a Voluntary Planning Agreement, the ecological and open space areas of the site are to be dedicated to Penrith City Council from which point Council will be the sole owner of the land.

1.4 Definitions

Key terms used in this Management Plan are defined as follows:

Maintenance period: period of time that commences on the granting of any Development Consent for the Development or the removal of vegetation on the Land, whichever occurs first and ends 2 years from that time or at another date as agreed between the parties in writing, or otherwise determined in accordance with this agreement.

Vegetation Management Plan: the plan setting out management actions for the site within Lot 1 DP1226122.

2. Background Information

1.1 Planning and landscape context

The site to which this management plan applies is 2.13 ha in size. Surrounding land uses include residential areas, commercial or industrial properties and vegetated bushland. The Conservation Reserve (Proposed Lot 1000) and the Central Reserve Open Space/Recreation Area that are covered by the VMP are zoned as E2: Environmental Conservation and RE1: Public Recreation respectively, in the Penrith Local Environmental Plan 2010 (NSW Government 2019b). The Eastern Reserve is not subject to this VMP.

2.1 Existing native vegetation

Native vegetation on the site is in poor to moderate condition. Vegetation communities present in the site were mapped by Tozer *et. al* (2010) as part of regional vegetation mapping and verified by Niche (Figure 2).

The classification of vegetation in NSW has been subject to significant changes recently with the publication of the OEH BioNet Vegetation Classification database (OEH 2019a), which classifies all vegetation in NSW into Plant Community Types (PCTs). The PCTs are used to classify vegetation into NSW Vegetation Classes and subsequently NSW Vegetation Formations using the Keith (2004) classification system. The database provides floristic and structural data for PCTs and association of PCTs to Threatened Ecological Communities (TECs).

The vegetation on site was correlated and assigned with the most closely matching PCT present in the Sydney Basin Bioregion from the data collected in the site. The PCT was determined by assessing the flora species recorded in 2019 by Niche (Annex 2). The TEC listings and vegetation classifications were reviewed to associated TECs with the identified PCT. TECs have been identified with reference to the OEH's threatened species profiles (OEH 2019b), NSW Scientific Committee final determinations (NSW Government 2019c) and Species Profile and Threats (SPRAT) Database (Department of the Environment 2019). The existing vegetation communities in the site are described in Table 1.

Table 1: Vegetation on the site

Plant Community Type	PCT Common Name	Area (ha)	Vegetation Formation (Keith 2004)	Vegetation Class (Keith 2004)	TEC Status (OEH 2019b, NSW Government 2019c, DoE 2019)
PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Shale Plains Woodland	1.57 (EPBC Listed)	Grassy Woodlands	Coastal Valley Grassy Woodlands	Critically Endangered under the BC Act (NSW) and EPBC Act (Commonwealth)

The CPW occurs on gentle topography associated with the shale plains of western Sydney carries an open grassy woodland dominated by Grey Box (*Eucalyptus moluccana*), Forest Red Gum (*Eucalyptus tereticornis*) and Ironbark (*Eucalyptus crebra*/*Eucalyptus fibrosa*). Cumberland Shale Plains Woodland is related to Cumberland Shale Hills Woodland (PCT850) which together comprise the Cumberland Plain Woodland in the Sydney Basin Bioregion. Cumberland Shale Plains Woodland is characterised by a sparse to moderate cover of shrubs and a high cover of grasses and forbs, and the primary habitat for the community is defined by Tozer *et al.* (2010) as occurring at elevations less than 150 meters above sea level with some sites occurring at higher elevations where the landscape remains gently inclined. Rainfall is restricted to a narrow band between 750 and 950 millimetres per annum. A list of species from surveys undertaken by Niche (2019) at the Werrington VMP site is included as Annex 2.

2.2 Natural values

2.2.1 Biodiversity values

The site is part of larger areas of surrounding vegetation, contributing to regional wildlife habitat and movement. The site supports a diversity of flora and fauna habitat. Native vegetation and habitat within the site appeared to be in poor to moderate condition, with scattered infestations of woody weeds, exotic perennial grasses and herbaceous weeds. These include weeds listed as Weeds of National Significance ('WoNS'), under the NSW *Biosecurity Act* 2015 or the *Biosecurity Regulation* 2017 and Priority weeds listed for the Greater Sydney (Table 3).

2.2.2 Threatened species

The site has the potential to provide habitat for a number of threatened flora and fauna species. Threatened species with the potential to occur were determined from the NSW BioNet database (OEH 2019b) using a 10 kilometre search area. Eleven (11) threatened flora and thirty-four (34) threatened fauna species considered to have potential habitat at the site are shown in Table 2. Threatened species have been previously recorded at the site, however it should be noted that targeted surveys have not been undertaken as a part of this management plan.

Table 2: Threatened species previously recorded within/close proximity to and with potential habitat at the site

Scientific Name	Common Name	NSW status	Comm. status	Records
Fauna				
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		4
Burhinus grallarius	Bush Stone-curlew	E1,P		2
Callocephalon fimbriatum	Gang-gang Cockatoo	V,P,3		2
Calyptorhynchus lathami	Glossy Black-Cockatoo	V,P,2		6
Chthonicola sagittata	Speckled Warbler	V,P		12
Daphoenositta chrysoptera	Varied Sittella	V,P		8
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	4
Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		2
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		3
Glossopsitta pusilla	Little Lorikeet	V,P		2
Hieraaetus morphnoides	Little Eagle	V,P		2
Hoplocephalus bungaroides	Broad-headed Snake	E1,P,2	V	1
Ixobrychus flavicollis	Black Bittern	V,P		2
Lathamus discolor	Swift Parrot	E1,P,3	CE	9
Litoria aurea	Green and Golden Bell Frog	E1,P	V	8
Lophoictinia isura	Square-tailed Kite	V,P,3		5
Meridolum corneovirens	Cumberland Plain Land Snail	E1		155
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V,P		17

Scientific Name	Common Name	NSW status	Comm. status	Records
Miniopterus australis	Little Bent-winged Bat	V,P		3
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		24
Myotis macropus	Southern Myotis	V,P		10
Ninox connivens	Barking Owl	V,P,3		1
Ninox strenua	Powerful Owl	V,P,3		8
Petauroides volans	Greater Glider	P	V	1
Petaurus australis	Yellow-bellied Glider	V,P		2
Petaurus norfolcensis	Squirrel Glider	V,P		1
Petroica boodang	Scarlet Robin	V,P		1
Phascolarctos cinereus	Koala	V,P	V	3
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	169
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		1
Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		5
Stagonopleura guttata	Diamond Firetail	V,P		1
Tyto novaehollandiae	Masked Owl	V,P,3		1
Tyto tenebricosa	Sooty Owl	V,P,3		1
Flora				
Acacia pubescens	Downy Wattle	V	V	1
Allocasuarina glareicola		E1	E	1
Dillwynia tenuifolia		V		152
Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	V		826
Hibbertia puberula		E1		3
Marsdenia viridiflora subsp. viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	E2		71
Micromyrtus minutiflora		E1	V	7
Persoonia nutans	Nodding Geebung	E1,P	E	18
Pimelea spicata	Spiked Rice-flower	E1	E	7
Pultenaea parviflora		E1	V	196
Syzygium paniculatum	Magenta Lilly Pilly	E1	V	1

CE = critically endangered, E = endangered, V = vulnerable, P = protected

3. Management Issues

3.1 Habitat management / threatened species

The site supports potential habitat for numerous threatened species as described in Section 2.2.2 (Plate 1). This primarily includes transient species that rely on specific foraging resources (such as myrtaceous feed trees and lerp as a foraging resource). Threats to biodiversity/habitat include weed incursion, illegal dumping, vehicle strike, domestic pet attacks and vertebrate pest/predators' interactions. These threats are discussed further below, and recommendations made for management actions in the FMP (Niche 2021b).



Plate 1: Native vegetation and habitat in the Site

In conjunction with this plan, and the FMP (Niche 2021), a Nest Box Plan (NBP) has also been developed (Annex 4) to compensate for habitat that may be lost as result of the development. The NBP has been developed in accordance with Condition 16, of the Penrith City Council Notice of Determination (PCC 2020).

3.2 Feral animals

No specific surveys have been undertaken to determine the presence of feral animals on site. Whilst no direct evidence of feral animal activity was observed in the site, feral animals such as foxes (*Vulpes vulpes*) and rabbits (*Oryctolagus cuniculus*) are known to occur in the locality and control of feral animals requires consideration as they pose a threat to native fauna, including threatened species.

During the site inspection by Niche (3 March 2021), indirect signs of presence for both feral species (Rabbit and Red Fox) were identified (in the form of scats and fox kill). Feral animals will be managed in accordance with the Feral Animal Control and Monitoring Plan (FACMP, Niche 2021a).

3.3 Weeds

The site has varying degrees of disturbance and weed infestation (Plate 2 and 3). Priority of weed control works is to be determined according to the status of weeds present. The following hierarchy is given to target weed infestations:

1. Weeds of National Significance ('WoNS') (Commonwealth of Australia 2019b);
2. Weeds listed under the NSW *Biosecurity Act* 2015 or the *Biosecurity Regulation* 2017 (NSW Government 2019d; 2019e);
3. Priority weeds listed for the Greater Sydney (NSW DPI 2019)

There were ten (10) weeds that are listed as Weeds of National Significance (WoNS), Biosecurity Matters, and/or Priority weeds in the Greater Sydney region recorded in the site (Niche 2019; Horticulture Management Services 2016).

Weed management actions have been included in the VMP and methods have been further discussed/developed in the WMP (Niche 2021d). Weed species recorded in the site include a wide range of species (Table 3).

Table 3: Weeds species in the site

Scientific Name	Common Name	WoNS	Biosecurity Regulation	Priority
Araujia sericifera	Moth vine			
Asparagus aethiopicus	Asparagus Fern	✓	✓	✓
Asparagus asparagoides	Bridal Creeper	✓	✓	✓
Asparagus virgatus	Tall Asparagus Fern			✓
Bidens pilosa	Cobblers Pegs			
Briza maxima	Quaking grass			
Bromus catharticus	Prairie grass			
Cenchrus clandestinus	Kikuyu			
Cestrum parqui	Green Cestrum			✓
Chloris gayana	Rhodes grass			
Chlorophytum comosum	Spider Plant			
Cirsium vulgare	Spear thistle			
Conyza spp.	Fleabane			
Cynodon dactylon	Common Couch			
Dactylis glomerata	Cocksfoot			
Echium spp.	Paterson's Curse			
Ehrharta erecta	Panic Veldtgrass			
Ehrharta longiflora	Annual Veldtgrass			
Eragrostis curvula	African Lovegrass			
Foeniculum vulgare	Fennel			
Gleditsia triacanthos	Honey Locust			

Scientific Name	Common Name	WoNS	Biosecurity Regulation	Priority
Gomphocarpus fruticosus	Narrow-leaved Cotton Bush			
Grevillea robusta	Silky Oak			
Hypericum perforatum	St John's Wort			
Ligustrum spp.	Large and Small Leafed Privet			
Lycium ferocissimum	African boxthorn	✓	✓	✓
Nassella neesiana	Chilean Needle Grass	✓	✓	✓
Olea europea ssp.	African olive			✓
Onopordum acanthium ssp.	Scotch Thistle			
Opuntia spp	Prickly Pear	✓	✓	✓
Paspalum dilatatum	Paspalum			
Plantago lanceolata	Plantain			
Pyracantha crenulata	Nepalese Firethorne			
Rosa rubiginosa	Sweet Briar			
Rubus fruticosus spp.	Blackberry	✓	✓	✓
Rumex crispus	Curled Dock			
Salix spp.	Willow	✓	✓	✓
Schinus areira	Peppercorn Tree			
Senecio madagascariensis	Fireweed	✓	✓	✓
Sida rhombifolia	Paddy's Lucerne			
Solanum nigrum	Black nightshade			
Solanum seaforthianum	Climbing Nightshade			
Solanum sisymbriifolium	Sticky Nightshade			
Sonchus oleraceus	Common Sow thistle			
Sporobolus africanus	Parramatta Grass			
Tradescantia fluminensis	Trad			
Verbena bonariensis	Purple Top			

Woody weed and exotic grass infestations were present in scattered patches across the site, especially along the drainage lines. Thickets of *Olea europea ssp. cuspidata* and *Eragrostis curvula* were observed at several locations (Plate 2 and 3).



