

**City of
Ipswich**

ATTACHMENTS UNDER SEPARATE COVER

ITEM ATTACHMENT DETAILS

3 Warrill Park Lawn Cemetery - Master Plan and Land Management Plan

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Warrill Park Lawn Cemetery

Master Plan

and

Land Management Plan



DOCUMENT REGISTER

PROJECT NUMBER: PRC00011
PROJECT TITLE: WARRILL PARK LAWN
CEMETERY MASTERPLAN
REVISION: 3
DRAWN BY: DEBBIE TURNER
IPSWICH CITY COUNCIL

REVISIONS

ISSUE	DESCRIPTION	DRAWN	DATE
-	DESIGN INTENT	DT	29/04/22
1	CONCEPT DESIGN 80% FOR REVIEW	DT	23/03/25
2	CONCEPT DESIGN 100%	DT	06/06/25
3	CONCEPT DESIGN-UPDATED DESIGN	DT	08/04/26

THIS DOCUMENT HAS BEEN PREPARED FOR IPSWICH CEMETERIES,
TO PROVIDE GUIDANCE FOR FUTURE WORKS.

THE IMAGES INCLUDED IN THIS DOCUMENT ARE
INTENDED SOLELY TO CONVEY THE INTENDED
CHARACTER OF THE SPACE AND SHOULD NOT
BE INTERPRETED AS THE FINAL DESIGN.

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INTRODUCTION

EXISTING SITE

ADDRESS: 12 Anderson Day Drive, Willowbank Qld 4306

SIZE: 24.78ha

LOCATION: Approximately 15km from Ipswich CBD

ABOUT: Since its opening in 1971, Warrill Park Lawn Cemetery has become the largest and most utilised cemetery in Ipswich. Originally operated by the Ipswich Cemetery Trust, the Ipswich City Council became the Trustee in 1979.

As the largest operational cemetery in Ipswich, Warrill Park Lawn Cemetery has more than 14,800 existing burial and ash placements, with expansion work in 2023/24 adding more than 1,500 additional burial plots.

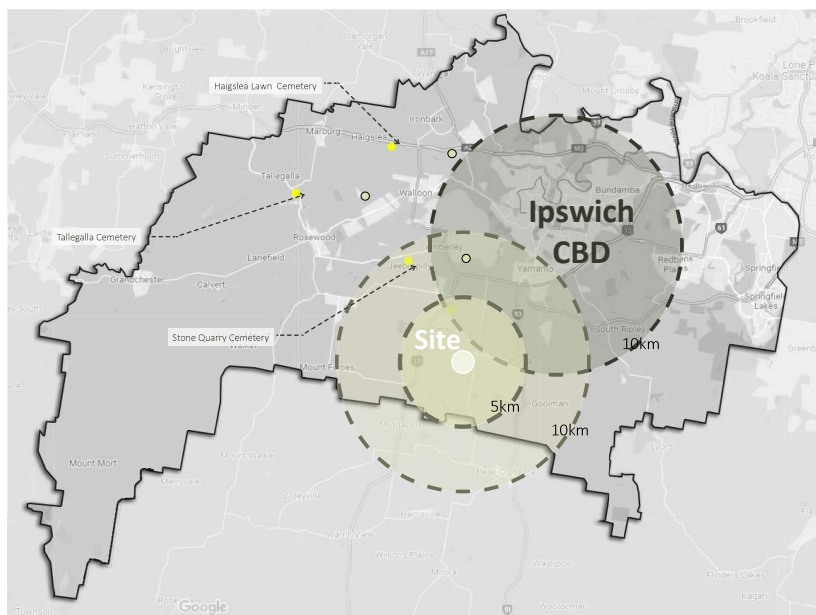
The cemetery is primarily a lawn cemetery however offers a range of options for the placement of cremated remains such as columbarium walls, memorial gardens and memorial walks.

The Melaleuca Memorial Walk has been established within the protected remnant Melaleuca forest and has been approved to operate, however no further expansion of this area is permitted.

[*Refer to ICC 21003 Melaleuca irbyana Impact Assessment Report, Oct 2021]

SITE CONDITIONS:

The site is compassed by the protected Melaleuca Forest to the south and Ebenezer Creek to the north, the Cunningham Hwy to the west, and Warrill Creek to the east. Warrill Creek is a major tributary of the Bremer River, which is located approximately 10kms up stream. These boundaries offer challenges to the site that include extensive areas affected by flooding, an ecologically protected zone, that is also a priority area for koala habitat and rehabilitation.



Map sourced from iKnow
Not to scale

LAND MANAGEMENT PLAN

The land situated at 12 Anderson Day Drive, Willowbank (Lot 283 SP 135010) is currently operated as the Warrill Park Lawn Cemetery & Crematorium. It is principally a lawn cemetery with some cremation memorial garden developments. The site has been used in this way since 1971, initially as an independent trust and since 1979, by the Ipswich City Council (Council). Council has entered into an agreement to assign the management rights of the site to Norwood Park Limited for a period of 30 years commencing 5 September 2011.

Local Area Description:

The site is situated in a rural area with much of the area to its west having been subject to open cut coal mining. Most of these areas have now been rehabilitated. The site is zoned as Special Uses – Cemetery and much of the surrounding land is zoned for future industrial or rural use.

Existing 'Uses' (Primary and Secondary):

The primary use of the site is for cemetery (death care) purposes. As with all cemeteries the site has a secondary use as passive open space and as a flora and fauna habitat.

Existing Interest:

Trustee Lease over the whole of Warrill Park Lawn Cemetery is currently held between Ipswich City Council and Norwood Park Limited ACN 008 439 441.

The permitted use of the Trustee Lease is for "Public Cemetery and uses of and incidental to a cemetery including any other use (such as development and operation of a crematorium facility) consented to by the Trustee and the Minister from time to time (subject to obtaining of all necessary statutory approval)."

The southern edge of the cemetery grounds contains a largely intact patch of remnant *Melaleuca irbyana* forest. *Melaleuca irbyana* is listed as "endangered" under the Nature Conservation Act 1992 (Qld), as an endangered regional ecosystem under the Vegetation Management Act 1999 (Qld) and as a threatened ecological community (TEC) under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth). Any impacts to the species or community require relevant assessment under the above acts of legislation. The Department of Climate Change, Energy, the Environment and Water has an interest in any significant impacts to the TEC.

Existing Infrastructure:

The site is developed as an operating cemetery. It has therefore, roads, water supply and stormwater pipe work and sheds and buildings associated with this use.

Native Title Status:

Native Title implication will be suitable addressed for any dealing on the Trust land.

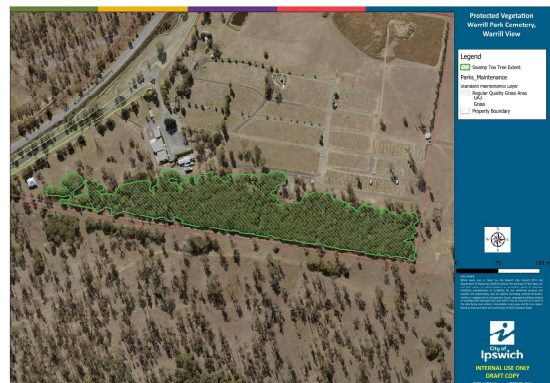


IMAGE: Protected Vegetation Warrill Park Cemetery, Warrill View. [2021]

PROJECT OBJECTIVES

These conceptual plans have been informed directly by the Site Analysis and Opportunities and Constraints highlighted on site. Key objectives implemented into the designs are as follows:

- Provide future protection to endangered areas, and clear direction for future planning of assets and resources.
- Allow the opportunities and constraints highlighted in the Site Analysis to inform the design outcome
- Enhance the amenity and comfort for visitors, including shade, seating and quiet areas for reflection
- Improve accessibility and safety within the site where possible
- Locate future carparking
- Address water management across the site
- Implement innovative and sustainable solutions that consider the environment, future maintenance and visitor appeal.
- Enhance the site character through a uniformed approach to proposed materiality and planting selections
- Provide guidance for future works

KEY ISSUES



Retain existing trees and land use opportunities



Limited shade and seating, No DDA compliant pathways

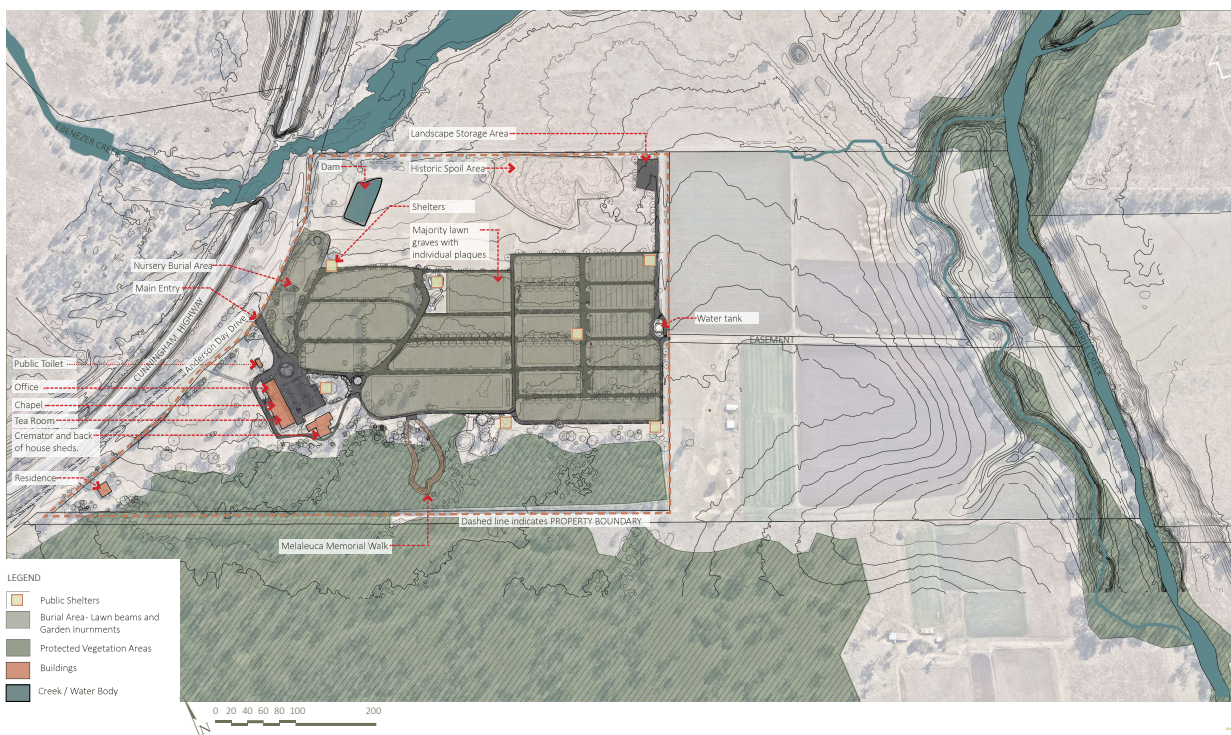


Burials in protected area, inappropriate planting species



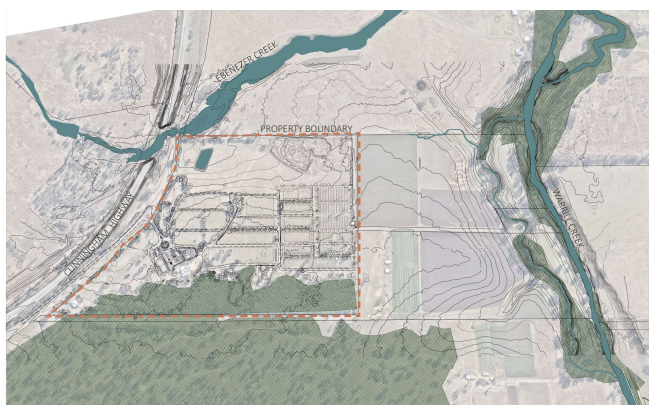
Inconsistent site character

EXISTING SITE CONDITIONS



VEGETATION PROTECTION AREAS

-  Vegetation Protection Area [Protected Plants Flora Survey Trigger Map, State of Queensland (Department of Environment, Science and Innovation), 2024]



KOALA PRIORITY & HABITAT AREAS

-  Koala Priority Area
-  Koala Habitat Restoration Area
-  Koala Habitat area

Based on iKnow "Strategic Planning- SEQ Koala Plan"



FLOOD VELOCITY MAP

- > 4.0
- 2.0 to 4.0
- 1.0 to 2.0
- .5 to 1.0
- Up to 0.5

Ipswich Rivers 1:100 AEP velocity
Based on IKnow - Bremer River 1:100 Flood Velocity Map



FLOOD ZONES

- 0.00 to 0.05
- 0.05 to 0.15
- 0.15 to 0.30
- 0.30 to 0.50
- 0.50 to 1.00
- 1.00 to 2.00
- > 2.00
- 2011 Flood Extent

Based on IKnow - "Historic Flood- Flood Extent 2011 Event" &
"Bremer River Creeks Ebenezer Creek 2019 1:100 AEP"





KEY PLAN 01

10 Warrill Park Lawn Cemetery Master Plan & Land Management Plan



KEY PLAN 02

Warrill Park Lawn Cemetery Master Plan & Land Management Plan //



MASTER PLAN [MP-01] SITE PLAN

12 Warrill Park Lawn Cemetery Master Plan & Land Management Plan



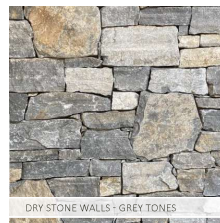
GRANITE / MARBLE HEADSTONES



HONED CONCRETE SEATING



FEATURE PAVING - LIGHT GREY / WHITE TONES



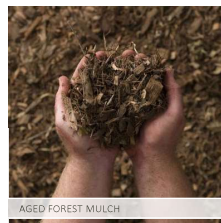
DRY STONE WALLS - GREY TONES



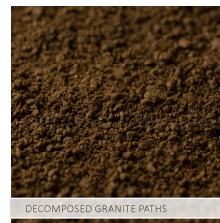
CORTEN PATH EDGING / LASER-CUT FENCING



CONCRETE EDGING - FLUSH



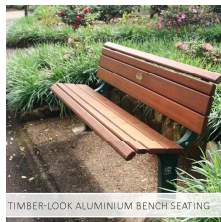
AGED FOREST MULCH



DECOMPOSED GRANITE PATHS



GREYED TIMBER-LOOK DECKING / SHELTERS



TIMBER-LOOK ALUMINIUM BENCH SEATING



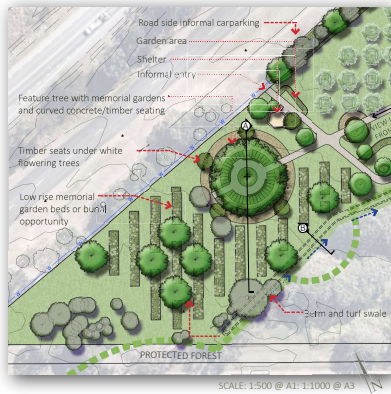
EARTH TONES TO STRUCTURES/SIGNS



ALUMINIUM FENCING TO BINS - DULUX 'MONUMENT'

GENERAL MATERIALS PALETTE

Warrill Park Lawn Cemetery Master Plan & Land Management Plan 13



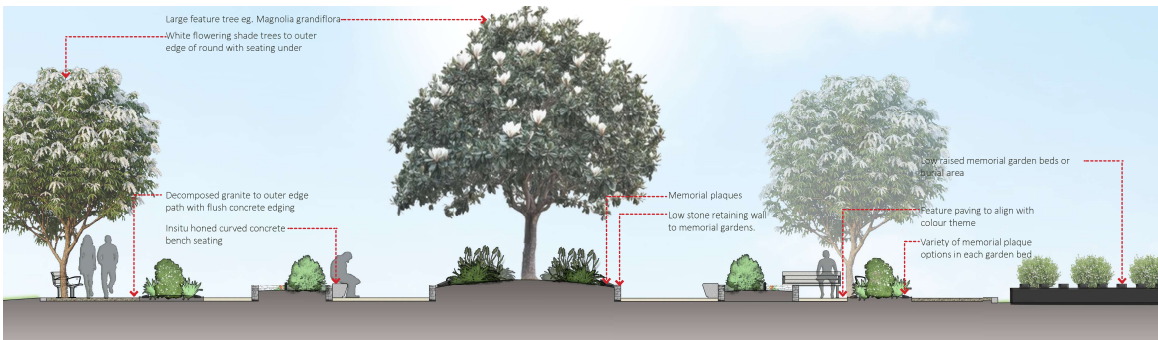
FRONT WESTERN GARDENS

- Strong colour theme suggested to enhance landscape design (eg. Black and white contrasting colours)
- View line from Chapel concludes at the circular garden.
- Various sized memorials to be placed in small raised garden beds to round. Sizes to accommodate single and family plaques.
- Feature tree to centre of circle (eg. mature sized Magnolia grandiflora)
- Feature paving to inner circle
- Decomposed Granite [Deco] to outer circle path with flush concrete edging. Seating under shade trees at outer edge
- Curved honed concrete bench seating with timber-look aluminium backing
- Low raised memorial garden beds with granite facade and capping. Alternatively, in-ground burials in similar rows
- Shelter to be hexagon shape to match other site shelters. Materiality to compliment the surrounding landscape and colour scheme. Matching table and bench seating.
- Shade trees throughout - preference for flowering trees that enhance the landscape and colour scheme
- Opportunity to establish an informal entry from front boundary to access road-side informal carparking
- Berm and turf swales to direct water to overland-flow path. Berms to feature memorial boxes and planting. Berm and swale form an edge to define maintainable area.
- Protective forest is to be left natural with a mowed edge.

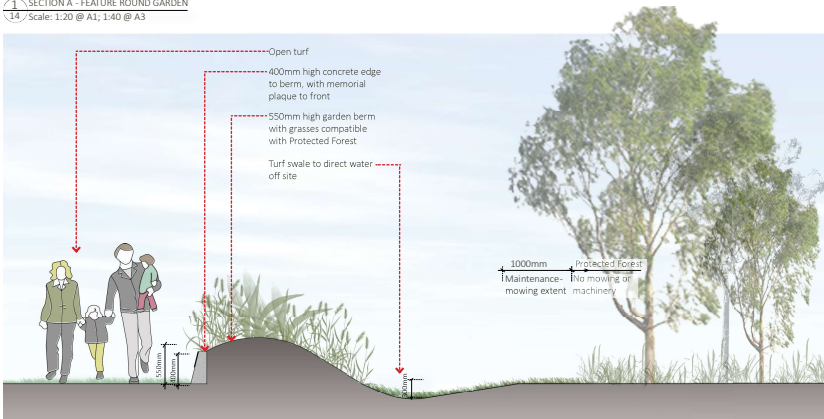


MASTER PLAN [MP-02] FRONT WESTERN GARDENS

14 Warrill Park Lawn Cemetery Master Plan & Land Management Plan

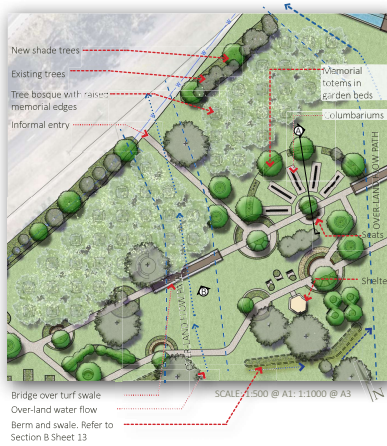


SECTION A - FEATURE ROUND GARDEN
Scale: 1:20 @ A1; 1:40 @ A3



SECTION B - BERM & SWALE
Scale: 1:20 @ A1; 1:40 @ A3

MP-02 SECTIONS & ELEVATIONS

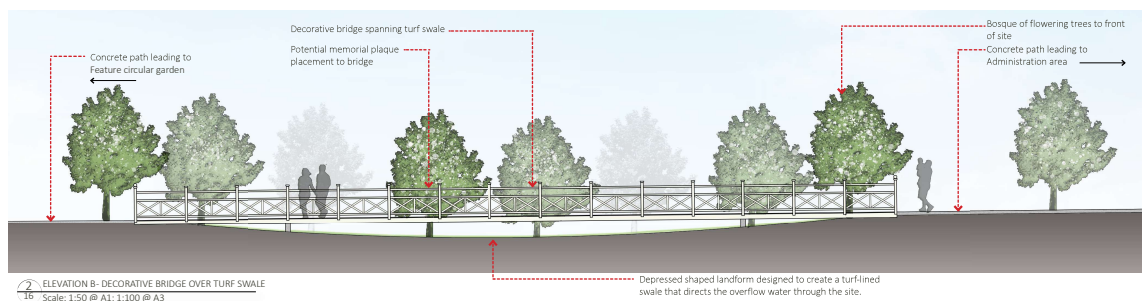
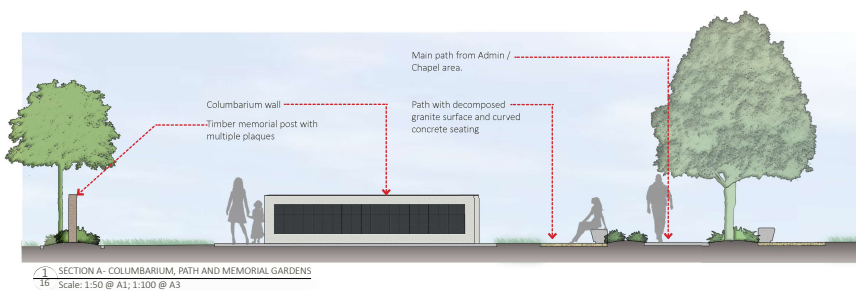


FRONT WESTERN GARDEN

- Strong colour theme suggested to enhance landscape design (eg. Black and white contrasting colours)
- TREE BOSQUE**
 - Tree Bosque [Grid] to have a raised granite surround suitable to place a memorial plaque and niche box option
 - Suggested tree species would be LAGERSTROEMIA natchez [Crepe Myrtle- White]. These trees are deciduous and will allow warmth during winter season
 - Trees shown in the swale area to not accommodate Niche boxes
- COLUMBARIUMS**
 - Radial columbariums to compliment the theme of the area in both material and colour choice eg. Black/White stone. Refer to 1. Section A on Sheet 17
- GARDENS**
 - Gardens to accommodate memorials. Plaques and niches can be placed in a variety of options within the garden and along edging.
 - Circular honed concrete seating throughout
 - Planting species to feature flowers of similar colour throughout the area.
 - Tall timber / steel vertical posts inserted into outer radial garden beds with memorial plaque placement to front and back sides.
- BERM AND SWALE**
 - Raised garden mound [berm] to perimeter of lawn as shown, to direct stormwater to overland flow paths. This is in response to 'Warrill View Cemetery Overland Flow Assessment - [63% AEP Depth Map]'. Refer to Annexure 02
 - Concrete edging to berm with memorial plaque and/or niche attached to front of concrete. Grasses and suitable forest species to mound. Berm will act as a barrier to restrict access to the protected forest area, including maintenance machinery.
 - Turf swale behind berm to direct water flow to overland flow path. Refer to 2. Section B on Sheet 13
- BRIDGES**
 - Decorative timber bridges to span over turf overland flow paths
- OVERLAND FLOW PATH**
 - Reshape land to form a turf swale to help control water direction across site. No burials to be within these zones. Refer to 2. Section B on Sheet 15

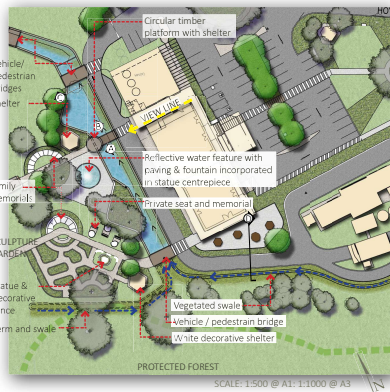


MASTER PLAN [MP-03] FRONT WESTERN GARDEN



MP-03 SECTIONS & ELEVATIONS

Warrill Park Lawn Cemetery Master Plan & Land Management Plan 17



FRONT WESTERN GARDEN

- THE SCULPTURE GARDEN:**
- Statue on raised platform with decorative fence to front
 - Concrete bench seating
 - 450mm high raised garden beds with stone facade and capping.
 - Memorial plaque fixed to top of stone capping
 - Gardens to consist of flowering plants of one consistent colour to compliment the area
 - Decomposed granite paths with flush concrete edging
 - Shelter to be hexagon shape to match other site shelters.
 - Decorative pots and bird baths to be placed throughout garden, consistent with style and colour theme

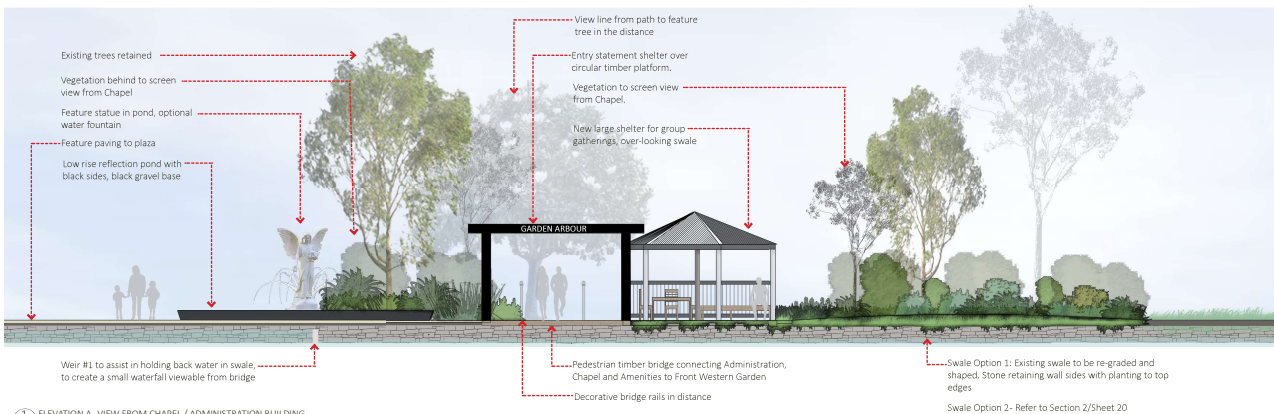
- REFLECTIVE POND**
- Pond to be raised +/- 500mm high
 - Black smooth stones to base
 - Memorials to be placed around the reflective pond
 - Feature paving around pond with seating
 - Feature decorative water fountain to centre, visible from Chapel area

- GARDENS**
- Gardens to accommodate a variety of memorial options and layouts.
 - Granite family memorial 'wedges' to circular garden beds with planting in centre
 - Private seat and memorial plot combination with small planting surround

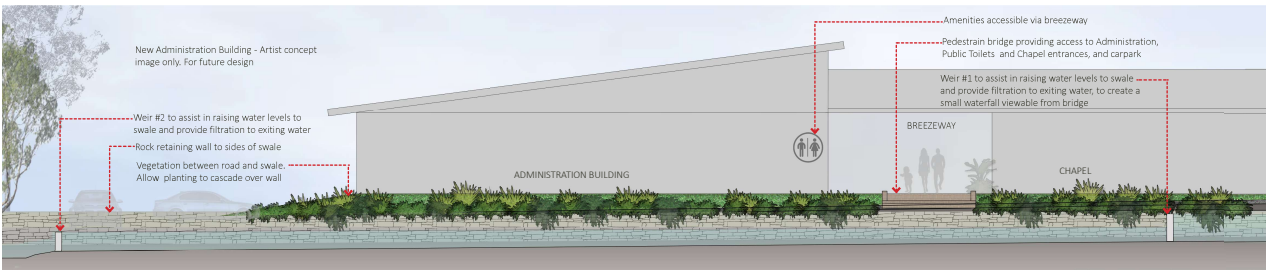


MASTER PLAN [MP-04] FRONT WESTERN GARDEN

18 Warrill Park Lawn Cemetery Master Plan & Land Management Plan

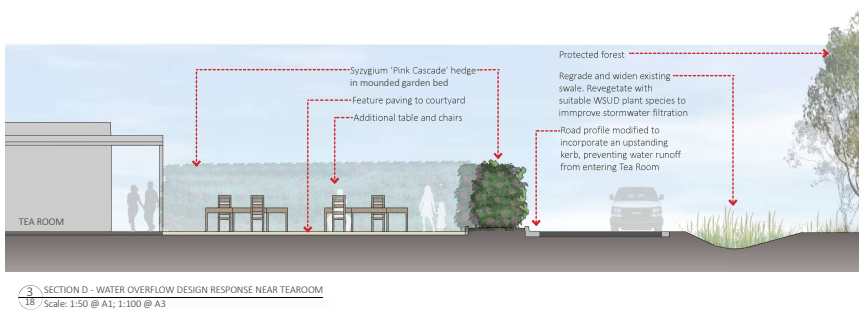
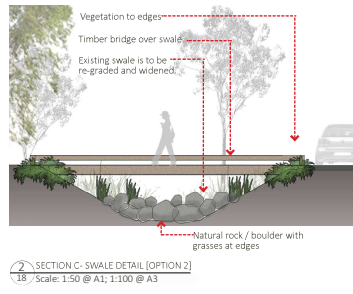
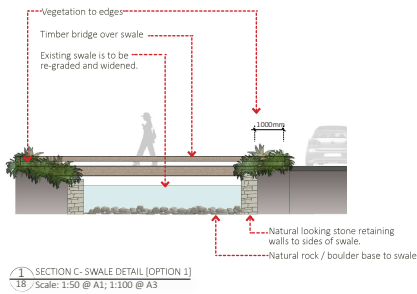


1 ELEVATION A - VIEW FROM CHAPEL / ADMINISTRATION BUILDING
Scale: 1:50 @ A1; 1:100 @ A3



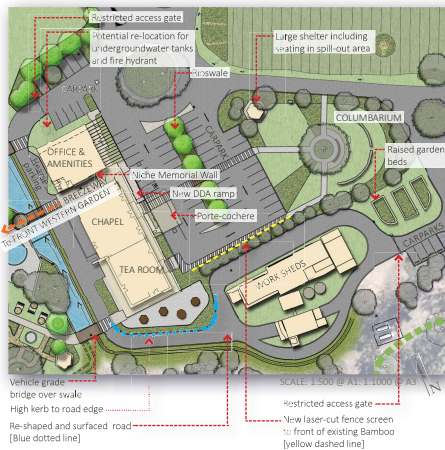
2 ELEVATION B - VIEW TO CHAPEL / ADMINISTRATION BUILDING
Scale: 1:50 @ A1; 1:100 @ A3

MP-04 ELEVATIONS



MP-04 SECTIONS

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ADMINISTRATION OFFICE: OPTIONAL SITE OPPORTUNITIES

- New single-storey office building to include Funeral Director Lounge and consultation rooms
- Skillion roof angle to match existing buildings with large windows to front
- Signage opportunity to side wall of office building, facing the entry
- Colours to be selected from neutral colour palette [example below]
- Existing underground water tanks and fire hydrant to be addressed in future stage. New possible location shown on plan
- Hearse parking bay at rear

OPPORTUNITIES CREATED (Additional features if Administration Building changes are explored)

NICHE MEMORIAL WALL - along breezeway between Admin and Chapel.

AMENITIES:

- Amenities cubicles and wash area located in breezeway between Administration and Chapel.

EXISTING CHAPEL AND TEAROOM:

- To be re-painted to match new office. To be renovated as required
- Porte-cochère to front of chapel to allow for hearse to be covered whilst loading.
- Outdoor seating area adjacent Tea Room to be extended. To include extra seating on a paved/concrete surface
- Hedge of SYZYGIUM 'Pink Cascade' to be re-planted at edges for privacy
- New pedestrian access to burial area via bridge over the vegetated swale

EXISTING COLUMBARIUM AREA:

- New path connections to buildings and internal site, re-freshed gardens, new seating and shelter for large gatherings.
- Feature pavement
- Curved concrete/timber seating under existing tree

CARPARK IMPROVEMENT OPPORTUNITIES:

- To be re-shaped and resurfaced with new line marking. ONE WAY traffic direction. To be re-graded to ensure water flow to new vegetated Bioswale in centre. Swale to drain to open drain at front of site.

- New pedestrian walkway to connect Columbarium area to buildings with bridge over swale

RAISED GARDEN BEDS:

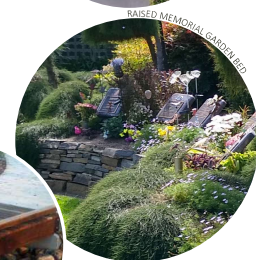
- >500mm raised stone garden beds suitable for inurnment burials with headstones on posts.
- Colourful and scented flower species to be selected to encourage cascading over sides.

WORKSHOP AREA

- Bamboo hedge to remain. A new 1.8m high laser-cut aluminium fence to front of existing bamboo plants to hide surface leaf litter. Cut-out design to incorporate Wren birds to match logo.

- Roads to be reshaped, re-surfaced, with new linework

- Swale to road edge to direct stormwater overflow off site, to protect buildings from flooding
- Restricted vehicle access gates, Authorised Access Only signage.
- High upstand kerb to road edge to help direct overflow water away from building and toward swale.



MASTER PLAN [MP-05] OFFICE / CARPARK / COLUMBARIUM



ARTIST IMPRESSION OF ADMINISTRATION BUILDING - OPTIONAL SITE OPPORTUNITIES

 Warrill Park Lawn Cemetery Master Plan & Land Management Plan



LAWN BURIALS: Existing lawn burial headstones to be lifted and placed on concrete beams. Concrete beams to feature an inserted metal dandelion seed, symbolising the seeds' dispersal when blown

DANDELION WALK: Decomposed granite path through garden, featuring natural flat-top stone boulders for seating, planting species to attract butterflies, small sculptures for children to discover.

1. Entry statement to Nursery area. Circular shelter with decorative laser-cut panels. Seating under existing shade trees.
2. Circular shade structures and seating around existing columbariums. Seating to be integrated into shelter curve. Materials to consist of Milboard 'Smoked Oak', concrete, corten steel look.
3. Circular entry statement to each end of the 'Dandelion Walk'. Structure to be steel, painted to imitate Corten Steel.
4. Circular timber deck with seating at edges with feature pattern. Potential use as a bookable space for large gatherings. Deck is elevated to avoid minor water issues. Material example shown below for decking is Milboard- Smoked Oak.

MATERIAL SELECTION



Refer to Annexure 03 for full Detailed Concept Plan

MASTER PLAN [MP-06] NURSERY BURIAL AREA

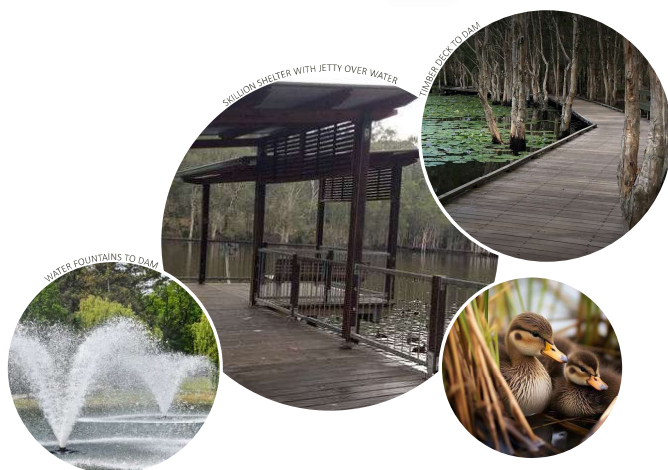


DAM ACTIVATION:

- Raised timber boardwalk surrounding dam edge to encourage and protect fauna nesting at edges
- Timber shelter connected to jetty, to encourage connection to water
- Seating opportunities under shelter and along timber boardwalk with shade trees
- Planting to be native grasses and Eucalyptus species
- 2x Water fountain to help reduce highway noise and provide restful ambiance.

MEADOW & PATH:

- A selection of soft grasses and flowers to create colour, texture, and movement with the wind.
- A turf path through the meadow, maintained by mowing.
- Tall native trees planted randomly throughout the meadow



MASTER PLAN [MP-07] MEMORIAL GARDEN & DAM ACTIVATION

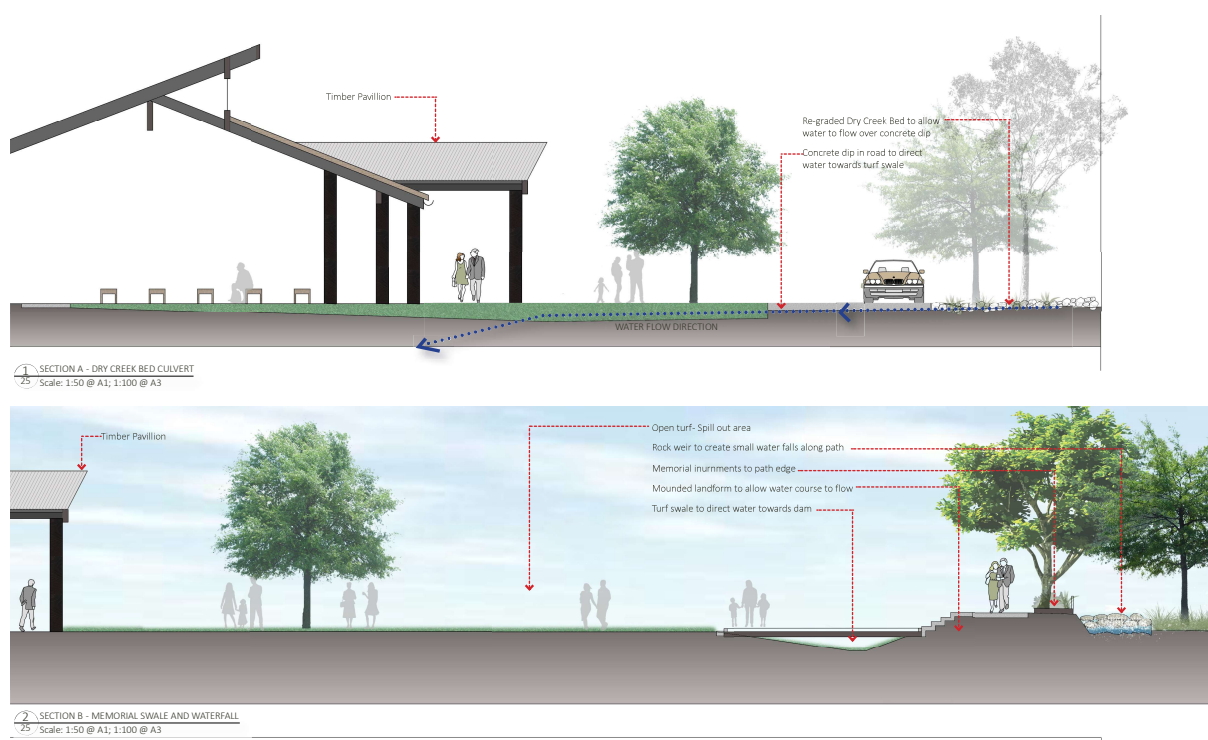


MEMORIAL GARDEN:

- Water Course-**
- Water to be pumped from dam water, and circulating back to dam.
 - Water course meandering next to path
 - Sand base with rock edges
 - Weirs along water path to allow for small water falls.
 - Timber look concrete bridges where water crosses under path.
 - Shelter over bridge as formal entry to garden, with seating to sides, with a view to the weir-water falls and gardens. To have a roof design to compliment new Timber Pavillion
- Memorials-**
- Variety of headstone and inurnment options along path and water edge.
 - Numerous seating opportunities under trees and near inurnments.
 - Family burial sites
 - Large shade trees and lush planting along water course and around memorial areas



MASTER PLAN [MP-07] MEMORIAL GARDEN & DAM ACTIVATION



MP-07 & MP-08 SECTIONS & ELEVATIONS

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TIMBER PAVILLION:

- Timber shelter with open sides and zincalume roof.
- A spill-out zone to the rear with a timber batten pergola covered with a vine.
- A 'bookable' space for events
- Solar panels on pavillion roof for electrical supply

CARPARK:

- Bitumen carpark to support chapel and amenities buildings.