Plate 2: Native vegetation with *Eragrostis curvula* infestation



Plate 3: Native vegetation with *Olea europa spp. cuspidata* infestation

Weed density throughout the Site has been mapped according to the following broad cover classes:

- High (> 50% cover): areas observed supporting a high density of weeds including patches of dense woody weed infestations and areas supporting numerous woody weeds, climbers and herbaceous weeds
- Medium (10 – 49%): areas with scattered infestations of woody and herbaceous weeds
- Low (<10%): areas of native vegetation in good condition with only scattered weeds present.

Figure 3 shows weed density and key areas observed supporting weed infestations during the site inspection.

3.4 Hydrology

The site contains an ephemeral wetland along the eastern boundary of MZ4.

3.5 Fire management

A Bushfire Assessment Report has been prepared for the proposed development at Werrington by Building Code & Bushfire Hazard Solutions Pty Limited (BHS 2019). The recommendations of the Bushfire Assessment Report have been adopted into the VMP. In addition, a suitable bushfire and fuel management plan in line with the Bushfire Assessment Code would be developed for the site in accordance with a local Bush Fire Risk Management Plan and in liaison with the NSW Rural Fire Services (RFS) (NSW RFS 2019) and Council's Bush Fire Mitigation Officer. The bushfire and fuel management plan will be developed such that threatened species known to occur across the site are not significantly impacted by the fire regime.

Bushfire risk mitigation treatments, once determined, would be undertaken by Lendlease in liaison with the NSW RFS.

3.6 Disturbed areas

Disturbance is a significant issue on the site. The main disturbances are past land use including agriculture (i.e. farming), clearing of native vegetation, fragmentation, encroachment of weeds and degradation of the quality of remaining native vegetation remnants, unauthorised vehicle access and illegal dumping. The areas affected by this disturbance are the boundaries adjacent to public roads, where tracks and rubbish have impacted on the vegetation condition. However, the overstorey vegetation is still present and showing good signs of regeneration (Plate 2). These areas would naturally regenerate following the removal of rubbish, strategic revegetation and prevention of unauthorised access.

3.6.1 Rubbish / illegal dumping

Rubbish and illegal dumping are an issue within the site. Rubbish removal needs to be undertaken on a regular basis. Where access to remove rubbish is not feasible by vehicle, the rubbish should be removed by hand. Access to the site will be restricted and all rubbish removed taken to an authorized waste disposal centre to avoid potential land contamination.

3.6.2 Unauthorised access / fencing

Unauthorised human access and associated disturbances such as track stability and illegal dumping are evident at the site. It is considered that fencing is only required to exclude unauthorised human access (particularly vehicles) and that the requirement for fencing should consider impacts to biodiversity (e.g. fencing of vegetated land onsite adjoining other vegetated land offsite will result in impacts to biodiversity but provide little or no ecological benefits).

Areas that require fencing include the southern and western boundary of the Conservation Reserve where the vegetation is easily accessed. Recommended fencing has been shown on Figure 3. The final fencing plan and fencing type will be discussed with and agreed upon by Council.

All trees to be retained within the development area are to be protected in accordance with the minimum tree protection standards as outlined in Australian Standard AS 49702009 'Protection of trees on development sites'

3.7 Track maintenance

Adequate access for maintenance of the vegetation zones shall be provided as a part of the landscape and subdivision design. The main access to the Conservation Reserve and Open space/recreational area has been mapped in Figure 2 and described in Table 4.

Erosion control will be required on all tracks to be maintained for access. Gates will be required to secure access. Indicative tracks to be retained and potential gate locations are shown in Figure 3.

3.8 Signage

Signage at the site will be required, including regulatory and informative signage. Locations of required signages are mapped in Figure 3 and information to be included in the signage is described in Table 4.

3.9 Annual monitoring and reporting

The site will be subject to biannual monitoring and reporting in the first year and annual reporting in the second year. The biannual/annual report will include:

- Progress on achieving the objectives of the management plan
- Document condition of areas before and after rehabilitation and over time
- Photo records of progress and growth from fixed points since time zero at commencement of VMP
- Works undertaken during the reporting period
- Weeding areas including extent and intensity of weed infestations, areas treated, type of treatment, monitoring over time
- Numbers and species of plantings and success
- Progress of any rehabilitation work including treatments, location, spatial extent area treated, and monitoring over time
- Any matters that affect the successful implementation of the management plan.

As a part of the biannual/annual monitoring Lendlease will initiate an annual joint inspection with Council's ecologist and vegetation management officer. This will provide the opportunity for feedback from Council during the maintenance period so that matters/issues can be addressed progressively throughout the maintenance period thus increasing the likelihood that the site will be in suitable condition for dedication after the maintenance period is complete.

An adaptive management approach should be adopted for the site allowing management to be more flexible and respond to emerging issues. Any issues or recommendations made in the biannual/annual monitoring report are to be appropriately addressed in the following year. This approach should also include where appropriate a review of the previous years' weed management and provide a detailed plan for the following year. At the conclusion of the maintenance period a final annual report will be prepared that:

- Documents the final year of VMP implementation by Lendlease
- Compiles the results of all monitoring and works over the maintenance period for the matters included in each biannual/annual Report
- Assesses suitability for dedication to Council
    - Assesses in detail the condition of the site at the end of the maintenance period and the degree to which the objectives of the management plan have been met.
    - Documents any outstanding works i.e. works not completed or where progress has not been sufficient to meet objectives and reasons for this
    - Makes recommendations for the management actions into the future (in perpetuity) for inclusion in the Revised Management Plan.

4. Management plan objectives and strategies

4.1 Objectives

The overall goal of this VMP is to provide guidance for the works and management actions required to maintain or improve the biodiversity values of the site over a maintenance period of two (2) years.

The objectives for this management plan are:

- Establish the Conservation Reserve and Open Space/recreational area prior to the end of the maintenance period
- Restoration of Critically Endangered Remnant Community (CPW) vegetation
- Re-instate/maintain natural ecosystem functioning
- Rehabilitate any area of land disturbed by clearing or weed removal, using current bushland regeneration and vegetation management techniques, which compliments the existing vegetation on adjoining sites and wildlife habitat/corridors
- Improve habitat for native fauna including threatened species
- Implement a monitoring and review process
- Liaise with relevant local and state bodies
- Provide an educational resource for the local community.

This VMP has been prepared in accordance with *National Standards For The Practice Of Ecological Restoration In Australia* (second edition) by the Society for Ecological Restoration Australasia (SERA 2019). The Standards are applicable to any Australian ecosystem (whether terrestrial or aquatic) and any sector (whether private or public, mandatory or non-mandatory). They can be used by any person or organisation to help develop plans, contracts, consent conditions and closure criteria.

4.2 Strategies

The site has been divided into four management zones as shown in Figure 2 and described below.

Management Zone 1A (MZ1A) – 0.47 ha



Photo 1: Native grasses in central section of MZ1A

MZ1A is located within the Conservation Reserve and contains a moderate infestation of weeds, mainly in the ground layer. MZ1A has been previously disturbed/cleared of native vegetation and is currently dominated by range on weeds on the eastern and northern boundaries.

Weed control will be undertaken followed by planting of native *Cumberland Plain Woodland* canopy, shrub and groundcover species to improve the resilience of the disturbed edges of this management zone.

Management Zone 1B (MZ1B) – 0.31 ha



Photo 2: Eastern boundary of MZ1B to be revegetation

MZ1B is located within the Conservation Reserve. The native canopy and ground layer vegetation is generally intact and regenerating in this management zone, but the shrub layer is sparse. MZ1B contains areas of low, moderate to high weed infestation including woody and herbaceous weeds, mainly in the ground layer and mid-storey. Sections of MZ1B has been previously disturbed/cleared of native vegetation and currently contains scattered patches of weeds across the entire zone.

Weed control will be undertaken followed by planting of native *Cumberland Plain Woodland* shrub and groundcover species in the disturbed parts of the zone e.g. the eastern end of the MZ1B.

There are two existing tracks in MZ1B that will be decommissioned and rehabilitated via scarification of the soil and planting with native *Cumberland Plain Woodland* shrub and groundcover species. The planting of native trees is not required due to the already exiting regeneration observed but the groundcover diversity should be enhanced in disturbed parts of the site (i.e. the eastern end of the MZ1B and tracks that is to be revegetated). It is recommended that tracks be rehabilitated in Year 2 of the maintenance period so that they can be used for access for management actions in Year 1, e.g. revegetation of Management Zone 2.

Management Zone 2 (MZ2) – 0.37 ha



Photo 3: MZ2 to be revegetated with native CPW species

MZ2 is located between MZ1A and MZ1B within the Conservation Reserve. MZ2 is a previously cleared area that currently contains a row of planted *Corymbia maculata* and mostly exotic pasture grasses. The exotic grasses are currently managed through mowing. MZ2 will be revegetated to restore *Cumberland Plain Woodland* vegetation including all stratum (canopy, mid-storey and ground layer) with appropriate species (Annex 2) to create connectivity between native vegetation patches in the Conservation Reserve to enhance existing wildlife corridors and fauna habitat quality. Weed control work and mulching will be undertaken to prepare MZ2 for planting. Scarification of soil may also be required due to compaction issues that can affect the establishment and growth of plants.

Management Zone 3 (MZ3) – 0.52 ha



Photo 4: MZ3 dominated by *Melaleuca styphelioides*

MZ3 is situated on a lower part of the site and is dominated by *Melaleuca styphelioides,* indicating historically wetter conditions. This suggests that MZ3 is highly susceptible to weed establishment/ infestation due to nutrient rich soils and hydrology (i.e. water flows/urban runoff). MZ3 contains areas of low, moderate and high weed infestation. Management objectives in MZ3 are to maintain the vegetation communities/habitat as is, undertake weed control, and regular monitoring for weeds and illegal dumping.

Management Zone 4 (MZ4) – 0.49 ha



Photo 4: MZ4 dominated by *Eragrostis curvula*

MZ4 has been previously disturbed/cleared of native vegetation and is currently contains patchy weed infestations of low moderate and high density across the whole zone. *Eragrostis curvula* and other exotic grasses are the main weeds in this zone. Control of *Eragrostis curvula* and other exotic grasses will be undertaken by hand/manual removal to improve natural regeneration through soil disturbance, thus triggering the germination of native seed in the seedbank. Other weeds will be managed through a combination of hand removal and spot spraying with appropriate herbicides in MZ4. Infill planting of native *Cumberland Plain Woodland* canopy, shrub and groundcover species will be undertaken to improve the resilience of the edges and more disturbed sections of this zone and where native canopy and mid-storey/shrub layer is sparse.

Asset Protection Zones (APZ)

MZ1A and MZ4 include an APZ to be implemented on the eastern boundaries where these areas interface with residential lots (Figure 3). The APZs were recommended by BHS (2019) based on minimum required APZs determined from Table A2.4 of Planning for Bush Fire Protection (PBP). All proposed allotments excluding Conservation Reserve (proposed Lot 1000) and the retained CPW within Central Park (Lot 2269) will be maintained in accordance with an APZ (BHS 2019). The widths of the APZs in MZ1A and MZ4 are seven meters and 11 metres respectively (Figure 2 and Figure 3).

The strategies recommended in order to achieve the management objectives and address the management issues for the site comprise the following:

- Management of unauthorised access through installation of perimeter fencing, gates and signage. The final fencing plan and fencing type will be discussed with and agreed upon by Council.
- Removal of rubbish, unnecessary tracks and old internal fencing
- Development and implementation of a bush regeneration and weed control plan
- Development and implementation of a bushfire management plan for hazard reduction and asset protection
- Undertake control of pest animals
- Undertake erosion control works
- Undertake neighbour relations and community consultation
- Undertake biannual/annual monitoring and reporting.

4.3 Implementation of Management Actions

4.3.1 Suitably Qualified and Licenced Contactors

Survey, research, or on-ground works that impact or potentially impact on a threatened species, population or ecological community or their habitats (listed under the *BC Act*) may only be carried out by suitably qualified practitioners holding a current Scientific Licence from the NSW Environment, Energy and Science ('EES'). Such works may include collecting, picking, or otherwise damaging native flora, bush regeneration, weed control and seed collection.

Only appropriately qualified and trained bush regenerators should be used to undertake work in environmentally sensitive areas where threatened species or remnant native vegetation could be harmed. A trained bush regenerator is one who has successfully completed the accredited Certificate II/III in Conservation Land Management offered by NSW TAFE or equivalent, and who has completed at least 350 hours in the field. Trained bush regenerators must be supervised on site by at least one bush regenerator with a minimum qualification of a Certificate IV in Conservation and Land Management.

All bushland/native vegetation restoration will be carried out to best practice standards as per "Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland" (DEC 2005).

Other contactors may be required for completion of management actions. It is the responsibility of the landowner to ensure that the all contractors engaged to work in remnant bushland is suitably qualified and appropriately licensed.

4.3.2 Onsite Supervision

Trained bush regenerators must be supervised on site by at least one bush regenerator with a minimum qualification of a Certificate IV in Conservation and Land Management.

The appointment of a qualified supervising Project Manager to oversee the implementation of the VMP is strongly recommended. Ideally, this will be a trained Ecologist with experience in working in native plant communities. The Project Manager will be responsible for implementation of the VMP, for the review and assessment of methods, techniques employed, progress reports and will also be responsible for 'sign off' at each stage of the project during the maintenance period. The Project Manager will liaise between the landowner and the Council, as required.

5. Management Actions

Refer to the Construction Environmental Management Plan (CEMP, Niche 2020) prepared for the site for management and mitigation of potential direct and indirect impacts of construction to CPW at the site. Table 4 details the management actions required to achieve the management objectives of the VMP at the Site.

Table 4: Management actions, timing and frequency

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
Infrastructure						
Installation of perimeter fencing, access/ management gates and interpretive signage	MZ: all	Access to the vegetation management zones will be managed via perimeter fencing, and appropriate signage at all the access points (Figure 3). Adequate access for maintenance of the vegetation zones shall be provided as a part of the landscape and subdivision design. The final fencing strategy is to be prepared in consultation with and approved by Council. Fencing is required around the management zones. This is shown in Figure 3, however, is subject to further investigations in consultation with Council in order to avoid clearing of native vegetation. All fences, gates and signs are to be inspected/maintained annually. Five small signs to be installed in locations shown in Figure 3. Recommended information on signage to read: "Cumberland Plain Woodland - Conservation Area". All trees to be retained within the development area are to be protected in accordance with the minimum tree protection standards as outlined in Australian Standard AS 49702009 'Protection of trees on development sites'.	1	1	Start Year: 1 Frequency: all fencing to be undertaken within the first 3 months of Year 1 of the maintenance period.	Installation of perimeter fencing, access/ management gates and interpretive signage undertaken in the first year of the maintenance period (Figure 3). Gates and fencing will be maintained in working order such that unauthorized vehicular access is prevented. All fences, gates and signs are to be inspected/maintained annually.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
Construction of roads and tracks, including walking and bushfire trails.	MZ: all zones except MZ3	The existing trail in the centre of MZ:1b is to be decommissioned and rehabilitated/revegetated. New access tracks are proposed to be constructed for access to the Conservation Reserve and Open Space/Recreation Zone. Construction of trails for access are recommended below: Trail 1 (temporary management track): A temporary access management track is to be retained during the maintenance period for contractor access to undertake weed control and rehabilitation tracks. An asset protection zone (APZ) trail that currently exists on the northern boundary of the MZ1B will be extended east along the railway fence to the north-eastern corner of MZ2 and then directly south to the southern boundary (to be fenced) of the Conservation Area to form Trail 1 (Figure 3). No vegetation clearing is required for Trail 1 as it will be situated in an area of mainly pasture grasses and other weeds. The trail will provide access to all management zones in the Conservation Reserve during the maintenance period. This track is to be rehabilitated/revegetated in the second year of the maintenance period. Trail 2: A management access trail is to be constructed along the western boundary of MZ4 (Figure 3). This track will be maintained to allow vehicle access.	1	2	Start Year: 1 Frequency: Ongoing from the first year of the maintenance period Track maintenance undertaken every year with management actions as required.	Decommissioning of excess trails and construction of new trails (where required) to be undertaken in the Year 1 of maintenance period. Rehabilitation/revegetation to be undertaken in Year 1 following closure of exiting trail in the centre of MZ1B. Rehabilitation/revegetation to be undertaken in Year 2 following closure of Trail 1. Ongoing track maintenance to be undertaken annually with management actions as required.
Bush Fire Hazard Reduction and Ecological Burning						
Develop Bushfire Management and Asset Protection Plan	MZ: all	It is proposed to engage a specialist bushfire consultant in the first year to undertake a detailed assessment of the site and prepare a Bushfire Management Plan (including Fuel Management Plan). The	1	1	Start Year: 1 To be prepared at the start of Year 1	Bushfire Management Plan to be prepared in consultation with and approved by Council during

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		recommendations will consider the RFS' species specific conditions relating to the use of fire.				the first year of the maintenance period.
Implement bushfire hazard reduction and ecological burns	MZ: all	The recommendations of the bushfire management plan developed by a qualified consultant would be followed.	1	2	Start Year: 2 Frequency: This will be dependent on bushfire management plan and burn approvals.	Monitoring showing increase in floristic diversity and reduction of exotic annual weeds and grasses (to be included in Fire Management Plan).
Management of MZ1A and MZ4 – APZs	MZ1A (7m) and MZ4: APZ (11m)	To be managed as per Fuel Management Plan to be prepared for Eastern Park and the Asset Protection Zone within Central Park prior to the registration of the subdivision as per recommendations of BHS (2019).	1	1	Start Year: 1 Frequency: To be prepared at the start of Year 1	Fuel Management Plan prepared as part of to Bushfire Management Plan in consultation with and approved by Council during the first year of the maintenance period.
Bush Regeneration and Weed Control Plan						
Weed Management Year 1 (24 days)	MZ: all	The weed management plan in the first year of the maintenance period will prioritise control of listed Weeds of National Significance (WoNS), Biosecurity Matters, and/or Priority weeds in the Greater Sydney region. There are occurrences of other weeds within these areas, some of which have been classified as secondary weeds. These are not considered a major threat to the biodiversity of the site in the long term. Secondary weeds then all other weeds would be targeted after high threat weeds species are under control. Given the number and distribution of weeds throughout the various vegetation zones, the long-term control and management of weeds and future weed incursions will include intensive (regular, at least monthly, and	1	1	Start Year: 1 Frequency: 24 days/768 hours annually (two sessions monthly in Year 1 of the maintenance)* *Based on a bush regeneration team of four working 8 hours per day (i.e. 32 hours per day for a team)	Reduction of weed cover to less than 20% at the end of the Year 1 of the maintenance period across all management zones.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		seasonal) control for the first year. Weed management will be reassessed at the end of Year 1 as part of the monitoring and to inform the weed management actions for Year 2 of the maintenance period.				
	MZ 4	In addition to targeting weeds in the order specified in the hierarchy in section 1.4, control of *Eragrostis curvula* and other exotic grasses will be undertaken simultaneously through hand removal to improve natural regeneration through triggering the germination of native seed in the seedbank.	1	2		Reduction of exotic grasses to less than 30% and germination of native species in disturbed soils. Native species regeneration cannot be quantified as its success is dependent on the health of the soil seed bank.
Weed Management Year 2 (12 days)	MZ: all	The weed management plan in the second year of the maintenance period will prioritise control of listed Weeds of National Significance (WoNS), Biosecurity Matters, and/or Priority weeds in the Greater Sydney region. Secondary weeds then all other weeds will be targeted when listed WoNS, Biosecurity Matters, and/or Priority weeds in the Greater Sydney region are under control. Given the number and distribution of weeds throughout the various vegetation management zones, the long-term control and management of weeds and future weed incursions will include intensive (regular, at least monthly, and seasonal) control for the second year. Weed management will be reassessed at the end of Year 2 as part of the monitoring and to inform the weed management actions for ongoing future maintenance of the site.	2	2	Start Year: 2 Frequency: 12 days/384 hours annually (one sessions monthly in Year 1 of the maintenance)* *Based on a bush regeneration team of four working 8 hours per day (i.e. 32 hours per day for a team)	Reduction of weed cover to less than 10% at the end of the Year 1 of the maintenance period across all management zones.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
Revegetation/supplementary planting trees/ shrubs/ground cover	MZ: all	1. Management Zone Specific Recommendations MZ1A – revegetation to be undertaken with appropriate *Cumberland Plain Woodland* species on the north-eastern boundary of the zone and the decommissioned trails where native vegetation is sparse or has been previously removed. Scarification of soils is highly recommended on trails before planting is undertaken. Only mid-storey and groundcover species are required for revegetation in this zone as the canopy is mostly intact and regenerating. MZ1B – revegetation to be undertaken with appropriate *Cumberland Plain Woodland* species on the eastern and northern boundary of the zone where native vegetation is sparse. A combination of canopy, mid-storey and groundcover species area required for revegetation in this zone. MZ2 – revegetation to be undertaken to restore *Cumberland Plain Woodland* vegetation including all stratum (canopy, mid-storey and ground layer) with appropriate species to create connectivity between native vegetation patches in the Conservation Reserve to enhance existing wildlife corridors and fauna habitat quality. Weed control work will be undertaken to prepare the MZ for planting by spraying all exotic grasses with appropriate herbicide/s followed by soil scarification and mulching. MZ3 – No planting recommended for this zone. Weed control only. MZ4 - revegetation to be undertaken with appropriate *Cumberland Plain Woodland* species on the northern	1	2	Start Year: 1 Frequency: planting undertaken annually.	Planting to be undertaken annually in the appropriate season (e.g. Autumn or Spring) during the maintenance period. Plantings: • 90%survival rate of plantings; • Less than 5% weed cover at the end of the maintenance period. • Increase in species diversity and % foliage cover consistent with local PCT benchmark data. Local benchmark data from good condition bushland would provide realistic species diversity and % foliage cover targets.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		boundary (see Monitoring Point 9 in Figure 3) and central vegetation patch (see Monitoring Point 8 in Figure 3) of the management zone where native vegetation is sparse and or structural layers are absent. A combination of canopy, mid-storey and groundcover species are required for revegetation in this zone. It should be noted that native canopy recruitment is event in the zone and should be considered when planting. MZ1A (7m) and MZ4 APZ (11m) – Strictly no planting to be undertaken in this zone as this is an APZ. 2. General Recommendations Planting of native trees, shrubs and groundcover species to be undertaken: - after weed control works have been undertaken and the area to be planted has been appropriately prepared - on slopes adjacent road or track edges where weed thickets are removed - in areas of sparse native vegetation - in areas that require erosion control - to rehabilitate any decommissioned tracks. It is highly recommended that coils on tracks should be scarified due to issues of soil compaction. The planted native shrubs and groundcover will assist in minimising intrusion of weeds into the good vegetation area from the roadside or track edges. Plantings to consist of plants grown from seed sourced from the site. If this is not feasible plants will be sourced that are grown from local seed. The plantings will match				