AMENITIES:

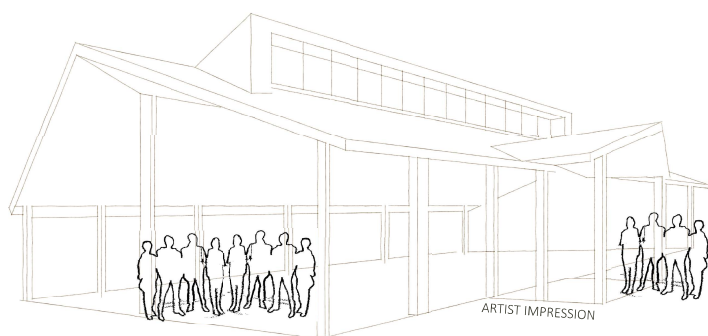
- New location for the existing amenities block surrounded by planting. Re-painted to match neutral colour scheme.
- Solar panels to roof for electrical supply

NATURAL BUSH BURIAL AREA:

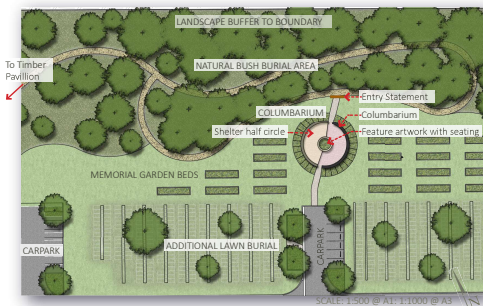
- Forest of native tree species and appropriate grasses and shrubs to approx 1m high
- Entry statement- simple natural hardwood timber structure intentionally left to weather and age gracefully
- Path to be decomposed granite allowed to bleed into landscape at edges
- Seating opportunities along the path
- Variety of inurnment burial plaques, including engraving on rocks and hardwood timber posts.

ADDITIONAL LAWN BURIAL AREA:

- Concrete lawn beams with random tree planting and seating areas.



MASTER PLAN [MP-08] TIMBER PAVILLION & AMENITIES



- NATURAL BUSH BURIAL AREA:**
- Forest of native tree species, appropriate grasses and flowers to approx 1m high
 - Entry statement- simple natural hardwood timber structure intentionally left to weather and age gracefully
 - Path to be decomposed granite allowed to bleed into landscape at edges
 - Seating opportunities along the path
 - Variety of inurnment burial plaques, including engraving on rocks and hardwood timber posts.
- ADDITIONAL LAWN BURIAL AREA:**
- Concrete lawn beams with random tree planting throughout with seating under trees.
- MEMORIAL GARDEN BEDS:**
- Raised garden beds with stone facade and capping.
 - Memorial plaques placed on posts along edges.
 - Planting species to add colour and scent, and encouraged to spill over wall
- COLUMBARIUM:**
- Mixed burial area, including columbarium walls with stone facade, garden memorials and family burial plots.
 - Feature statue or shade tree to centre of plaza
 - Plaza to have feature paving to circle with honed insitu raised concrete seating edge to centre
 - Half circular shelter to maximise shade from north/west sun-path
 - Outer gardens to be family plots or other memorial placements
- LANDSCAPE BUFFER**
- Earth mounded along boundary edge and planted with a selection of native trees and large shrubs

COLUMBARIUM AREA AND MEMORIALS



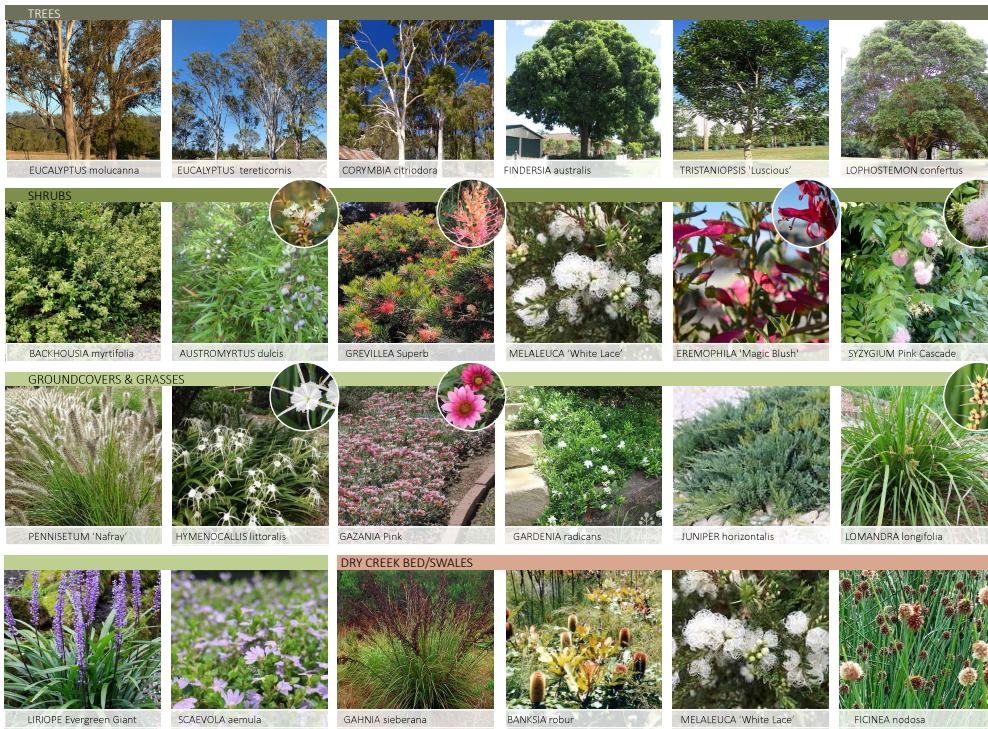
BUSHLAND MEMORIAL PATH



MASTER PLAN [MP-09] BUSHLAND MEMORIAL PATH & MEMORIAL BURIALS

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GENERAL AREA



PLANTING PALLETTE	
BOTANICAL NAME	COMMON NAME
TREES	
ACACIA fimbriata	Brisbane Wattle
ACACIA floribunda	Gossamer Wattle
BRACHYCHITON discolor	Lacebark Tree
BRACHYCHITON populneus	Kurrajong
CORYMBIA citriodora	Lemon Scented Gum
CASUARINA cunninghamiana	River She-Oak
EUCALYPTUS molucana	Grey Box
EUCALYPTUS tereticornis	Forest Red Gum
FLINDERSIA australis	Crows Ash
LEPTOSPERMUM petersonii	Lemon-scented Tea Tree
LOPHOSTEMON confertus	Queensland Brush Box
TRISTANIOPSIS 'Luscious'	Water Gum
SHRUBS	
ACMENA smithii 'Forest Flame'	Lilly Pilly
AUSTROMYRTUS dulcis*	Midgen Berry
BACKHOUSIA myrtifolia	Grey Myrtle
EREMOPHILA 'Magic Blush'	Emu Bush
GREVILLEA Superb	Grevillea 'Superb'
LEPTOSPERMUM Pink Cascade	Tea Tree
MELALEUCA 'White Lace'	Honey Myrtle
PITTOSPORUM 'Miss Muffet'	Miss Muffet
RHAPHIGLEPIS 'Cosmic White'	Indian Hawthorn
SYZYGIUM Pink Cascade	Lilly Pilly
WESTRINGEA fruticosa	Coastal Rosemary
GROUNDCOVERS & GRASSES	
ASPLENIUM australasicum	Crows Nest
BRACHYSCOME multifida	Rock Daisy
DIETES bicolor	Yellow Peacock Flower
DIETES grandiflora	Wild Iris
GAZANIA Pink*	Gazania Pink
GARDENIA radicans	Dwarf Gardenia
HYMENOCALLIS littoralis	Spider Lily
JUNIPER horizontalis	Creeping Juniper
LIRIOPE Evergreen Giant	Turf Lily
LOMANDRA hystrix	Mat Rush
LOMANDRA longifolia	Mat Rush
PENNISETUM atropurpureoides	Halfway Foxtail Grass
SCAEVOLA aemula	Fan Flower
VICOLA hederacea	Native Violet
DRY CREEK BED / SWALE	
BANKSIA robur	Swamp Banksia
FICINIA nodosa	Knobby Club-Rush
GAHNIA sieberiana	Red Fruit Saw Sedge
LIRIOPE Evergreen Giant	Turf Lily
LOMANDRA hystrix	Mat Rush
MELALEUCA 'White Lace'	Honey Myrtle

PREFERRED PLANTING PALLETTE - GENERAL DEVELOPMENT AREA

Warrill Park Lawn Cemetery Master Plan & Land Management Plan 29

PROTECTED FOREST



PLANTING PALLETTE	
BOTANICAL NAME	COMMON NAME
TREES	
ACACIA fimbriata	Brisbane Wattle
ALPHITONIA excelsa	Soap Tree
GREVILLEA robusta	Silky Oak
LEPTOSPERMUM petersonii	Lemon Scented Tea Tree
MELALEUCA viminalis	Weeping Bottlebrush
SHRUBS	
ASPLENIUM australasicum	Birds Nest Fern
HOVEA acutifolia	Pointed Leaf Hovea
ISOPOGON anemonifolius	Broad-leaved Drumsticks
LEPTOSPERMUM polygalifolium	Tantoon, Yellow Tea Tree
GROUNDCOVERS	
ACTINOTUS hellanthin	Flannel Flower
CALOTIS dentex	White Burr Daisy
CHRYSOCEPHALUM apiculatum	Yellow Buttons
EREMOPHILA debilis	Winter Apple
HARDENBERGIA violacea	Sarsparilla
HIBBERTIA sp.	Guinea Flower
LOMANDRA hystrix	Mat Rush
LOMANDRA laxa	Mat Rush
PIMELEA linifolia	Rice Flower
TETRAGONIA tetragonoides	Warrigal Greens
THEMEDA triandra	Kangaroo Grass
VIOLA hederacea	Native Violet

Note: Refer to ANNEXURE 01(b)

PREFERRED PLANTING PALETTE - PROTECTED MELALEUCA FOREST REVEGETATION

MEADOW



ANGOPHORA costata CORYMBIA citriodora MELALEUCA quinquervia

MEADOW MIX- TO 1M HIGH



PENNISTETUM 'Nafray' ACTINOTUS 'Flannel Flower' THEMEDA australis CHRYSOPHALUM 'Yellow Buttons' CENTAUREA Blue Boy 'Cornflower' FICINEA nodosa

NATURAL BURIAL AREA



ACACIA fimbriata WATERHOUSEA floribunda MELALEUCA quinquervia BACKHOUSIA citriodora

SHRUBS AND GRASSES

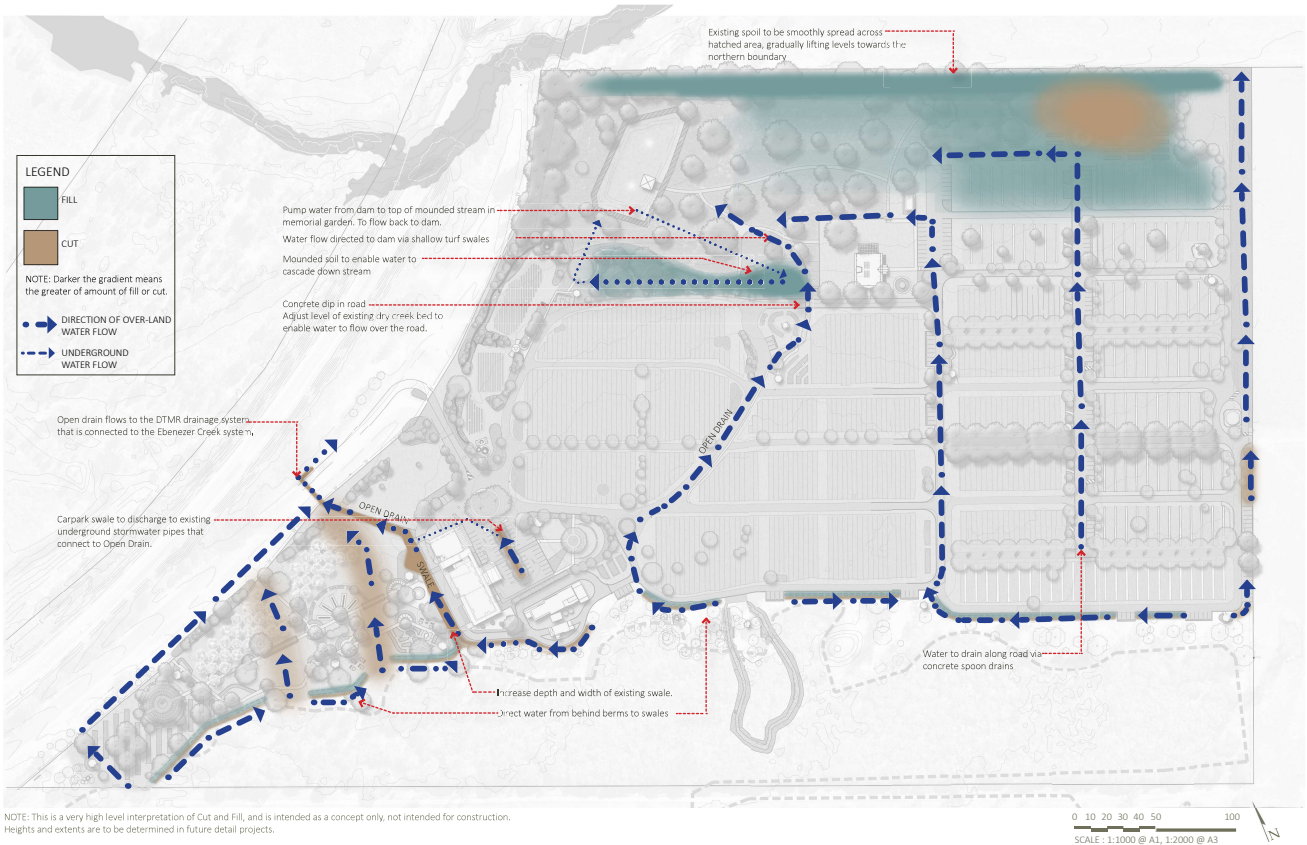


PENNISTETUM 'Nafray' ANIGOZANTHUS 'Kangaroo Paw' THEMEDA australis LOMANDRA longifolia BACKHOUSIA myrtifolia MELALEUCA 'White Lace' AUSTROMYRTUS dulcis

PLANTING PALLETTE- MEADOW	
BOTANNICAL NAME	COMMON NAME
TREES	
ANGOPHORA costata	Smooth Bark Apple Tree
CORYMBIA citriodora	Stemmed Scented Gum
MELALEUCA quinquervia	Broad Leaved Paer Bark
MEADOW MIX	
ACTINOTUS minor	Flannel Flower
CENTAUREA 'Blue Boy'	Cornflower
CHRYSOPHALUM 'Yellow Buttons'	Yellow Buttons
FICINEA nodosa	Knotted Club Rush
PENNISTETUM 'Nafray'	Foxtail Grass
THEMEDA australis	Kangaroo Grass

PLANTING PALLETTE- NATURAL BURIAL AREA	
BOTANNICAL NAME	COMMON NAME
TREES	
ACACIA fimbriata	Brisbane Wattle
BACKHOUSIA citriodora	Lemon Scented Myrtle
MELALEUCA quinquervia	Broad Leaved Paer Bark
WATERHOUSEA floribunda	Weeping Lilly Pilly
SHRUBS AND GRASSES	
ANIGOZANTHUS	Kangaroo Paw
AUSTROMYRTUS dulcis	Midgen Berry
BACKHOUSIA myrtifolia	Grey Myrtle
LOMANDRA longifolia	Mat Rush
PENNISTETUM 'Nafray'	Foxtail Grass
THEMEDA australis	Kangaroo Grass

PREFERRED PLANTING PALETTE - MEADOW AND NATURAL BURIAL AREA



LAND CUT/FILL & WATER OVERFLOW INTENT

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ANNEXURES

- 01 Melaleuca ibyana (Swamp Tea-tree) Forest
 - a) Melaleuca ibyana Impact Assessment
 - b) Memorial Walkway Planting Guide
- 02 Warrill View Cemetery Overland Flow Assessment
- 03 Warrill View Cemetery Nursery Concept Design
- 04 Original Cemetery Reserve Review



Warrill Park Lawn Cemetery Master Plan & Land Management Plan 33

ANNEXURE 01

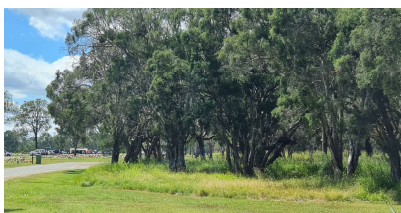
MELALEUCA IRBYANA [SWAMP TEA-TREE]: A THREATENED ECOLOGICAL COMMUNITY

Melaleuca irbyana is listed as "endangered" under the Nature Conservation Act 1992 (Qld) as an endangered regional ecosystem under the Vegetation Management Act 1999 (Qld) and as a threatened ecological community (TEC) under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).

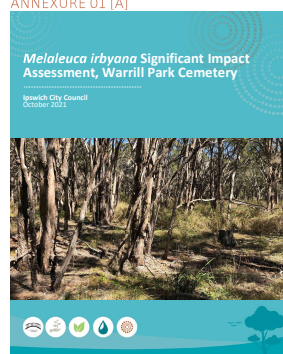
The Melaleuca irbyana extent at Warrill Park Lawn Cemetery covers approximately 5.4 ha, representing about 1% of the global extent of the TEC. The patch is potentially one of the larger remaining large patches of the species in the region (SPRAT 2020).

<https://www.dcccew.gov.au/environment/biodiversity/threatened/assessments/swamp-tea-tree-forest-2005>

Images below: Melaleuca irbyana protected forest at Warrill Cemetery



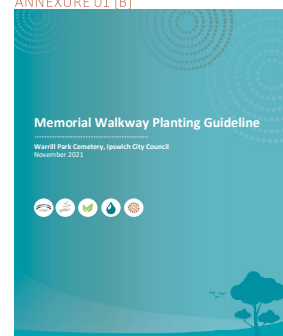
REFER TO ATTACHED DOCUMENT -
ANNEXURE 01 [A]



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REFER TO ATTACHED DOCUMENT -
ANNEXURE 01 [B]



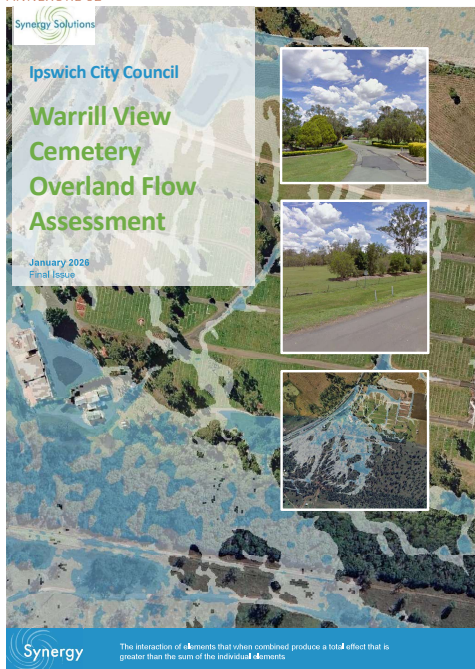
redleaf
ENVIRONMENTAL
Ecology | Environment | Heritage

www.redleaf.com.au

ANNEXURE 02

WARRILL PARK CEMETERY OVERLAND FLOW ASSESSMENT

REFER TO ATTACHED DOCUMENT -
ANNEXURE 02



ANNEXURE 03

WARRILL VIEW CEMETERY NURSERY CONCEPT DESIGN

REFER TO ATTACHED DOCUMENT -
ANNEXURE 03



ANNEXURE 04

ORIGINAL CEMETERY RESERVE REVIEW

The original cemetery reserve incorporated the current land parcel of 58 Anderson Day Drive. The Cemetery Reserve was sub-divided in 1969 creating an equal size lot to the east of the current cemetery, Lot 284.

A preliminary site assessment has been undertaken of Lot 284 which has determined that it is a future opportunity for expansion of the existing cemetery. Preliminary concept design work indicates that although the site will have similar constraints to the current site, approximately 14.5 ha of the land will be suitable for development of cemetery activities.

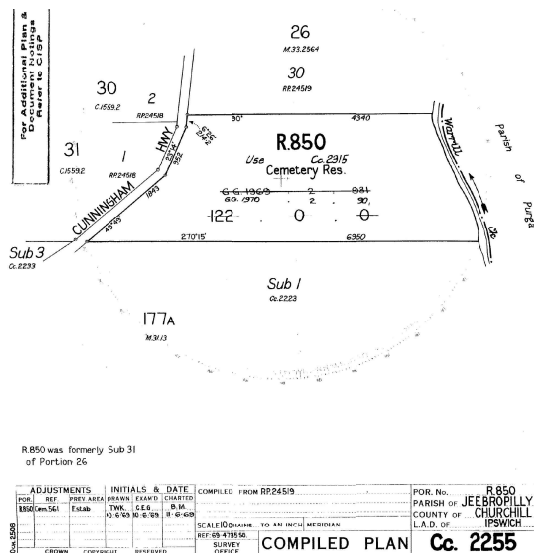


Image 1: Original Survey Plan - Cemetery Reserve 1969

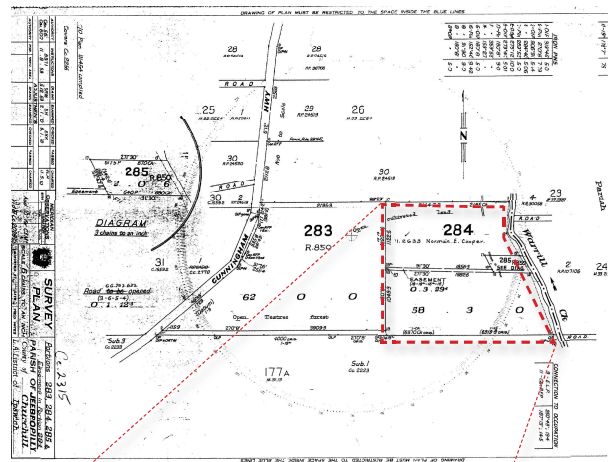
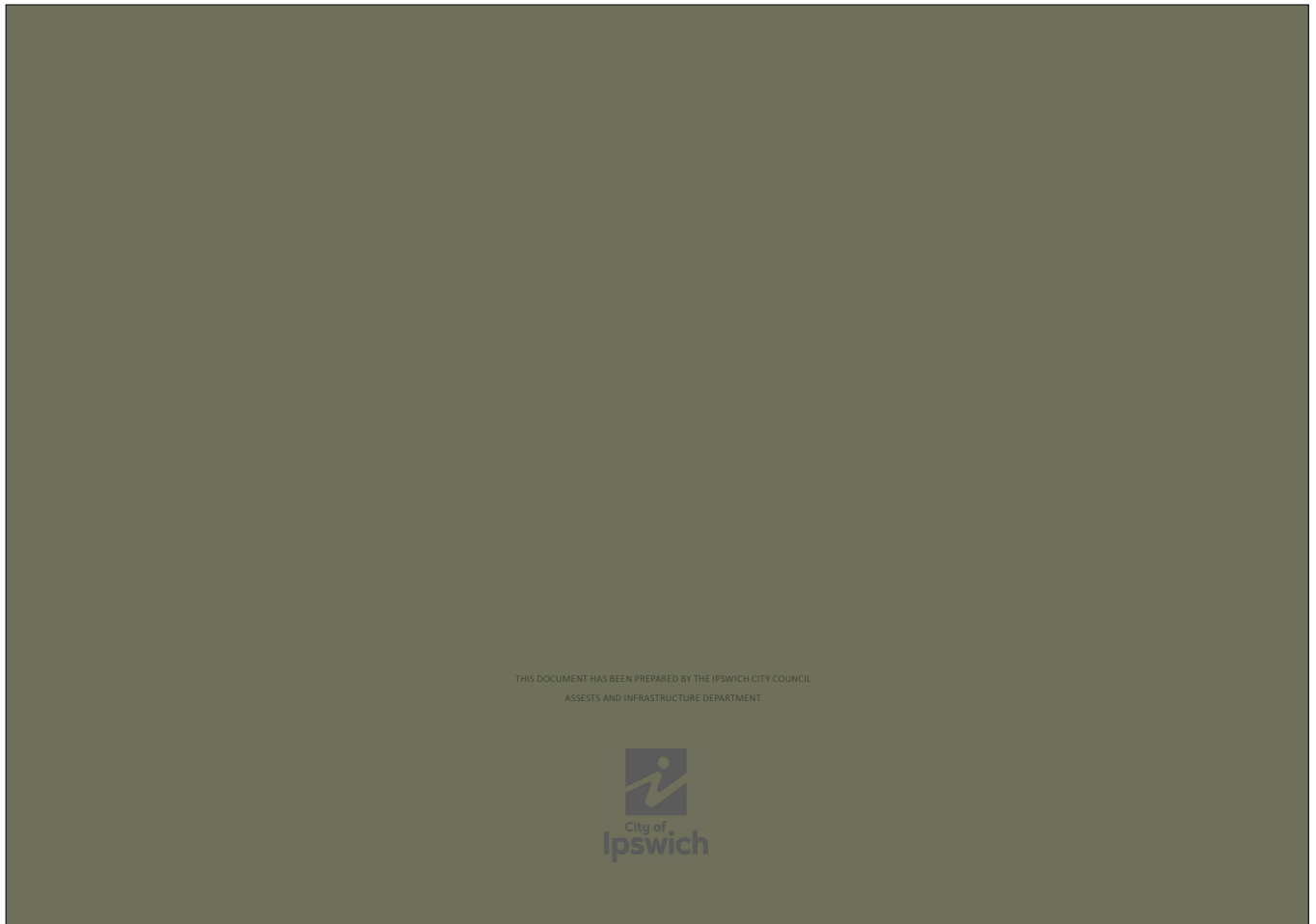


Image 2: Sub-Division - Lot 284 CC2315 - 1969 Cemetery Reserve 1969



Image 3: Preliminary Site Assessment Concept by Ipswich City Council [2025]

REFER TO ATTACHED DOCUMENT - ANNEXURE 04



THIS DOCUMENT HAS BEEN PREPARED BY THE IPSWICH CITY COUNCIL
ASSETS AND INFRASTRUCTURE DEPARTMENT



Consultation and Communication: Warrill Park Lawn Cemetery – Master Plan.

Stakeholder group	Impact of Project	Likely engagement interests	Engagement Methods	Engagement responsibility
ICC Mayor & Councillors	High	Expert understanding of community requirements and high level of interest in forward planning elements	Correspondence, Briefings and meetings.	PRS
ICC internal staff: AIS – Capital Delivery ES – Environment / Hydraulics PRS – Dev Planning PRS – City Design Corp Ser – Property & Facilities Infrastructure Delivery Transport Planning Strategic Planning	High	Expert understanding of site conditions and restrictions, planning and design elements.	Correspondence, Briefings and meetings.	PRS
Norwood Park Pty Ltd (Trading as Ipswich Cemeteries)	High	Contracted service provider for the Ipswich Cemetery Services (Death Care Services) Deed.	Correspondence and meetings.	PRS
Native Title and Cultural Heritage Officer & Network	High	Expert advice on any impacts	Correspondence and meetings.	PRS
Indigenous Australia Community Dev Officer & Network	High	Expert advice on any impacts	Correspondence, newsletters, and meetings.	PRS
Funeral Directors	High	Commercial interest, expert industry knowledge of community requirements and potential needs.	Correspondence, Briefings and one on one meetings. Shape Your Ipswich.	PRS
Representatives of the Islamic community.	Medium-High	Interest driven by cultural requirements and limited availability at other cemeteries.	Correspondence, Briefings and meetings. Shape Your Ipswich.	PRS
Representatives of the Christian faith communities	Medium - High	Input on community requirements and suggested facility improvements.	Correspondence, Briefings and phone calls. Shape Your Ipswich.	PRS
Ipswich Community	Medium - High	General interest in the project and its community impact. High engagement from users/visitors of the site.	Shape Your Ipswich and various media avenues.	PRS
Willowbank Area Residents Group including Mr George Hatchman	Medium	General interest in the project and its community impact. Some members as indicated have a high level of interest in the development of community	Correspondence, Briefings and meetings. Shape Your Ipswich.	PRS

Item 3 / Attachment 2

Stakeholder group	Impact of Project	Likely engagement interests	Engagement Methods	Engagement responsibility
		facilities within the wider Willowbank area.		
Ipswich Hospice	Low-Med	General interest in the project as families/staff involved with end-of-life community members.	Correspondence, Briefings and phone calls. Shape Your Ipswich.	PRS
Multicultural networks	Low-Medium	Gain and share information around multicultural communities.	Emails. Shape Your Ipswich.	CCED
Ipswich Disability Interagency Network (IDIN)	Low - Medium	Concepts for Master Plan address the needs of people with disabilities	Emails. Shape Your Ipswich.	CCED

City of Ipswich
Warrill Park Lawn Cemetery
Community Engagement Report

September 2025





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Disclaimer: Quantitative and qualitative data was collected from participants during the engagement, in accordance with council’s Information Privacy Policy. Quantitative data was downloaded from the various digital platforms and/or transcribed into a master Excel database by project staff. The data was cleaned, de-identified, aggregated and charted in the master database. Open thematic analysis of qualitative comments was carried out using Excel. For the purposes of this report, percentages are rounded to the nearest whole number, which may result in a total not equal to 100%.



EXECUTIVE SUMMARY

Warrill Park Lawn Cemetery has served the Ipswich community since 1971 and is the city's largest and most utilised cemetery, with over 14,800 burials and ashes placements. Surrounded by protected forest, waterways, and private land, the site faces ecological and flood-related constraints that limit future expansion. To address these challenges and improve the visitor experience, Ipswich City Council developed a preliminary concept master plan proposing natural burial area, expanded memorial gardens, upgraded facilities, and improved accessibility.

Community engagement was undertaken to gather feedback on the proposed improvements. Residents were invited to share their thoughts on design elements, memorial preferences, accessibility, and how the cemetery can better support remembrance and community connection. The engagement aimed to ensure the plan reflects community values and needs.

The themes and stakeholder insights identified in this report will help inform the final master plan for Warrill Park Lawn Cemetery.

WHY WE ENGAGED

The purpose behind this engagement project was to:

- understand community values and expectations for cemetery spaces
- identify preferences for future burial, memorial, and reflection areas
- gather insights to guide the design and functionality of proposed improvements.

HOW WE ENGAGED

The engagement ran for a period of 26 days, between 4 August 2025 and 29 August 2025.

Engagement feedback channels

The community was able to contribute their feedback through the channels detailed below.

Shape Your Ipswich

Comments were captured via an online survey on the project page, [Warrill Park Lawn Cemetery](#), hosted on Shape Your Ipswich. Survey questions can be seen at Appendix 1.

Hard copy survey

Community members were able to complete a hard copy survey to share their feedback. The questions in the survey replicated the online version on Shape Your Ipswich. These surveys were available to download from Shape Your Ipswich or could be requested via phone.

Email

The community was able to directly reach out to council via communityengagement@ipswich.qld.gov.au with feedback on this project.

Phone

The community was able to directly reach out to council via 3810 6666 with feedback on this project.

Direct stakeholder outreach

In addition to public-facing engagement channels, targeted outreach was undertaken to ensure representation from key stakeholder groups. This included:

- Extensive contact with funeral service providers across the region, reflecting the importance placed on their inclusion by elected representatives.
- Engagement with a broad spectrum of religious and cultural organisations, ensuring diverse perspectives on burial practices and commemorative needs were captured.
- Multicultural and community groups via The Ipswich Platform newsletter.
- Outreach to smaller stakeholder groups identified through internal networks, supporting inclusive and representative feedback.

These efforts complemented broader general community engagement and ensured that professional, cultural, and community-specific insights were meaningfully incorporated into the planning process.

Promotional channels

To maximise engagement, the following communication channels were used to reach the community and trigger awareness.

Shape Your Ipswich

One email campaign was sent out via Shape Your Ipswich. The campaign was sent on 4 August 2025 and was sent out to Shape Your Ipswich members who had selected any of the following categories of interest:

- Arts, culture and heritage
- City design and planning
- Community

This campaign was sent to a total of 1256 members, of which 577 opened the email.

Ipswich First

The article, [Community feedback sought on Warrill Park Lawn Cemetery master plan](#), encouraged community to share their feedback on the future planning for Warrill Park. The article was published on 7 August 2025 and received 296 views.

Physical Signage

Signage was placed at Warrill Park Lawn Cemetery from 6 August to 29 August 2025. The sign included a QR code to Shape Your Ipswich and encouraged community to share their feedback. The signage design can be seen in Appendix 2.

Engagement Channels	Contributors ¹
Shape Your Ipswich	112
Hard copy surveys	0
Email	2
Phone	0
Total	114

¹ Total number of unique individuals who submitted feedback per engagement channel. An individual who makes more than one contribution on a single engagement channel is only counted as a single contributor. Noting individuals may be counted multiple times if submitting feedback across multiple engagement channels.



Ipswich City Council social media

Paid social media posts were shared across Meta platforms from 4- 29 August 2025. Across all platforms, posts reached 37,243 accounts, and 3,556 users clicked through to Shape Your Ipswich. A screenshot of the posts can be seen at Appendix 3.

Social Media Channel	Date of posting	Reach ²	Clicks ³
Meta (paid) (facebook/instagram)	4-29 August 2025	37,243	3,556
Meta (organic) (facebook)	7 August 2025	4,754	270

Internal Engagement:

Direct engagement was undertaken with subject matter experts across Council, including officers from Native Title and Cultural Heritage, Indigenous Australian Community Development, Capital Delivery, Environment Planning, Development Planning, Heritage, and Transport Planning.

Internal promotion of the engagement was included in a [wire article](#), which gained 367 views.

WHAT THE COMMUNITY TOLD US

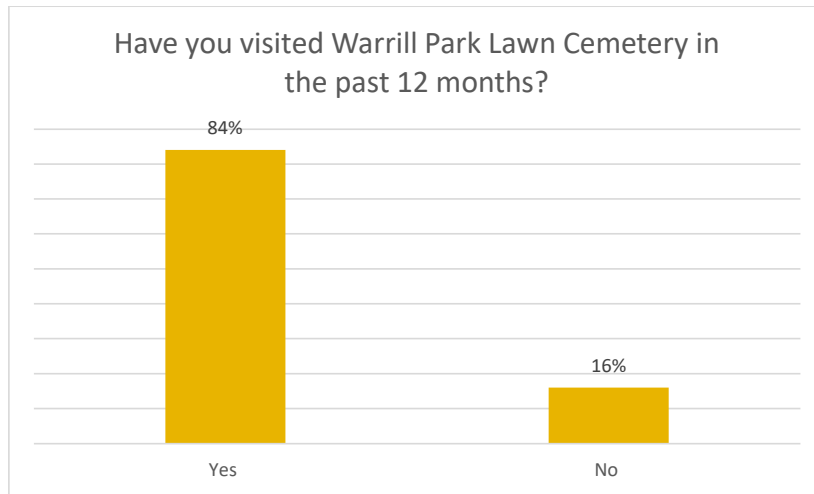
A summary of the feedback received across all channels has been outlined below.

Have you visited Warrill Park Lawn Cemetery in the past 12 months?

All 112 survey respondents provided an answer to this question. The majority (84%) reported visiting Warrill Park Lawn Cemetery in the past year.

² Total number of times a social media post was viewed.

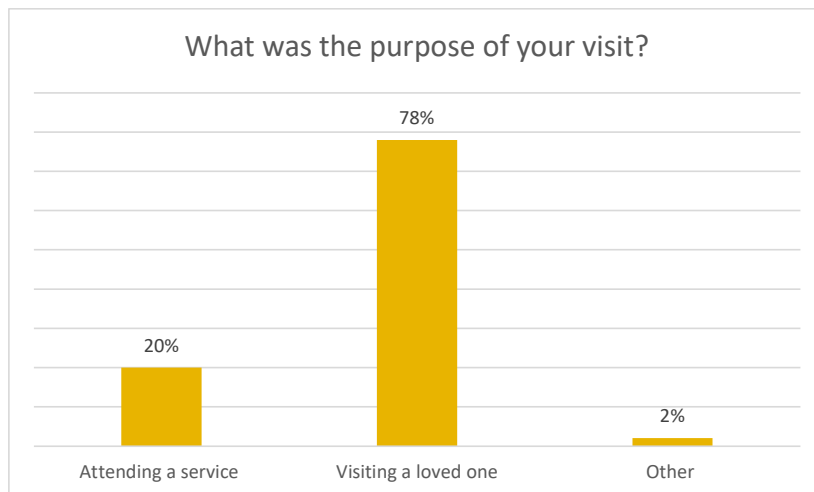
³ Total number of times a URL in a social media post was clicked.



What was the purpose of your visit?