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		species listed in Annex 2 from surveys undertaken on the site by Niche (2019). A mosaic pattern/approach will be used for planting species selected within all identified area/zones. These planting densities should emulate the type of natural vegetation/communities found on site and adjoining properties. Trees are recommended to be planted in groups or clusters to maximise the diversity of habitat to benefit both flora and fauna and enhance visual and aesthetic amenity. Site preparation activities for all rehabilitation/revegetation will include identification of habitat critical to the Cumberland Land Snail (*Meridolum corneovirens*). Consideration will be undertaken to integrate planting with the fire management plan as some species (e.g. canopy trees and mid-storey species) will require time without fire to establish or they will be killed off by the fire.				
Erosion control	MZ: all	Erosion control measures such as planting, will be required within the site where soil disturbance has occurred. Erosion control will be required on all tracks to be maintained for access and areas where weed thickets are removed through the site. Erosion control techniques to be used will include a combination of sediment fencing, coir logs, jute matting, planting and strategic bush regeneration as appropriate.	1	2	Start Year: 1 Frequency: Ongoing from Year 1	Erosion control undertaken on an ongoing basis during the maintenance period using appropriate combination of techniques.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		Other erosion control measures would also be considered as they may be more appropriate or more effective options for management of erosion on the site.				
Habitat augmentation	MZ: all	Wood with a diameter of 30cm or greater on all trees that are scheduled for removal, is to be sawn into 2-6m lengths and relocated within remnant vegetation (outside of APZs), under the guidance of an ecologist.	1	1	Start Year: 1 Frequency: 1	Subjective measure: significantly greater amount of coarse woody debris within the management zones after scheduled clearing takes place. Visual increase in coarse woody debris in the subsequent photo monitoring session.
Habitat augmentation	MZ: all	Nest boxes to be installed and monitored in accordance with the nest box plan (Annex 4).	1	1	Start Year: 1 Frequency: 1	Occupancy of nest boxes by target species group.
Other Recurring Costs						
Control of pest animals	MZ: all	A baseline feral animal survey is to be undertaken in the first year of the plan. A Feral Animal Control and Monitoring Program has been developed for the site (Niche 2021a).	1	1	Start Year: 1	Baseline monitoring survey to be undertaken before commencement of pest animal control, and used as reference in all subsequent reports, to report against for the life of the plan.
Control of pest animals	MZ: all	The Feral Animal Control and Monitoring Program will be implemented throughout the life of the Management Plan when inbuilt triggers for action are met.	1	2	Start Year: 2 Frequency: in accordance with the Program to be developed	Once management actions are triggered, a reduction in number of individuals of each pest species reported present.
Rubbish removal	MZ: all	Existing rubbish and fencing material waste located throughout the site will be removed and disposed of offsite.	1	2	Start Year: 1 Frequency: Ongoing from Year 1	100% reduction of rubbish within the first two years.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		Additional rubbish dumping will continue to be monitored and removed quarterly during the maintenance period.				
Community Engagement						
Neighbour relations and community consultation	N/A	Letters will be delivered to the immediate neighbours of the site. The letter will comprise an overview of the establishment and management objectives of the site. Ongoing consultation will be undertaken with the immediate neighbours of the site regarding management actions that may affect them, such as perimeter fencing, feral animal control and fire. The signage for the site will include contact details for the land manager for general public enquiries.	1	2	Start Year: 1 Frequency: Once a year	Signage installed and initial consultation with neighbours undertaken in the first year.
Monitoring						
Monitoring surveys	MZ: all	The site will be subject to biannual monitoring and reporting in the first year and annual reporting in the second year. Biannual/annual monitoring and record keeping will be conducted by Lendlease. Lendlease must complete reports of monitoring activities. The completed reports of monitoring activities relating to a reporting period must be submitted with the annual report. Monitoring Points that are recommended are shown in Figure 3. The nine monitoring locations are the minimum to be used for measuring the progress of vegetation management works undertaken on site. Photo records of progress and growth from the fixed monitoring points in Figure 3 are to be collected from the commencement of the VMP (year 0).	1	2	Start Year: 1 Frequency: 2 (biannually in year 1, annually in the second year)	Monitoring of all management actions undertaken taking into consideration the required performance measures and noting if any non-permissible actions have been carried out at the site.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
Annual joint inspection with Council	MZ: all	Before each 12 month anniversary after the commencement of the maintenance period, the applicant or applicant's representative will initiate an annual joint inspection with Councils ecologist and vegetation management officer. This will provide the opportunity for feedback from Council during the maintenance period so that matters/issues can be addressed progressively throughout the maintenance period.	1	2	Start Year: 1 Frequency: 2 (annually)	Joint inspection undertaken each year and feedback incorporated into annual report and addressed at the site where applicable.
Annual report	MZ: all	The annual report will include details of the following management actions/works undertaken at the site: - Native Vegetation Management - Integrated Weed Management - Threatened Species Habitat Management - Integrated Feral Pests Management - Fire for Hazard Reduction and Asset Protection The monitoring of each of the management actions above will help determine: -The physical condition of fencing and gates and whether they are maintained to an appropriate standard -If any human disturbance has occurred on the site -The physical condition of existing fire trails and access tracks within the site, their navigability and evidence of erosion -The presence of rubbish on the site -The effectiveness of threatened species habitat management actions. Baseline biodiversity monitoring will be conducted biannually in the first year and annually in the second year by a qualified ecologist. Monitoring include: - A discussion of each management action and outcomes - An assessment of the performance measures as outlined in the Management Plan	1	2	Start Year: 1 Frequency: 2 (annually)	Monitoring report should outline if all management actions have been undertaken, improvement in the performance measures and if any non-permissible actions have been carried out at the site.

Required Management Actions	MZ	Recommendations	Start Year	End Year	Recommended Frequency	Performance measures/indicators
		- Photo monitoring points collected at the commencement of the VMP - Recommendations for ongoing management All monitoring and reporting will require a baseline survey on which all subsequent reports, use a reference to report against for the life of the plan. The management plan and management activities will be reviewed annually during the two-year monitoring period to ensure all performance measures are being meet. As a part of the adaptive management approach recommended the detailed weed plan is reviewed and a detailed plan for the following year included in the annual report.				
End of Maintenance Period						
Final Report	MZ: all	Prior to the end of the Maintenance Period, a Final Report will be provided to Council. The Final Report will be prepared by a suitably qualified person. The Final Report will confirm whether the management actions have been satisfactorily fulfilled in accordance with the management plan.	2	-	Once	Final report prepared by a suitably qualified person and provided to Council prior to the end of the maintenance period. Final report would trigger an onsite inspection to be carried out by /with council.
Draft Revised Management Plan	MZ: all	Prior to the end of the Maintenance Period, a draft Revised Management Plan will be provided to Council. The draft Revised Management Plan will be prepared by a suitably qualified person. The draft Revised Management Plan will set out the works and management actions required to be undertaken on the Site to maintain or improve the biodiversity values in perpetuity.	2	-	Once	Draft Revised Management Plan prepared by a suitably qualified person provided to Council prior to the end of the maintenance period. Draft annual report would trigger an onsite inspection to be carried out by /with council.

Table 5: Indicative Timetable of Works over a Two (2) Year Maintenance Period

Note: 6 monthly blocks are divided into 3 monthly increments. This program of works is indicative only and will depend on availability of resources for on-ground works.

ITEM / TASK	PRELIM.	MONTHS 0-6		MONTHS 7-12		MONTHS 13-18		MONTHS 19- 24		ON-GOING	
Planning & Administration											
VMP approved by Council & adopted by Lendlease											
Resources allocated for 2-year maintenance period											
Appoint Project Manager/Ecologist											
Prepare draft bush regeneration and pest management works plan											
Prepare tender for on-ground works											
Engage Bush Regeneration/Pest Managment Contractor											
Site Induction (project manager)											
Annual joint inspection with Council (annually)											
Neighbour relations and community consultation (as required)											
Other Preliminary Actions											
Mark out development area, roads and buffers: erect tree protection and exclusion fencing											

ITEM / TASK	PRELIM.	MONTHS 0-6		MONTHS 7-12		MONTHS 13-18		MONTHS 19- 24		ON-GOING	
Bushland Managment Program											
Primary Weeding											
Follow-up & Secondary Weeding											
Maintenance Weeding (all work sites)											
Rubbish Removal											
Erosion Control Works (frequency as required)											
Native CPW Planting Program											
Identify areas to be planted/linked: prepare working map for contractors											
Determine planting needs: organise propagation of tubestock											
Site Preparation (e.g. weed control, soil scarification and mulching, as appropriate)											
Planting Tubestock/Advanced stock											
Plant Maintenance (watering and weeding)											
Pest Management Program											
Implement Feral Animal Monitoring Program											
Implement Feral Animal Control Program											

ITEM / TASK	PRELIM.	MONTHS 0-6		MONTHS 7-12		MONTHS 13-18		MONTHS 19- 24		ON-GOING	
Monitoring Program & Reporting											
Bush Regeneration Contractor monitoring & progress reports to Lendlease and Council (6 monthly)			**1**		**2**		**3**		**4 (FINAL)**		
Review of VMP: Draft Management Plan											

References

Building Code & Bushfire Hazard Solutions Pty Limited (2019), Bushfire Assessment Report, Proposed: Staged Residential / Industrial Development at: 16 Chapman Street, Werrington NSW. Prepared For: GLN Planning.

Commonwealth of Australia (2019a). Environment Protection and Biodiversity Conservation Act 1999, https://www.legislation.gov.au/Details/C2014C00506. Accessed 10/12/19.

Commonwealth of Australia (2019b). Weeds of National Significance (WoNS), https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html. Accessed 10/12/19.

Department of Environment and Conservation (2005). Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland. Available at https://www.environment.nsw.gov.au/resources/nature/RecoveringCumberlandPlain.pdf

Department of the Environment (2019). Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest in Community and Species Profile and Threats Database, Department of the Environment, Canberra. http://www.environment.gov.au/sprat. Accessed 10/12/19.

Horticultural Management Services (2016). Vegetation Management Plan. Proposed Residential subdivision development. South Werrington Urban Village, Penrith NSW. Prepared for Universal Property Group Pty Ltd.

Keith D.A. (Keith 2004). From ocean shores to desert dunes: the vegetation of New South Wales and the ACT (Department of Environment and Conservation NSW: Hurstville).

New South Wales Government (2019a). Biodiversity Conservation Act 2016 No 63, https://www.legislation.nsw.gov.au/#/view/act/2016/63. Accessed 10/12/19.

New South Wales Government (2019b). Penrith Local Environmental Plan 2010, https://legislation.nsw.gov.au/#/view/EPI/2010/540/full?autoquery=(Content%3D((%22re1%22)))&dq=Within%20Title%3D%22Penrith%20Local%20Environmental%20Plan%20201. Accessed 10/12/19.

New South Wales Government (2019c). Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered ecological community listing, https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened species-scientific-committee/determinations/final-determinations/2008-2010/cumberland-plain-woodland-critically-endangered-ecological-community-listing. Accessed 10/12/19.

New South Wales Government (2019d), Biosecurity Act 2015 No 24, https://www.legislation.nsw.gov.au/#/view/act/2015/24. Accessed 10/12/19.

New South Wales Government (2019e), Biosecurity Regulation 2017, https://legislation.nsw.gov.au/#/view/regulation/2017/232. Accessed 10/12/19.

New South Wales Government (2019f), NSW Weedwise, https://weeds.dpi.nsw.gov.au/. Accessed 10/12/19.

New South Wales Rural Fire Service (2019). Bush Fire Environmental Assessment Code, https://www.rfs.nsw.gov.au/resources/publications/hazard-reduction/bush-fire-environmental-assessment-code. Accessed 10/12/19.

Niche (2020). Construction Environmental Management Plan prepared for Lendlease Communities, 16 Chapman Street Werrington.

Niche (2021a). Feral Animal Control and Monitoring Plan prepared for Lendlease Communities, 16 Chapman Street Werrington.

Niche (2021b). Fauna Management Plan prepared for Lendlease Communities, 16 Chapman Street Werrington.

Niche (2021c). Native Seed Collection Strategy prepared for Lendlease Communities, 16 Chapman Street Werrington.

Niche (2021d). Weed Management Plan prepared for Lendlease Communities, 16 Chapman Street Werrington.

Niche Environment and Heritage (2019). 5111_Werrington_EPBCReferral_Memo_Rev2_20190822_4.2ha impact, Proposed Residential subdivision development. South Werrington Urban Village, Penrith NSW. Prepared for Lendlease.

Office of Environment and Heritage NSW (2019a), Threatened Biodiversity Profile Search, https://www.environment.nsw.gov.au/threatenedspeciesapp/. Accessed 10/12/19.

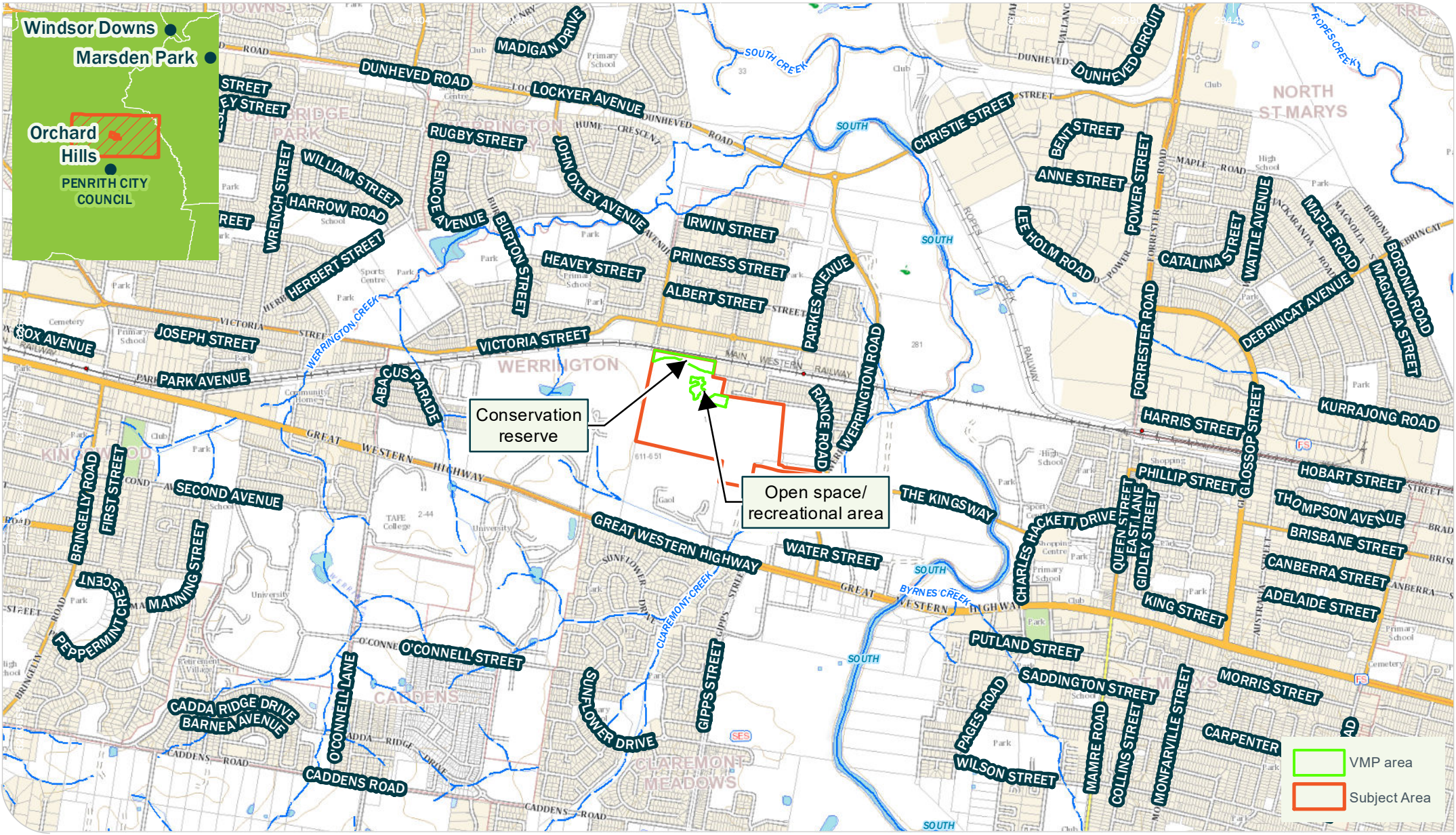
Office of Environment and Heritage NSW (2019b), BioNet Species Sightings Search, https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx. Accessed 10/12/19.

Office of Environment and Heritage NSW (2019b), BioNet Vegetation Classification, https://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx. Accessed 10/12/19.

Society of Ecological Restoration Australasia (2018), National standards for the practice of ecological restoration in Australia (2nd edition), http://seraustralasia.com/standards/National%20Restoration%20Standards%202nd%20Edition.pdf Accessed 10/12/19.

Tozer, M.G., Turner, K., Keith, D.A., Tindall, D., Pennay, C., Simpson, C., MacKenzie, B., Beukers, P. & Cox, S. (2010). Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. *Cunninghamia* 11(3), 359-406.

Annex 1. Figures



niche Environment and Heritage

0 500 m

GDA 1994 MGA Zone 56

Niche PM: Amanda Griffith
Niche Proj. #: 5111
Client: Lend Lease

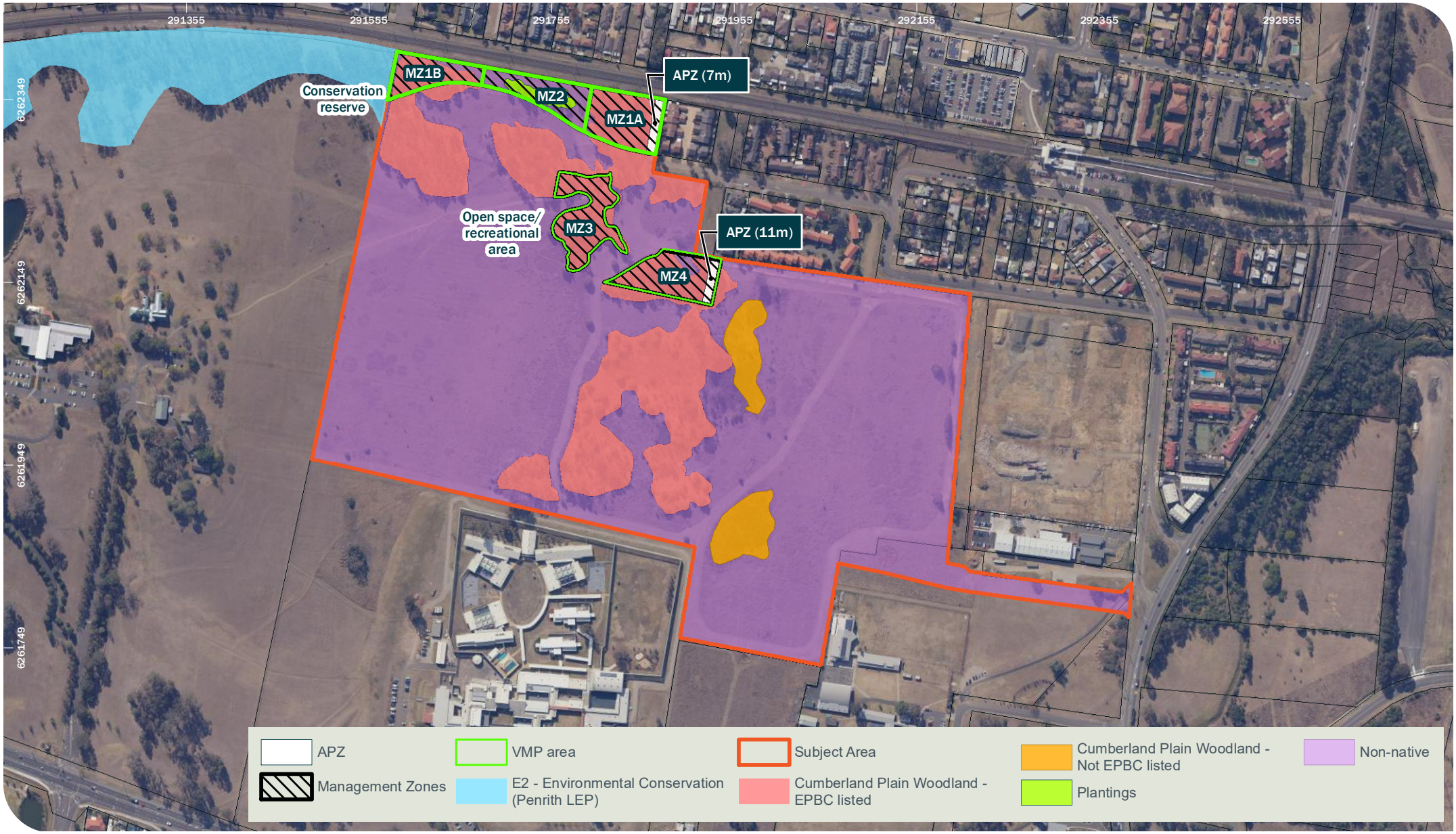
Location map

Werrington Vegetation management plan
Lot 1 DP1226122 Werrington

Figure 1

public/NSW_Base_Map: © Department of Finance, Services & Innovation 2018

Drawn by: Matt Harris Last updated: 3/24/2020 9:52:24 AM File: T:\spatial\projects\s5100\s5111_Werrington_EPBCActReferral_NSW\Maps\VMP\5111_Figure_1_LocationMap.mxd



Drawn by: Matt Harris Last updated: 9/22/2020 2:00:46 PM File: T:\spatial\projects\a5100\a5111_Werrington_EPBCActReferral_NSW\Maps\VMP\5111_Figure_2_VMP_Management.mxd

niche Environment and Heritage

0 150 m

GDA 1994 MGA Zone 56

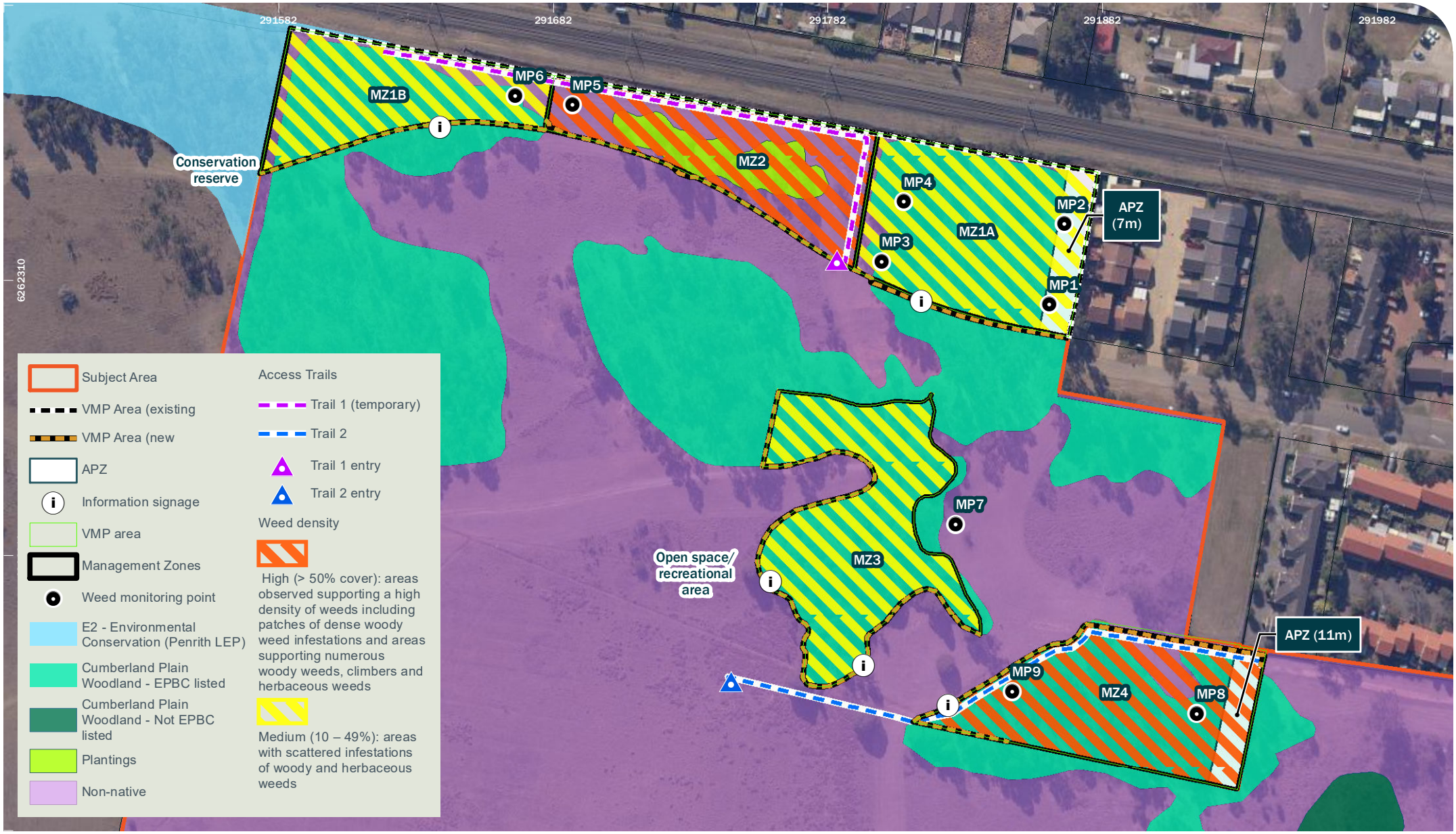
VMP Area Lot 1/DP1226122 and Management Zones