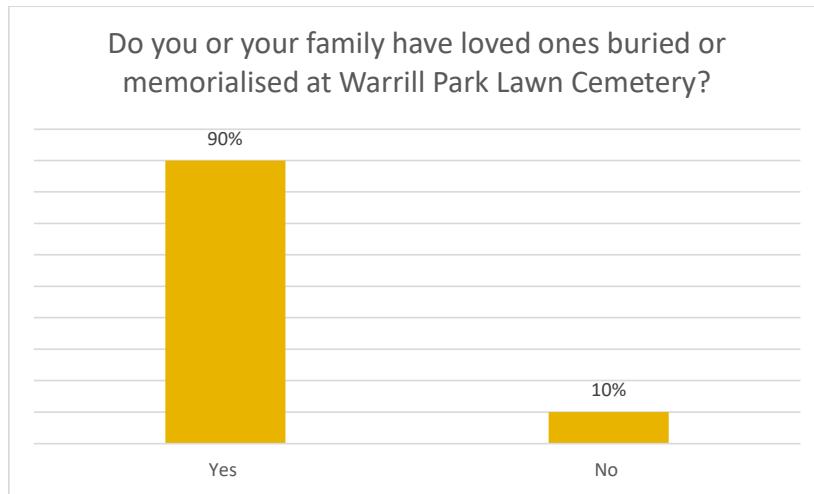
This question received responses from all 112 survey participants. Most indicated they were visiting a loved one (78%), while 20% attended a service and a small number (2%) selected other reasons.

Other reasons included visiting for the purpose of undertaking memorial planning or plaque selection.



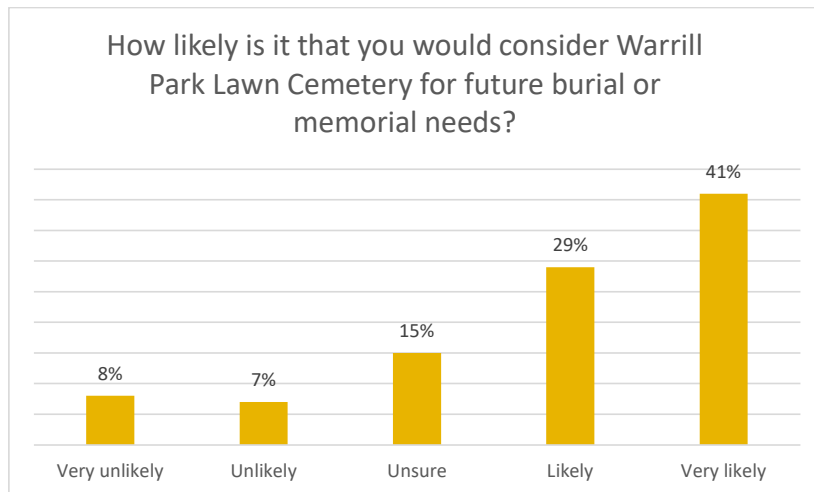
Do you or your family have loved ones buried or memorialised at Warrill Park Lawn Cemetery?

All survey participants responded to this question. A significant majority (90%) reported that they or their family members have loved ones buried or memorialised at the cemetery, while only 10% indicated they did not. This highlights the strong personal ties many respondents have to the site.



How likely is it that you would consider Warrill Park Lawn Cemetery for future burial or memorial needs?

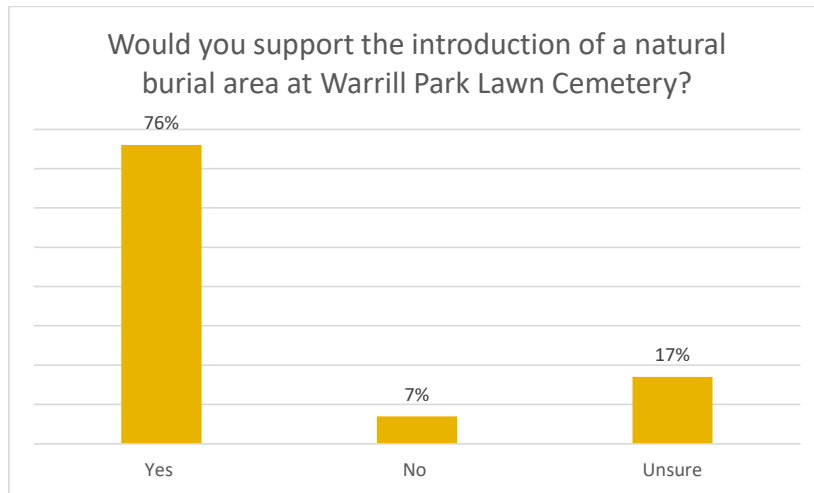
All survey respondents answered this question. A combined 70% said they were either likely (29%) or very likely (41%) to consider the cemetery for future burial or memorial needs. 15% indicated they were unsure, and a smaller group - 8% very unlikely and 7% unlikely - said they wouldn't consider it. These results suggest that most participants view the cemetery as a potential option for future arrangements.



Would you support the introduction of a natural burial area at Warrill Park Lawn Cemetery?

The majority of survey respondents (76%) said they would support the introduction of a natural burial area at Warrill Park Lawn Cemetery. A smaller group (17%) were unsure, and only 7% said they

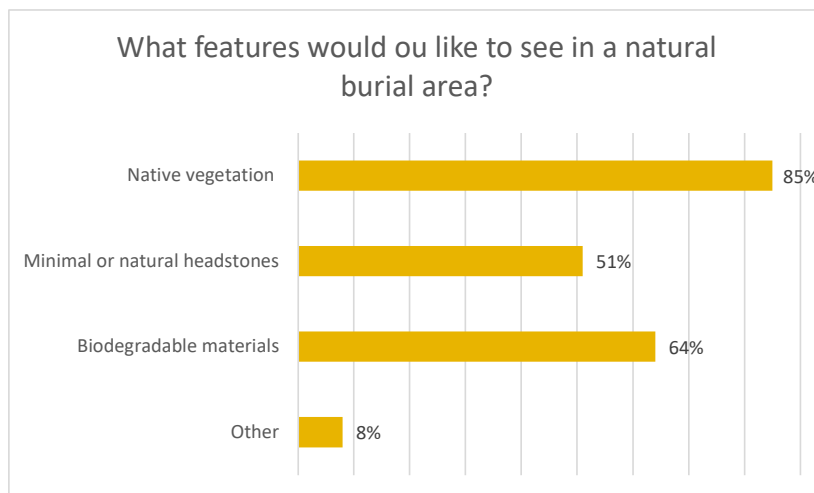
wouldn't support it. This suggests strong overall interest in more environmentally conscious burial options.



What features would you like to see in a natural burial area?

85% of survey respondents said they'd like to see native vegetation included in a natural burial area. Biodegradable materials were also popular, selected by 64%, followed by minimal or natural headstones at 51%. Only 8% chose "Other." These responses suggest strong interest in environmentally friendly and natural design elements.

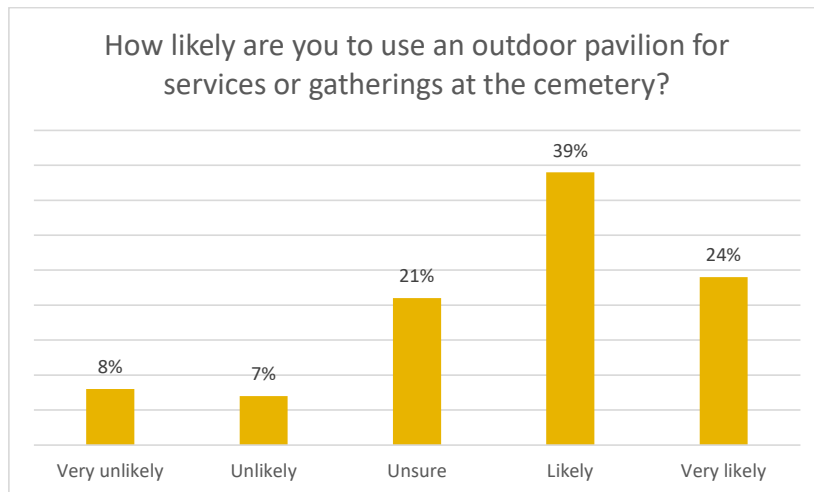
Other comments included support for natural elements, respectful grieving spaces, better upkeep, and education.



How likely are you to use an outdoor pavilion for services or gatherings at the cemetery?



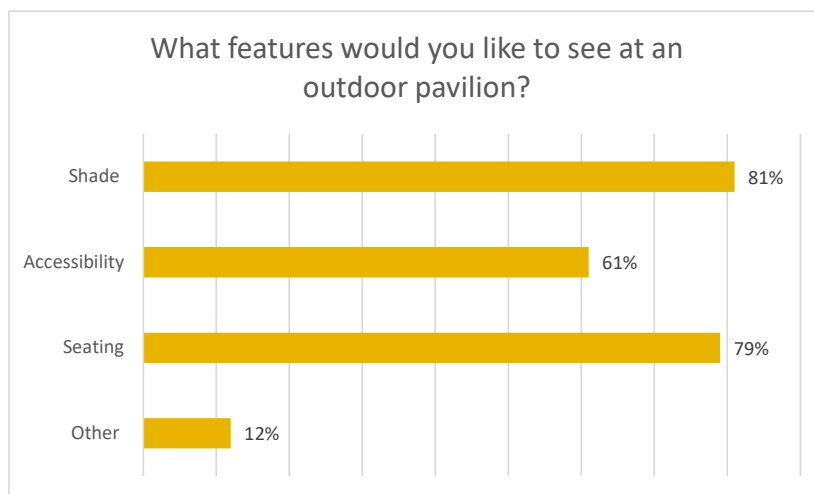
A combined 63% of survey respondents said they would be likely (39%) or very likely (24%) to use an outdoor pavilion for services or gatherings at the cemetery. About one in five (21%) were unsure, while smaller groups said they were unlikely (7%) or very unlikely (8%) to use the space. These results suggest that the idea of an outdoor pavilion is appealing to many participants.



What features would you like to see at an outdoor pavilion?

All survey respondents answered this question. Shade (81%) and seating (79%) were the most commonly selected features, followed by accessibility at 61%. A smaller group (12%) chose “Other.” These results show a clear preference for comfort and inclusivity in the design of an outdoor pavilion.

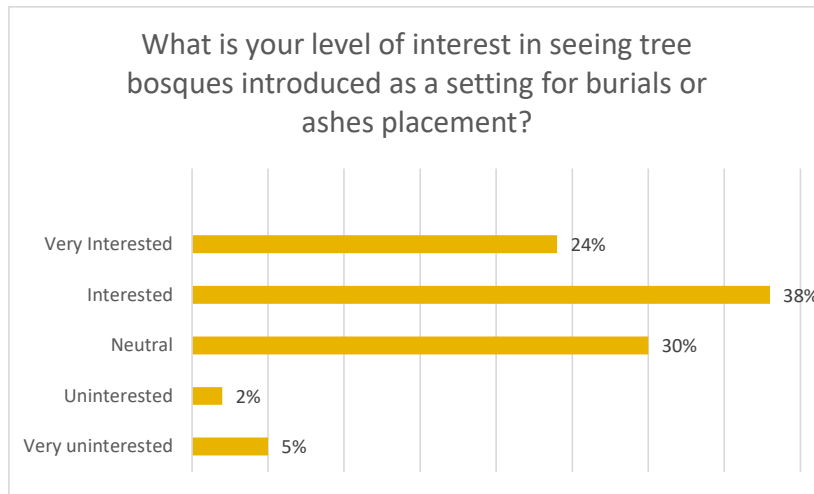
Other comments included support for access to drinking water and toilets, flexible furniture and AV equipment, BBQ facilities for family gatherings, and a desire for well-maintained, visually pleasing spaces.





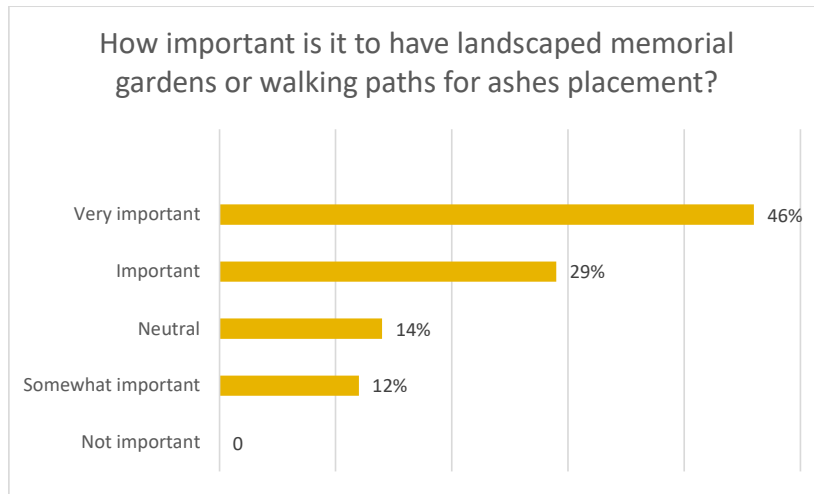
A tree bosque is a planted group of trees used as a natural memorial space. Participants were asked their level of interest in seeing tree bosques introduced as a setting for burials or ashes placement.

A combined 62% of survey respondents said they were either interested (38%) or very interested (24%) in the idea of introducing tree bosques as a setting for burials or ashes placement. Around 30% felt neutral, while only 7% expressed disinterest. These results suggest that the concept has broad appeal among participants.



How important is it to have landscaped memorial gardens or walking paths for ashes placement?

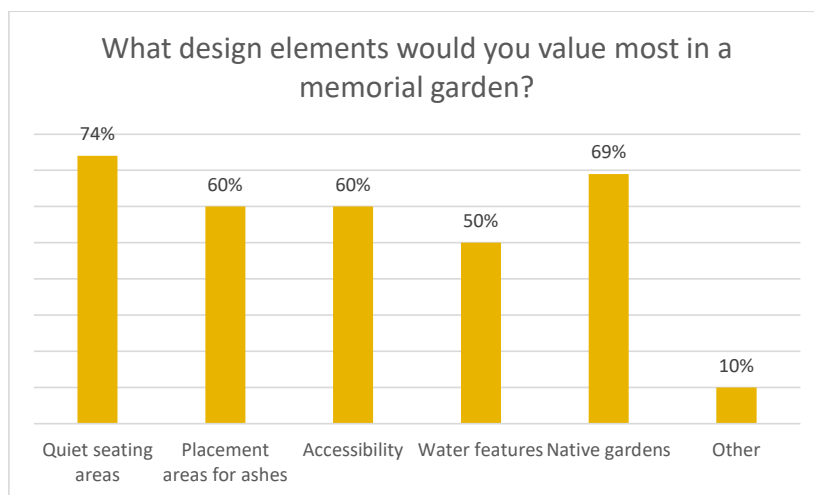
All survey respondents answered this question. Nearly half (46%) said it was very important to have landscaped memorial gardens or walking paths for ashes placement, and another 29% considered it important. A smaller group felt it was of neutral importance (14%) or somewhat important (12%), while no respondents said it wasn't important. These results show strong support for incorporating thoughtful landscaping into memorial spaces.



What design elements would you value most in a memorial garden?

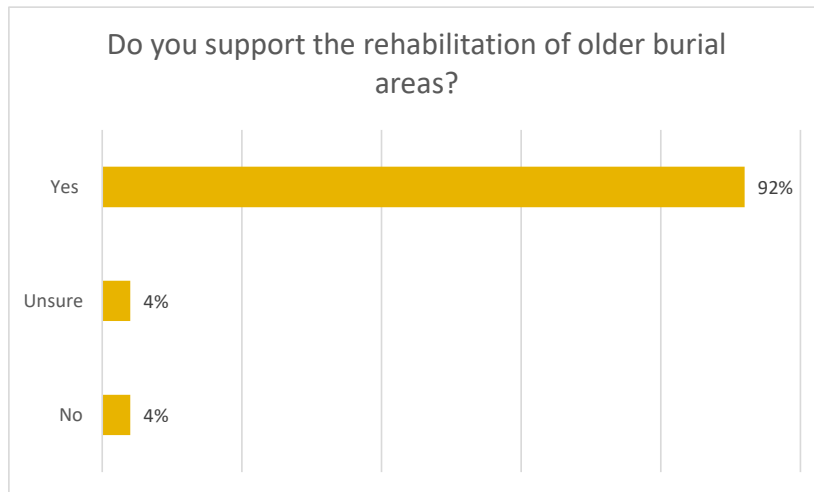
Quiet seating areas were the most valued feature, selected by 74% of survey participants. Native gardens followed closely at 69%, while placement areas for ashes and accessibility were each chosen by 60%. Water features were also popular (50%), and 10% selected “Other.” These responses highlight a preference for peaceful, natural, and accessible spaces in memorial garden design.

Other comments included support for improved maintenance, shaded and weather-protected seating, access to toilets and drinking water, alternative ash placement options, and subtle artistic or spiritual elements.



Do you support the rehabilitation of older burial areas?

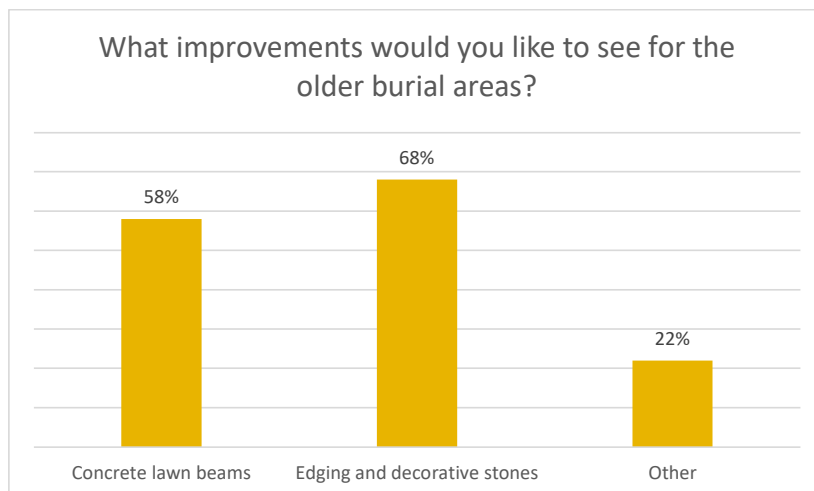
Support for rehabilitating older sections of the cemetery was strong, with 92% of survey participants in favour of the idea. Only a small number - 4% each - were either unsure or opposed. The feedback indicates strong community interest in preserving and enhancing existing burial spaces.



What improvements to older burial areas would you like to see?

Support for improving older burial areas was clear among the 112 survey respondents. The most popular suggestion was edging and decorative stones, favoured by 68% of participants, followed by concrete lawn beams at 58%. A smaller portion of 22% suggested other types of improvements. The feedback reflects a strong community interest in enhancing the visual and structural quality of existing cemetery spaces.

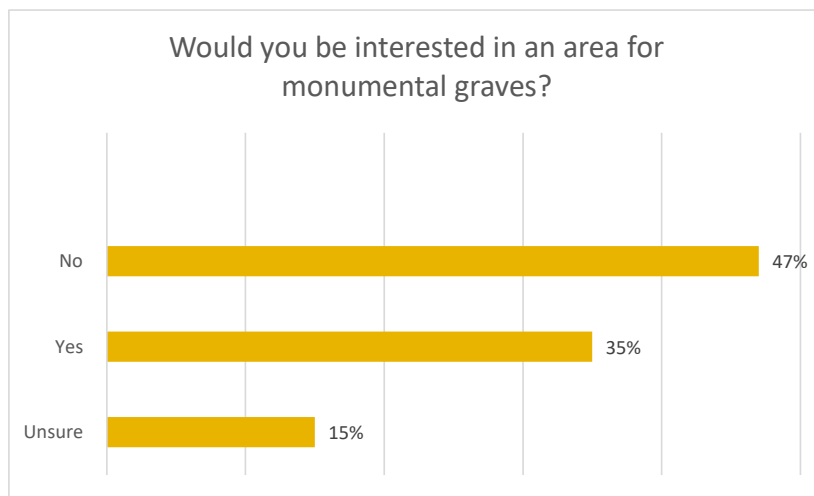
Other comments included support for better lawn and garden maintenance, protection of headstones from damage and water pooling, more natural vegetation and shade, flower placement options, and gentle upgrades that respect existing graves.





Would you be interested in an area for monumental graves?

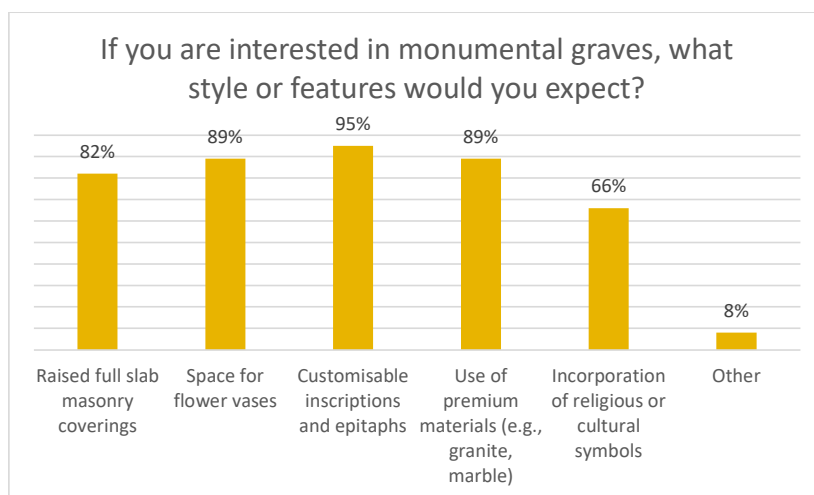
Interest in establishing an area for monumental graves was mixed among the 112 survey respondents. While 35% expressed support for the idea, a larger portion—47%—were opposed. An additional 15% were unsure. 8% of respondents suggested other options. The results suggest that while there is some interest, the community is divided on the value of introducing monumental grave areas.



If you are interested in monumental graves, what style or features would you expect?

Among those interested in monumental graves, there was strong support for specific design features. Customisable inscriptions and epitaphs were the most preferred, with 95% of survey respondents selecting this option. Space for flower vases and use of premium materials (e.g., granite, marble) were each favoured by 89%, while raised full slab masonry coverings received 82% support. Incorporation of religious or cultural symbols was chosen by 66%, and 8% suggested other features. This feedback highlights a clear preference for personalised, high-quality, and culturally meaningful grave designs.

Other comments included support for artistic elements like statues, native vegetation for comfort and shade, and flexibility to accommodate individual family needs.



What other ideas or features would you like to see included in the future development of Warrill Park Lawn Cemetery?

More than 100 survey participant responses were received to this question. The main suggestions focused on maintenance and safety, facilities and infrastructure, landscaping and atmosphere, cultural and emotional needs, community use and accessibility, and concerns about overdevelopment. Key themes and details are outlined below.

Theme	Detail
Maintenance and safety	29% of respondents emphasised the importance of maintaining and improving the cemetery’s existing infrastructure. Suggestions included: <ul style="list-style-type: none"> • Leveling sinking graves and lifting plaques • Regular mowing and weed control • Better drainage to prevent waterlogging • Protection of headstones from mower damage • Fixing uneven paths and roads • Addressing pest issues like fire ants • Proper tree care and maintenance
Facilities and infrastructure	30% of respondents highlighted the need for improved amenities to support visitors. Suggestions included: <ul style="list-style-type: none"> • More shaded seating and shelter throughout the cemetery • Additional public toilets • Improved chapel design with overflow capacity and outdoor screens • Better live streaming technology • On-site flower shop

	<ul style="list-style-type: none"> • Touchscreen kiosks for plot location • Reconsideration of car park placement and expansion • Soft lighting for ambiance and safety
Landscaping and atmosphere	<p>19% of respondents expressed a desire for a more natural and peaceful environment.</p> <p>Suggestions included:</p> <ul style="list-style-type: none"> • Native plants and bush-style landscaping • Water features and seasonal gardens • More shade trees • Ban on artificial flowers • Ground cover in bare areas like the Bamboo Garden • Tasteful signage and aesthetic improvements
Cultural and emotional Needs	<p>9% of respondents emphasised the importance of cultural sensitivity and emotional connection.</p> <p>Suggestions included:</p> <ul style="list-style-type: none"> • Support for cultural burial practices (e.g., families filling graves) • Natural burial options • Personalisation of plots • Respect for memorial items left by families • Mental health resources and grief support • Columbarium niches for family groups • Recognition of First Nations communities
Community use and accessibility	<p>8% of respondents want the cemetery to be welcoming and inclusive.</p> <p>Suggestions included:</p> <ul style="list-style-type: none"> • Playground near nursery for children visiting siblings • Picnic-friendly spaces for family gatherings • Universal accessibility across all areas • Improved paths and walkways • Statues and seating in baby section • Reframing cemetery uses as a public space for reflection and connection
Concerns about overdevelopment	<p>5% of respondents cautioned against excessive upgrades and prioritised sustainability.</p> <p>Suggestions included:</p> <ul style="list-style-type: none"> • Focus on maintaining existing areas before adding new features • Avoid costly structures that require ongoing upkeep • Ensure all sections receive equal attention • Prioritise sustainability and eco-friendly practices

Additional industry stakeholder feedback:

Outside of the Shape Your Ipswich engagement survey, additional submissions were received from key stakeholders, including funeral directors and site operators. These contributions provided valuable

operational insights and professional perspectives that complement the broader community feedback. The main suggestions focused on improving site amenity, enhancing infrastructure, expanding memorial options, and planning for long-term sustainability. Key themes and details are outlined below.

Theme	Detail
Site amenity and visitor experience	Stakeholders emphasised the importance of improving the overall appearance and comfort of the cemetery. Suggestions included: <ul style="list-style-type: none"> • Make the site more inviting • Add more shade and shelters • Enhance the feature behind the chapel to improve the service outlook • Upgrade the tired columbarium wall area used by waiting families • Improve public amenities • Upgrade the office and create a funeral director’s lounge
Infant burial and family spaces	<ul style="list-style-type: none"> • Install ABC blocks or similar as seating in the infant burial area • Create a more comforting and respectful space for families • Develop a picnic-friendly and reflective spaces for multi-generational visits
Memorial options and burial design	Stakeholders expressed strong support for flexible and natural memorial options. Suggestions included: <ul style="list-style-type: none"> • Develop an outdoor pavilion to serve as a chapel • Introduce a natural burial area • Incorporate tree bosques for ashes and burials • Avoid full monumental graves as this is available at other cemeteries • Develop family estates and ash memorial gardens • Blend ash gardens and burial options in future designs
Commemoration and cultural recognition	Stakeholders proposed initiatives to enhance remembrance and cultural inclusion. Suggestions included: <ul style="list-style-type: none"> • Investigate a war memorial and garden of remembrance



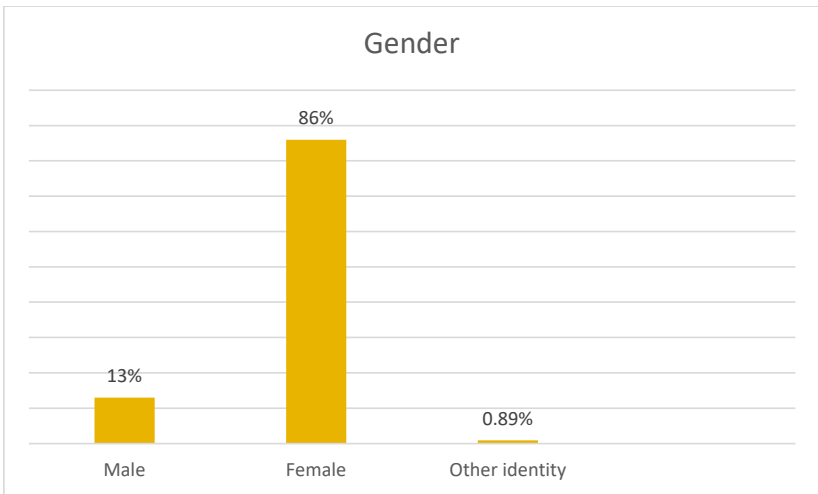
	<ul style="list-style-type: none"> • Consult with RSL and RAAF Amberley on suitable locations • Support respectful and culturally sensitive memorial spaces
<p>Landscape and water management</p>	<p>Improving water management and landscape aesthetics was a key priority. Suggestions included:</p> <ul style="list-style-type: none"> • Formalise the drainage channel from the workshop area to Anderson Day Drive • Incorporate a reflection pool and formal garden near the chapel and tea-room • Explore terracing and raised garden beds to mitigate flooding • Relocate burial areas to higher ground • Delay development of flood-prone western sections

WHO ENGAGED

Where reasonable, demographic data was captured as part of engagement activities to understand the diversity of respondents.

Gender

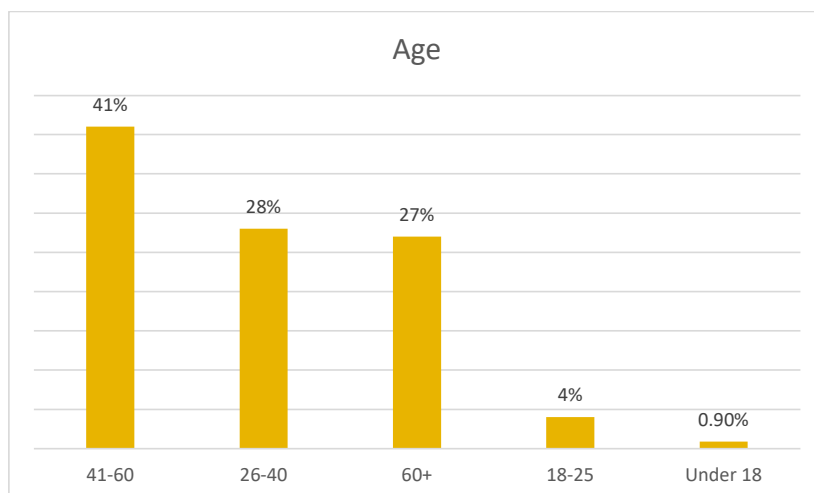
The gender breakdown of the 112 respondents shows a strong majority of female participants (86%), with 13% identifying as male and 0.89% identifying with another gender identity.





Age

The age distribution of the 112 respondents shows that the largest group was aged 41 - 60 (41%), followed by 26 - 40 (28%) and 60+ (27%). Younger participants were less represented, with 4% aged 18 - 25 and less than 1% under 18. This suggests that feedback was primarily provided by middle-aged and older community members.



Locality

Most respondents identified with a specific locality within Ipswich, with 34% from Division 1, 32% from Division 3, and 28% from Division 4. A smaller portion (6%) came from Division 2, while 9% selected "Other."

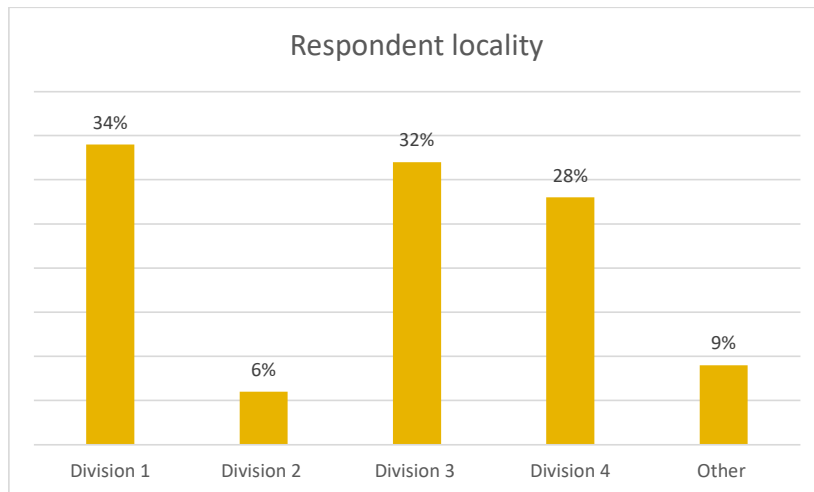
Other localities include a diverse mix of suburbs and regional towns across South East Queensland including Nanango, Lowood, Boonah and Dundowran.

In total, 68 Ipswich suburbs were represented:

- Augustine Heights
- Barellan Point
- Basin Pocket
- Bellbird Park
- Blacksoil
- Blackstone
- Booval
- Brassall
- Brookwater
- Bundamba
- Calvert
- Camira
- Churchill
- Chuwar
- Coalfalls
- Collingwood Park
- Deebing Heights
- Dinmore
- East Ipswich
- Eastern Heights
- Ebbw Vale
- Ebenezer
- Flinders View
- Gales
- Goodna
- Grandchester
- Haigslea
- Ipswich
- Ironbark
- Karalee
- Karrabin
- Leichhardt
- Lower Mount Walker
- Marburg
- Moores Pocket
- Mount Forbes
- Mount Marrow
- Muirlea
- Mutdapilly

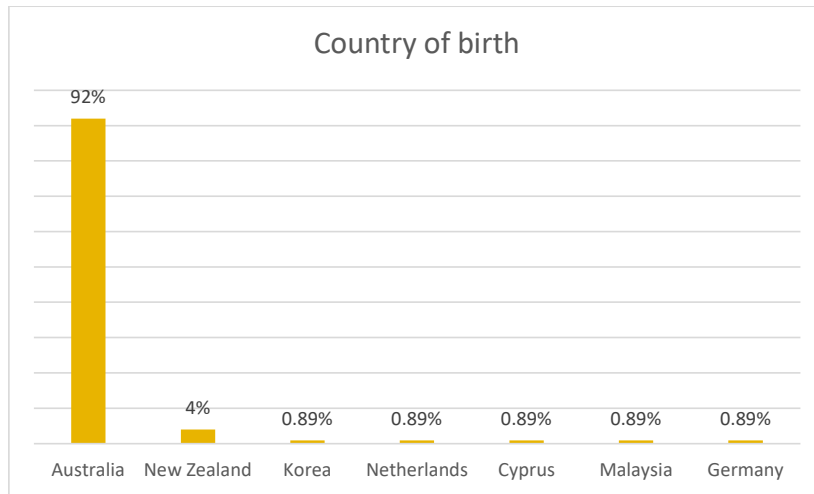


- Newtown
- North Booval
- North Ipswich
- One Mile
- Pine Mountain
- Purga
- Raceview
- Redbank
- Redbank Plains
- Ripley
- Riverview
- Rosewood
- Sadliers Crossing
- Silkstone
- South Ripley
- Spring Mountain
- Springfield
- Springfield Central
- Springfield Lakes
- Tallegalla
- Thagoona
- The Bluff
- Tivoli
- Walloon
- West Ipswich
- Willowbank
- Woodend
- Wulkuraka
- Yamanto



Country of birth

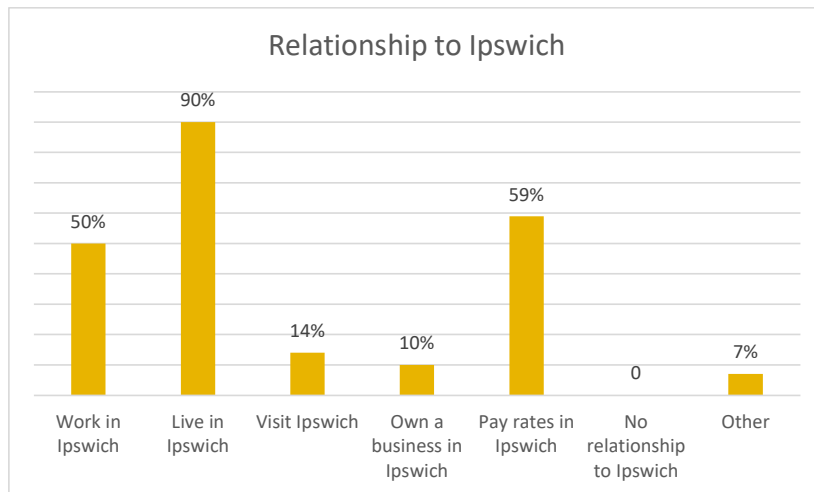
The majority of respondents (92%) were born in Australia, with small representations from New Zealand (4%), and Korea, Netherlands, Cyprus, Malaysia, and Germany (each at 0.89%). This indicates that the feedback primarily reflects the views of locally born community members, with limited input from overseas-born individuals.



Relationship to Ipswich

Most respondents reported a strong connection to Ipswich, with 90% living in the area and 59% paying rates. Half of the participants work in Ipswich, while smaller groups visit (14%), own a business (10%), or selected other relationships (7%).

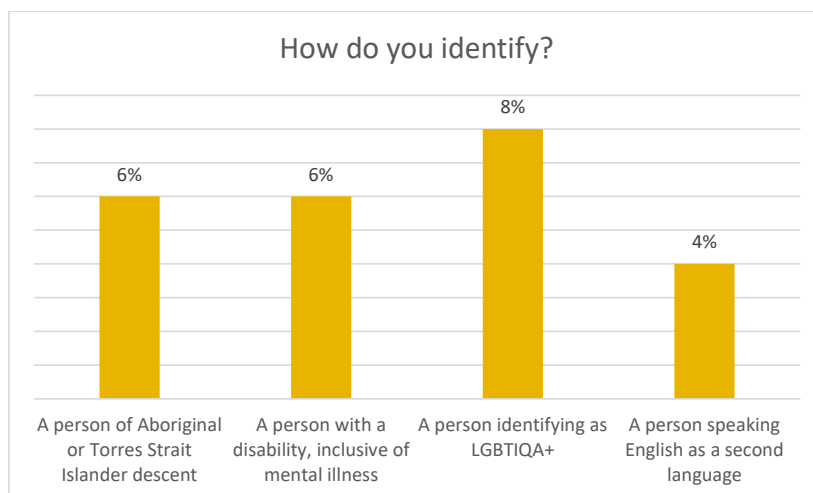
Other comments included strong personal connections to Ipswich, such as being born in the city, growing up there, having family who still reside locally, and spending their childhood or working life in Ipswich.



Minority Groups

Respondents were invited to share aspects of their identity, with 8% identifying as LGBTIQ+, and 6% each identifying as Aboriginal or Torres Strait Islander or as a person with a disability (including mental

illness). Additionally, and 4% reported speaking English as a second language. This data provides insight into the diversity of the community members who participated in the survey.



FINDINGS

Findings as outlined in this report are to be shared publicly via Shape Your Ipswich, along with relevant project updates to show how the community’s feedback has shaped this project.