Werrington Vegetation management plan
Lot 1 DP1226122 Werrington

Niche PM: Amanda Griffith
Niche Proj. #: 5111
Client: Lend Lease

Figure 2

public/NSW_Imagery: © Department of Customer Service 2020



Drawn by: Matt Harris Last updated: 9/22/2020 2:49:18 PM File: T:\spatial\projects\a5100\a5111_Werrington_EPBCActReferral_NSW\Maps\VMP\5111_Figure_3_WeedMapMon.mxd

niche Environment and Heritage

0 50
m
GDA 1994 MGA Zone 56

Niche PM: Amanda Griffith
Niche Proj. #: 5111
Client: Lend Lease

Weed Mapping and Monitoring
Werrington Vegetation management plan
Lot 1 DP1226122 Werrington

Figure 3

public/NSW_Imagery: © Department of Customer Service 2020

Annex 2. Werrington CPW Native Flora Species List (Niche 2019)

Table 6: Native flora species recorded at the site

Scientific Name	Common Name
Acacia elongata	Swamp Wattle
Aristida ramosa	Purple Wiregrass
Aristida vagans	Threeawn Speargrass
Aristida warburgii	Threeawn Speargrass
Asperula conferta	Common Woodruff
Brunoniella australis	Blue Trumpet
Bursaria spinosa	Blackthorne
Centella asiatica	Indian Pennywort
Cheilanthes distans	Bristly cloak fern
Cheilanthes sieberi	Mulga fern
Cymbopogon refractus	Barbed Wire Grass
Cyperus gracilis	Slender Flat-sedge
Cyperus imbecillis	A Sedge
Dianella caerulea	Blue Flax-lily
Dichelachne micrantha	Shorthair Plumegrass
Dichondra repens	Kidney Weed
Einadia nutans	Climbing Saltbush
Entolasia stricta	Wiry Panic
Eragrostis brownii	Brown's Lovegrass
Eremophila debilis	Winter Apple
Eucalyptus moluccana	Grey Box
Eucalyptus tereticornis	Forest Red Gum
Glycine tabacina	Glycine
Goodenia bellidifolia	Goodenia
Hakea sericea	Needlebush
Juncus usitatus	Juncus
Kunzea ambigua	Tick Bush
Lomandra filiformis	Wattle Mat-rush
Melaleuca styphelioides	Prickly-leaved Tea Tree

Scientific Name	Common Name
Microlaena stipoides	Weeping Grass
Oxalis perennans	Oxalis
Persicaria decipiens	Slender knotweed
Plantago debilis	Plantago
Pseuderanthemum variabile	Pastel Flower
Pultenaea spp.	Pultenaea
Rhytidosporum spp.	Rhytidosporum
Sporobolus creber	Slender Rat's Tail Grass
Thelymitra cyanea	Veined Sun Orchid
Themeda triandra	Kangaroo Grass
Wahlenbergia gracilis	Australian Bluebell

Annex 3. Indicative VMP implementation costings

Table 7. Management costings for VMP implementation

Stages	Project Manager/ Ecologist	Bush regenerator	Material cost	Subtotal
Preliminary works	$170.00	$50.00	$1.00	
Prepare draft bush regeneration and pest management works plan	6			$ 1,020.00
Prepare tender for on-ground works	3			$ 510.00
Site Induction (project manager)	4			$ 680.00
Mark out development area, roads and buffers: erect tree protection and exclusion fencing, install signage				$ 31,295.00
Subtotal				**$ 33,505.00**
Months 0-6				
Primary weeding		320		$ 16,000.00
Maintenance weeding		64		$ 3,200.00
Rubbish removal				$ 5,000.00
Erosion control works				$ 1,000.00
Identify planting areas and prepare map for contractors	8			$ 1,360.00

Stages	Project Manager/ Ecologist	Bush regenerator	Material cost	Subtotal
Determine planting needs and organise propagation of tubestock		6		$ 300.00
Baseline vertebrate pest survey	8			$ 1,360.00
Develop Feral Animal Control and Monitoring Program (in consultation with Council)	12			$ 2,040.00
Vertebrate pest control actions				$ 2,500.00
Develop bushfire management and asset protection plan				$ 5,000.00
Neighbour relations and community consultation	3			$ 510.00
Subtotal				**$ 38,270.00**
Months 7-12				
Follow-up and secondary weeding		320		$ 16,000.00
Maintenance weeding		64		$ 3,200.00
Rubbish removal				$ 2,000.00
Erosion control works				$ 1,000.00

Stages	Project Manager/ Ecologist	Bush regenerator	Material cost	Subtotal
Planting Preparation		16		$ 800.00
Planting tubestock/advanced stock				$ 34,234.80
Plant maintenance (watering and weeding)		64	$5,160.00	$ 8,360.00
Mulching		192	$10,000.00	$ 19,600.00
Vertebrate pest control actions				$ 2,500.00
Joint inspection with council	6			$ 1,020.00
Neighbour relations and community consultation	3			$ 510.00
Complete annual monitoring report	16			$ 2,720.00
Subtotal				**$ 91,944.80**
Months 13-18				
Follow-up and secondary weeding		256		$ 12,800.00
Maintenance weeding		64		$ 3,200.00
Planting preparation		16		$ 800.00
Planting tubestock/advanced stock				$ 8,558.70

Stages	Project Manager/ Ecologist	Bush regenerator	Material cost	Subtotal
Plant maintenance (watering and weeding)		64	$5,160.00	$ 8,360.00
Mulching		64	$5,000.00	$ 8,200.00
Vertebrate pest control actions				$ 2,500.00
				$ -
Erosion control works				$ -
Neighbour relations and community consultation	3			$ 510.00
Subtotal				**$ 44,928.70**
Months 19-24				
Maintenance weeding		64		$ 3,200.00
Vertebrate pest control actions				$ 2,500.00
Rubbish removal				$ -
Erosion control works				$ -
Joint inspection with council	8			$ 1,360.00
Neighbour relations and community consultation	3			$ 510.00
Complete annual monitoring report	16			$ 2,720.00
Complete final monitoring report	16			$ 2,720.00

Stages	Project Manager/ Ecologist	Bush regenerator	Material cost	Subtotal
Complete draft revised management plan	16			$ 2,720.00
Subtotal				$ 15,730.00
Management contingency				$ 10,000.00
Total				**$ 224,378.50**

Table 8. Costing for revegetation plantings

Scientific name	Common name	Qty	Size	Planting density (plants per hectare)	Cost per plant	Total cost
Trees						
Eucalyptus tereticornis	Forest Red Gum	48	Forestry tube	30	7.1	340.8
Eucalyptus moluccana	Grey Box	48	Forestry tube	30	7.1	340.8
Acacia decurrens	Black Wattle	79	Forestry tube	50	7.1	560.9
Melaleuca stypheloides	Prickly-leaved Paperbark	79	Forestry tube	50	7.1	560.9
	Subtotal	**254**				**1803.4**
Shrubs and forbs						
Bursaria spinosa	Blackthorn	711	Grow cell	450	6.1	4337.1
Dianella longifolia var. longifolia	Smooth Flax-lily	474	Grow cell	300	6.1	2891.4
Dodonea viscosa subsp. cuneata	Sticky Hop Bush	711	Tree tube	450	7.1	5048.1
Indigofera australis	Native Indigo	711	Tube stock	450	7.1	5048.1
Lomandra longifolia	Spiny-headed Mat-rush	474	Grow cell	300	6.1	2891.4
Pratia purpurascens	Whiteroot	474	Tree tube	300	7.1	3365.4
Stypandra glauca	Nodding Blue Lily	474	Tube stock	300	7.1	3365.4
Wahlenbergia communis	Tufted Bluebell	474	Tube stock	300	7.1	3365.4
	Subtotal	**4503**				**30312.3**
Scientific name	**Common name**	**Qty (grams)**		**Density (grams per hectare)**	**Cost per gram (hand broadcast)**	
Grasses						
Entolasia stricta	Wiry Panic	790	Seed	500	0.35	276.5
Imperata cylindrica	Blady Grass	790	Seed	500	0.35	276.5
Microlaena stipoides	Weeping Grass	790	Seed	500	0.35	276.5
Poa labillardieri	Common Tussock-grass	790	Seed	500	0.35	276.5
Themeda australis	Kangaroo Grass	790	Seed	500	0.35	276.5
	Subtotal	**3950**				**1382.5**
		No. required			**Cost per unit**	
Tree guards		254			2.9	736.6
					Total	**34234.8**

Annex 4. Nest Box Plan

5.1 Purpose

This Nest Box Plan (NBP) has been developed in accordance with Condition 16, of the Penrith City Council Notice of Determination (PCC 2020), which states: *"… An ecologist is to be engaged to develop a Nest Box Plan to install next boxes within areas of remnant native vegetation to replace hollow bearing trees that have been removed. The Nest Box Plan must include consideration of type (relevant to the target species of the hollows that have been removed), number (relevant to the number of hollows removed), and location of nest boxes and a plan for installation and monitoring. An ecologist must certify that the nest boxes are designed and built to suit the target species in accordance with the Nest Box Plan"*.

This plan details the number, type and location of nest boxes required to be installed to compensate for the loss of hollows on local fauna as a result of the project, and in accordance with the notice of determination (PCC 2020) and the FMP (Niche 2021).

5.2 Hollow-bearing trees at the site

Previous biodiversity assessments (Ambecol 2014 and Niche 2020) have not identified any suitably sized hollows for roosting fauna. A field survey was undertaken on 2 March 2021, by Niche ecologists Jessie Bear and Kayla Asplet to identify and map hollow-bearing trees across the site.

A total of six definite and/or potential hollow-bearing trees/stags were mapped across the site (Figure 4): Three trees had definite hollows. No obvious, large hollows were present in the remining three trees, and due to the up-facing angle of the limbs, even small hollows could not have been seen. Given their size (Diameter at Breast Height (DBH) of greater than 30 centimetres), and as a precautionary approach, it was considered that they could potentially support small hollows (with openings equal to or less than five centimetre diameter) that may be suitable for microbats.

Two of the trees with definite hollows occur in the E2 Conservation Area in the north of the site. The remaining four hollow-bearing trees occur within the development area and will removed as a result of the project. Of the four hollow-bearing trees to be removed, one had a definite hollow potentially suitable for microbats (approximately five centimetre diameter); the other three were considered to have the potential to also support small hollows for microbats.

5.3 Nest box plan

The habitat trees identified potentially support small-sized hollows as such the type and size of nest boxes to be installed were selected to fit this size range, considering an entrance size close to body size to minimise predation risk (Goldingay and Stevens 2009). Table 9 provides a summary of the hollow-bearing trees present, the size of hollows, target species and type of nest box required.

It is proposed that hollows to be removed by construction activities are to be replaced by nest boxes at a ratio of 1:1. As such, a total of four nest boxes suitable for microbats will be required.

The next boxes will be installed in trees in the remnant vegetation in E2 Conservation Area in the north of the site (Figure 1). This vegetation community is consistent with the vegetation to be cleared in the impact footprint.

Nest boxes are to be installed prior to the commencement of vegetation clearing to allow for relocation of any displaced fauna.

All hollow-bearing trees to be removed will be felled under the supervision of a qualified ecologist in accordance with the FMP (Niche 2021).

It should be noted that if, during clearing, previously unobserved hollows of a different size (i.e. larger) are felled, the installation of additional nest boxes may be required to compensate for the loss of habitat for a different species group (e.g. large gliders or owls) not accounted for within this nest box plan.

Table 9: Nest Box type, target species and installation details

Nest box Type/design	Target species	Tree type requiring habitat compensation	Diametre at Breast Height (DBH) in centimetres	Hollows confirmed? (Y/N)	Latitude	Longitude	Box
Double chamber microbat	• Eastern Freetail-bat (*Mormopterus norfolkensis*) • Large-eared Pied Bat (*Chalinolobus dwyeri*) • Large Bentwing-bat (*Miniopterus orianae oceanensis*) • Southern Myotis (*Myotis macropus*) • Greater Broad-nosed Bat (*Scoteanax ruepellii*)	Stag (dead tree)	80	No– however, greater than 30 cm dbh and has dead limbs that may have cavities.	-33.7589	150.75	For Bat Boxes the following dimensions are recommended (Franks and Franks 2006): • Bottom opening • Entrance diametre 20 mm, height of chamber 400 mm • Ensure boxes are installed a minimum of 50 metres apart.
		Live tree - *Eucalyptus tereticornis*	50	No – however, greater than 30 cm dbh and has dead limbs that may have cavities.	-33.7589	150.75	
		Live tree - *Eucalyptus moluccana*	100	Yes – appears to have a 5 cm hollow.	-33.7591	150.7512	
		Live tree - *Eucalyptus moluccana*	70	No - however, greater than 30 cm dbh and has dead limbs that may have cavities.	-33.7619	150.7519	

Installation

Tree selection and height

There are a limited number of mature trees or trees with a DBH greater than 30 centimetres in the E2 Conservation Area. Nest boxes will be installed on large mature trees without hollows in similar locations to where natural hollows would be found and at a height appropriate for the target species and surrounding habitat. Height of boxes will be between four and six metres above the ground to avoid predation from ground predators and low enough for effective maintenance and monitoring (Australasian Bat Society,

2020). Details of each nest box will be recorded and include the GPS location, identification number, nest box type and diameter at breast height of the host tree.

Aspect and attachment

Boxes should be attached to trees using the Habisure system which involves attaching boxes using plastic coated wire with a series of bends and a hosepipe which protect the tree and allows growth (RMS 2011). Boxes are to be oriented southwest in thermoregulatory consideration for microbat boxes (Goldingay and Stevens 2009). Canopy is also a consideration and bat boxes with a fully shaded position maybe less successful than those with part direct sun (Goldingay and Stevens 2009).

Monitoring and maintenance

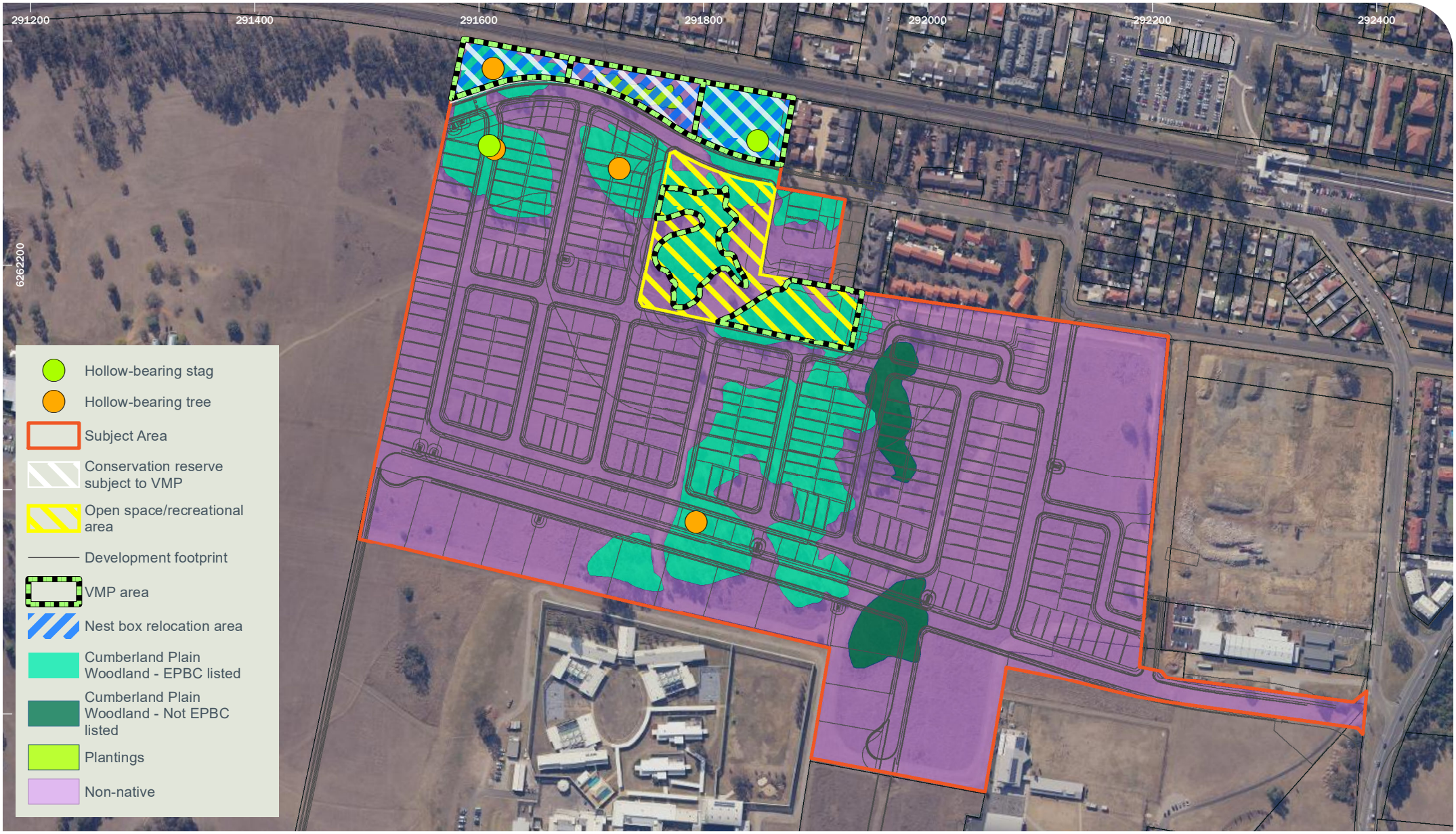
Annual monitoring of nest boxes will be undertaken to ensure native fauna are utilising them and boxes are viable for use for a minimum of five years. If the boxes are not being used the fauna management plan would be revised to consider alternative box types or methods to ensure fauna find the boxes appropriate for use. Monitoring should avoid microbat breeding times (October to March) to ensure no disturbance to maternal roosting. The following information will be recorded during monitoring events:

- Inspection date, weather conditions (rain, wind, cloud cover, ambient temperature) and the time each nest box was inspected.
- Nest box identification number.
- Occupation details (species and number of individuals) and signs of use (i.e. nests or nesting materials present), including pest species.
- If the nest box is occupied by a pest species (e.g., European Honey Bees).
- Nest box condition and any maintenance requirements.

Common pests encountered in nest boxes include ants, termites, European Honey Bees, and wasps. If pest species are found to occupy nest boxes, maintenance strategies may include attaching carpet under the lid, attaching pest strips or buffalo fly ear tags to deter European Honey Bees and other pests such as wasps, applying talcum powder to entrances to deter ants, and reconsidering nest box design. Maintenance actions are to consider the most recent and relevant information concerning deterrents.

Reporting

A brief letter report is to be prepared that includes the recorded data and reports on any maintenance issues. Any maintenance issues are to be scheduled and undertaken within one month from the report date, including treatment for pest species.



niche Environment and Heritage

N

0 100

m

GDA 1994 MGA Zone 56

Potential Hollow-bearing trees to be removed and recommended nest box relocation area

Werrington nest box plan

Lot 1 DP1226122 Werrington

Niche PM: Amanda Griffith
Niche Proj. #: 5111
Client: Lendlease

Figure 1

public/NSW_Imagery: © Department of Customer Service 2020

Drawn by: Jessie Bear Last updated: 3/4/2021 2:16:19 PM File: T:\spatial\projects\e5100\e5111_Werrington_EPBCActReferral_NSW\Maps\WMP\5111_NBP_Figure_1_Nestboxes.mxd

References

Ambecol (2014). *Flora and Fauna Assessment, Proposed South Werrington Urban Village, Penrith Local Government Area*. Prepared for Universal Property Group Pty Ltd. Author: Ambrose S, dated 14 January 2014.

Australasian Bat Society (2020). *Boxes for bats*. Accessed on 11 March 2021. http://ausbats.org.au/install-a-microbat-house/4582876246

Franks, A. and Franks, S. (2006). *Nest Boxes for Wildlife: A Practical Guide*. Bloomings Books, Melbourne.

Goldingay, R. and Stevens, J. (2009) *Use of artificial tree hollows by Australian birds and bats.* Wildlife Research 36, 98-97.

Niche (2020). *16 Chapman Street Werrington. EPBC 2019/8552 – Variation Documentation*. Prepared for Lendlease. Author: Griffith A, dated 1 October 2020.

Niche (2021). *16 Chapman Street, Werrington. Fauna Management Plan*. Prepared for Lendlease. Author: Asplet K, dated 15 March 2021.

RMS (2011). Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects. NSW Roads and Maritime Services.

PCC (2020). Notice of Determination (DA19/0704). Dated 8 January 2020. Penrith City Council.

niche Environment and Heritage

niche-eh.com

Excellence in your environment

Contact Us

Niche Environment and Heritage
02 9630 5658
info@niche-eh.com

NSW Head Office – Sydney
PO Box 2443 North Parramatta
NSW 1750 Australia

QLD Head Office – Brisbane
PO Box 540 Sandgate
QLD 4017 Australia

Sydney
Illawarra
Central Coast
Newcastle
Mudgee
Port Macquarie
Brisbane
Cairns

© Niche Environment and Heritage, 2018

Our services

Ecology and biodiversity
Terrestrial
Freshwater
Marine and coastal
Research and monitoring
Wildlife Schools and training

Heritage management
Aboriginal heritage
Historical heritage
Conservation management
Community consultation
Archaeological, built and landscape values

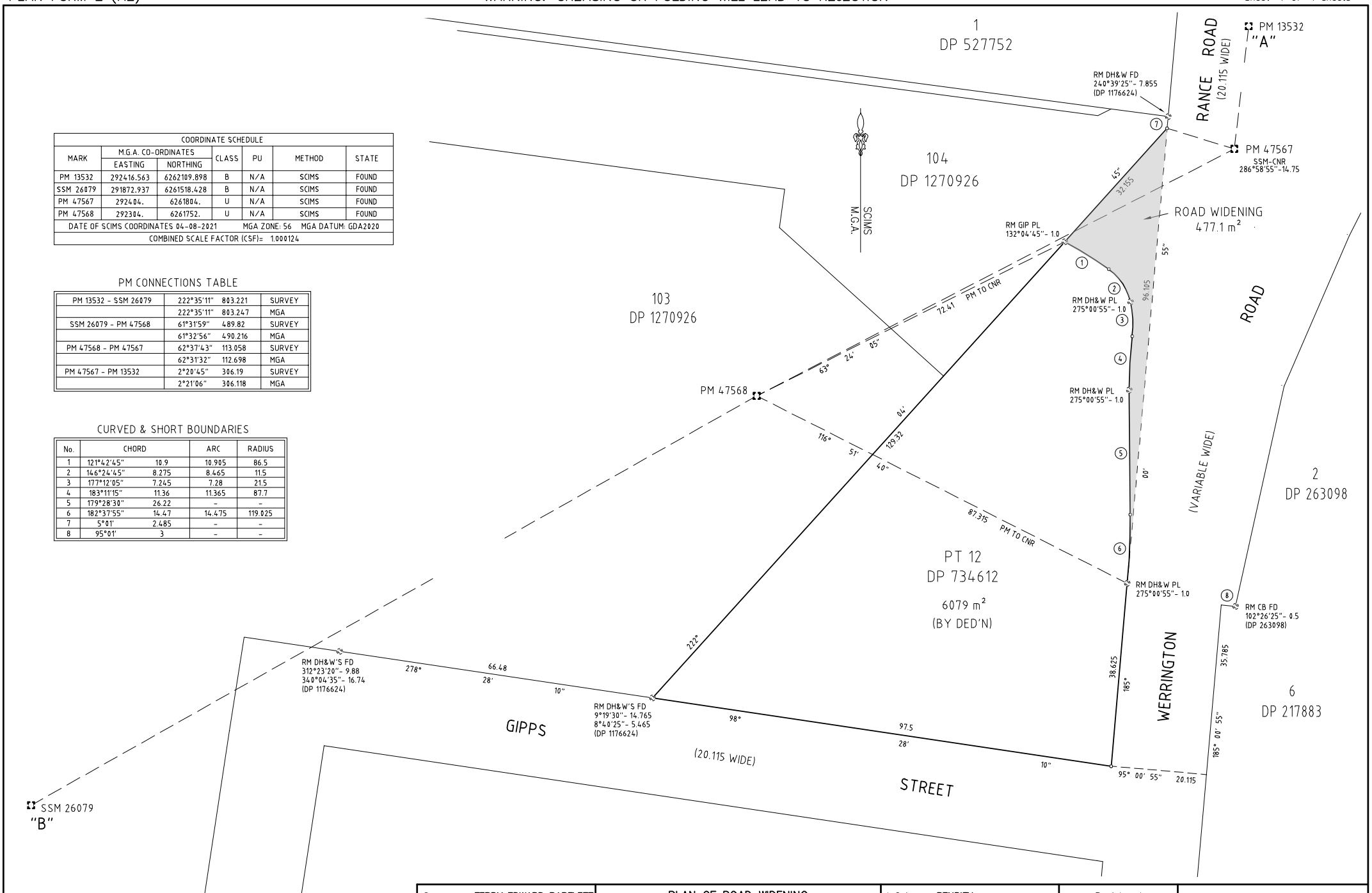
Environmental management and approvals
Impact assessments
Development and activity approvals
Rehabilitation
Stakeholder consultation and facilitation
Project management