- Strong personal connection to the site: 90% of respondents reported having loved ones buried or memorialised at Warrill Park Lawn Cemetery, and 84% had visited in the past year- mostly to visit a loved one. This highlights the cemetery’s emotional significance and role in community remembrance.
- Broad support for environmentally conscious burial options: 76% of respondents supported the introduction of a natural burial area. Key features valued included native vegetation (85%), biodegradable materials (64%), and minimal or natural headstones (51%).
- Interest in enhanced memorial and gathering spaces: majority of respondents expressed interest in using an outdoor pavilion (63%) and valued features such as shade (81%), seating (79%), and accessibility (61%). Similarly, landscaped memorial gardens and walking paths were considered important or very important by 75% of respondents, with quiet seating areas (74%) and native gardens (69%) being the most valued design elements.
- Strong support for rehabilitation of older burial areas: 92% of respondents supported improvements to existing sections of the cemetery. Popular suggestions included edging and decorative stones (68%) and concrete lawn beams (58%), with additional comments focused on maintenance, drainage, and respectful upgrades.
- Mixed views on monumental graves: while 35% of respondents supported the idea of a monumental grave area, 47% were opposed and 15% were unsure. Among supporters, there was strong interest in customisable inscriptions (95%), premium materials (89%), and space for flower vases (89%).
- Community priorities for future development: key themes included improved maintenance and safety (e.g., drainage, mowing, pest control), enhanced infrastructure (e.g., shaded seating, toilets, chapel upgrades), natural landscaping, cultural sensitivity, and inclusive design.



Stakeholders also emphasised long-term sustainability, water management, and the need for comforting spaces for families.

The information will be used to inform next steps for this project.

APPENDIX

1. SURVEY QUESTIONS

Tell us about your experience with Warrill Park Lawn Cemetery

1. Have you visited Warrill Park Lawn Cemetery in the past 12 months?

Select one answer only	
<input type="radio"/>	Yes
<input type="radio"/>	No

2. If you answered yes to the above question, what was the purpose of your visit?

Select all that apply	
<input type="radio"/>	Attending a service
<input type="radio"/>	Visiting a loved one
<input type="radio"/>	Other (please specify)

3. Do you or your family have loved ones buried or memorialised at Warrill Park?

Select one answer only	
<input type="radio"/>	Yes
<input type="radio"/>	No
<input type="radio"/>	Unsure

4. How likely is it that you would consider Warrill Park Lawn Cemetery for future burial or memorial needs?

Select one answer only	
<input type="radio"/>	Very unlikely



<input type="radio"/>	Unlikely
<input type="radio"/>	Unsure
<input type="radio"/>	Likely
<input type="radio"/>	Very Likely

Natural Burial Areas

A natural burial area allows for burials using biodegradable materials in a bushland setting. This option supports environmentally conscious practices and provides an alternative to traditional burial methods.

5. Would you support the introduction of a natural burial area at Warrill Park Lawn Cemetery?

Select one answer only	
<input type="radio"/>	Yes
<input type="radio"/>	No
<input type="radio"/>	Unsure

6. If you answered yes to the above question, what features would you like to see in a natural burial area?

Select all that apply.	
<input type="radio"/>	Native vegetation
<input type="radio"/>	Biodegradable materials
<input type="radio"/>	Minimal or natural headstones
<input type="radio"/>	Other (please tell us your ideas)

Outdoor pavilion

An outdoor pavilion would serve as a sheltered space for family gatherings, quiet reflection and could also be used for small services. It would provide a functional area for visitors to use during various weather conditions.

7. How likely are you to use an outdoor pavilion for services or gatherings at the cemetery?

Select one answer only	
<input type="radio"/>	Very Unlikely



<input type="radio"/>	Unlikely
<input type="radio"/>	Unsure
<input type="radio"/>	Likely
<input type="radio"/>	Very Likely

8. If you answered likely or very likely to the above question, what features would you like to see at an outdoor pavilion?

Select all that apply.	
<input type="radio"/>	Shade
<input type="radio"/>	Seating
<input type="radio"/>	Accessibility
<input type="radio"/>	Other (please tell us your ideas)

Memorial gardens and walks

Memorial gardens and walking paths provide dedicated spaces for ashes placement and remembrance. These areas are designed to support quiet reflection and respectful visitation, offering a structured and accessible way for families to honour loved ones over time.

9. How important is it to have landscaped memorial gardens or walking paths for ashes placement?

Select one answer only	
<input type="radio"/>	Not important
<input type="radio"/>	Somewhat important
<input type="radio"/>	Neutral
<input type="radio"/>	Important
<input type="radio"/>	Very important

10. If you believe memorial gardens to be important, what design elements would you value most in a memorial garden?

Select all that apply.	
------------------------	--



<input type="radio"/>	Quiet seating areas
<input type="radio"/>	Placement areas for ashes
<input type="radio"/>	Accessibility
<input type="radio"/>	Water features
<input type="radio"/>	Native gardens
<input type="radio"/>	Other (please tell us your ideas)

Tree bosques

Tree bosques are small groves of trees that could be used for burials or ashes placement. This option provides a natural setting for memorialisation with minimal built infrastructure.

11. What is your level of interest in seeing tree bosques introduced as a setting for burials or ashes placement?

Select one answer only	
<input type="radio"/>	Very uninterested
<input type="radio"/>	Uninterested
<input type="radio"/>	Neutral
<input type="radio"/>	Interested
<input type="radio"/>	Very interested

Rehabilitation of Existing Burial Areas

Some older burial areas have plaques that sit below ground level and can become submerged during wet weather. Rehabilitation would involve raising plaques and improving the ground surface to enhance access and visibility.

12. Do you support the rehabilitation of older burial areas?

Select one answer only	
<input type="radio"/>	Yes
<input type="radio"/>	No
<input type="radio"/>	Unsure

13. If you answered yes to the above question, what improvements would you like to see?



Select all that apply.	
<input type="radio"/>	Concrete lawn beams
<input type="radio"/>	Edging and decorative stones
<input type="radio"/>	Other (please tell us your ideas)

Monumental graves

A monumental grave area would allow for traditional graves covered by masonry. This option provides families with the opportunity to create more permanent and personalised memorials.

14. Would you be interested in an area for monumental graves?

Select one answer only	
<input type="radio"/>	Yes
<input type="radio"/>	No
<input type="radio"/>	Unsure

15. If you answered yes to the above question, what style or features would you expect to see?

Select all that apply.	
<input type="radio"/>	Raised full slab masonry coverings
<input type="radio"/>	Space for flower vases
<input type="radio"/>	Customisable inscriptions and epitaphs
<input type="radio"/>	Use of premium materials (e.g., granite, marble)
<input type="radio"/>	Incorporation of religious or cultural symbols
<input type="radio"/>	Other (please tell us your ideas)

General feedback

16. What other ideas or features would you like to see included in the future development of Warrill Park Lawn Cemetery?



About you

We want to make sure we are hearing from people of all backgrounds. Please complete these questions to help us know who has or has not been represented through this survey

17. Gender

Select one answer only	
<input type="radio"/>	Male
<input type="radio"/>	Female
<input type="radio"/>	Non-binary/Gender diverse

18. What year were you born?

19. Suburb

20. Country of birth

21. Relationship to Ipswich City Council

Select all that apply.	
<input type="checkbox"/>	Work in Ipswich
<input type="checkbox"/>	Live in Ipswich
<input type="checkbox"/>	Visit Ipswich
<input type="checkbox"/>	Own a business in Ipswich
<input type="checkbox"/>	Pay rates in Ipswich
<input type="checkbox"/>	No relationship to Ipswich
<input type="checkbox"/>	Other



--	--

22. Do you identify as any of the following

Select all that apply.	
<input type="radio"/>	A person of Aboriginal or Torres Strait Islander descent
<input type="radio"/>	A person with a disability, inclusive of mental illness
<input type="radio"/>	A person identifying as LGBTIQ+
<input type="radio"/>	A person speaking English as a second language
<input type="radio"/>	None of the above

2. PHYSICAL SIGNAGE ON SITE

Warrill Park Lawn Cemetery Master Plan

Council is now seeking feedback on the preliminary concept master plan for Warrill Park Lawn Cemetery on a range of proposed features and improvements, including natural burial areas, memorial gardens and walks, and upgraded visitor facilities.

Your input will help shape a master plan that reflects the needs and values of our community.

For more information contact Ipswich City Council on (07) 3810 6666

[Shapeyouripswich.com.au/warrill-park-lawn-cemetery](https://shapeyouripswich.com.au/warrill-park-lawn-cemetery)



3. SOCIAL MEDIA POST



Help shape the future of Warrill Park Lawn Cemetery, our city's largest and most visited cemetery.

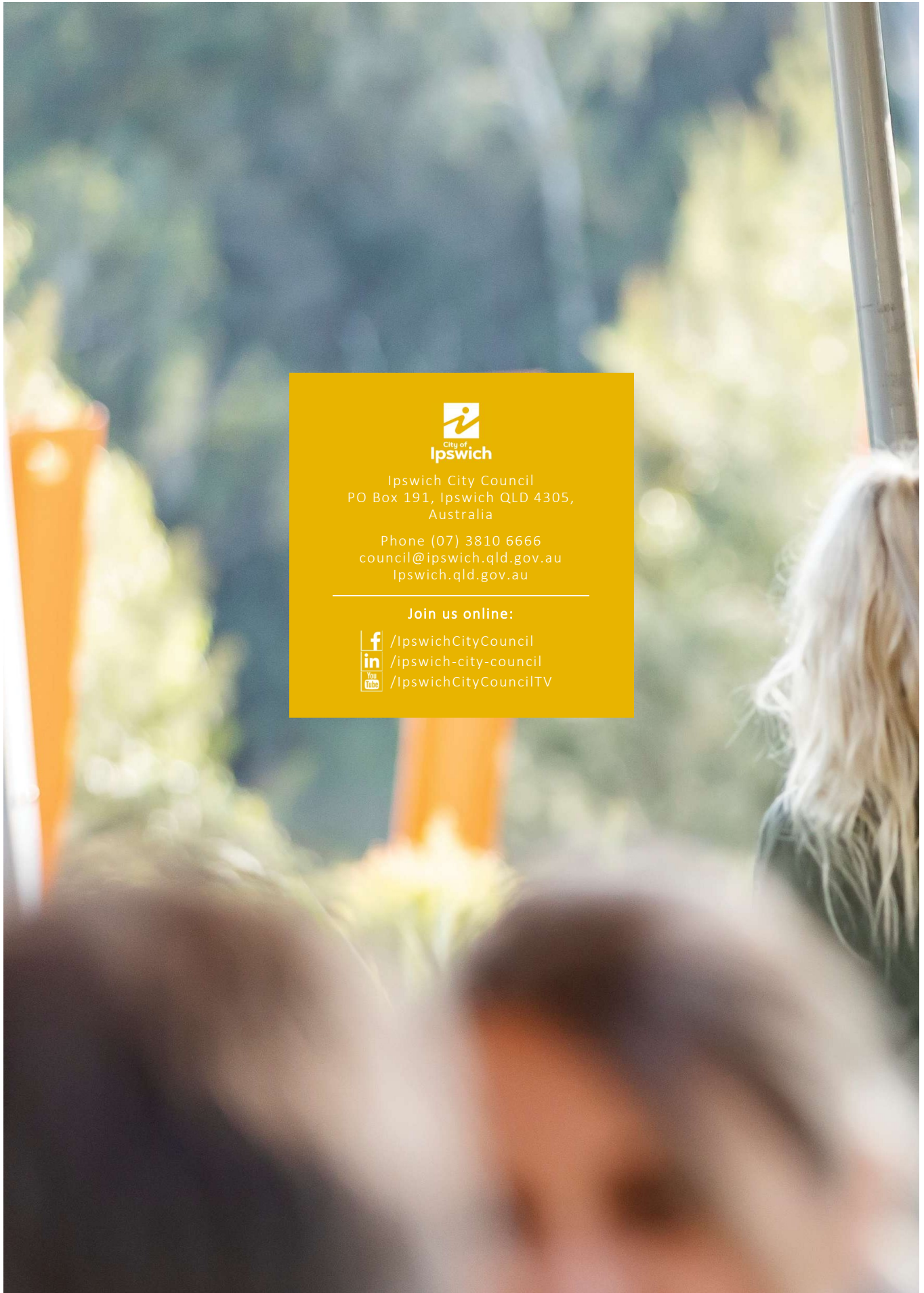
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Your input will help shape a master plan that reflects the needs and values of our community.

Have your say here: <https://www.shapeyouripswich.com.au/warrill-park-lawn-cemetery>

Read more at: <https://loom.ly/bDryD9s>





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Melaleuca irbyana Significant Impact Assessment, Warrill Park Cemetery

Ipswich City Council
October 2021



Ecology | Environment | Heritage

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Cover Photo: *Melaleuca irbyana* at Warrill Park Cemetery (Credit: Christina Kindermann 2021)

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Signature				Signature	
					
Name		Dr Darren Fielder		Name	
				Dr Christina Kindermann	
Title		Principal Scientist		Title	
				Senior Environmental Scientist	





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1 Introduction

1.1 Project introduction

Redleaf Environmental was engaged by Ipswich City Council (ICC) to prepare a significant impact assessment for a stand of *Melaleuca irbyana* (swamp tea tree) located at Warrill Park Cemetery. The southern edge of the cemetery grounds contains a largely intact patch of remnant *Melaleuca irbyana* forest. The Warrill Park Cemetery Master Plan has identified the possibility of creating bush burials and bush memorials within this. The Master Plan was adopted in 2013 and to date two bush burials have occurred along with the creation of a pathway and the inurnment of thirty-eight ashes.

Melaleuca irbyana is listed as “endangered” under the *Nature Conservation Act 1992* (Qld), as an endangered regional ecosystem under the *Vegetation Management Act 1999* (Qld) and as a threatened ecological community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Any impacts to the species or community require relevant assessment under the above acts of legislation. It is understood that no environmental assessment was completed prior to the construction of the pathway or the grave sites. ICC has therefore requested that Redleaf Environmental complete a site assessment to determine the potential impacts of the existing pathway and grave sites as well as future additions.

ICC has been advised that a bobcat was used to carry out excavation of the soil where the walkway was constructed to an approximate depth of 100 millimetres. The excavated area was then topped with decomposed granite, with the decomposed granite fill having an approximate depth of 75 millimetres.

The constructed walkway is approximately 222 metres in length and approximately 1.8 metres in width. No information has been provided if any trees were removed or damaged during the construction of the memorial walkway.

Scope of work to be undertaken:

Specifically, Redleaf Environmental was requested to undertake the following:

- Undertake a detailed assessment of the threatened ecological community.
- Determine the extent of the community boundary based on the definition in the species listing advice.
- Determine and document the potential direct and indirect impacts undertaken thus far.
- Determine and document the potential impacts to the community caused by introduced grasses and other weeds currently located within the community that is not associated with the pathway work.
- Undertake an assessment of these impacts against the relevant significant impact criteria for endangered ecological community to determine if there has or likely has been any significant impact.

1.2 Species information and current site conditions

M. irbyana grows in flat areas that are periodically waterlogged, in eucalypt forest, mixed forest and Melaleuca woodland with a sparse and grassy understorey. It grows on poorly draining, heavy clay soils. (Byrnes 1984; Barlow 1987). Much of the forest has been cleared, affected by activities of stock and feral animals, or invaded by weeds. Less than 10% of the original forest remains (Logan City Council 2020). Current known threats include competition from weeds, Habitat loss and fragmentation, Climate change and Susceptibility to introduced edge effects.

1.2.1 Loss of habitat and individual plants

The creation of the memorial walkway and bush graves sites may have resulted in the loss of individual *M. irbyana*. The extent of damage is unknown. The creation of additional tracks is likely to further impact individual trees.

1.2.2 Weeds

The understorey of the TEC contains areas densely infested with *Megathyrsus maximus var. pubiglumis* (green panic). Several vine species such as (corky passionfruit) and asparagus species were beginning to smother some





trees. The planting of weed species at memorial and grave sites can increase the potential for encroachment into the surrounding habitat. These species can invade vegetation and smother native plant species. Weeds may be introduced into the TEC area via footwear and machinery

1.2.3 Increased edge effects

Depending on the topography, physical processes and vegetation type involved, edge effects can affect up to 50 m into an area of remnant and non-remnant woody vegetation. Regular works within the cemetery including the stockpiling of soil, mowing and watering can impact the surrounding landscape, pushing into the TEC boundary.

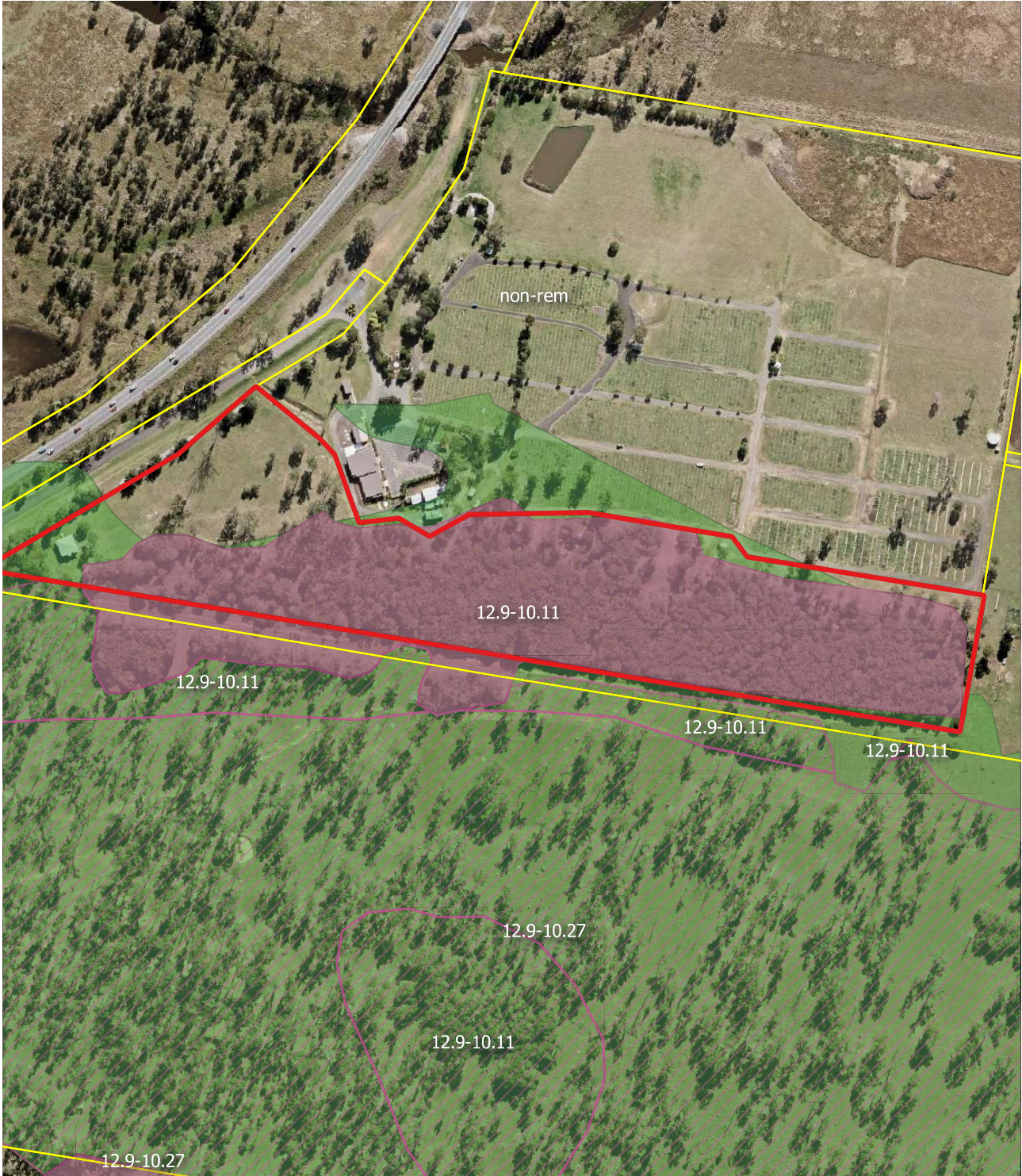
1.2.4 Changes to hydrology

Though not quantified, there is evidence to suggest that *M. irbyana* is sensitive to changes in local hydrology, groundwater, soil moisture and periodic inundation events (Roberts 2008, Vickers 2004, Johnston 1979 and Cooper et al. 1995 in SPRAT 2020). Modifying vegetation cover (e.g., clearing vegetation) indirectly causes changes in soil moisture (Neldner et al. 2017).

1.3 Site Location

The Warrill Park Lawn Cemetery is located along the Cunningham Highway, approximately 15km to the southwest of Ipswich and incorporated the following allotment: Lot 283, Plan SP135010.





Legend		CRS: GDA 1994 MGA Zone 56 Projection: Transverse Mercator	
Survey Extent	QLD DCDB	 N Scale 0 50 100 m (A4) 	
Protected Flora Trigger Map	High Value Regrowth Endangered		
Remnant Endangered	Regional Ecosystems		

Figure 1: Regional Ecosystem Mapping Melaleuca irbyana Impact Assessment Ipswich City Council	O	Issued for use	CK	DF	05/10/2021	Map Number 1 of 3	Job Number ICC21003
	A	Issued for review	CK	DF	05/10/2021	 redleaf ENVIRONMENTAL	
	Rev	Description	Drawn	Approved	Date		



2 Desktop analysis methodology

2.1 Data searches

The assessment involved the interrogation of the following data sources and mapping:

- Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool;
- Queensland Department of Natural Resources, Mines and Energy (DNRME) Regulated Vegetation Management Maps (Regional Ecosystem (RE) Mapping (version12.0));
- NRME Property Map of Assessable Vegetation (PMAV);
- NRME Essential Habitat Mapping (version 4.0);
- Queensland Department of Environment and Science (DES) Wildlife Online Search Tool Wildlife Online Database;
- Queensland DES Protected Plants Flora Survey Trigger Map;
- Queensland Department of Local Government, Racing and Multicultural Affairs (DLGRMA's) State Planning Policy (SPP) interactive mapping;
- Queensland Department of Agriculture and Fisheries Fire Ant Biosecurity Zone mapping;
- DLGRMA's Flood Hazard Area mapping;
- Queensland Department of Agriculture and Fisheries (DAF) Waterways for Waterway Barrier Works spatial layer;
- DES's Map of Referrable Wetlands;
- DES's Queensland Wetland Maps; and
- Atlas of Living Australia interactive mapping

3 Field methodology

3.1 Floristic Survey

Vegetation was ground-truthed and assessed against current *Vegetation Management Act 1999* (VMA) Regional Ecosystem mapping and pre-clear mapping. A comprehensive flora survey was undertaken using a methodology consistent with the established formats used by the Queensland Herbarium. The survey consisted of a random meander over the site to ground-truth desktop investigations and identify the location and extent of any vegetation associations and communities.

The purpose of the random meander methodology was to ensure adequate site coverage to identify the density *Melaleuca irbyana* specimens and determine the broad flora species composition. This method is effective for the detection of cryptic, pest and significant flora species

The site was assessed by Martin Bennett and Christina Kindermann on the 16th and 17th September 2021. The field survey included the following:

- Records of the floristic composition of the vegetation including both native and exotic plant species. Any species of potential conservation interest were photographed or collected for further identification/confirmation;
- Identification of 'endangered' or 'of concern' REs (NC Act) or threatened ecological communities (EPBC listed);
- Verification of the RE mapping within the work footprint area; and
- Provision of site-specific recommendations to avoid, minimise or mitigate identified impacts from the proposed activities on the identified values.





3.1.1 Survey limitations

Botanical surveys have inherent biases because of the cryptic nature of some species, search effort, time-of-year (seasonal variations in flora) and the climatic conditions under which the surveys were conducted. Seasonal searches over the course of a year would reveal a range of additional species inhabiting this site. The collection of true presence / absence data is difficult and time-consuming requiring extensive resourcing. Consequently, the survey relied on a risk-based approach to determine the likelihood of protected plants occurring within the clearing impact area. The survey was designed and conducted to maximise the likelihood of identifying protected plants.

In stating these limitations, the efficacy of the flora survey carried out at this site is highly effective. Consequently, the data and recommendations made here provide a reliable and true representation of the values of the site to confidently determine the likelihood of protected plant species to occur within the clearing impact area.

3.2 Biocondition

Two Biocondition assessments were completed within the assessment area. The BioCondition methodology as described in the “BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Manual Version 2.2” prepared by the Queensland Herbarium (Eyre et al. 2015) was followed. This involved the establishment of a 100 m x 50 m transect containing five assessment areas (plots/quadrats) to record values for defined ecological attributes. These values were used as indicators to provide a quantitative measure for the performance of ecosystem function within the context of biodiversity conditions. Scores for BioCondition sites were calculated in accordance with Eyre et al. (2015) which compares the values obtained at each survey site with values in the benchmark document for that RE. The benchmarks for RE 12.9-10.11 were utilised. This provides a numeric value along a continuum of biodiversity condition, where scores closer to 0 indicates that sites are ‘dysfunctional’ and those closer to 1 indicates that sites have ‘functional’ condition.

3.3 Identification of potential impacts

The site was traversed to identify any additional impacts to the TEC.

3.4 Tree assessment

The Diameter at Breast Height (DBH), location and Height of individual *Melaleuca irbyana* trees were recoded along a 20m buffer around the pathway, each of the BioCondition transects, all trees within the mown edges and a 20m buffer from the soil dump site. The Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) were then calculated to allow for an accurate impact assessment on the tree roots and to assist in quantifying potential impacts to the site’s hydrological regime from changes in soil surface.

The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree. There are many factors that affect the size of the SRZ (e.g., tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula. Root investigation may provide more information on the extent of these roots.

$$\text{SRZ radius} = (\text{DBH} \times 50)0.42 \times 0.64$$

The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. The TPZ incorporates the structural root zone (SRZ).

Australian Standard 4970 – 2009 Protection of Trees during construction states that the method of calculating the ideal TPZ is as follows:

The radius of the TPZ is calculated for each tree by multiplying its diameter at breast height (DBH) by 12, DBH = trunk diameter measured at 1.4 m above ground.



4 Results

4.1 Desktop Results

4.1.1 Regional ecosystems

The Queensland Herbarium vegetation mapping indicates the property contains mapped Category B Remnant Vegetation and Category X non remnant vegetation (Table 1). The mapped Regional Ecosystems are mapped as essential habitat for *Melaleuca irbyana* under the *Vegetation Management Act 1999*.

Table 1 Mapped REs within works area

RE	Description	VM Act Status	Category	Area (ha)
12.9-10.11	<i>Melaleuca irbyana</i> low open forest on sedimentary rocks	Endangered	B	5.43
Non-rem	None	None	X	19.36

4.1.2 Protected flora

The property entirely falls within a mapped area under the protected flora trigger mapping by DES (Figure 1). Ten (10) flora species were identified as having habitat likely to occur within the area from a search of the DES Wildlife Online database (NC Act 1992) and from the EPBC Protected Matters search (EPBC Act 1999) and using a 5 km radius search (Appendix C and D).

4.2 Field Results

Field verification revealed that the survey area was consistent with the regional ecosystem mapping (Figure 1). The TEC extent is shown in Figure 2.

4.2.1 Native and exotic plant species

From the botanical inspections there were 99 species. Of these, 61 species were native with 38 species exotic to the area (Appendix A- Flora List). Of the exotic species, nine (9) species were identified as 'Restricted invasive plants' under the Biosecurity Act 2014 (Table 2).

Table 2 Restricted invasive plants found within the survey area

Family	Scientific Name	Common Name	Observations
Apocynaceae	<i>Cryptostegia grandiflora</i>	rubber vine	one specimen recorded
Asparagaceae	<i>Asparagus aethiopicus</i> 'Sprengeri'	basket asparagus	dense stands abundant across site
Asparagaceae	<i>Asparagus africanus</i>	climbing asparagus	a few scattered strands across site
Asteraceae	<i>Senecio madagascariensis</i>	fireweed	scattered throughout in low numbers
Cactaceae	<i>Opuntia tomentosa</i>	velvet tree pear	few, sporadic individuals
Crassulaceae	<i>Bryophyllum delagoense</i>	mother of millions	several locations with large population.
Ulmaceae	<i>Celtis sinensis</i>	chinese celtis	few, sporadic individuals
Verbenaceae	<i>Lantana camara</i>	common lantana	scattered throughout in low numbers
Verbenaceae	<i>Lantana montevidensis</i>	Creeping lantana	throughout ground layer





Under the Act, corporations, like persons, are obliged to take all reasonable and practical steps to minimise biosecurity risks posed by their activities. This is known as a general biosecurity obligation (GBO). Restricted invasive plants (Biosecurity Act 2014) require weed control practices to avoid spreading them off-site during construction activities.

4.2.2 BioCondition survey results

The transect locations are presented in Figure 2 with the ecological condition indicator values, associated scores and benchmarks shown in Table 3. Transect 1 (T1) had a score of 0.72 and Transect 2 (T2) a score of 0.76. This suggests the site is in a moderate condition. Whilst patches of the TEC were dominated by weed species, there was good evidence of recruitment (Figure 5). Particularly in those areas that were relatively weed free. This suggests that the current system is functioning well. The implementation of weed management protocols is likely to improve these scores.

Table 3 BioCondition Transect values and scores

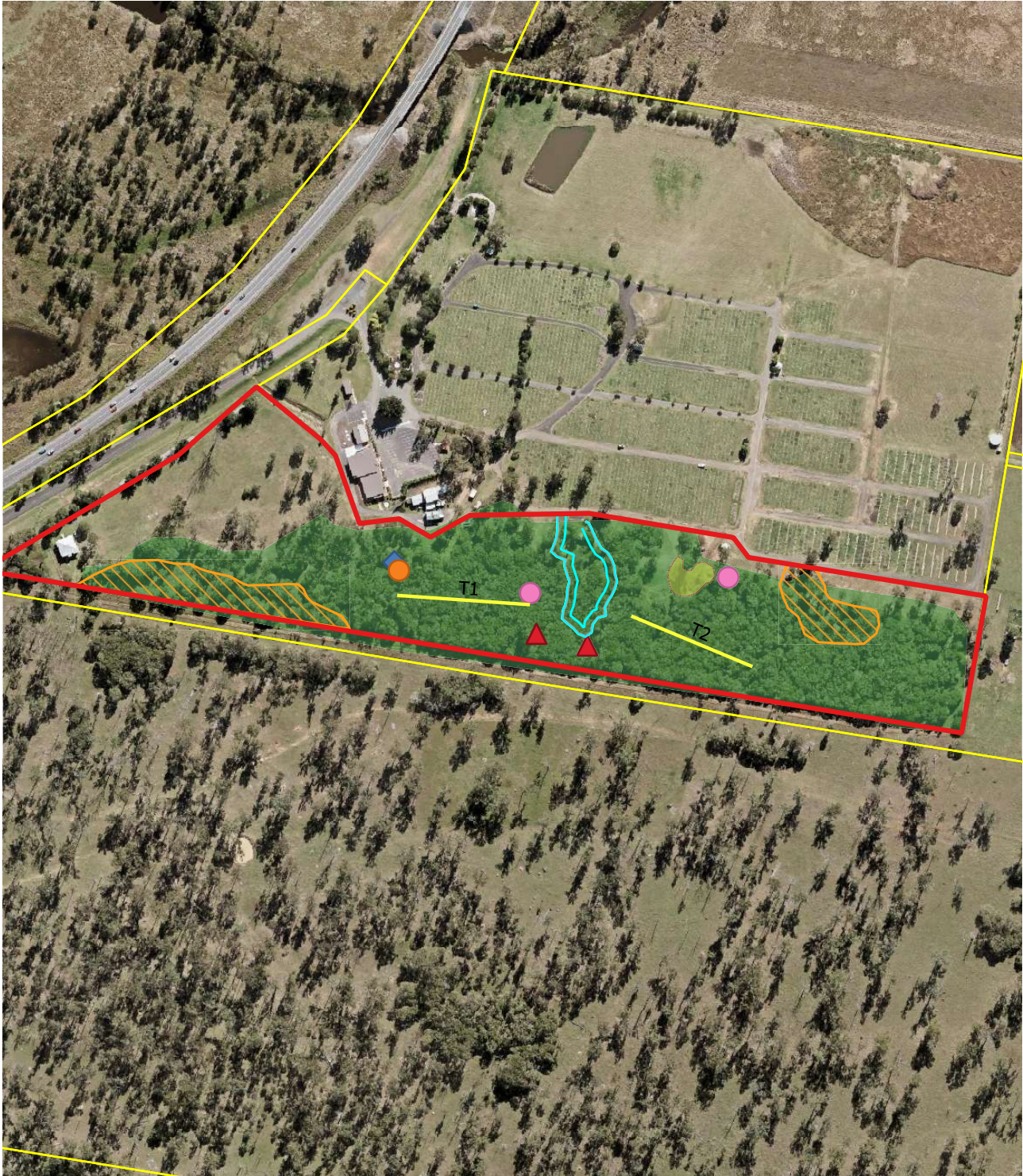
Category	Benchmark	T1		T2	
		Values	Score	Values	Score
Site Score					
Proportion of dominant canopy EDL species with evidence of recruitment	100%	100%	5	100%	5
Total tree species richness	4	0	5	5	5
Shrub species richness	2	0	0	0	0
Grass species richness	7	4	2.5	4	2.5
Forbs/ others (non-grass ground) species richness	22	15	5	15	2.5
Tree canopy (EDL) height	9m	10m	5	12m	5
Tree canopy cover	77%	88.3	3.5	84.8%	2.5
Shrub canopy cover	1%	0	0	0	0
Native perennial grass cover	21%	27%	5	13 %	3
Organic litter cover	27%	13%	5	38%	5
Total large trees	80/ha	240	15	96	15
Course woody debris length	540m	346 m	5	303 m	5
Non-native plant (weed) cover	0%	70%	0	40%	3
Landscape Score					
Size of patch score	10	-	5	-	5
Connectivity score	5	-	2	-	2
Context score	5	-	0	-	0

4.2.3 Placement of Ashes within the memorial walkway

Warrill Park Cemetery have informed Redleaf regarding the use of reserved plots (for ashes placement) along the memorial workways. This activity has been included in the impact assessment.

Placing cremains within a reserved plot involves excavating a small amount of earth in the raised garden beds on the edges of the walkway to a depth of 300mm and placing a container with the cremains in the area and covering it with the excavated soil. It is expected that the excavation would not go into the subsoil below the raised garden beds.





Legend			CRS: GDA 1994 MGA Zone 56 Projection: Transverse Mercator		
<ul style="list-style-type: none"> Survey Extent QLD DCDB TEC extent Biocondition transects 	<ul style="list-style-type: none"> Memorial Walkway Soil Dump Velvet tree pear ▲ bush graves 	<ul style="list-style-type: none"> Mother of millions patch Rubber vine Oil dump 	<p>Scale (A4)</p> <p>0 50 100 m</p>		

Figure 2: Significant site features

Melaleuca irbyana Impact Assessment
Ipswich City Council

O	Issued for use	CK	DF	05/10/2021
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Rev	Description	Drawn	Approved	Date

Map Number 2 of 3	Job Number ICC21003



4.2.4 Identification of potential impacts

A site assessment identified several activities that are affecting the condition of the TEC. The impacts and mitigation measures for these activities are identified in Table 4 below.

Table 4: Identified activities on the cemetery grounds and their impacts and mitigation measures

Activity	Impact	Mitigation measures
Existing memorial walkway (Figure 5 and Figure 6)	Changes to hydrology/alteration of flow paths Removal of individual trees/branches	Create surface flow paths through raised edges of pathway where possible No additional trees/or branches to be removed
Existing Weeds within site (Figure 2 and Figure 8)	Smother native plant species, reduce recruitment of native species	Implementation of a weed management plan. This should be carried out by an expert operator and could include the use of indigenous cool burn methods. Fire management guidelines within <i>Melaleuca irbyana</i> RE's are provided below.
Soil Stockpile (Figure 10 and Figure 11)	Direct damage to trees Soil accumulation on tree roots Changes to hydrology due to soil accumulation.	Move stockpile and ensure new stockpile location is outside of the TEC boundary/ <i>Melaleuca irbyana</i> SRZ. Removal of soil burden around several <i>Melaleuca irbyana</i> root systems, this should be done by hand rather than a machine as machinery is more likely to cause root damage.
Succulent plants along pathway (Figure 6).	Weed incursion into TEC	Remove species known to vegetatively reproduce (such as aloe and agave species). Recommended disposal options are to dig out plants completely and burn or deep bury/disposal at a registered waste facility. Further details are included in Appendix E. Development of a planting guide for the memorial walkway and bush grave sites to ensure species will not escape into the TEC.
Oil Dump (Figure 13)	Chemicals may disrupt plant growth	Remediate this area by removing affected soil and replacing with weed/contamination free soil. Initial site surveys showed the area to be quite localised (1-2m ²). Additional remedial techniques such as oil eating bacteria may be required if contamination extends further into the TEC.
Watering of mown areas (Figure 14)	Increased water/nutrients can alter hydrology	Limit watering to ensure run-off does not enter TEC





Activity	Impact	Mitigation measures
Establishment of new pathways (Figure 7).	Spread of weed seeds via footwear/machinery Alteration of hydrological patterns	Implement weed management plan to control weeds Restrict access to TEC (entry by existing pathways only) Implement biosecurity protocols such as machinery washdown
Bush Graves (Figure 9)	Direct removal of <i>M. irbyana</i> trees to create space for grave sites/access tracks Potential interference/contamination of groundwater	No additional bush graves to be placed in the TEC
Rubbish found in the TEC	Further degradation of habitat	Implement a regular rubbish pickup (paper, plastic, and fake flowers) from the TEC where they blow in from the cemetery.
Lack of knowledge surrounding the protected vegetation within the cemetery boundary and surrounding habitat	Further impacts to the TEC	Educational workshops on the value and the legislative responsibilities of this TEC by Council and the Cemetery staff Educate customers surrounding the values and importance of the TEC
Placement of ashes within the memorial walkway	IMPACT UNLIKELY- minimal disturbance of soil within the raised garden bed along the edge of the memorial walk.	Follow planting guidelines if customers wish to add plants at their memorial site Ensure any rubbish (such as fake flowers/trinkets placed at memorial sites) are secured so they don't blow into the TEC

4.2.5 DES Fire management guidelines for Regional Ecosystem 12.9-10.11

SEASON: Late summer to mid-winter (after rain). INTENSITY: Planned and occasional unplanned burns (typically of higher intensity) influence the ecology of melaleuca ecosystems. INTERVAL: Mixed grass/shrub 6-20 years. STRATEGY: Aim for a 25-70% burn mosaic (in association with surrounding ecosystems, as melaleuca ecosystems often just occur in patches or along natural drainage lines). Fires may, depending on the conditions and type of vegetation, burn areas larger than just the melaleuca ecosystem. Ensure secure boundaries from non-fire-regime adapted ecosystems. High soil moisture (or presence of water on the ground) is required, as avoidance of peat-type fires must be maintained. ISSUES: *M. irbyana* may be managed differently to the rest. This is a low melaleuca forest with eucalypt overstorey. Fire regimes for melaleuca ecosystems in general require further fire research. Melaleuca forests are fire-adapted, but too high an intensity or frequent fire will slow or prevent regeneration and lead to lower species richness (since these communities contain numerous obligate seed regenerating species that require sufficient fire intervals to produce seed). High intensity fires may kill trees and lead to whipstick regeneration. Too frequent fire may result in a net loss of nutrients over time from an already nutrient poor system. Fire associations are significantly influenced by understorey composition. Mixed understorey communities burn in a similar way to dry sclerophyll, in association with the surrounding dry sclerophyll, though somewhat less frequently due to the additional moisture present in melaleuca communities.





4.2.6 Tree assessment

It is estimated that the density of *M. irbyana* within the TEC area is The TPZ and SRZ were calculated for trees surrounding the pathway and the soil stockpile area. The memorial walkway intersects the SRZ of 68 trees and the soil stockpile is intersecting with the SRZ of 16 trees. Stem density within the TEC area was approximately 1 stem per 8-14 m². Both the path and the soil stockpile are pushing into the TPZ and SRZ of individual *M. irbyana* (Figure 3). Based on the density of trees within the TEC it is likely that any activity (such as the creation of additional pathways and grave sites) will intersect the TPZ and SRZ.





Legend

- Survey Extent
- QLD DCDB
- Soil Dump
- Memorial Walkway
- ▲ bush graves
- Surveyed tree locations
- SRZ

CRS: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



Scale 25 (A4) 50 m



Figure 3: Tree locations and SRZ

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5 EPBC Act significant impact assessment *Melaleuca irbyana* forest

To determine if a referral is required under the EPBC Act for the Critically Endangered TEC ‘Swamp Tea-tree (*Melaleuca irbyana*) Forest of South-east Queensland’, an assessment is required against the Matters of National Environmental Significance significant impact guidelines 1.1 (DEWHA 2013). These guidelines outline a ‘self-assessment’ process, including detailed criteria, to assist persons in deciding whether referral may be required.

A ‘significant impact’ is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment, which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. Consideration is given to whether the potential impacts are serious or irreversible.

The ecological community is listed as Critically Endangered under the EPBC Act; therefore, the following impact criteria were used in the assessment and in accordance with the guidelines.

Table 5 *Melaleuca irbyana* forest significant impact assessment

Criteria	Impact Assessment (+ mitigation measures below)	Triggers Criteria?
Reduce the extent of an ecological community.	The TEC extent within the cemetery grounds was established by using botanical knowledge of the associated regional ecosystems, as well as the biotic threshold criteria which defines it. Ground truthed mapping indicates that the extent of the TEC is 5.43 ha. No clearing of the TEC has been proposed and therefore works are unlikely to reduce the extent of the current stand of the TEC.	No
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.	It is unclear if the creation of the memorial walkway and establishment of the two bush grave sites resulted in the removal of any trees. However, as these areas are less than 3 m wide the action is unlikely to increase fragmentation of the TEC.	No
Adversely affect habitat critical to the survival of an ecological community.	The current memorial walkway and bush grave sites do not appear to adversely be affecting the survival of the TEC.	No
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community’s survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.	The hydrological impacts of the memorial walkway (in particular, the raised verges on each side) to the TEC are unknown. The memorial walkway intersects with the SRZ of 68 trees, it is therefore likely that these individuals will be impacted. Whilst this is only a small percentage of the TEC, the creation of additional access tracks as well as digging of grave sites has the potential to further alter surface water drainage patterns. There is some evidence to show that graves sites and cemeteries have been linked to groundwater contamination (Trick et.al 2005).	Yes
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	Weed incursion from planted specimens along the memorial walkway and grave sites have potential to spread into the TEC and therefore alter the floristic composition.	Yes
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: <ul style="list-style-type: none"> • assisting invasive species, that are harmful to the listed 	Weeds are identified as a primary threat to the TEC on the SPRAT profile. Several of the species planted along the memorial walkway have the potential to proliferate and potentially invade the TEC, with some aloe specimens were already recorded within the TEC. The TEC does have some	Yes





Criteria	Impact Assessment (+ mitigation measures below)	Triggers Criteria?
ecological community, to become established, or <ul style="list-style-type: none"> causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or 	weeds already established including green panic grass, asparagus fern and mother of millions. Increased foot traffic (in particular to access the bush graves) can also result in the spread of weed seeds on footwear and machinery. Water and fertilisers used in the mown grass along the edge of the TEC and surrounding gardens and memorial walkway plantings have the potential to mobilise into the TEC.	
Interfere with the recovery of an ecological community.	The field-assessment identified the TEC extent being 5.4 ha, representing about 1% of the global extent of the TEC. The patch is potentially one of the larger remaining large patches of the species in the region (SPRAT 2020). Provided mitigation measures are in place it is unlikely the proposed activities will interfere with the recovery of an ecological community.	No





6 Recommendations

The current memorial walkway (including the burial of ashes and addition of memorial plaques) as well as the two bush grave sites appear to be having minimal impact to the TEC. The removal or relocation of these features is likely to have a greater impact than for them to remain in place. It is therefore recommended that these features remain in place.

The main impacts to the TEC are the soil stockpile area (which is encroaching onto the root zones of several *M. irbyana species*) and the proliferation of weed species within the TEC (existing weeds and escapees from the memorial walkway).

To ensure the continued protection and restoration of the TEC the following recommendations are to be implemented.

- Relocate the soil laydown/stockpile area. Ensure this area is outside of the TEC boundary/SRZ and should include removal of soil burden around several *Melaleuca irbyana* root systems, this should be done by hand rather than a machine as machinery is more likely to cause root damage.
- An alternative to moving the stockpile is to barricade the area between the stockpile and TEC with 1m³ concrete blocks, ensuring they do not intersect the SRZ's or impact the overland flow of water.
- Creation and implementation of a weed management plan to improve the TEC condition and value.
- Phase out the addition of bush grave sites (traditional burials) within the TEC and ensure pathways to existing grave sites are clearly marked (to avoid further entry to the TEC).
- The current bush graves currently do not have formal pathways to them, it is recommended that these be delineated with markers (such as stakes) that will not change the soil topography but ensure people visiting the sites do not walk further into the TEC.
- It is understood that it is difficult to determine the number of people visiting the bush graves or memorial paths, and restrictions on numbers are not necessary.
- Educational workshops on the value and the legislative responsibilities of this TEC by Council and the Cemetery staff. Provision of education materials to cemetery customers so they understand the value and importance of the TEC.
- Development of a planting guide for the memorial walk and bush grave sites to ensure species will not escape into the TEC.
- The placement of ashes (cremains) within designated garden beds along the memorial walkway can continue as it is deemed to have minimal impact within the TEC (provided other mitigation measures are implemented).





7 References

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8 Site Photos





Figure 4: Garden beds surrounding *M. irbyana* at the edge of the TEC.



Figure 5: Juvenile *M. irbyana* observed on site



Figure 6: Memorial walkway containing exotic species planted along the raised edges.



Figure 7: Access track connecting one of the bush grave sites to the memorial walkway.



Figure 8: Rubber vine observed on site



Figure 9: One of the bush graves containing planted specimens (not native to the E.E/TEC).



Figure 10: Soil stockpile located on the edge of the TEC



Figure 11: Soil from the stockpile area beginning to impacted on roots



Figure 12: Limbs removed from *M. irbyana*. It is unclear if these were removed during path creation or on a separate occasion.



Figure 13: Oil dumped within the TEC



Figure 14: Part of the TEC contains a mown understory that is regularly maintained and watered



Figure 15: One of the several dead trees adjacent to the soil stockpile





Appendix A- Flora List

Family	Scientific Name	Common Name	I	Q	A	Biosecurity	WoNS
Acanthaceae	<i>Brunoniella australis</i>	australian trumpet		LC			
Aizoaceae	<i>Tetragonia tetragonoides</i>	warrigal greens		LC			
Amaranthaceae	<i>Alternanthera denticulata</i>	lesser joyplant		LC			
Amaranthaceae	<i>Achyranthes aspera</i>	devils horsewhip		LC			
Apiaceae	<i>Cyclospermum leptophyllum</i>	slender celery	Y				
Apocynaceae	<i>Cryptostegia grandiflora</i>	rubber vine	Y			Restricted invasive plant	Yes
Apocynaceae	<i>Parsonsia lanceolata</i>	scrub silkpod vine		LC			
Apocynaceae	<i>Cynanthum bowmanii</i>	bowmans milk vine		LC			
Apocynaceae	<i>Gomphocarpus physocarpus</i>	cotton balloon bush	Y				
Asparagaceae	<i>Asparagus aethiopicus 'Sprengeri'</i>	basket asparagus	Y			Restricted invasive plant	Yes
Asparagaceae	<i>Asparagus africanus</i>	climbing asparagus	Y			Restricted invasive plant	Yes
Asparagaceae	<i>Asparagus officinalis</i>	commercial asparagus	Y				
Asteraceae	<i>Bidens pilosa</i>	cobbler pegs	Y				
Asteraceae	<i>Calotis cuneata</i>	a daisy		LC			
Asteraceae	<i>Calotis dentex</i>	a daisy		LC			
Asteraceae	<i>Calyptocarpus vialis</i>	creeping Cinderella-weed	Y				
Asteraceae	<i>Cassinia laevis</i>	cough bush		LC			
Asteraceae	<i>Crassocephalum crepidioides</i>	thickhead	Y				
Asteraceae	<i>Cyanthillium cinereum</i>	vernonia		LC			
Asteraceae	<i>Erigeron bonariensis</i>	fleabane	Y				
Asteraceae	<i>Erigeron sumatrensis</i>	fleabane	Y				
Asteraceae	<i>Gamochaeta pensylvanica</i>	cudweed	Y				
Asteraceae	<i>Lactuca serriola</i>	prickly lettuce	Y				
Asteraceae	<i>Pterocaulon redolens</i>	apple bush		LC			
Asteraceae	<i>Senecio madagascariensis</i>	fireweed	Y			Restricted invasive plant	Yes
Asteraceae	<i>Sonchus oleraceae</i>	milk thistle	Y				
Asteraceae	<i>Vittadinia diffusa</i>	a daisy		LC			
Asteraceae	<i>Vittadinia dissecta var. hirta</i>	a daisy		LC			
Bignoniaceae	<i>Jacaranda mimosifolia</i>	jacaranda	Y				
Bignoniaceae	<i>Pandorea pandorana</i>	wonga vine		LC			
Brassicaceae	<i>Lepidium bonariense</i>	pepperpress	Y				
Cactaceae	<i>Opuntia tomentosa</i>	velvet tree pear	Y			Restricted invasive plant	Yes
Campanulaceae	<i>Wahlenbergia gracilis</i>	slender blue bell		LC			
Chenopodiaceae	<i>Einadia hastata</i>	ruby saltbush		LC			
Chenopodiaceae	<i>Einadia polygonoides</i>	narrow leaved saltbush		LC			
Chenopodiaceae	<i>Einadia trigonos subsp. stellulata</i>	fish saltbush		LC			





Campanulaceae	<i>Lobelia concolor</i>	posion pratia	LC	
Convolvulaceae	<i>Dichondra repens</i>	kidney herb	LC	
Crassulaceae	<i>Bryophyllum delagoense</i>	mother of millions	Y	Restricted invasive plant
Crassulaceae	<i>Crassula sieberiana</i>	australian Stonecrop	LC	
Cyperaceae	<i>Cyperus gracilis</i>	whisker grass	LC	
Cyperaceae	<i>Fimbristylis dichotoma</i>	finger rush	LC	
Cyperaceae	<i>Scleria mackaviensis</i>	rough sedge	LC	
Fabaceae	<i>Crotalaria lanceolata</i>	rattlepod	Y	
Fabaceae	<i>Glycine tabacina</i>	trailing pea	LC	
Fabaceae	<i>Macroptilium lathyroides</i>	phasey bean	Y	
Hemerocallidaceae	<i>Dianella brevipedunculata</i>	bent leaved flax lily	LC	
Hemerocallidaceae	<i>Dianella rara</i>	dwarf flax lily	LC	
Juncaceae	<i>Juncus usitatus</i>	a reed	LC	
Laxmanniaceae	<i>Eustrephus latifolius</i>	wombat berry	LC	
Laxmanniaceae	<i>Lomandra laxa</i>	slender mat rush	LC	
Malvaceae	<i>Malvastrum coromandelianum</i>	prickly malvastrum	Y	
Malvaceae	<i>Sida rhombifolia</i>	paddys lucerne	LC	
Marsileaceae	<i>Marsilea mutica</i>	nardoo	LC	
Mimosaceae	<i>Acacia leiocalyx</i>	early flowering wattle	LC	
Mimosaceae	<i>Acacia maidenii</i>	maidens wattle	LC	
Mimosaceae	<i>Leucaena leucocephala</i>	leucaena	Y	
Myrtaceae	<i>Corymbia tessellaris</i>	moreton bay ash	LC	
Myrtaceae	<i>Corymbia torelliana</i>	cadagi	Y	
Myrtaceae	<i>Eucalyptus crebra</i>	narrow leaved ironbark	LC	
Myrtaceae	<i>Eucalyptus tereticornis</i>	blue gum	LC	
Myrtaceae	<i>Melaleuca irbyana</i>	swamp tea tree	E	
Ochnaceae	<i>Ochna serrulata</i>	mickey mouse plant	Y	
Oleaceae	<i>Jasminum dianthifolium</i>	grassy jasmine	LC	
Orchidaceae	<i>Dockrillia linguiformis</i>	tick orchid	LC	
Oxalidaceae	<i>Oxalis corniculata</i>	oxalis	Y	
Passifloraceae	<i>Passiflora suberosa</i>	corky passion vine	Y	
Plantaginaceae	<i>Plantago debilis</i>	plantain	LC	
Poaceae	<i>Aristida calycina</i>	white speargrass	LC	
Poaceae	<i>Aristida ramosa</i>	purple wiregrass	LC	
Poaceae	<i>Chloris divaricata</i>	tall chloris	LC	
Poaceae	<i>Chloris gayana</i>	rhodes grass	Y	
Poaceae	<i>Cymbopogon refractus</i>	barbwire grass	LC	
Poaceae	<i>Digitaria breviglumis</i>	finger grass	LC	
Poaceae	<i>Digitaria divaricatissima</i>	finger grass	LC	
Poaceae	<i>Eragrostis brownii</i>	browns lovegrass	LC	
Poaceae	<i>Eragrostis trichophora</i>	lovegrass	LC	





Poaceae	<i>Eriochloa crebra</i>	spring grass	LC	
Poaceae	<i>Heteropogon contortus</i>	black speargrass	LC	
Poaceae	<i>Megathyrsus maximus var. pubiglumis</i>	green panic	Y	
Poaceae	<i>Melinis repens</i>	red natal grass	Y	
Poaceae	<i>Panicum simile</i>	two-colour panic	LC	
Poaceae	<i>Themeda triandra</i>	kangaroo grass	LC	
Proteaceae	<i>Grevillea robusta</i>	silky oak	LC	
Pteridaceae	<i>Cheilanthes sieberi</i>	mulga fern	LC	
Rhamnaceae	<i>Alphitonia excelsa</i>	soap tree	LC	
Rutaceae	<i>Flindersia australis</i>	crows ash	LC	
Rutaceae	<i>Murraya paniculata 'Exotica'</i>	mock orange	Y	
Santalaceae	<i>Exocarpos cupressiformis</i>	forest cherry	LC	
Sapindaceae	<i>Cupaniopsis anacardioides</i>	tuckeroo	LC	
Scrophulariaceae	<i>Eremophila debilis</i>	winter apples	LC	
Solanaceae	<i>Solanum americanum</i>	glossy nightshade	Y	
Solanaceae	<i>Solanum seaforthianum</i>	brazilian nightshade	Y	
Ulmaceae	<i>Celtis sinensis</i>	chinese celtis	Y	Restricted invasive plant
Verbenaceae	<i>Glandularia aristigera</i>	maynes pest	Y	
Verbenaceae	<i>Lantana camara</i>	common lantana	Y	Restricted invasive plant
Verbenaceae	<i>Lantana montevidensis</i>	creeping lantana	Y	
Verbenaceae	<i>Verbena littoralis</i>	common verbena	Y	
Viscaceae	<i>Notothixos incanus</i>	grey-leaved mistletoe	LC	





Appendix B- Biocondition Site Photos

Direction		T1 Photos – 50 m marker
North		
East		



Direction T1 Photos – 50 m marker

South



West





Direction T2 Photos – 50 m marker

North



East





Direction T2 Photos – 50 m marker

South



West





Appendix C-EPBC data





Australian Government
**Department of Agriculture,
Water and the Environment**

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 13/09/21 10:15:21

[Summary](#)

[Details](#)

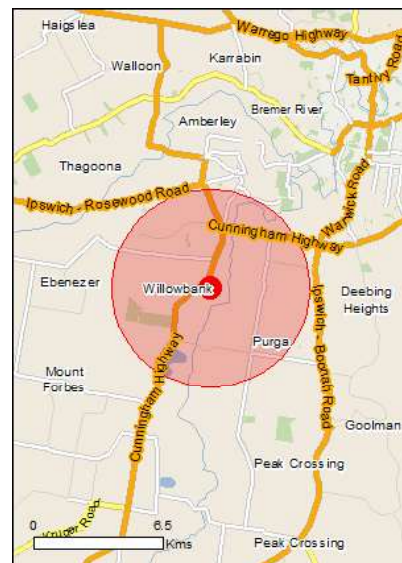
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

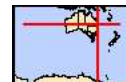
[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

[Buffer: 5.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	31
Listed Migratory Species:	16

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	8
Commonwealth Heritage Places:	1
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	31
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Moreton bay	40 - 50km upstream

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Item 3 / Attachment 4

Name	Status	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cupaniopsis tomentella Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area
Notelaea ipsviciensis Cooneana Olive [81858]	Critically Endangered	Species or species

Item 3 / Attachment 4

Name	Status	Type of Presence
Reptiles		
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	habitat may occur within area Species or species habitat may occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Furina dunmali Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species

Item 3 / Attachment 4

Name	Threatened	Type of Presence
Calidris melanotos Pectoral Sandpiper [858]		habitat may occur within area Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Defence - AMBERLEY - AP1 FIRE TRAINING
Defence - AMBERLEY - AP3 REMOTE RECEIVERS SITE
Defence - AMBERLEY - AP4 VHF STATION
Defence - AMBERLEY - AP5 MQ AREA LADY SHERGER
Defence - AMBERLEY - AP6 MQ AREA
Defence - AMBERLEY - AP7 BUFFER ZONE
Defence - AMBERLEY - AP8 BUFFER ZONE
Defence - AMBERLEY - RAAF BASE

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Amberley RAAF Base Group	QLD	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area

Item 3 / Attachment 4

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Tir Na Crann	QLD

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
------	--------	------------------

Birds

Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
--	--	--

Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
-------------------------------------	--	--

Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
---	--	--

Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
--	--	--

Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
--	--	--

Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
--	--	--

Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
---	--	--

Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
---	--	--

Frogs

Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
--------------------------------------	--	---

Mammals

Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
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Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
--	--	--

Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
--	--	--

Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
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Mus musculus House Mouse [120]		Species or species
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Item 3 / Attachment 4

Name	Status	Type of Presence
Oryctolagus cuniculus Rabbit, European Rabbit [128]		habitat likely to occur within area Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat may occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-27.68185 152.6886

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Office of Environment and Heritage, New South Wales](#)
- [Department of Environment and Primary Industries, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
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- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government – Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix D-Wildnet data





**Queensland
Government**

WildNet species list

Search Criteria: Species List for a Specified Point
Species: Plants (including other non-animals such as fungi and protists)
Type: All
Queensland status: All
Records: All
Date: Since 1980
Latitude: -27.6818
Longitude: 152.6886
Distance: 5
Email: Darren@redleafenv.com.au
Date submitted: Monday 13 Sep 2021 10:14:05
Date extracted: Monday 13 Sep 2021 10:20:01

The number of records retrieved = 54

Disclaimer

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Acanthaceae	<i>Brunoniella australis</i>	blue trumpet			C	1/1
plants	land plants	Acanthaceae	<i>Rostellularia adscendens</i>				C	1/1
plants	land plants	Alismataceae	<i>Damasonium minus</i>	starfruit			C	1/1
plants	land plants	Amaranthaceae	<i>Alternanthera denticulata</i> var. <i>micrantha</i>				C	1/1
plants	land plants	Amaranthaceae	<i>Gomphrena celosioides</i>	gomphrena weed	Y		C	1/1
plants	land plants	Asteraceae	<i>Camptacra barbata</i>				C	1/1
plants	land plants	Asteraceae	<i>Chrysocephalum apiculatum</i>	yellow buttons			C	1/1
plants	land plants	Asteraceae	<i>Eclipta platyglossa</i> subsp. <i>platyglossa</i>				C	1/1
plants	land plants	Asteraceae	<i>Lagenophora fimbriata</i>				C	1/1
plants	land plants	Bigoniaceae	<i>Pandorea floribunda</i>				C	1/1
plants	land plants	Campanulaceae	<i>Lobelia concolor</i>				C	1/1
plants	land plants	Campanulaceae	<i>Lobelia stenophylla</i>				C	1/1
plants	land plants	Cyperaceae	<i>Cyperus bowmanni</i>				C	1/1
plants	land plants	Cyperaceae	<i>Cyperus platystylis</i>				C	1/1
plants	land plants	Euphorbiaceae	<i>Euphorbia dallachyana</i>				C	1/1
plants	land plants	Fabaceae	<i>Glycine tabacina</i>	glycine pea			C	1/1
plants	land plants	Fabaceae	<i>Indigofera linifolia</i>				C	1/1
plants	land plants	Fabaceae	<i>Rhynchosia minima</i> var. <i>australis</i>				C	1/1
plants	land plants	Fabaceae	<i>Tipuana tipu</i>	tipuana	Y		C	1/1
plants	land plants	Goodeniaceae	<i>Goodenia gracilis</i>				C	1/1
plants	land plants	Goodeniaceae	<i>Velleia paradoxa</i>	spur velleia			C	1/1
plants	land plants	Hypoxidaceae	<i>Hypoxis pratensis</i> var. <i>pratensis</i>				C	1/1
plants	land plants	Lentibulariaceae	<i>Utricularia aurea</i>	golden bladderwort			C	1/1
plants	land plants	Lentibulariaceae	<i>Utricularia gibba</i>	floating bladderwort			C	1/1
plants	land plants	Mimosaceae	<i>Acacia salicina</i>	doolan			C	1/1
plants	land plants	Mimosaceae	<i>Neptunia gracilis</i> forma <i>gracilis</i>				C	1/1
plants	land plants	Mimosaceae	<i>Neptunia monosperma</i>				C	1/1
plants	land plants	Myrtaceae	<i>Corymbia citriodora</i> subsp. <i>variegata</i>				C	1
plants	land plants	Myrtaceae	<i>Eucalyptus moluccana</i>	gum-topped box			C	1
plants	land plants	Myrtaceae	<i>Eucalyptus siderophloia</i>				C	1
plants	land plants	Myrtaceae	<i>Eucalyptus tereticornis</i> subsp. <i>basaltica</i>				C	1/1
plants	land plants	Myrtaceae	<i>Melaleuca irbyana</i>				E	6/5
plants	land plants	Myrtaceae	<i>Melaleuca viminalis</i>				C	1/1
plants	land plants	Nymphaeaceae	<i>Nymphaea gigantea</i>				C	1/1
plants	land plants	Oleaceae	<i>Jasminum dianthifolium</i>				C	1/1
plants	land plants	Orchidaceae	<i>Dockrillia linguiformis</i>	tongue orchid			C	1/1
plants	land plants	Pittosporaceae	<i>Pittosporum angustifolium</i>				C	1/1
plants	land plants	Poaceae	<i>Alloterospis semialata</i>	cockatoo grass			C	1/1
plants	land plants	Poaceae	<i>Chloris divaricata</i> var. <i>divaricata</i>	slender chloris			C	1/1
plants	land plants	Poaceae	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>				C	1/1
plants	land plants	Poaceae	<i>Digitaria divaricatissima</i>	spreading umbrella grass			C	1/1
plants	land plants	Poaceae	<i>Eragrostis pilosa</i>	soft lovegrass	Y		C	1/1
plants	land plants	Poaceae	<i>Eremochloa bimaclata</i>	poverty grass			C	1/1
plants	land plants	Poaceae	<i>Moorochloa eruciformis</i>				Y	1/1
plants	land plants	Pontederiaceae	<i>Eichhornia crassipes</i>	water hyacinth	Y		C	1/1
plants	land plants	Portulacaceae	<i>Calandrinia pickeringii</i>				C	1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Portulacaceae	<i>Talinum paniculatum</i>	talinum	Y			1/1
plants	land plants	Potamogetonaceae	<i>Potamogeton tricarlinatus</i>	floating pondweed		C		1/1
plants	land plants	Rubiaceae	<i>Richardia stellaris</i>		Y			1/1
plants	land plants	Rubiaceae	<i>Scleromitron subulatum</i>				C	2/2
plants	land plants	Solanaceae	<i>Solanum jucundum</i>				C	1/1
plants	land plants	Solanaceae	<i>Solanum viarum</i>		Y			4/4
plants	land plants	Stackhousiaceae	<i>Stackhousia muricata</i>				C	1/1
plants	land plants	Verbenaceae	<i>Phyla canescens</i>		Y			1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.



Appendix E-Invasive Plant Fact Sheets



Invasive plant

Agave

Century plant, sisal

Agave spp.



Agave are widely cultivated in gardens within Queensland, especially in drier inland districts. Three species of agave are known to be naturalised in Queensland, *Agave americana*, *Agave angustifolia* and *Agave sisalana*. These agaves have invaded the environment, often forming dense, almost impenetrable thickets that compete with native vegetation, limiting the growth of small shrubs and groundcover species. Agave can also reduce pasture and land availability for grazing animals.

Legal requirements

Agave species are not a prohibited or restricted invasive plants under the *Biosecurity Act 2014*. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical measures to minimise the biosecurity risks associated with invasive plants under their control.

Local governments must have a biosecurity plan that covers invasive plants in their area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws.



Queensland
Government

Description

A very large perennial rosette-forming plant, growing 1–2 m high and 2–4 m across. Older individuals may sometimes develop a short woody stem at the base of the plant and commonly produces numerous suckers which form a large clump or colony. When fully mature, agave plants develop a massive flower cluster on a robust flowering stem, 3–12 m high.

The large leaves at the base of the plant are long and narrow and are arranged in a rosette. They may be upright (i.e. erect or ascending) or spreading in nature and are sometimes bent backwards near their tips. Leaves are 0.3–2 m long and 3.5–25 cm wide, usually rigid and somewhat fleshy (i.e. succulent). They are normally bluish-grey to greyish-green in colour, but forms with variegated leaves are relatively common. The leaf margins of some species are coarsely toothed, with prickly teeth, up to 1 cm long, borne at intervals of 2–6 cm. Leaves have a pointed tip (i.e. acute apex) topped with a large dark-brown coloured spine up to 6 cm long.

The massive flower clusters are 1–8 m long, are borne at the top of a very robust flowering stem. Flower clusters are multi-branched, with the branches being further divided towards their tips (i.e. they are terminal panicles). Individual flowers are borne in an upright position on stalks, 2–4 cm long. Flowers are 5–10.5 cm long, are yellow or greenish-yellow in colour with their six petals being fused together at the base into a short tube, 8–20 mm long. Flowers also have six very prominent stamens. They also have a large ovary topped with a style and three stigmas. Flowering occurs from summer through to autumn.

The fruit is a large oblong capsule, 3.5–8 cm long, with a pointed tip and consists of three compartments. These capsules turn from green to brown or blackish in colour as they mature and eventually split open to release their seeds. Seeds are 6–8 mm long, black in colour and shiny in appearance.

On some species, plantlets are also produced in clusters near the tips of the flowering branches.

Agave species identification

Agave americana var. *americana* (century plant) has very large greyish or variegated leaves that are usually 1–2 m long that are often bent backwards at their tips.

The spines at the tips of its leaves are 3–5 cm long. The leaves have numerous, prickles, 5–10 mm long, along their margins. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It produces large capsules and usually doesn't develop plantlets on the branches of its flower clusters.

Agave americana var. *americana* 'Marginata' (variegated century plant) is very similar to *Agave americana* var. *americana* in all characteristics except it is distinguished by its variegated leaves (i.e. they are green with yellowish margins).

Agave americana var. *expansa* (century plant) has bluish-grey or greyish green leaves that are mostly borne upright. The spines at the tips of its leaves are relatively small, 2–3 cm long. These species produce large capsules and usually doesn't develop plantlets on the branches of its flower clusters.

Agave angustifolia (Caribbean agave) has green, greyish-green or variegated leaves that are usually 0.5–1 m long on adult plants. Leaves have many, small prickles, 2–5 mm long, along their margins and are usually very rigid. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It produces large capsules and sometimes also develops plantlets on the branches of its flower clusters

Agave sisalana (sisal) has dark green or greyish-green leaves that are usually 0.5–1.3 m long on adult plants and usually very rigid. Leaves do not have any prickles on their margins. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It usually doesn't produce capsules, instead developing numerous plantlets on the branches of its flower cluster.

Similar species

Agave species may also be confused with the false agaves which have naturalised in Queensland. These species can be distinguished by the following differences:

- *Furcraea foetida* (Cuban hemp) has pale green leaves that are 1–2 m long on adult plants. These leaves can have some prickles along their margins, but mainly near the bases of the leaves. Flowers are borne in a drooping position and are whitish or greenish-white in colour. It doesn't produce capsules, instead developing numerous plantlets on the branches of its flower clusters.
- *Furcraea selloa* (Variegated false agave) has variegated leaves that are usually 1–2 m long on adult plants. These leaves have numerous prickles (7–8 mm long) along their margins. Flowers are borne in a drooping position and are whitish or greenish-white in colour. It doesn't produce capsules, instead developing numerous plantlets on the branches of its flower clusters.

Life cycle

Agave species reproduce by seed, but most of the reproduction is probably vegetative. It produces numerous suckers and often also develops plantlets on the branches of its flower clusters.

Agave species spread laterally via suckers and can form very large and dense colonies over time. Young plants can be dispersed downstream during floods. Plants are most commonly spread into bushland areas in dumped garden waste.

Habitat and distribution

Agave is native to northern and central Mexico and some parts of southern USA (i.e. Arizona and Texas).

Three species of agave are known to be naturalised in Queensland: *Agave americana*, *Agave angustifolia* and *Agave sisalana*. These agave species are also naturalised in many parts of Australia but have a scattered distribution. Agave have been recorded from, Western Australia, New South Wales, Australian Capital Territory, Victoria, and south-eastern South Australia. *Agave americana* is also naturalised on Lord Howe Island and Norfolk Island.

Because it is very difficult to collect, herbarium records greatly underestimate the actual distribution of these species in Australia. It may also be naturalised in Tasmania and the Northern Territory.

Control

The GBO requires a person to take reasonable and practical measures to minimise the biosecurity risks posed by agave. This fact sheet provides information and some options for controlling agave.

The best control for agave species incorporates integrated management strategies, including herbicides, mechanical and physical methods.

Physical control

Dig out plants completely and burn or deep bury. Refer to the relevant local government or rural fire service for guidelines on lighting fires in your area.

Mechanical and fire control

Mechanical control using machinery can quickly reduce the size of the infestation. Although agave can regrow from suckers, this is a slow process and so opportunity exists to push up the large plants and burn at a later stage. Use of fire to burn plants either before or after spraying has had success, especially on reducing the sucker regrowth. More research is needed to fully ascertain the effectiveness of fire on plants.

Herbicide control

Treatment with herbicides can be effective, because the plants are relatively easy to find. See Table 1 for the treatment options in situations allowed by label and under permit.

Prior to using the herbicides listed under these permits (PER 82307 and PER11463), you must read or have read to you and understand the conditions of the permit. To obtain a copy of this permit visit apvma.gov.au.

Landholders and contractors should check if the property is in a hazardous area as defined in the *Agricultural Chemicals Distribution Control Act 1966* prior to spraying.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit biosecurity.qld.gov.au.



Agave americana var. *Americana* with flower



Agave americana var. *Americana marginata*

Table 1. Herbicides for the control of agave species

Situation	Herbicide	Rate	Registration details	Comments
Agricultural non-crop areas, commercial and industrial areas, pastures and rights-of-way	Fluroxypyr 200 g/L (e.g. Flagship 200)	3000 mL/100 L of diesel distillate		Foliar spray
		10 mL undiluted per plant		Stem injection
	Fluroxypyr 333 g/L (e.g. Starane Advanced)	1800 mL/100 L of diesel distillate		Foliar spray
		6 mL undiluted per plant		Stem injection
	Fluroxypyr 400 g/L (e.g. Comet 400)	1500 mL/100 L of diesel distillate		Foliar spray
		5 mL undiluted per plant		Stem injection
Forests including native vegetation areas, bushland reserves, revegetation areas, national park areas, non-cropland including rights-of-way, open spaces, commercial and industrial areas, domestic and urban areas, public service areas, botanic gardens	Glyphosate 360 g/L (e.g. Roundup Biactive, Glyphosate 360)	1000 mL + 1000 mL water	Permit 82307 (expires 31/07/22)	Cut, scrape and paint
	Glyphosate 360 g/L (e.g. Roundup Biactive, Glyphosate 360)	1000 mL + 1000mL water		Stem injection
Non-agricultural areas, domestic and public service areas, commercial and industrial areas, bushland/native forests, roadsides, rights-of-way, vacant lots, wastelands, wetlands, dunal and coastal areas	Imazapyr 250 g/L e.g. Unimaz 250 SL	500 mL/100 L water + wetter	Permit 11463 (expires 30/06/2023)	Foliar spray Minimise spray run-off as off target damage may occur if roots of susceptible plants are nearby
	Metsulfuron-methyl 600 g/kg (e.g. Brush-off)	10 g/100 L water + wetter		Foliar spray
Agricultural non-crop areas, commercial and industrial areas, fence lines, forestry, pastures and rights-of-way	Picloram 120 g/L + triclopyr 240 g/L (e.g. Access)	1670 mL/ 100 L of diesel distillate		Basal bark

Read the label carefully before use and always use the herbicide in accordance with the directions on the label.



Agave angustifolia (photo courtesy of flickr: Forrest and Kim Starr)



Agave americana var. *expansa*



Spines on leaf margins of *Agave americana* var. *expansa*



Large spine at the end of leaf on *Agave americana* var. *expansa*



Agave sisalana (photo courtesy of flickr: Forrest and Kim Starr)



Agave sisalana plantlet cluster on flowering stem
(photo courtesy of flickr: Forrest and Kim Starr)

[Agave Agave spp. 5](#)



Agave americana var. *Americana* infestation with lateral suckers



Agave americana var. *expansa* infestation



This fact sheet is developed with funding support from the Land Protection Fund.

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08/20

Invasive plant

Arrowhead vine

Syngonium podophyllum



A native aroid of Central America, arrowhead vine is widely used in North Queensland gardens. At least 10 different cultivars have been developed by the nursery industry.

It is almost exclusively propagated by cuttings and spread by cultivation and the dumping of garden refuse. Once established, it will take root wherever its stem touches the ground.

Arrowhead vine prefers moist, shady conditions and fertile soils.

Legal requirements

Arrowhead vine is not a prohibited or restricted invasive plant under the *Biosecurity Act 2014*. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control.



Queensland
Government

Local governments must have a biosecurity plan that covers invasive plants and animals in their area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws. Contact your local government for more information.

Description

Arrowhead vine is a rampant creeping or climbing plant. Its alternate, three-lobed, arrow-shaped leaves vary in size, shape and colour with age and cultivar variety. Juvenile leaves are entire with silvery-white veins or centre, bounded by green. Mature leaves are dark green and segmented into three leaflets, developing with age to 5–9 leaflets. The central leaflet is the longest.

Four to eleven flower spikes (spadixes) develop in leaf axils, each comprising 6–9 green tubular flowers, enclosed in a creamy-white to green modified leaf (a spathe), similar to that of an arum ‘lily’.

Fruit is red to reddish-orange with many black or brown seeds within a soft, gray-ish pulp.

Control

Manual control

Hand pull isolated plants and small infestations, making sure that all roots and stem fragments are removed. Plant pieces should either be bagged and taken to the dump or hung up off the ground to prevent reshooting.

Herbicide control

There are no herbicide products specifically registered for the control of arrowhead vine in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicide products to control arrowhead vine as an environmental weed in various situations.

See Table 1 for the treatment options in situations allowed by the permit.

Prior to using the herbicides listed under this permit (PER11463) you must read or have read to you and understand the conditions of the permit. To obtain a copy of this permit visit apvma.gov.au.

Follow up

Monitor treated areas regularly for any new seedlings or regrowth.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit biosecurity.qld.gov.au.

Table 1. Herbicides for the control of arrowhead vine

Situation	Herbicide	Rate	Registration details	Comments
Non-agricultural areas, domestic and public service areas, commercial and industrial areas, bushland/native forests, roadsides, rights-of-way, vacant lots, wastelands, dunal and coastal areas	Glyphosate 360 g/L (e.g. Weedmaster Duo, Glyphosate 360)	1 L per 100 L water	APVMA permit PER11463	Spot spray
	2,4-D 500 g/L (e.g. 2,4-D Low Odour 500)	4 mL per 1 L water	Permit expires 30/06/2023	
	2,4-D 625 g/L (e.g. Ken-Amine 625)	3 mL/1 L water		
	Fluroxypyr 200 g/L (e.g. Flagship 200)	500 mL to 1 L per 100 L water		
	Fluroxypyr 140 g/L + Aminopyralid 10 g/L (e.g. Hotshot)	500–700 mL/100 L water		

Read the label carefully before use. Always use the herbicide in accordance with the directions on the label.

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Invasive plant

Mother-in-law's tongue

Sansevieria trifasciata



Native to Nigeria, mother-in-law's tongue prefers well-drained soils in shady areas, but will tolerate dry periods.

A popular garden plant that when dumped as garden waste will survive and establish well in bushland crowding out low growing native plants. Mother-in-law's tongue spreads by rhizomes as dumped garden waste.

Legal requirements

Mother-in-law's tongue is not a prohibited or restricted invasive plant under the *Biosecurity Act 2014*. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants under their control.

Local governments must have a biosecurity plan that covers invasive plants in their area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws. Contact your local government for more information.