Environmental offsetting
Offset strategy and assessment (NSW, QLD, Commonwealth)
Accredited BAM assessors (NSW)
Biodiversity Stewardship Site Agreements (NSW)
Offset site establishment and management
Offset brokerage
Advanced Offset establishment (QLD)

Annexure G TfNSW Land

Draft

PLAN FORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION Sheet 1 of 1 sheets



COORDINATE SCHEDULE						
MARK	M.G.A. CO-ORDINATES		CLASS	PU	METHOD	STATE
	EASTING	NORTHING				
PM 13532	292416.563	6262109.898	B	N/A	SCIMS	FOUND
SSM 26079	291872.937	6261518.428	B	N/A	SCIMS	FOUND
PM 47567	292404.	6261804.	U	N/A	SCIMS	FOUND
PM 47568	292304.	6261752.	U	N/A	SCIMS	FOUND
DATE OF SCIMS COORDINATES 04-08-2021			MGA ZONE: 56		MGA DATUM: GDA2020	
COMBINED SCALE FACTOR (CSF)= 1.000124						

PM CONNECTIONS TABLE

PM 13532 - SSM 26079	222°35'11"	803.221	SURVEY
	222°35'11"	803.247	MGA
SSM 26079 - PM 47568	61°31'59"	489.82	SURVEY
	61°32'56"	490.216	MGA
PM 47568 - PM 47567	62°37'43"	113.058	SURVEY
	62°31'32"	112.698	MGA
PM 47567 - PM 13532	2°20'45"	306.19	SURVEY
	2°21'06"	306.118	MGA

CURVED & SHORT BOUNDARIES

No.	CHORD		ARC	RADIUS
1	121°42'45"	10.9	10.905	86.5
2	146°24'45"	8.275	8.465	11.5
3	177°12'05"	7.245	7.28	21.5
4	183°11'15"	11.36	11.365	87.7
5	179°28'30"	26.22	-	-
6	182°37'55"	14.47	14.475	119.025
7	5°01'	2.485	-	-
8	95°01'	3	-	-

Surveyor: TERRY EDWARD BARTLETT Date of Survey: 4th AUGUST 2021 Surveyor's Ref: 80219053 DP-13	PLAN OF ROAD WIDENING PART LOT 12 IN DP 734632	L.G.A.: PENRITH Locality: WERRINGTON Subdivision No: Lengths are in metres. Reduction Ratio 1:500	Registered DRAFT 2021.08.04	PPN DP 1276524

10 20 30 40 50 60 70 Table of mm 90 100 110 120 130 140 150

Annexure H Stage 1 Residential Lots

Draft

Req:R847343 /Doc:DP 1272642 P /Rev:05-Dec-2022 /NSW LRS /Prt:05-Dec-2022 21:47 /Seq:1 of 9
© Office of the Registrar-General /Src:InfoTrack /Ref:1341966

MAIN WESTERN RAILWAY

1000 D.P.1272641

1 D.P.749982

WEBB STREET

CHAPMAN (20.115 WIDE) STREET

LANDERS ST

RMDH&W FD 280°06'30"- 14.625 (DP 736179)

1070 D.P.1272641

1069 D.P.1272641

S.P. 67312

S.P. 31607

D.P. 1272641

WALKER STREET (20.115 WIDE) PM - CNR 270°19'16"- 209.34

P.M.41943 FD "B"

SP 31607 WALKER STREET

9°24'35" 0.415 98° 07' 55" 25.375

98° 09' 20" 169.53 RM "G"

1226

DIAGRAM "D"
SCALE 1 : 50

SEE DIAG. "D"

98° 09' 20" 169.53

98° 07' 55" 80.57

189°24'35" 315

191° 52' 50" 51.75

101° 52' 50" 189.11

101 D.P.1140594

RM "AL" FD

SHEET 2 SEE

SHEET 4 SEE

SHEET 3 SEE

1256 15.275 ha

1226 1.126 ha

189°24'35" 50.14

281°52'50" 55.895

275°00'30" 36.26

185° 129.155

100 D.P.1272697

102.155

30°

(R1)

SCIMS M.G.A.2020

Stage 1 residential lots to be created under DA19 0704 & DA20 0200

Lots 1001 - 1067 DP1272641
Lots 1200 - 1253 DP1272642
Lots 1901 - 1909 DP1273541

RM GIP FD 143°31'25"- 6.32 (DP 1276630)

'L' 'M' 'N' 'P1'

NAIL IN FOOTING FD AT CNR RM GIP FD 283°01'- 0.5 (DP 749982)

(77.165) 102.195 191°

LINE PEG

430.745 (170) LINE (99)

103° 02' 10"

RMGIP FD 283°02'10"- 1.01 (DP 749982)

1 D.P.749982

RMGIP FD 274°15'15"- 15.765 (DP 749982)

RMGIP FD 207°17'- 3.76 (DP 1270926)

RM GIP FD 94°53'50"- 1.01 (DP 1176624) DH&W'S FD 338°15'- 0.02 TO CNR (DP 1270926)

277°21'30" 39.275

107° 20' 10" 113.415

277°36'30" 97.2

6°25'30" 3.645

189° 119.215 25' 56' 10" 104.07

101 D.P.1270926

RMGIP FD 13°10'- 0.795 (DP 1270926)

100° 56' 30" 79.765

50'

103 D.P.1270926

157.535 100° 56' 30"

189° 33' 30" 100

25.02 22.855 35°

RM GIP FD 177°51'05"- 0.825 (DP 1176624)

1 D.P.1176624

SSM-CNR 5°25'44" 244.695

"A" S.S.M.26079 FD

P.M.15150 FD

121°51'04"-305.605 MGA GROUND
121°51'03"-305.596 BY SURVEY - NOTE 1

102 DP 1270926

RM GIP FD 262°30'50"- 5.755 (DP 1176624)

185°04' 45.795

56

1 D.P.132721

200°28'43"-832.533 MGA GROUND
200°28'43"-832.505 BY SURVEY - NOTE 1

41°40'57"-828.353 MGA GROUND
41°40'57"-828.327 SURVEY

105 DP 1270926

RM GIP FD 122°37'55"- 0.965 (DP 1176624)

104 D.P.1270926

55 1 D.P.527752

12 D.P.734612

WERRINGTON ROAD

Penrith City Council Authorised Officer

SCHEDULE OF REFERENCE MARKS

No.	BEARING	DISTANCE	DESCRIPTION
F	9°41'	1.495	R.M. G.I.P. FOUND (D.P.1226122)
G	225°38'10"	24.565	R.M. D.H.& W. FOUND (D.P.736179)
H	186°40'25"	3.74	R.M. D.H.& W. FOUND (D.P.749982)
			SHOWN INCORRECT IN D.P.1226122
J	185°00'30"	0.455	R.M. G.I.P. FOUND (D.P.221780)
			SHOWN INCORRECT IN D.P.1176624
K	277°03'55"	6.765	R.M. P.M.13532 FOUND (D.P.740520)
L	9°19'30"	14.765	R.M. D.H.& W. FOUND (D.P.1176624)
	8°40'25"	5.465	R.M. D.H.& W. FOUND (D.P.1176624)
M	312°23'20"	9.88	R.M. D.H.& W. FOUND (D.P.1176624)
	340°04'35"	16.74	R.M. D.H.& W. FOUND (D.P.1176624)
N	312°52'35"	17.6	R.M. D.H.& W. FOUND (D.P.1176624)
	340°24'25"	11.375	R.M. D.H.& W. FOUND (D.P.1176624)

SCHEDULE OF LINES

No.	BEARING	DISTANCE
1	98°09'20"	9.645
2	9°24'35"	0.415
3	98°07'35"	20.15
4	97°33'55"	20.135
5	6°25'30"	14.66
6	59°08'15"	5.335
30	11°52'50"	2.05
33	180°08'35"	1.085
35	9°20'30"	11.38
36	53°44'10"	5.72
52	189°24'35"	13.985
55	189°24'35"	13.06
56	97°33'	20.105

SCHEDULE OF CURVED BOUNDARIES

No.	BEARING	CHORD	ARC	RADIUS
31	10°38'40"	11.355	11.355	263.3
32	4°46'35"	17.9	17.92	110.8
34	4°44'35"	14.305	14.32	89.2
50	25°03'	2.37	2.4	4.4
51	25°03'	5.01	5.07	9.29
53	353°46'10"	5.01	5.07	9.29
54	353°46'10"	2.37	2.4	4.4

(R1) - EASEMENT FOR ACCESS 4 WIDE (D.P.1270926)
(L) - EASEMENT FOR UNDERGROUND CABLES 3 WIDE (DP 1276630)
(M) - EASEMENT FOR GAS MAIN 1 WIDE (DP 1276630)
(N) - EASEMENT FOR ACCESS 5 WIDE (DP 1276630)
(P1) - EASEMENT FOR SERVICES 6 WIDE (DP 1276630)

NOTE 1
DISTANCE DERIVED USING CORS NRTK GNSS

SURVEYING & SPATIAL INFORMATION REGULATION 2017 CLAUSE 70 COORDINATE SCHEDULE

MARK	MGA COORDINATES EASTING	MGA COORDINATES NORTHING	CLASS	PU	METHOD	STATE
SSM 26079	291 872.937	6 261 518.428	B	N/A	SCIMS	FOUND
PM 41943	292 423.863	6 262 137.152	B	N/A	SCIMS	FOUND
PM 15150	292 132.557	6 261 357.136	B	N/A	SCIMS	FOUND
SSM 201250	291 709.243	6 262 027.765	D	N/A	CADASTRAL TRAVERSE	PLACED
SSM 208222	291 633.504	6 262 048.017	D	N/A	CADASTRAL TRAVERSE	PLACED
SSM 208235	291 558.424	6 262 076.387	D	N/A	CADASTRAL TRAVERSE	PLACED
SSM 208226	291 665.247	6 262 166.249	D	N/A	CADASTRAL TRAVERSE	FOUND
SSM 208248	291 581.683	6 262 191.322	D	N/A	CADASTRAL TRAVERSE	FOUND
SSM 208250	291 740.119	6 262 165.593	D	N/A	CADASTRAL TRAVERSE	FOUND

DATE OF SCIMS COORDINATES: 30/05/2022 MGA ZONE: 56 MGA DATUM: GDA2020
COMBINED SCALE FACTOR: 1.000125

SURVEYOR Name: ADAM RICHARDSON Date: 30/05/2022 Reference: 491-21 STG1B-AR	PLAN OF SUBDIVISION OF LOT 1068 IN D.P.1272641	LGA: PENRITH Locality: WERRINGTON Reduction Ratio: 1: 2000 Lengths are in metres	Registered 5/12/2022	DP1272642

CAD REF: Z:\491-21\Survey\Plans\Plan_88B\STAGE 1B\491-21G S01 [08] STAGE 1B (sans 1257).RO -