Queensland
Government

Description

Mother-in-law's tongue is a herb or forb that grows upright to 60 cm. Leaves emerge from rhizomes as stiff, lance-shaped leaves, 0.6–1.2 m long, which are dark green with a mottling of grey-green and yellow throughout. Flowers are small, cream to green and tubular, 25–30 mm long, carried on a spike. The fruit is small round orange berries 7–9 mm. Seeds are pale brown, oblong 6–7 mm long and 5 mm wide. Rhizomes are bright orange colour, thick and fleshy, succulent in nature.

Control

Manual control

Carefully dig out isolated plants and small infestations, making sure that all fragments of the substantial rhizome system are removed. This requires persistent effort and very regular monitoring of the site and removal of any new growth and its rhizome. To prevent reshooting, all plant pieces should be put into strong bags and removed from bushland.

Herbicide control

There are no herbicide products specifically registered for the control of mother-in-law's tongue in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicide products to control mother-in-law's tongue as an environmental weed in various situations.

See Table 1 for the treatment options in situations allowed by the permit.

Prior to using the herbicides listed under this permit (PER11463) you must read or have read to you and understand the conditions of the permit. To obtain a copy of this permit visit apvma.gov.au.

Follow up

Monitor treated areas regularly for any new seedlings or regrowth.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit biosecurity.qld.gov.au.

Table 1. Herbicides for the control of mother-in-law's tongue

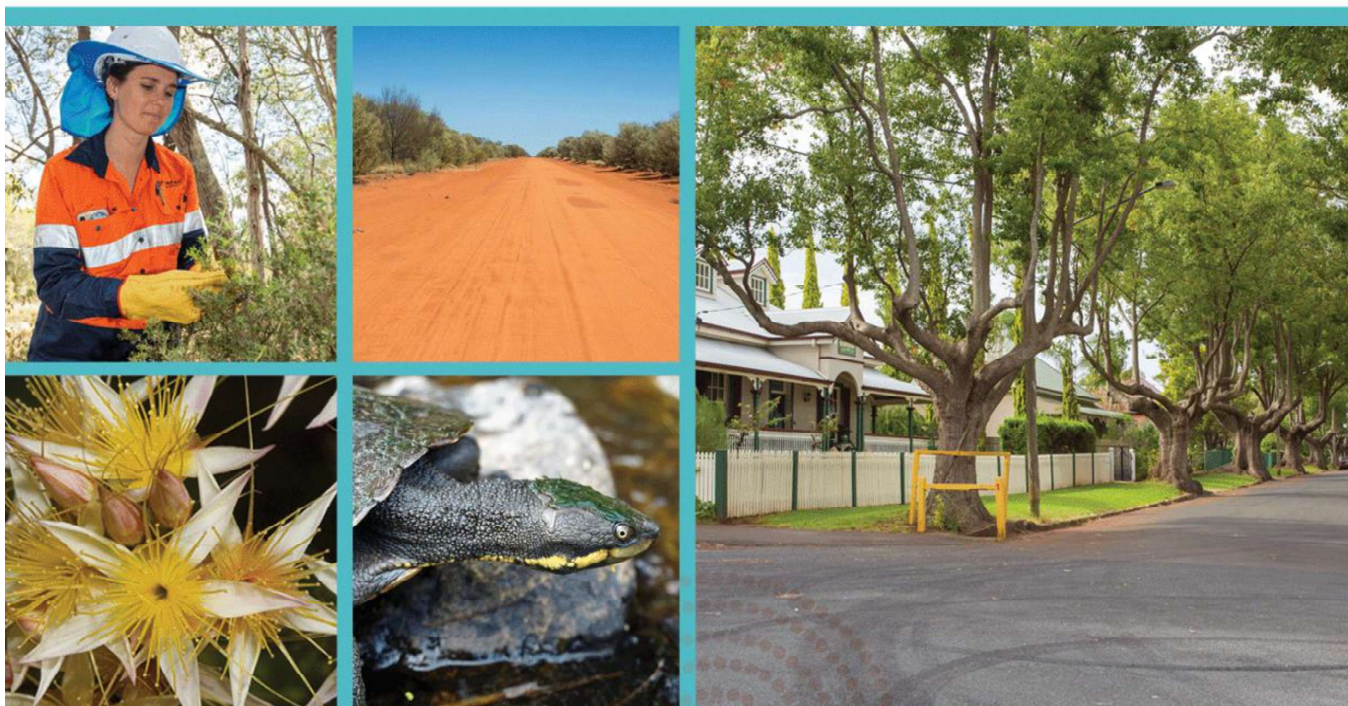
Situation	Herbicide	Rate	Registration details	Comments
Non-agricultural areas, domestic and public service areas, commercial and industrial areas, bushland/native forests, roadsides, rights-of-way, vacant lots, wastelands, wetlands, dunal and coastal areas	Glyphosate 360 g/L (e.g. Glyphosate 36) and other formulations	1 L per 100 L water plus a wetting agent For other formulations consult PER11463	APVMA permit PER11463 Permit expires 30/06/2023	Spot spray Addition of a wetting agent is essential
	Metsulfuron-methyl 600 g/kg (e.g. Associate, Ken-Met 600 WG)	10 g per 100 L water plus a wetting agent		
	Imazapyr 250 g/L (e.g. Unimaz 250 SL, Warrant 250)	200 mL per 100 L water plus wetting agent		Do not use imazapyr near desirable plants or where their roots may extend

Read the label carefully before use. Always use the herbicide in accordance with the directions on the label.



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Memorial Walkway Planting Guideline

Warrill Park Cemetery, Ipswich City Council
November 2021





Citation: Redleaf Environmental (2021) Planting Guideline, Warrill Park Cemetery. Prepared for Ipswich City Council.

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DOCUMENT CONTROL

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Signature		Signature	
Name	Dr Darren Fielder	Name	Dr Christina Kindermann
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1 Introduction

1.1 Project Overview

Redleaf Environmental was engaged by Ipswich City Council to create a Planting Guideline for a memorial walkway within an intact patch of remnant *Melaleuca irbyana* (swamp tea tree) forest located at Warrill Park Cemetery. The Warrill Park Lawn Cemetery is located along the Cunningham Highway, approximately 15km to the southwest of Ipswich and incorporated the following allotment: Lot 283, Plan SP135010.

A range of activities taking place within the cemetery grounds have been identified as threatening processes to the TEC. One of the threats identified was the succulent plants that have been planted along the edge of the pathway and next to memorial plaques. More details can be found in the following report:




Redleaf Environmental (2021) Melaleuca irbyana Significant Impact Assessment, Warrill Park Cemetery. Prepared for Ipswich City Council.

This planting guideline has been developed to mitigate the threatening process of weed inclusion and proliferation within the TEC.





2 Native Plants associated with the *Melaleuca irbyana* forest

Species description	Photo
<p>Wombat berry (<i>Eustrephus latifolius</i>)</p> <p>Small twinning vine with pink flowers and bright orange fruit. Coverage of 1-3m. Suitable as a ground cover but will climb over structures if provided.</p>	 <p>© Redleaf Environmental</p>
<p>Warrigal greens (<i>Tetragonia tetragonoides</i>)</p> <p>Leafy ground cover with small yellow flowers. Suitable for full sun and part shade, grows well in pots so should be suitable for raised path edges.</p>	 <p>© Redleaf Environmental</p>
<p>White burr daisy (<i>Calotis dentex</i>)</p> <p>A fast-growing perennial with white, yellow-centred flowers that bloom in spring and autumn. Removing the dead flower heads will encourage more abundant flowering. Grows up to 80cm tall.</p> <p><i>Calotis cuneata</i> is also suitable</p>	 <p>© Redleaf Environmental</p>





Winter apple (*Eremophila debilis*)

A ground cover with small pink flowers and bright berries. It is suited to most soils provided drainage is reasonable.



Flax lily (*Dianella brevipedunculata*)

A low maintenance, tufted grass plant with small purple-blue flowers. It prefers full sun or part shade and well-drained soil. Grows up to 50cm high and 50cm wide.

The following *Dianella* species are also suitable:

- *Dianella caerulea*
- *Dianella longifolia*
- *Dianella rara*
- *Dianella revoluta*



Soft mat rush (*Lomandra laxa*)

Tufted sedge forming sparse tussocks. Creamy white flowers in autumn and winter. Grows in well-drained soil in full shade or filtered sun. Can grow up to 50cm tall.

The following *Lomandra* species are also suitable:

- *Lomandra confertifolia*
- *Lomandra filiformis*
- *Lomandra multiflora*
- *Lomandra spicata*





Barbed-wire grass (*Cymbopogon refractus*)

A clump-forming grass that is long-lived (5-25 years) and very tolerant of low nutrient and dry areas. Suitable to grow in most soil types. Grows up to 1m high.

Kangaroo grass (*Themeda triandra*) is another suitable native grass with similar growing habits suitable for planting at this location.



Yellow buttons (*Chrysocephalum apiculatum*)

A long-lived perennial herb that performs well in a variety of garden environments. Grows between 30cm and 60cm high and 90cm wide.



Brisbane wattle (*Acacia fimbriata*)-Dwarf

Hardy species that can tolerate part shade. Brilliant yellow flowers. Cut back new growth by a third after flowering to keep tidy.

The following Acacia species are also suitable:

- *Acacia leiocalyx*
- *Acacia maidenii*
- *Acacia concurrens*





Rice flower (*Pimelea linifolia*)

Small shrub with white tubular flowers that can flower all year round. Grows on a range of soil types (from sands to clays) and can tolerate light shade. Requires a native fertiliser in spring.



Silky oak (*Grevillea robusta*)

A common tree that is widely used in revegetation projects and gardens. It can grow in most soil types. Its height can vary from 15-30 m depending on the environment its grown in. It bears stunning orange flowers in spring.






Soap tree (*Alphitonia excelsa*)

A fast tree can grow in most soil types and conditions. It bears small white flowers in autumn and early winter followed by oval blackish fruit.





3 Additional Suitable Native Plants

Species description	Photo
<p>Weeping bottlebrush (<i>Melaleuca viminalis</i>)</p> <p>A hardy shrub with bright red flowers, tolerating many environments including sandy and clay soils. This tree can grow to 10m and can tolerate regular pruning. Nursery hybrids are more shrub like.</p> <p>The following <i>Melaleuca</i> species are also suitable:</p> <ul style="list-style-type: none"> - <i>Melaleuca thymifolia</i> - <i>Melaleuca irbyana</i> 	 <p style="text-align: right; font-size: small;">©Redleaf Environmental</p>
<p>Birds nest fern (<i>Asplenium australasicum</i>)</p> <p>Grows in most soil types, on rocks and other structures, very low maintenance once established. Grows approximately 0.5-1.5m wide and high. Prefers shady/lightly shaded areas.</p>	 <p style="text-align: right; font-size: small;">©Redleaf Environmental</p>
<p>Flannel flower (<i>Actinotus helianthin</i>)</p> <p>An annual or perennial herb with silvery grey foliage and creamy-white, daisy-like flowers that grow up to 8cm. Flowers in spring and summer. A suitable plant for rockery or cottage gardens.</p>	 <p style="text-align: right; font-size: small;">©Redleaf Environmental</p>



Broad-leaved Drumsticks (*Isopogon anemonifolius*)

A hardy, low maintenance plant with attractive, narrow, green foliage and yellow flowers. Grows up to 2m high in well-drained soil in full sun and partial shade.

Requires feeding with a low phosphorus fertiliser in spring.



©Redleaf Environmental

Sarsaparilla (*Hardenbergia violacea*)

Ground cover/climber with glossy green leaves and bright purple flowers. Very hardy and frost tolerant; does not require much watering.



©Redleaf Environmental

Guinea flower (*Hibbertia sp.*)

Small, compact shrub with bright yellow flowers. Very hardy plant; drought tolerant and can grow in most soil types.

Most species grow between 0.5m and 3m high and 1m to 5m wide.



©Redleaf Environmental





Native violet (*Viola hederacea*)

Sprawling groundcover with purple flowers. Grows up to 15cm and is well suited to shady areas. Prefers moist soil, so watering is required.



Pointed leaf hovea (*Hovea acutifolia*)

Open shrub with glossy, green leaves and purple flowers. Prefers moist, well-drained soil and grows best in filtered sun. Can grow up to 5m wide.

The following *Hovea* species are also suitable alternatives:

- *Hovea impressinerva*
- *Hovea lanceolata*
- *Hovea longipes*
- *Hovea lorata*



Tantoon (*Leptospermum polygalifolium*)

A bush shrub with aromatic leaves that can grow up to 3m high and 3m wide. Grows in most soil types and can tolerate filtered sun. Bears white flowers in spring and summer.

The following *Leptospermum* species are also suitable:

- *Leptospermum variable*
- *Leptospermum petersonii*
- *Leptospermum microcarpum*





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Synergy Solutions

Ipswich City Council

Warrill View Cemetery

Overland Flow Assessment

January 2026
Final Issue



Synergy

The interaction of elements that when combined produce a total effect that is greater than the sum of the individual elements



Document Status

Revision	Date	Author	Reviewed	Approval
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Project Name	Warrill View Overland Flowpath Assessment
Client	Ipswich City Council
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2 Executive Summary

An investigation and assessment utilising a 1D/2D model has been undertaken of the catchment surrounding the Warrill View Cemetery site and the following outcomes were noted in the flood study:

1. A detailed 1D/2D model was constructed incorporating a 1.5 metre grid with major hydraulic structures such as bridges and culverts included.
2. Design events have been undertaken utilising 2019 Australian Rainfall and Runoff (ARR) methods. The study has simulated all the events, durations and ensembles in the hydraulic model to ensure the catchment is fully understood and represented.
3. The Flood Study has been updated to include, new localised IFD rainfall data, updated Lidar, survey and as constructed information to align with latest guidance.

Overall, this assessment has been a robust undertaking utilising all of the latest and relevant approaches to flood modelling in accordance with ARR19. The flood model provides valuable information and data to assess flood risk in detail for the site and to make any future improvements and flood mitigation efforts moving forward.



3 Background

The catchment is approximately 88.2 hectares in area, and the longest flowpath through the catchment is 1.2 kilometres. Characterises of the study area include:

- To the south half of the catchment is covered in light vegetation and the cemetery sites takes up approximately 30% of the catchment with grassed areas.
- There are multiple flowpaths that traverse the site with the main discharge points at the south and west of the site.

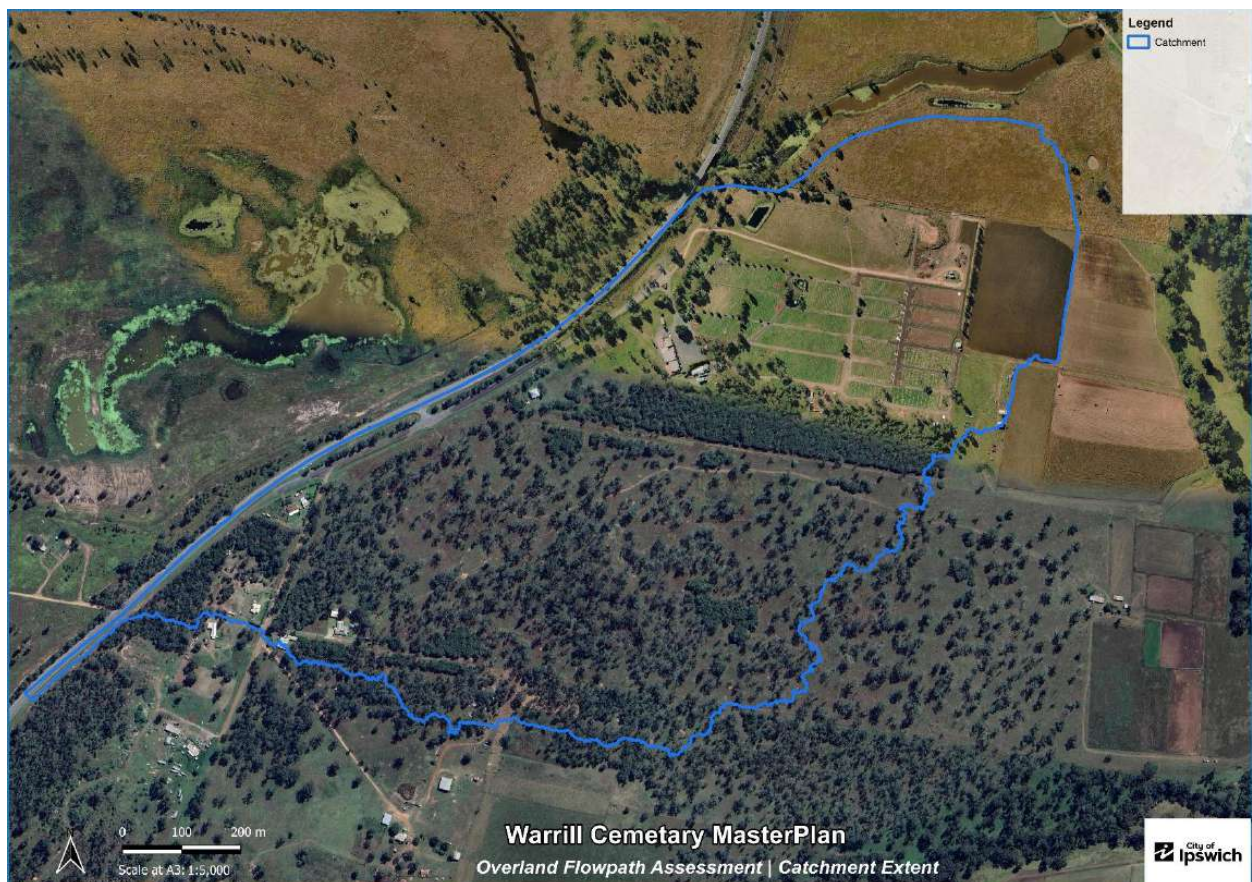


Figure 3-1 Catchment Extent

This flood study is being conducted to provide a robust fundamental understanding of the existing flood risk in the area, provide the necessary modelling basis for further assessment and master planning of the site.



4 Available Data

A variety of existing data sets were either provided or sourced from a range of agencies for this study. The data sets included a range of digital and hardcopy data provided by Council. A summary of the various data sets is outlined separately below.

4.1 GIS Datasets

A range of GIS datasets were sourced and provided to Synergy to inform the flood modelling and study. The information below represents a summary of the data made available.

4.2 Lidar

A digital elevation Model (DEM) was sourced through Council and other sources to represent the catchment. The 2023 Lidar dataset was utilised and noted as the most recent Lidar data available in the area.

4.3 Survey and As Constructed Design Information

Council provided survey and new as constructed information as part of the recent extension and roadworks. These were incorporated into the model and created a new digital elevation model combined with the Lidar.

4.4 Site Inspections

Site inspections were undertaken by Synergy Solutions to inform the flood study. The site inspections were undertaken at key points throughout the area and targeted the following aspects:

- Utilising a rapid direct rainfall model to identify initial flows paths and areas of interest.
- Inspection of culverts through the catchment. The inspection assisted with understanding blockages and filling missing data not available from GIS datasets.
- Inspection of vegetation particularly on the creek corridor to inform Manning's roughness values.

5 Hydrological Inputs

The following information lists the methodology, information, parameters and analysis that was undertaken in order to estimate discharges throughout the catchment.

5.1 Overall Approach to Hydrological Modelling

Given the urbanised and relatively small nature of the catchment, a direct rainfall approach within the hydraulic model was adopted to more accurately capture surface flow paths, local drainage patterns, and overland flow interactions. To support this approach, an URBS model was developed primarily to generate ARR2019 design rainfall inputs for use in the TUFLOW model, as well as to provide validation of modelled flows at key catchment locations.



5.2 Rainfall Depths

This study has adopted the 2016 BoM Enveloped 2020 LIMB IFDs and has applied them as one application across the entire catchment without spatial variation.

Table 5-1 presents the Intensity–Frequency–Duration (IFD) values at the catchment centroid.

Table 5-1 IFD values at centroid

Duration (mins)	63.2% (mm)	39.3% (mm)	18.1% (mm)	10% (mm)	5% (mm)	2% (mm)	1% (mm)
10	15.4	17.2	22.3	25.3	29	34.1	38.1
15	19	21.3	28.1	32.1	36.8	43.4	48.4
20	21.6	24.3	32.5	37.4	42.7	50.3	56.2
25	23.6	26.7	36	41.7	47.3	55.8	62.4
30	25.3	28.7	38.9	45.4	51.5	60.3	67.4
45	29.1	33.1	45.6	54	62.1	72.8	80.8
60	31.7	36.3	50.6	60.5	70.2	83.3	93.5
90	35.6	40.9	57.8	70	82.3	99.3	113.1
120	38.5	44.3	63.2	77.1	91.4	111.3	127.8
180	42.9	49.4	71.3	87.6	104.7	128.8	149.1
270	47.7	55.1	80.2	98.9	118.6	146.7	170.3
360	51.6	59.6	87	107.4	128.8	159.5	185
540	57.6	66.7	97.5	120.1	143.7	177.3	204.8
720	62.4	72.2	105.6	129.6	154.5	189.8	218.2

5.3 Dathub Parameters

Design rainfall parameters such as temporal patterns, pre-burst values and areal reduction factors were obtained from the ARR 2019 Data Hub (<http://data.arr-software.org/>).

5.4 Temporal Patterns and Aerial Reduction Factors

The east coast north region was used in accordance with ARR19. As the study has multiple areas of focus, areal reduction factors have not been incorporated into the modelling.

5.5 Rainfall Losses

Rainfall losses form an important part of this project with regards to ensuring conservatism and representing accuracy for different land uses. Initial investigation of the use of the ARR2019 rural losses revealed relatively high losses and the storm initial losses extracted from the ARR datahub were 22mm and the continuing losses 0.8mm/hour. In order to provide losses appropriate for urban use, customised losses were applied as below.



Table 5-2 Soil Losses

Zone	Relative Impervious Value (%)	Initial Loss (mm)	Continuing Loss (mm)
Default Rural and Vegetation/Grass	0	22	0.8
Roads	70	6.6	0.24
Buildings	100	0	0

6 Hydraulic Model Development

The aspects of the hydraulic model build, and modelling are detailed below.

6.1 Model Build

A detailed 1D/2D TUFLOW model has been developed using TUFLOW software version 2025.2.0-iSP-w64 and also makes use of the Highly Parallelised Compute (HPC) solution scheme. The information below represents the individual build elements of the TUFLOW model.

Model Selection

A 1D/2D TufLOW HPC model was used to simulate the hydraulic conditions. The TufLOW model used sub grid sampling at a resolution of 1.0m to provide more detail in the areas around the key corridors and design areas.

Terrain and Grid Sizing

Grid sizes were selected on a balance of the hydraulic simulations required and accurately representing road networks, flowpaths, storage areas and other terrain features.

Due to the requirement of a detailed urban model and focus on design options, a grid size of 1.5 metres was required around the urban areas of focus.

Initial temporal pattern and durations were informed with a 4-metre grid to balance the 1000+ simulations required.

Mannings and Soils Values

Mannings values were selected utilising guidance within Australian Rainfall and Runoff 2019, Aerial photos and on ground photos.



Table 6-1 Mannings Roughness Values

Material	Mannings Roughness (n)
Floodplain	0.05
Buildings	0.2
Light Vegetation	0.06
Medium Vegetation	0.075
Dense Vegetation	0.085
Roads	0.018
Gravel Roads	0.03

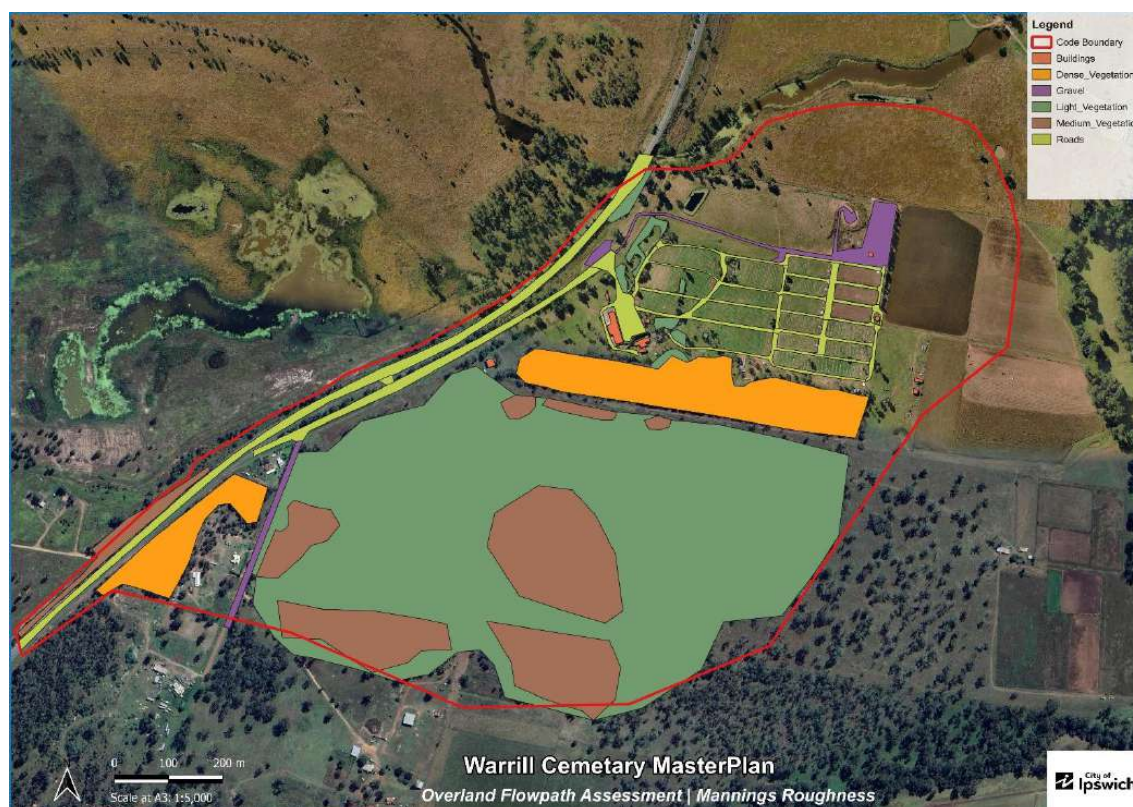


Figure 6-1 Manning Roughness Layout



Existing 1D Network

The modelling incorporated all stormwater pipes and pits within the 1D environment. Some of the as constructed information was missing and contained errors. The following methods were used to best represent the 1D network:

- Site inspections were undertaken of any culverts within the area of interest. The necessary measurements were taken on site for number of culverts and dimensions.
- Estimates were made of all other culverts in obvious places via google street view, imagery and using the digital elevation models.
- The stormwater network was imported into GIS and Tuflow to aid in infilling and interpolating. Several tools were used to correct this data. Missing inverts firstly utilised Tuflow's interpolation tool. Where this did not suffice, inverts were estimated using pipe size + 600mm cover.
- Initial Tuflow runs were undertaken to produce depth outputs to check major ponding areas. These areas were visually inspected on site or through aerial photography and additional pits and pipes added as necessary. In some cases, entire stormwater networks were missing, and engineering judgement was used to include these networks. A combination of model results, inspections and terrain interrogation were used to apply invert levels, pit arrangements and pipe sizes.



Figure 6-2 Pipe Networks

Bridges

There are no bridges located within the model extent for this study.



7 Design Events

The information below provides an overview of the design events methodology and modelling.

7.1 Summary

The design event modelling and outputs have been undertaken in accordance with the parameters and guidance listed in Australian Rainfall and Runoff 2019. The following is a summary of the work undertaken:

- The analysis utilised an assessment of multiple storm durations and all ten temporal patterns in accordance with ARR19.
- A process was applied to select events from the hydrology model to apply to the hydraulic model, such that a maximum envelope of the selected hydraulic model runs would represent an accurate design flood event across the locations of interest.

Overall, the framework used, and the modelling and outputs produced are robust due to the strict adherence to the ARR19 guidance.

7.2 Design Combination Selection

Due to the difficulties in applying ARR2019 fully to flood studies due to the many combinations of events, durations and ensembles, a custom method was derived to find a balance between simulation time and accuracy. If all 1000+ hydraulic simulations were produced, this was estimated to take hundreds of hours of modelling time which is not practical. At the other end of the scale, it is not appropriate to pick one focal point within the catchment due to the results being used over the entire catchment. A process was developed to select a subset of runs for the fine TUFLOW model to create maximum design flood surfaces valid at all locations. The process was undertaken in the following manner:

1. A coarse TUFLOW model was run for all AEPs, durations and ensembles.
2. Peak flood levels were extracted at 80+ locations across the catchment for all runs.
3. For each location and ARI, the target design flood level was calculated using the mean ensemble, maximum duration approach.
4. Each individual run at each location was given a score based on:
 - How close the run was to the target design flood level.
 - How close the run's storm duration was to the design critical duration.
 - Whether or not the run exceeded the target design flood level at the given location or any other location by more than 0.05m.
4. For each location and AEP, the run with the best score was selected and those combinations transferred for simulation in the final fine grid model.



8 Model Results

The following section of the report provides an overview of the results of the design events simulation and also a description of the characteristics of flooding in the catchment.

8.1 Critical Durations

Critical durations across the catchment were informed by the design combination selection process described above. An example of the different pattern sets for the 1% AEP is shown below.

Table 8-1 1% AEP Duration and Ensemble Sets

Duration (mins)	Ensemble
15	5
25	8
30	8
90	8

8.2 Post Processing Information

After simulations of all the relevant events, durations and focal points the following post processing was undertaken:

- TUFLOW's asc to asc tool was utilised to collate and provide the maximum surfaces for all durations for all events.
- Each result (level, depth, hazard etc) was maximised based on the collation of the selected temporal pattern and duration and output as a maximum surface combined.

Filtering of the final outputs was undertaken using the following parameters

- Any area of the model that were both 5mm or less in depth and less than 0.08m²/s were removed from the model.
- A secondary pass was also undertaken using a 0.08mm depth and 0.007m²/s pass to further filter
- A final filter was applied for any isolated ponds/puddles that were removed less than 100m².



Figure 8-1 1% AEP Flood Depth



9 Limitations and Assumptions

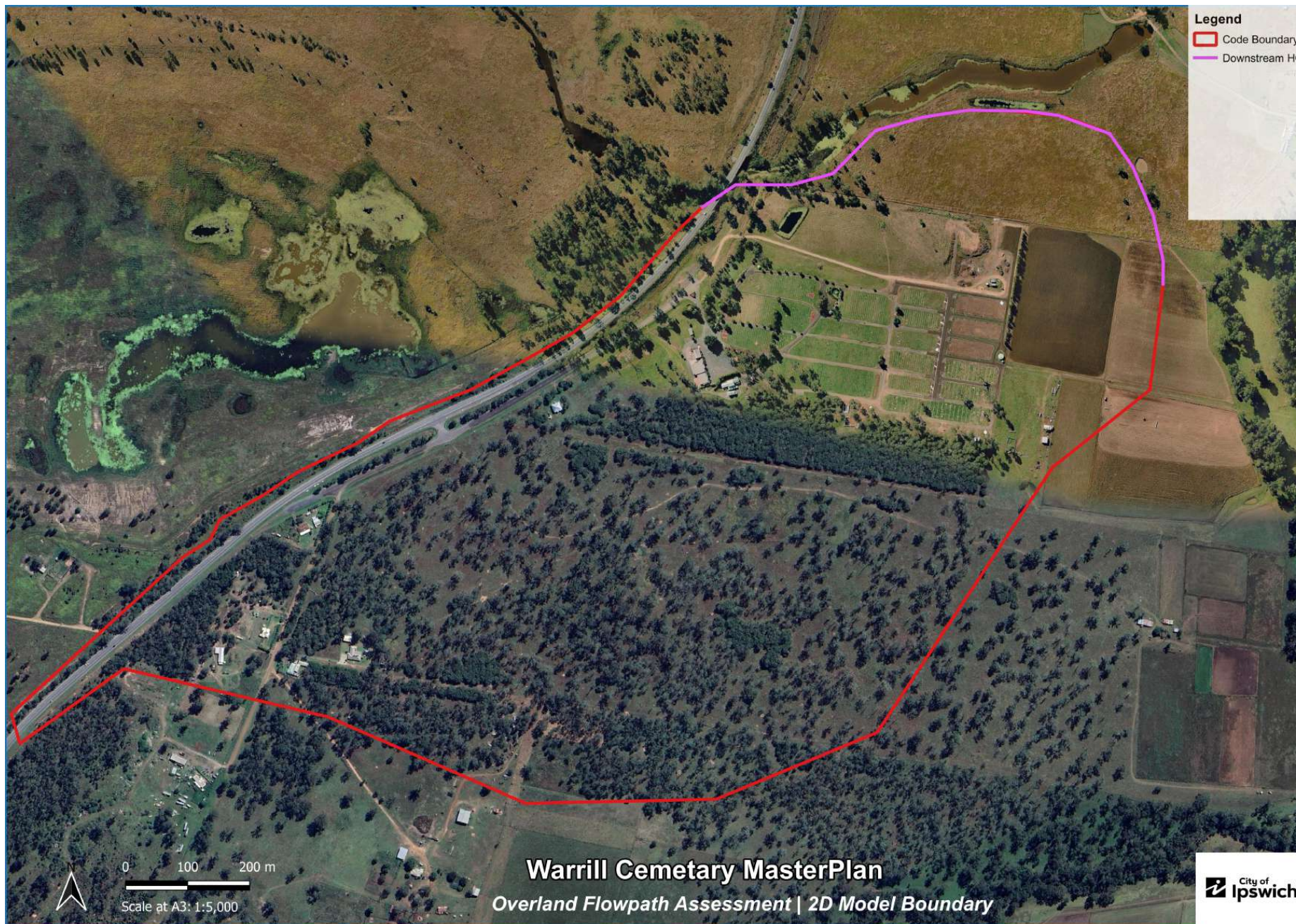
The work undertaken in this report and project, is subject to the following limitations:

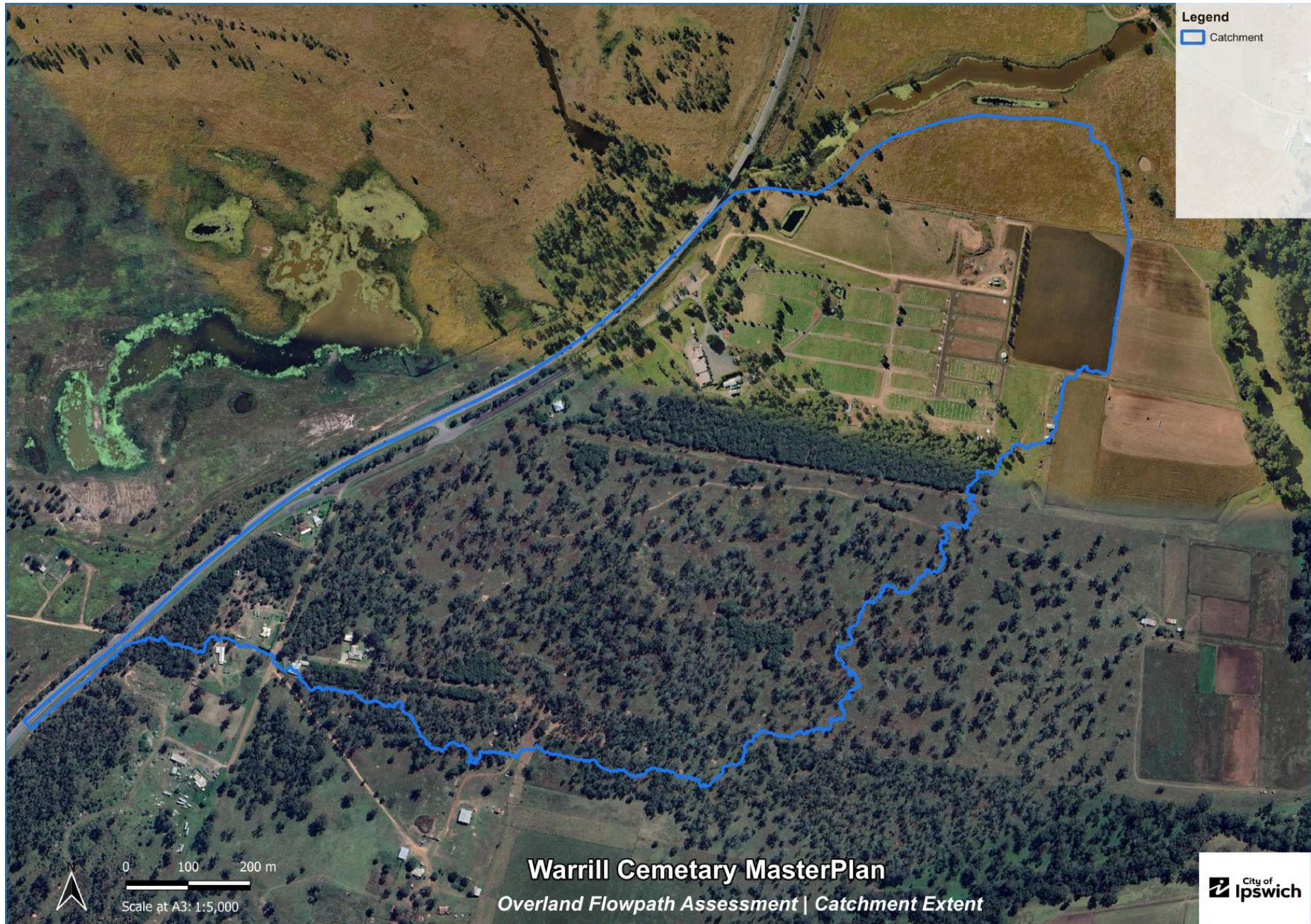
- Data provided by external sources and Council is assumed true and correct.
- Aspects of this project have been discussed and agreed with Ipswich City Council. Limitations are present within these joint project decisions and have been identified.
- Future use of this flood model requires an understanding of the events, durations and temporal patterns utilised. Synergy Solutions have documented and handed over all necessary data to Council for this to occur.
- This assessment has not considered flooding from either the Bremer River or Ebenezer Creek which was not in scope.

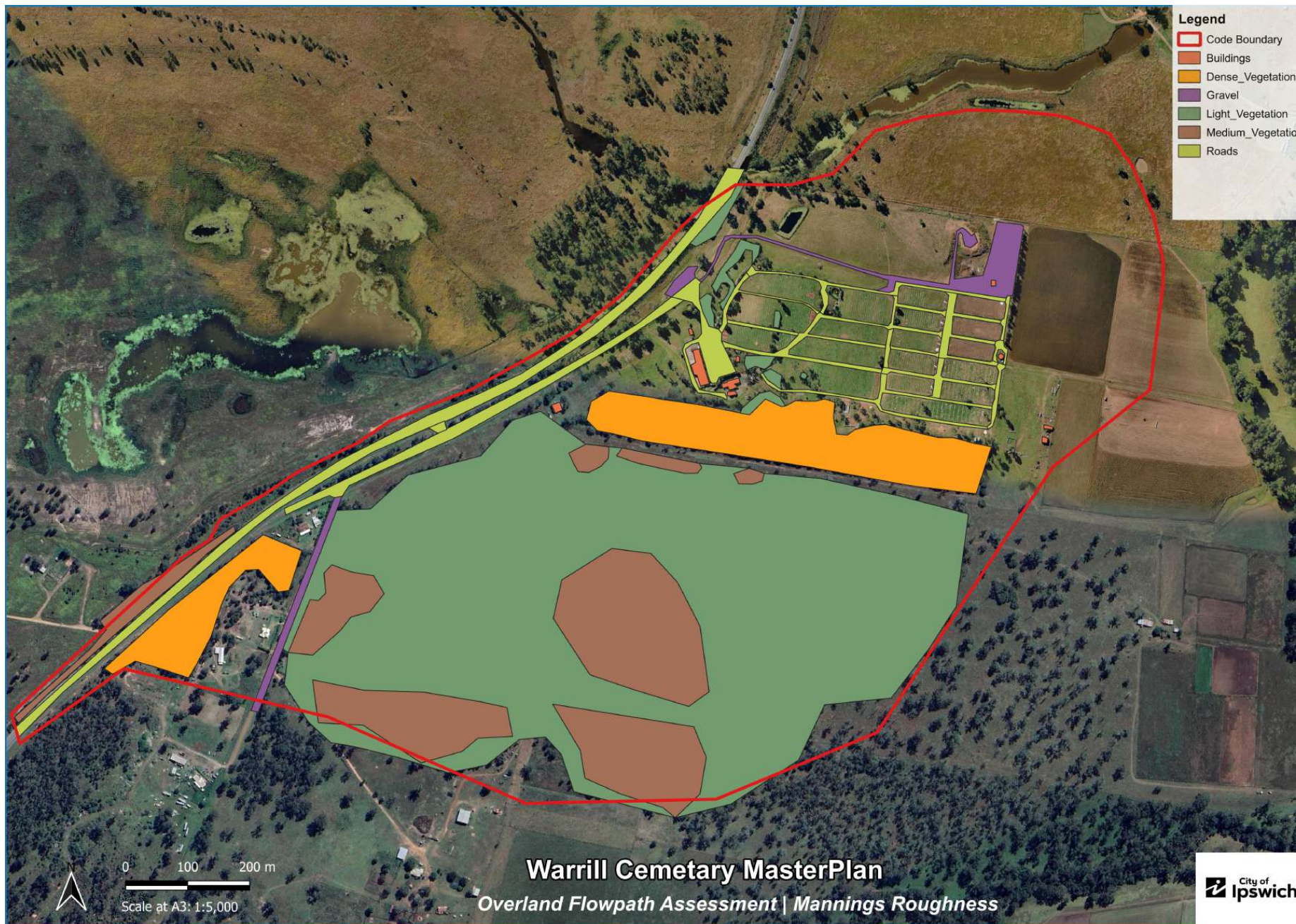


10 Appendix A | Model Build Maps







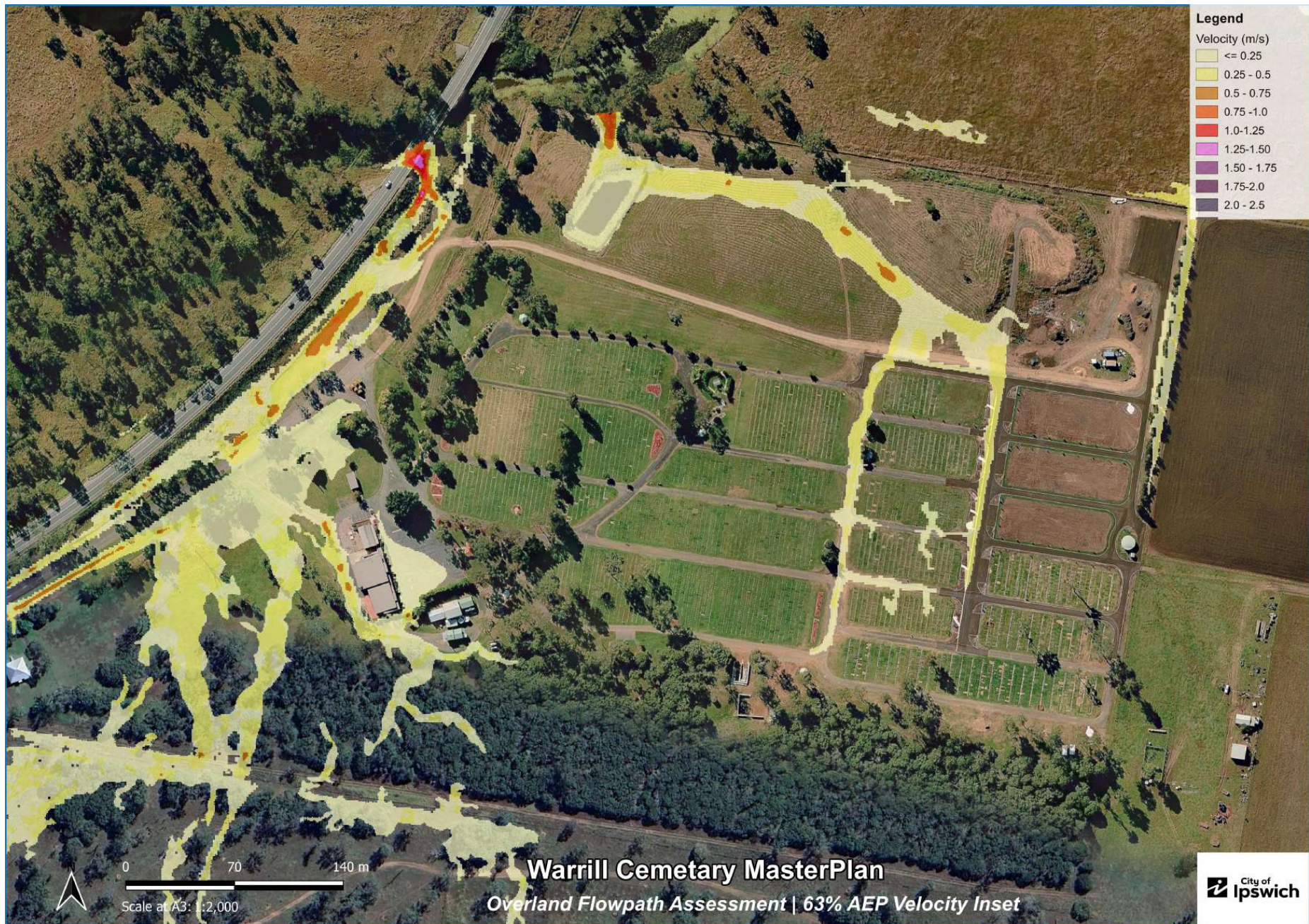




11 Appendix B | Existing Maps







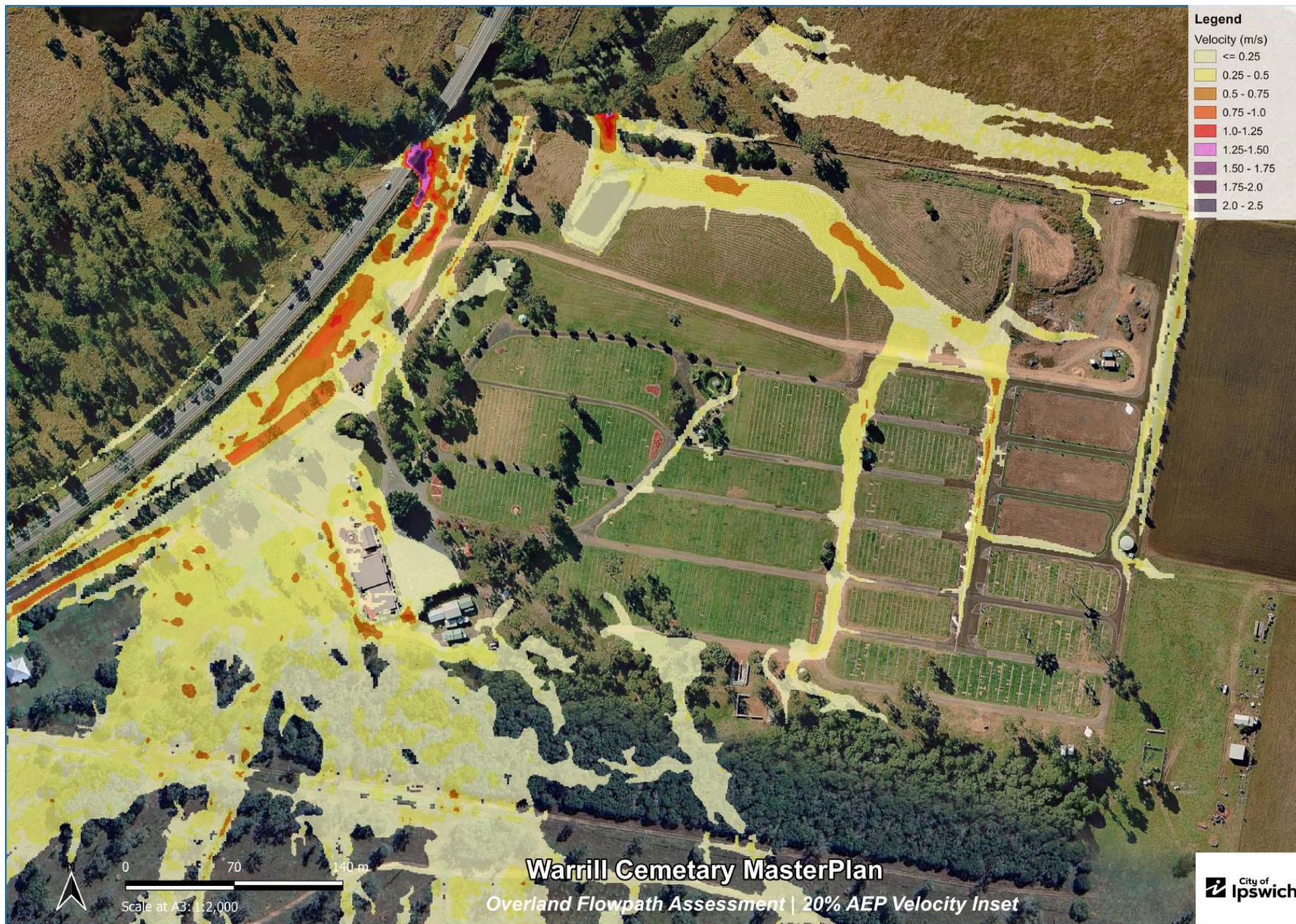






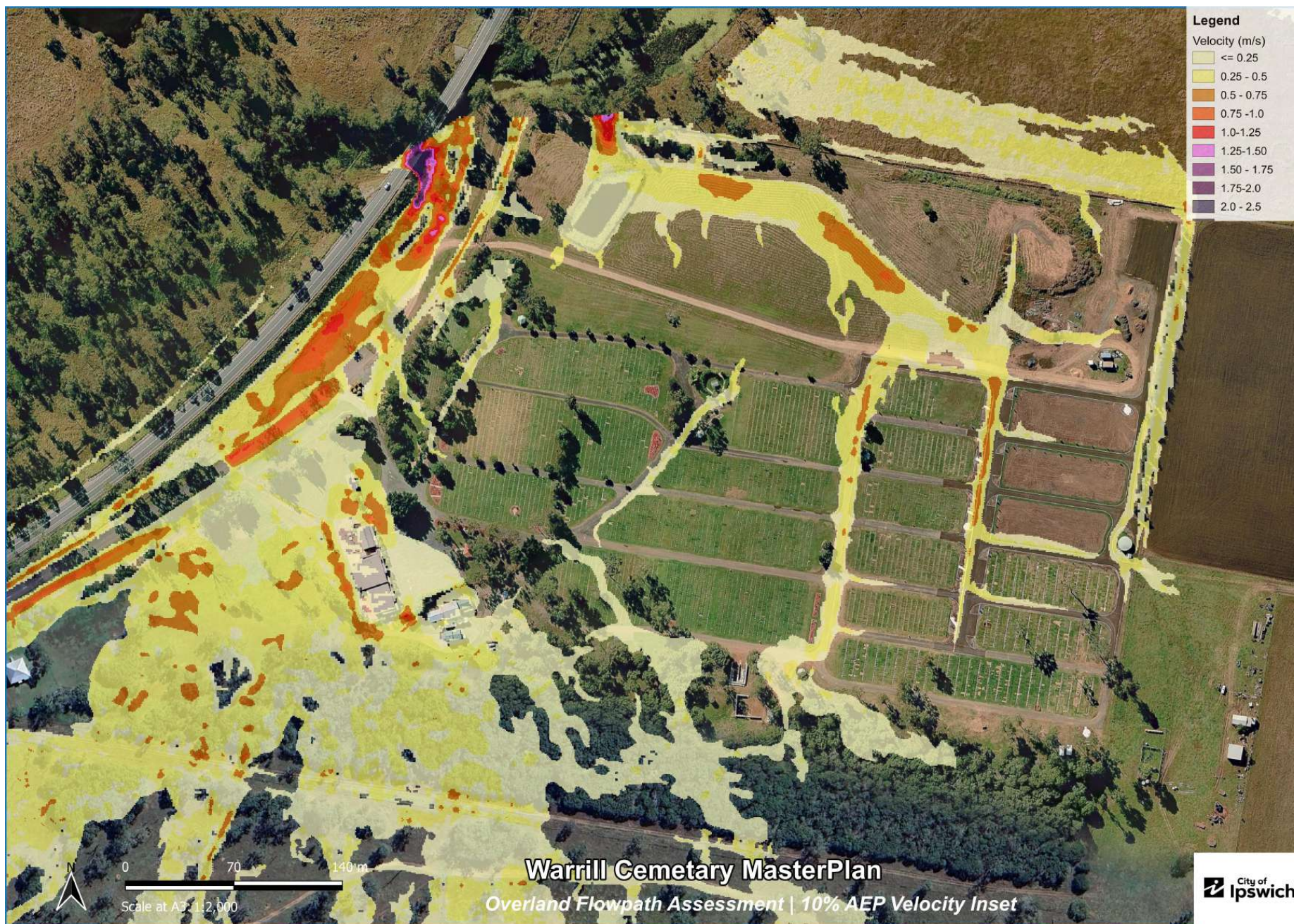




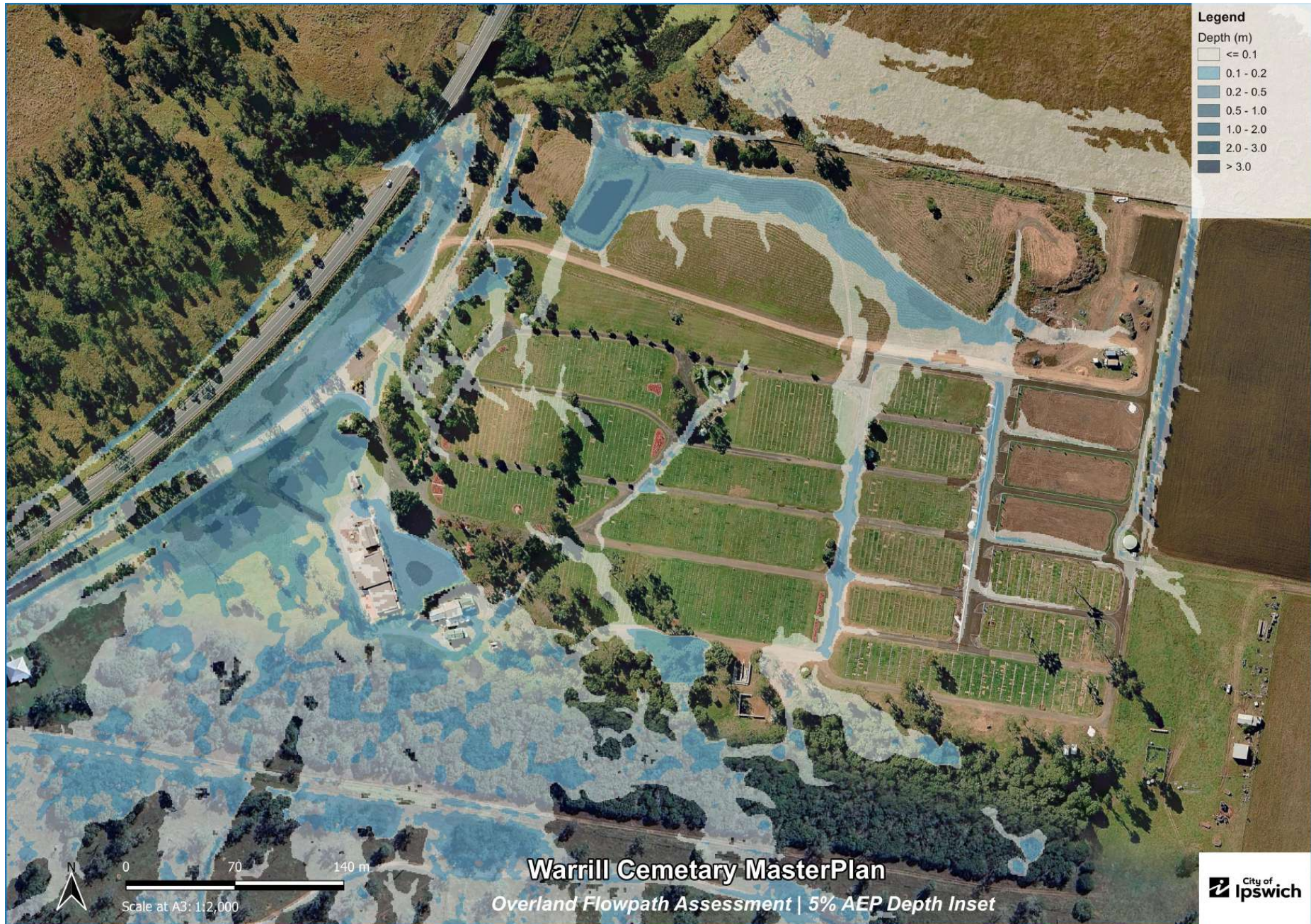


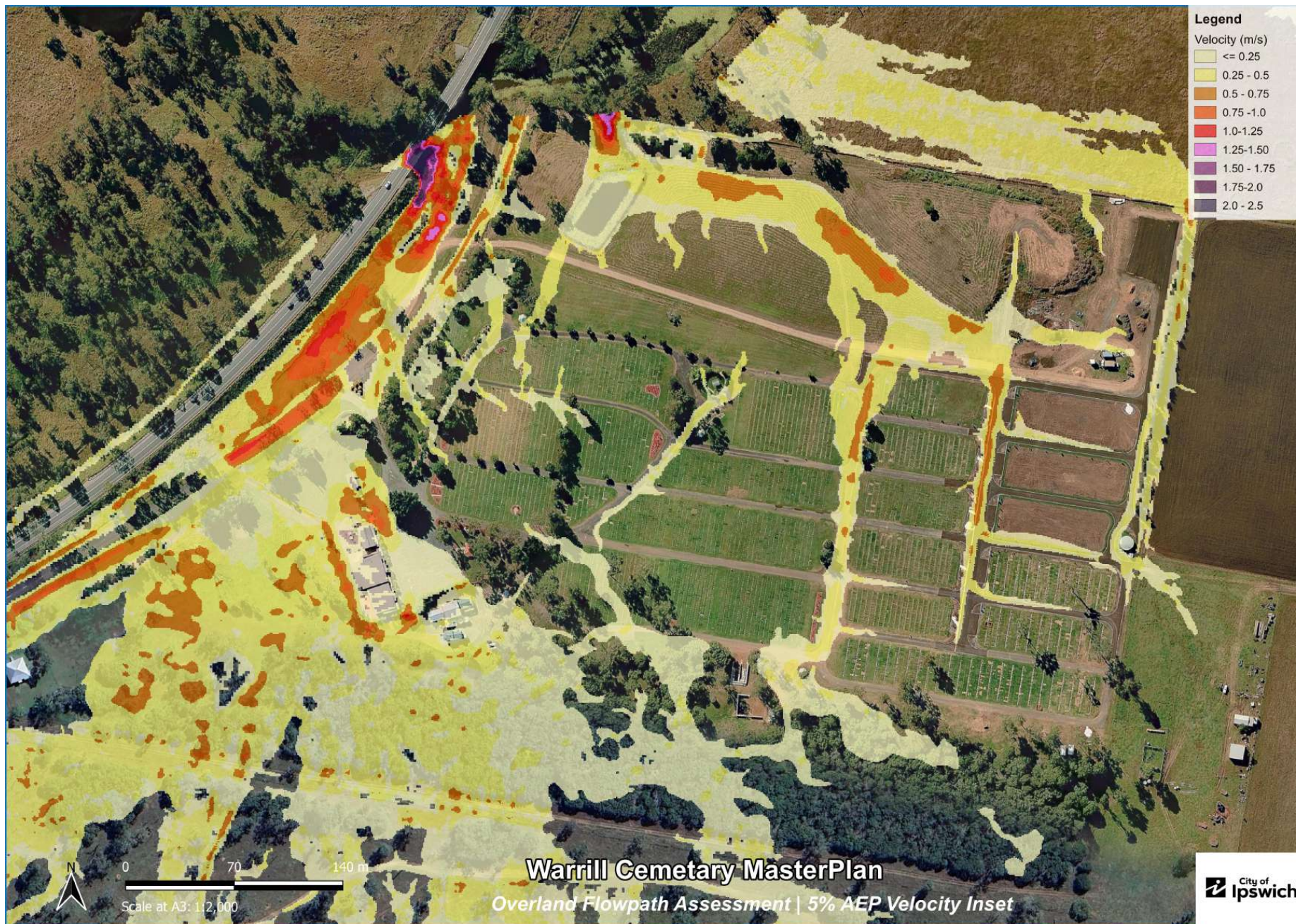


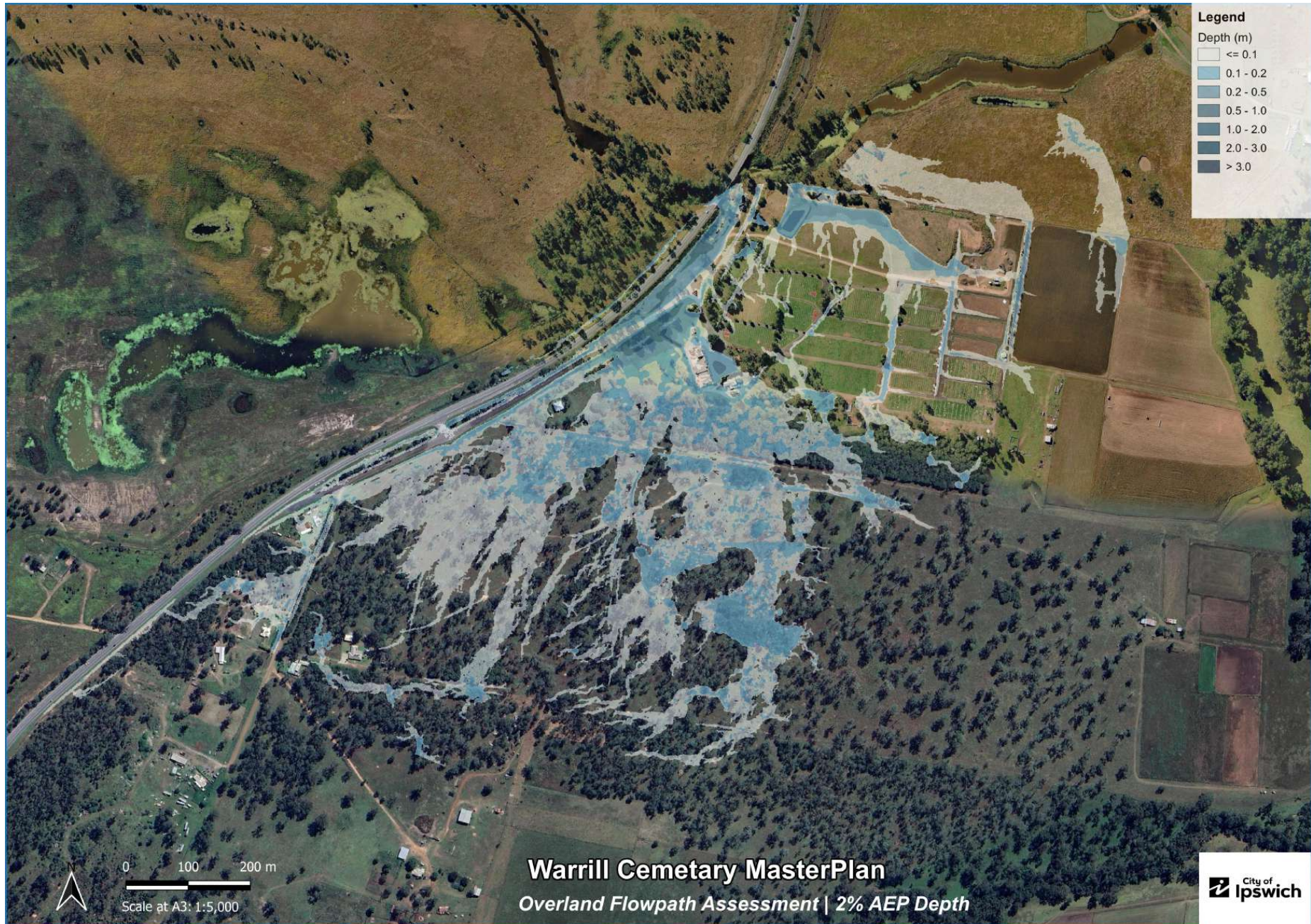




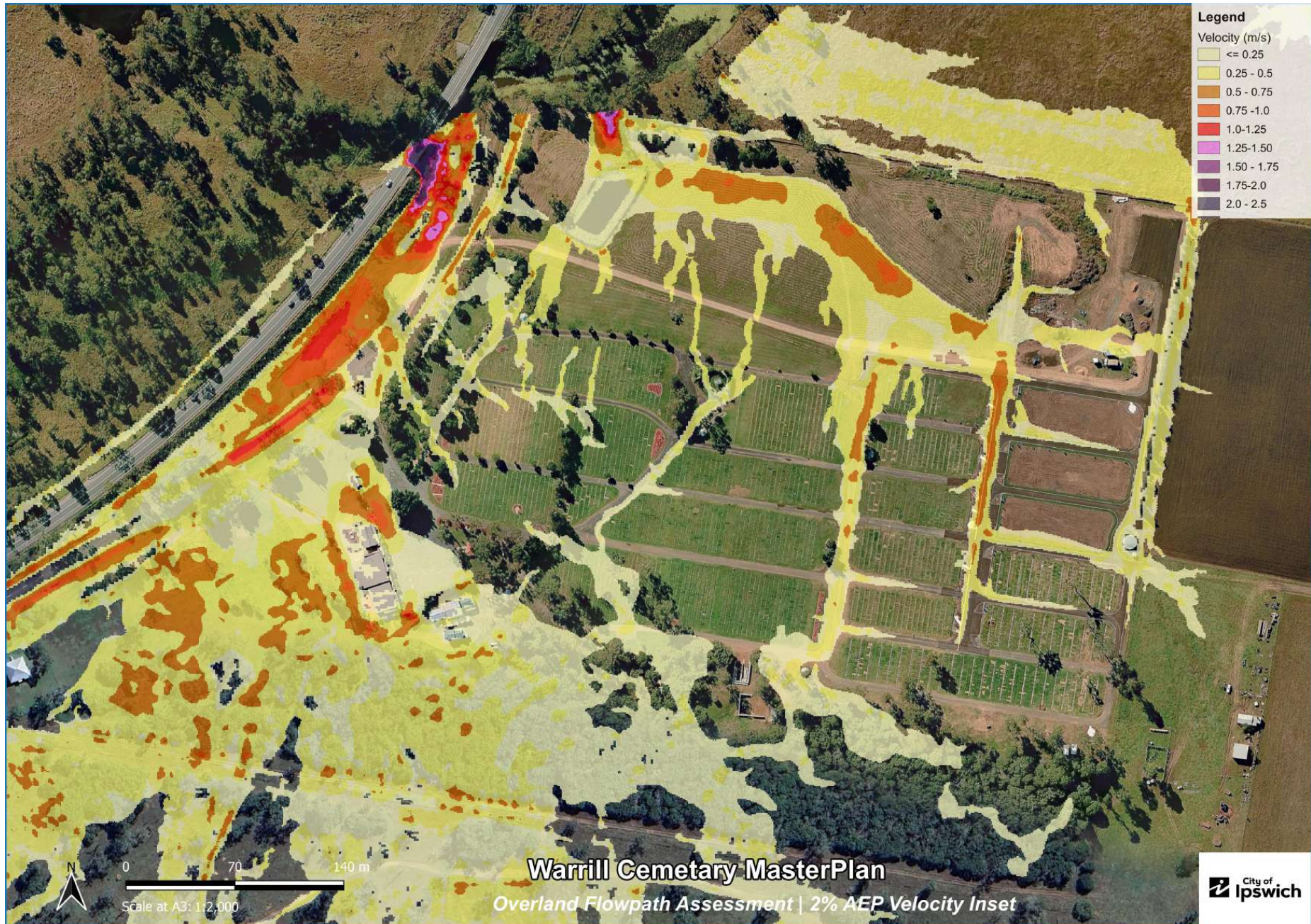


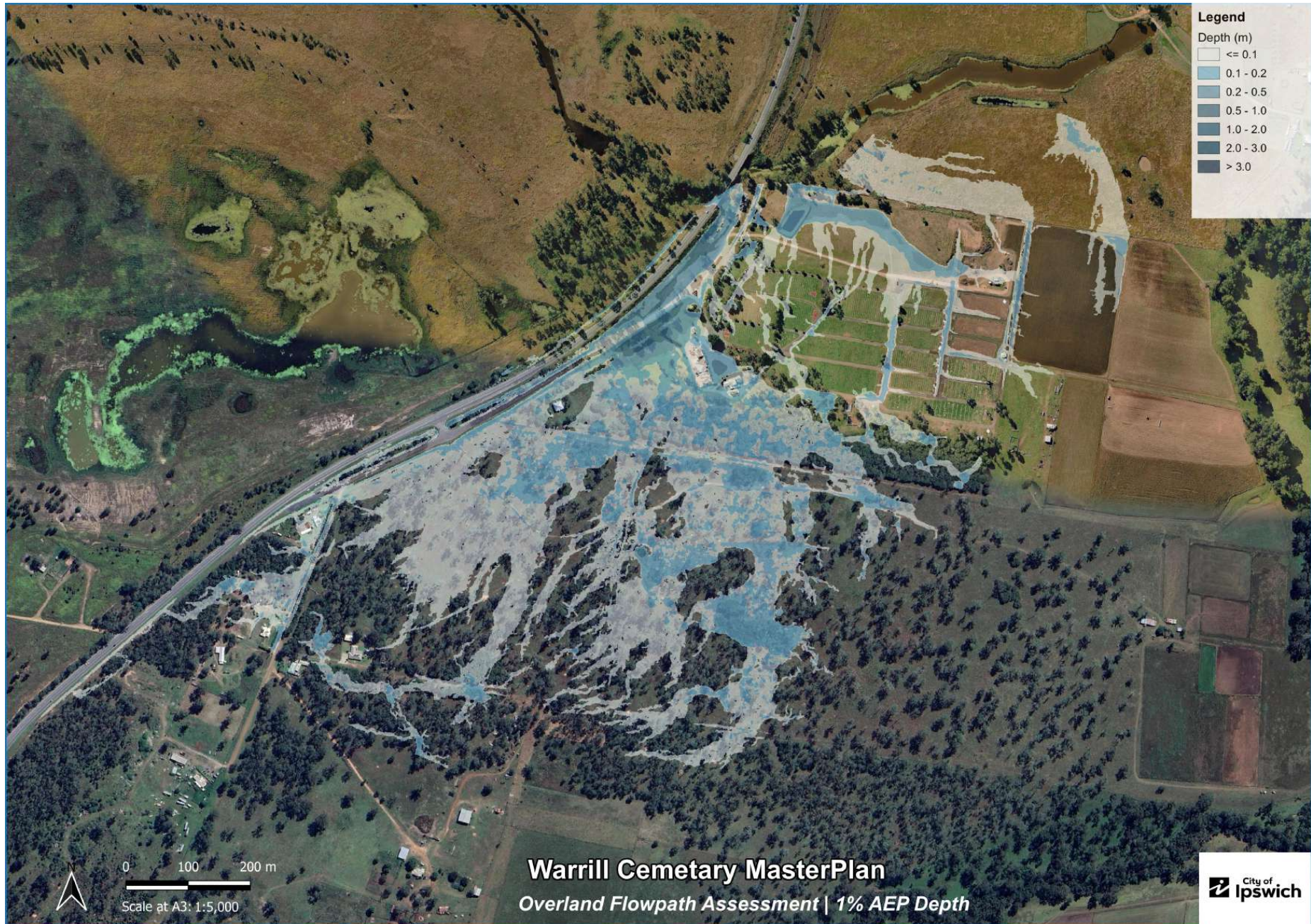




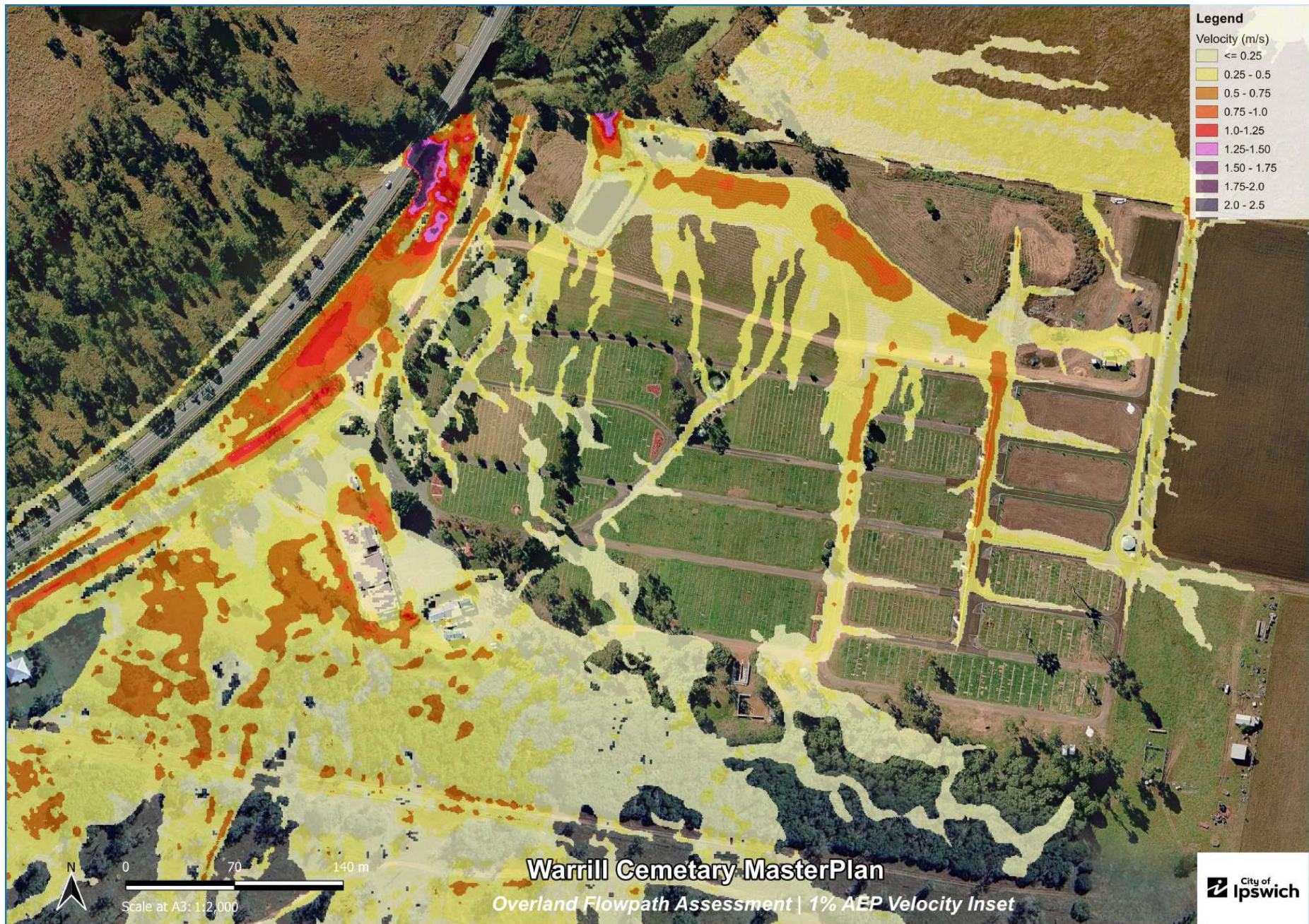


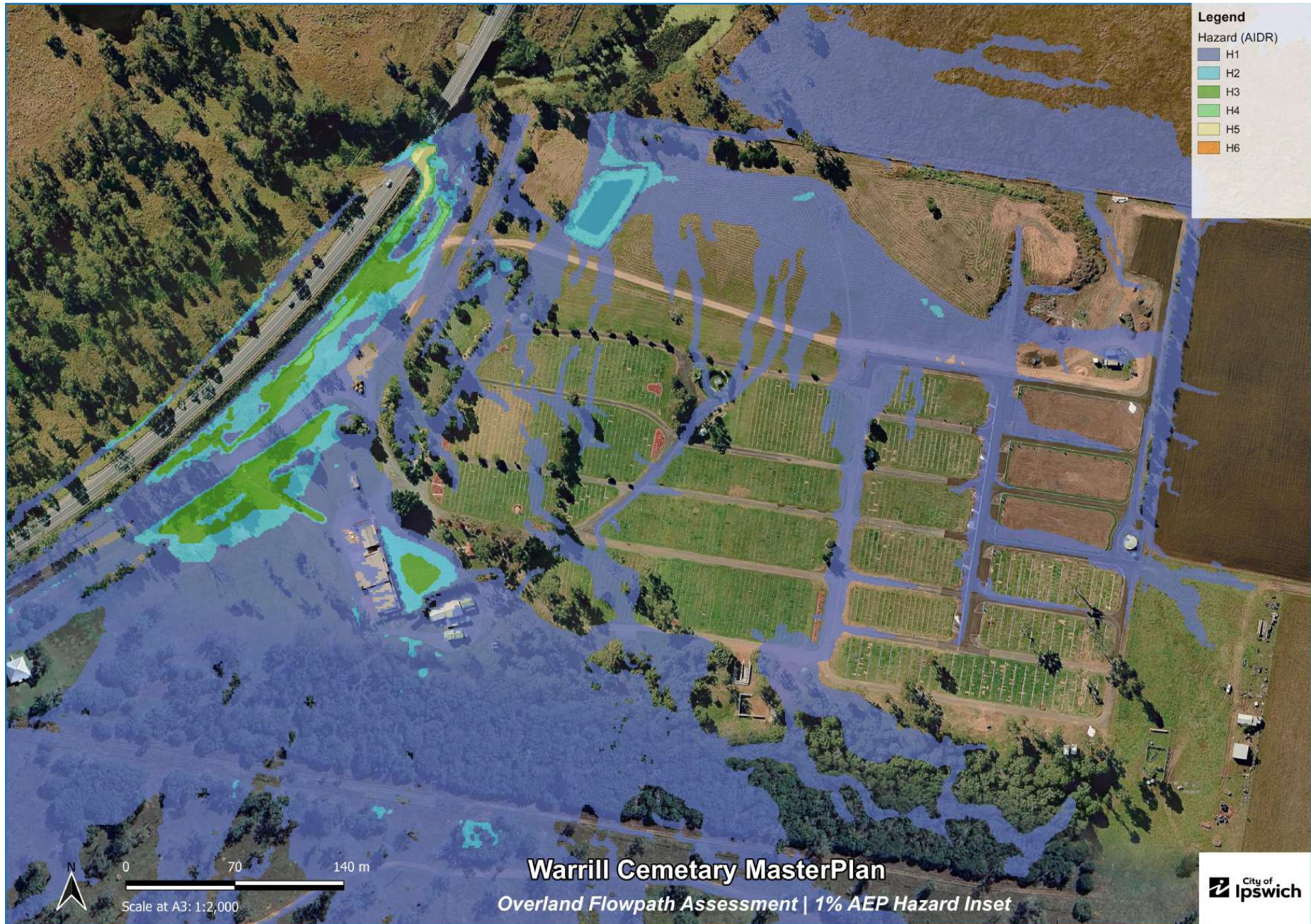


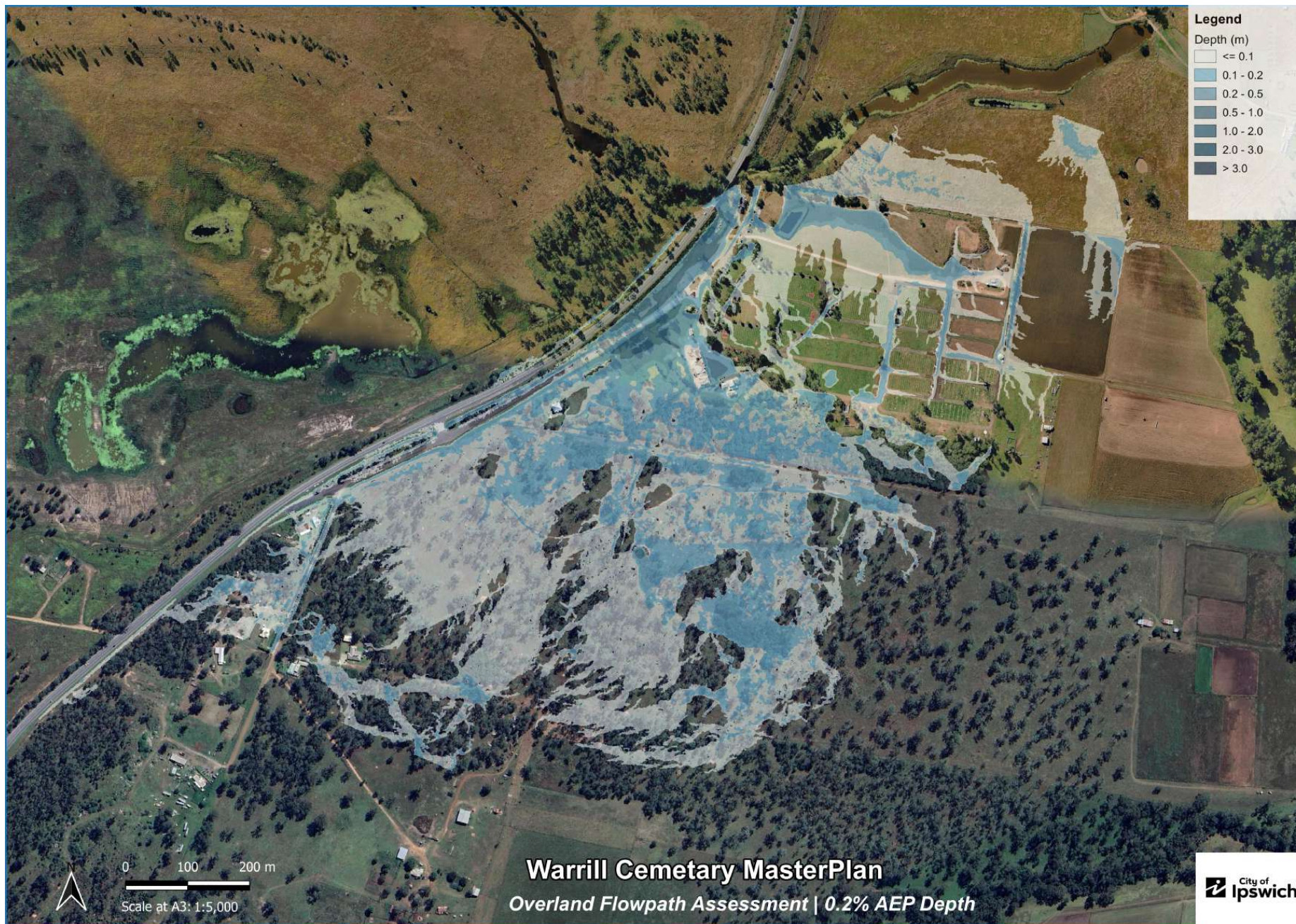


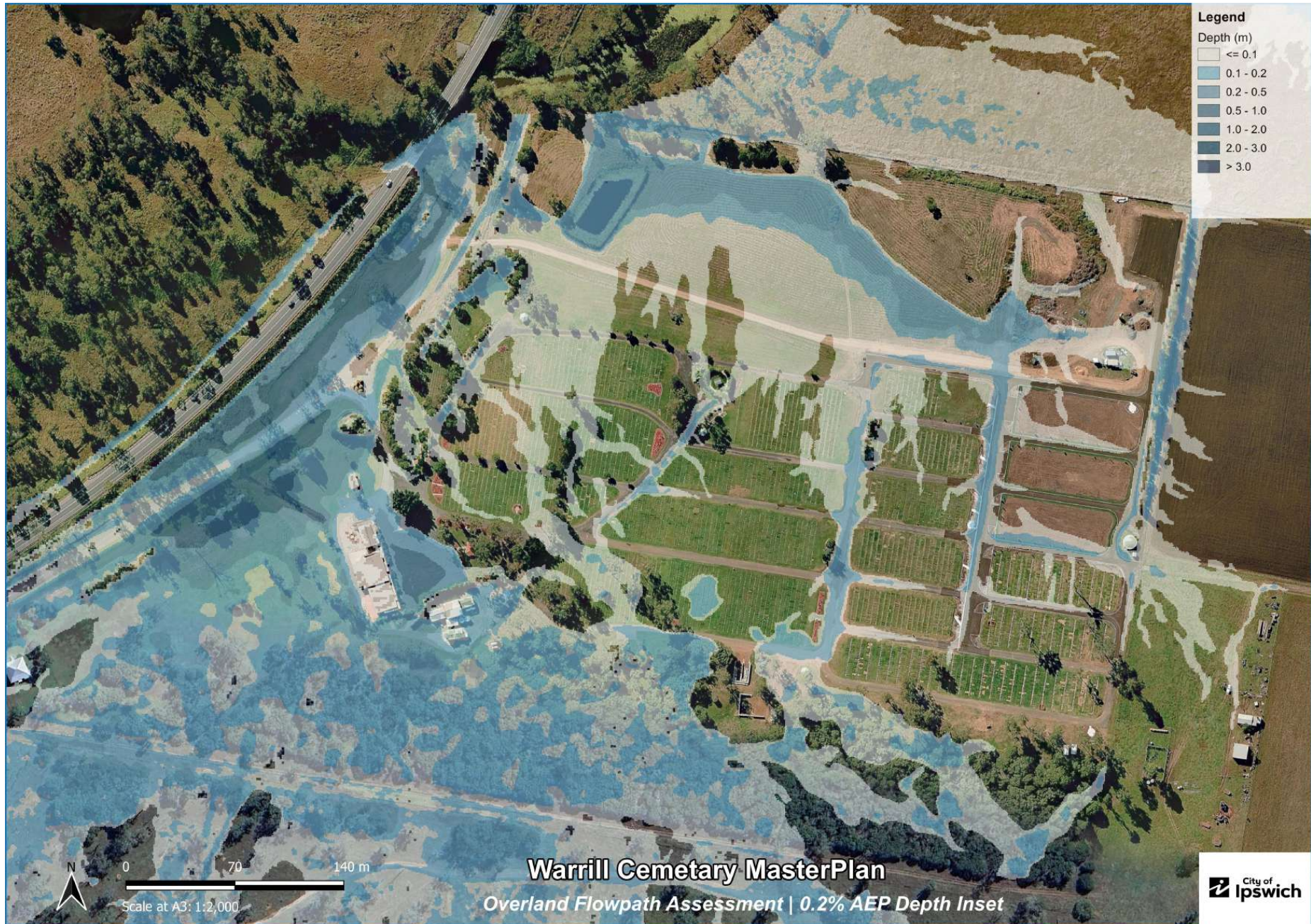


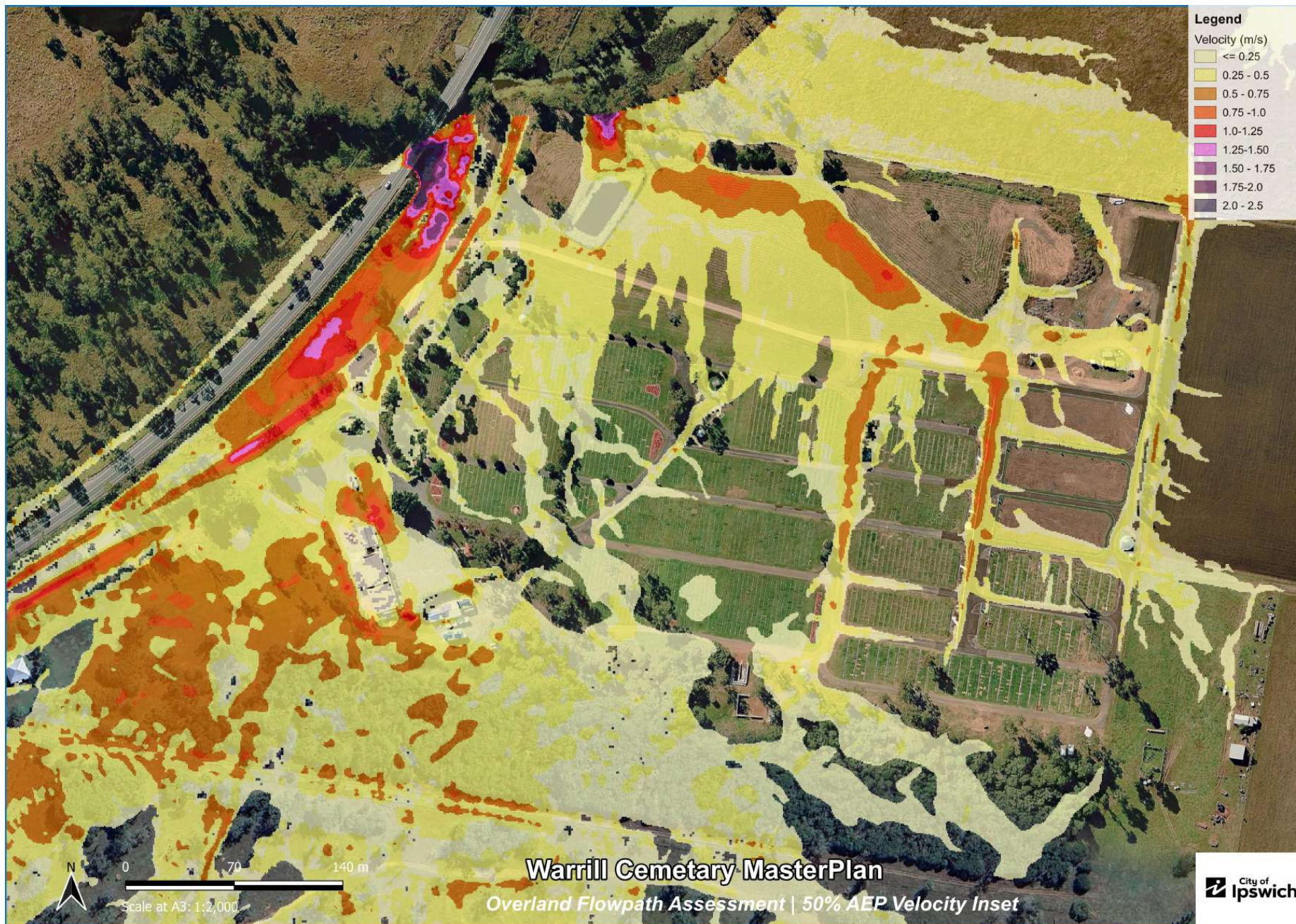


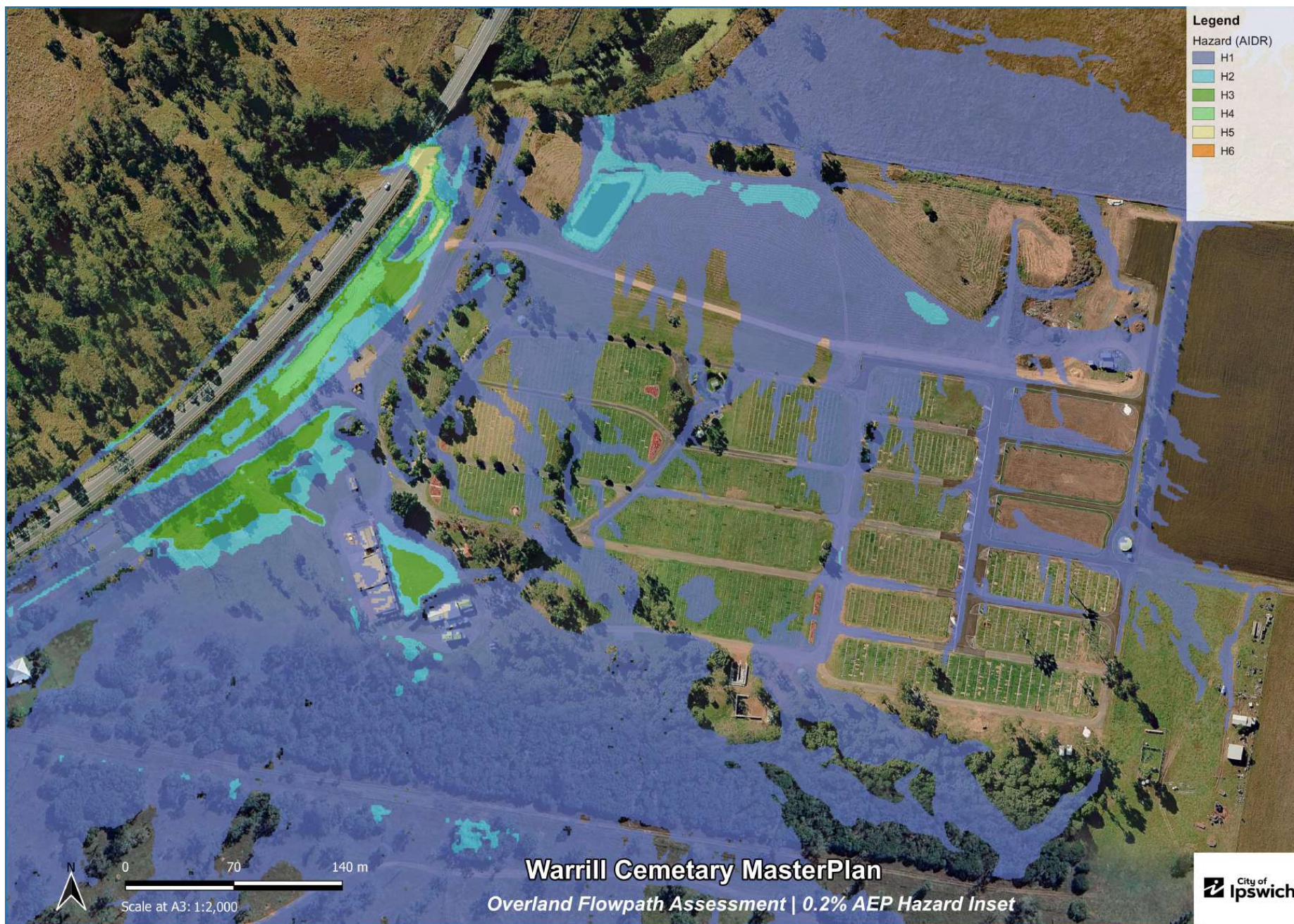














Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306

CITY/LOCAL AUTHORITY APPROVAL
Checked by: *R. Wenzel*
(For) *R. Wenzel*
Date: 29.08.23

ISSUE DATE: 29/08/23
PROJECT NO.: PRO00024
STATUS: CONCEPT DESIGN
SCALE:
DRAWN BY: DT

City of Ipswich
Sheet 1 of 33
REV. B



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Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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It has been said, that of all flowers, the life cycle of the humble Dandelion represents our universe: the bright yellow flower with its radiant petals is the sun; it then transforms into a fluffy white seed head which represents the moon; and as the individual seeds are blown away on the breeze, they become the scattering of shining stars. This ethereal idea captures the sentiment that our children are our universe, and those who are remembered here, will forever be our shining stars.

- This design reflects the Dandelion through a number of design concepts:*
- 1. The planting palette has been selected to represent the colours of the dandelion lifecycle, featuring selected species with yellow and white flowers,*
 - 2. The shade structures have a laser-cut roof detail of dandelion seeds, which cast shadows of the seed heads to the ground that will move with the sun path,*
 - 3. The radial theme of the timber-look decks represent the form of the dandelion head,*
 - 4. Stainless steel seed heads are embedded along the concrete lawn beams in random locations, modelling the movement as they are caught on the breeze.*



The Dandelion Theme

Warrill Pk Cemetery - Nursery

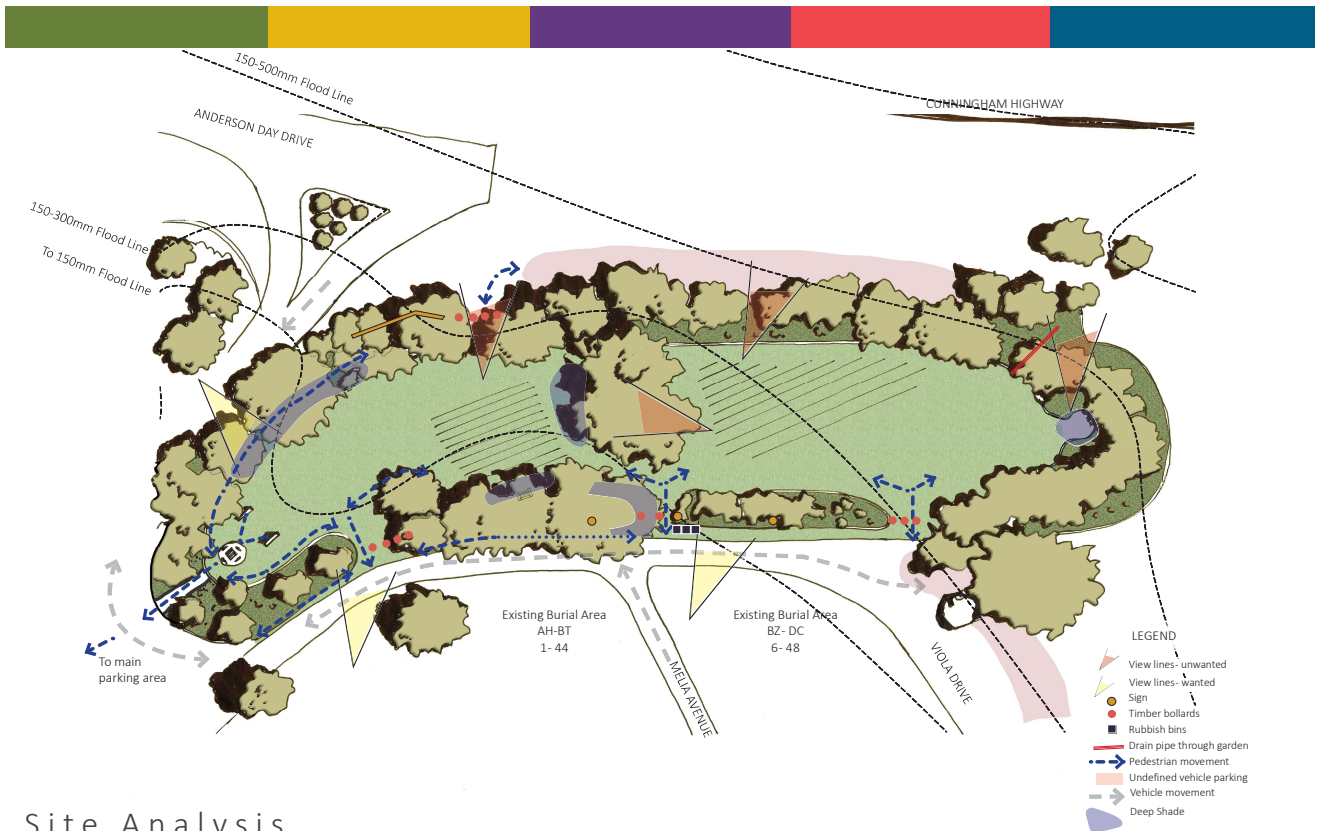
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306

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Site Analysis

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306



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Circular seating area, tired, uninviting lack of planting, in flood zone, Tired rubber softfall, theme is not relevant to surrounding area



Concrete continuous edging is cracked and grass growing through



Drain pipe through garden bed (out pipe)- invites erosion, no filtration by rock or planting, unsightly



View from entrance into Nursery area is quite good. Planting densities are sparse, particularly the Agapanthus species.



Sandstone blocks are dirty and uneven, sandblasting feature is illegible, surface not comfortable for sitting, view to highway, noisy



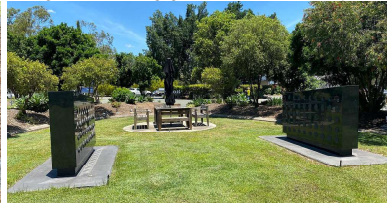
Drain pipe (in-take) looks too high for capturing water, possible poison is being used to control edging which will contaminate nearby river



Entrance is cluttered, not accessible for ride-on mower, uneven surface is difficult for disabled or prams



Timber seating is sturdy but tired. Arm rests are rough and splintery.



Timber seating is in full sun, columbariums are in good condition, but doesn't fit with the character of the other columbarium on site

Existing Site Conditions

Warrill Pk Cemetery - Nursery

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Soil has minimal mulch and sparse planting, looks dry and hard



Headstones have been placed in random pattern/lines, looks messy, planting is sparse



Random headstone placement - creates access issues and stunts plant growth due to foot traffic in garden



Existing graves are sinking and some are nearly lost, maintenance is difficult around individual headstones



Uncharacteristic plant species, Large shrub [pine] blocks views



View line to Cunningham Highway is unsightly and noisy



INTERNAL ROAD
Good shade trees at entrance, graves are road facing and create unsafe access



INTERNAL ROAD
Graves have been placed in garden bed facing the road. Random headstone placement (in middle of bed) is creating an access issue, and difficult for surrounding plant growth



Healthy Melaleucas are growing along the boundary line,

Existing Site Conditions cont...

Warrill Pk Cemetery - Nursery

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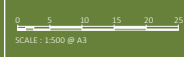
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- 1 'Dandelion Walk' decomposed granite path with headstones along edges.
- 2 'Dandelion Walk' entry statement
- 3 New lawn burial area
- 4 Refer to Landscape Plan- Existing Columbarium Area.
- 5 Refer to Landscape Plan- Dandelion Walk Area
- 6 Refer to Landscape Plan- Nursery Main Entry Area
- 7 Refer to Landscape Plan- Circular Seating Area
- 8 Existing bollards to remain
- 9 Vegetation screening to block views to highway
- 10 Boulders randomly placed through garden. Flat top boulders to be used as informal seating along 'Dandelion Walk'
- 11 Main entrance to Nursery area.
- 12 Concrete path to informal carpark area and existing shelter, to encourage the use of a designated entry point to the area and improve disability access.
- 13 Bin storage surround



Landscape Plan
Warrill Pk Cemetery - Nursery
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306



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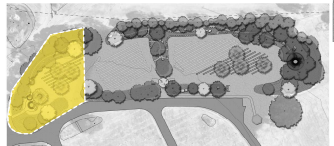
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- 1 'Dandelion Walk' decomposed granite path with headstones along edges.
- 2 'Dandelion Walk' entry statement
- 3 New lawn burial area
- 4 Existing columbariums
- 5 2 x New seating areas with shelter, and concrete path. Existing concrete slab to be retained and new concrete to match existing concrete surface levels. Shelters to have laser-cut roof with Dandelion design to match Entry Statement. Seating to match Circular Seating Area.
- 6 Concrete infill between existing columbariums with feature shade tree and circular concrete seating around tree
- 7 Decomposed granite to be installed to existing path to match new garden paths
- 8 Headstones placed with a minimum of 300mm from edging and within 600mm wide aged organic mulch. Heavier concentration of sandy soil to front area of headstone, suitable for burying Urns with Ashes.
- 9 Existing bollards to remain
- 10 Views to Nursery area are to be retained. Lift existing tree canopies to min. 4.2m above road surface
- 11 Boulders randomly placed through garden. Flat top boulders to be used as informal seating along 'Dandelion Walk'

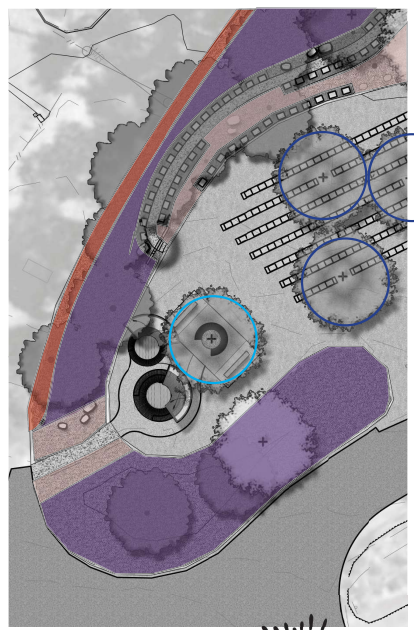


KEY PLAN - NOT TO SCALE



PLANTING ZONES

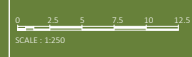
- Agapanthus planting zone. Feature planting for vehicle entrance to site. Refer to Groundcover Palette for planting density.
- General Planting Area- Trees and Groundcovers:
 - Trees with canopies high enough to retain visual access into the Nursery Area from site.
 - Groundcovers with flowers. Taller groundcovers to be planted towards the base of the raised mound.
 - Planting species can include:
 - Trees:
 - TRISTANIOPSIS 'Luscious'
 - XANTHOSTEMON chrysanthus
 - LAGERSTROEMIA Natchez
 - LAGERSTROEMIA indica 'Diamonds in the Dark'- Pure White
 - Groundcovers:
 - Refer to Species in the Groundcover Palette.
 - Agapanthus is NOT to be used in this area.
- General Planting Area- Groundcovers Only
 - The space between the headstones and the path / garden edging is to be kept low and organic.
 - Plants to be set back minimum of 300mm from headstones and concrete edging unless otherwise specified.
 - Groundcovers:
 - Refer to Species in the Groundcover Palette.
 - Agapanthus is NOT to be used in this area.
- Feature deciduous tree
 - BRACHYCHITON discolor
- Australian Native Trees
 - CORYMBIA citriodora
 - EUCALYPTUS racemosa



Landscape Plan - Existing Columbarium Area

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306

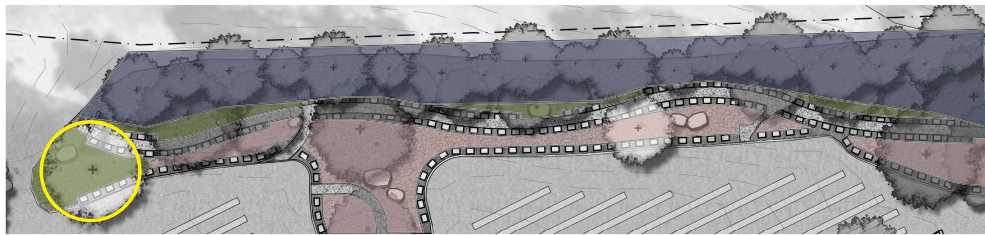


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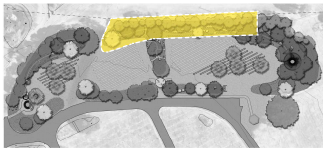




- 1 'Dandelion Walk' decomposed granite path with headstones along edges.
- 2 'Dandelion Walk' entry statement
- 3 Vegetation screening to boundary. To block view to highway. Refer to Screening Planting Palette and General Planting Arrangement- Screening Plants.
- 4 Boulders randomly placed through garden. Flat top boulders to be used as informal seating along 'Dandelion Walk'
- 5 Boulder seating along pathway
- 6 Headstones placed with a minimum of 300mm from edging and within 600mm wide aged organic mulch.



KEY PLAN- NOT TO SCALE



PLANTING ZONES

- Screening Planting Area. Refer to General Planting Arrangement- Screening Species and Screening Plants Palette.
- General Planting Area- Trees, Shrubs and Groundcovers: Refer to Tree, Shrubs and Groundcover Planting Palettes for species and densities. - Agapanthus is NOT to be used in this area.

- General Planting Area- Groundcovers Only
The space between the headstones and the path / garden edging is to be kept low and organic. Plants to be set back minimum of 300mm from headstones and concrete edging unless otherwise specified.
Groundcovers:
- Refer to Species in the Groundcover Palette.
- Agapanthus is NOT to be used in this area.

- Feature yellow flowering tree. Refer to Tree Palette. Species could include:
- XANTHOSTEMON chrysanthus
- TRISTANIOPSIS Luscius



Landscape Plan - Dandelion Walk Area

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

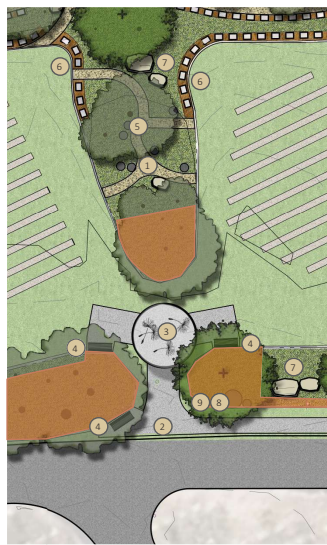


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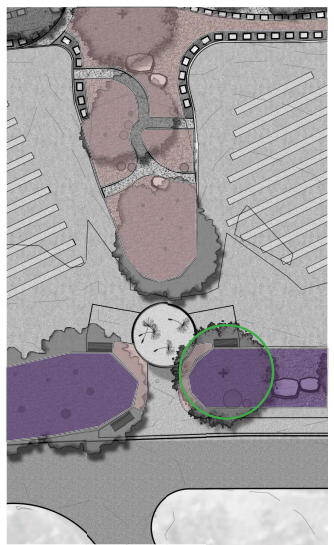


- 1 Decomposed granite path with metal edging
 - 2 Main entry Nursery area with concrete path to carparking and shelter
 - 3 Circular timber-look shelter with Dandelion seed head design laser-cut into steel roof. Laser-cut steel fringe surround under gutter with name of area attached. Refer to Elevation 1- Main Entrance
 - 4 Wrought iron decorative seating- Refer to Materials and Finishes
 - 5 Interactive Adventure Walk. Various sculptures of insects, dandelions and fairies attached to trees, boulders and ground level. Potential to allow grieving visitors to hang ribbons through trees as a memorial token.
 - 6 Headstones placed with a minimum of 300mm from edging and within 600mm wide aged organic mulch.
 - 7 Boulders randomly placed through garden.
 - 8 3 x Feature Metal/Iron Dandelion sculptures. Refer to Sculpture Exemplars
 - 9 ICC sign- with 'The Dandelion Theme' explanation
- Area to be left as garden only for the front entry. No further burials or headstones to be placed in this area. No further burials or headstones to road-side of front garden beds. Planting species to have all year round flowering interest.

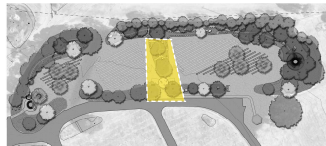


PLANTING ZONES

- General Planting Area- Trees and Groundcovers:
Trees with canopies high enough to retain visual access into the Nursery Area from site.
Groundcovers with flowers. Taller groundcovers to be planted towards the base of the raised mound.
Planting species can include:
Trees:
- TRISTANIOPSIS 'Luscious'
- XANTHOSIEMON chrysanthus
- LAGERSTROEMIA Natchez
- LAGERSTROEMIA indica 'Diamonds in the Dark'- Pure White
Groundcovers:
- Refer to Species in the Groundcover Palette.
- Agapanthus is NOT to be used in this area.
- General Planting Area- Groundcovers Only
The space between the headstones and the path / garden edging is to be kept low and organic.
Plants to be set back minimum of 300mm from headstones and concrete edging unless otherwise specified.
Groundcovers:
- Refer to Species in the Groundcover Palette.
- Agapanthus is NOT to be used in this area.
- New tree to match tree species in opposite garden bed.
Tree:
- MELALEUCA bracteata



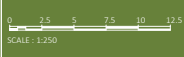
KEY PLAN - NOT TO SCALE



Landscape Plan - Nursery Main Entry Area

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306



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- 1 'Dandelion Walk' decomposed granite path with headstones along edges.
 - 2 'Dandelion Walk' entry statement with stone steps as required
 - 3 Vegetation screening to block views to highway
 - 4 Boulders randomly placed through garden. Flat top boulders to be used as informal seating along 'Dandelion Walk'
 - 5 Timber-look raised deck with honed concrete seating surround. Seating to have sections of armrests and backrests, backrests to be of laser-cut steel with Dandelion design. Refer to Section B and Section C- Circular Seating Area for conceptual design. Refer to Character Exemplar for Timber-Look Raised Deck exemplar.
 - 6 Headstones placed with a minimum of 300mm from edging and within 600mm wide aged organic mulch. Heavier concentration of sandy soil to front area of headstone, suitable for burying Urns with Ashes.
 - 7 Levels to concrete edging and adjacent turf to be adjusted to allow drainage pipe to function correctly. Damaged concrete edging to be repaired.
- Existing drain pipe through garden bed.

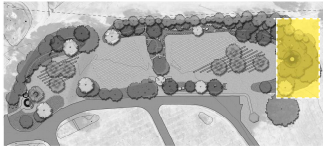


PLANTING ZONES

- **General Planting Area- Trees, Shrubs and Groundcovers:**
Refer to Tree, Shrubs and Groundcover Planting Palettes for species and densities.
- Agapanthus is NOT to be used in this area.
- **General Planting Area- Groundcovers Only**
The space between the headstones and the path / garden edging is to be kept low and organic.
Plants to be set back minimum of 300mm from headstones and concrete edging unless otherwise specified.
Groundcovers:
- Refer to Species in the Groundcover Palette.
- Agapanthus is NOT to be used in this area.
- **Screening Planting Area.** Refer to General Planting Arrangement- Screening Species and Screening Plants Palette.
- **Shade Planting Area.** Refer to Shade Shrubs Palette
- **New feature deciduous trees to wrap around circular seating area**
Tree:
- BETULA nigra



KEY PLAN - NOT TO SCALE



Landscape Plan - Circular Seating Area

Warrill Pk Cemetery - Nursery

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Elevation 1 - Main Entrance

Warrill Pk Cemetery - Nursery

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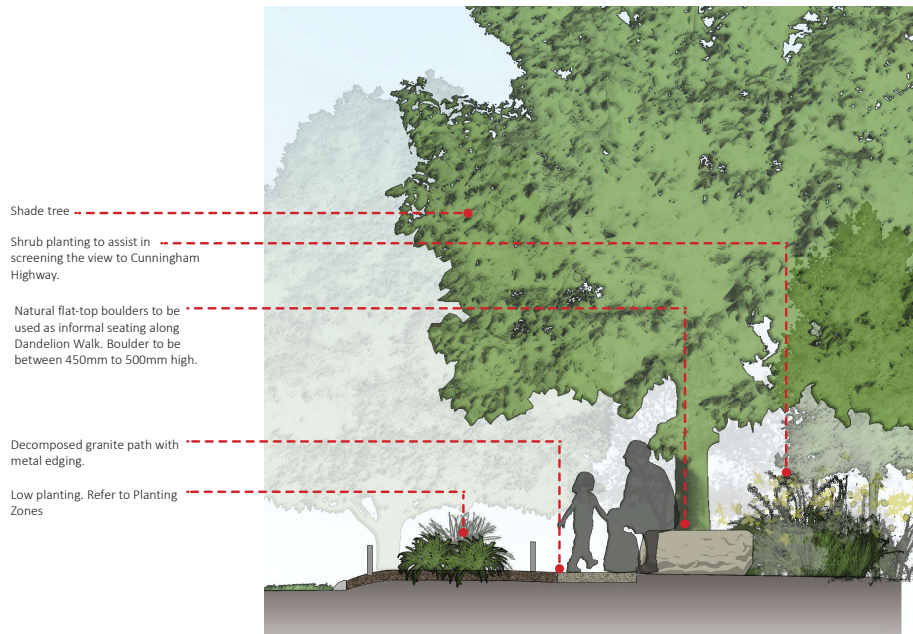
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Elevation 2 - Dandelion Walk Entrance
Warrill Pk Cemetery - Nursery

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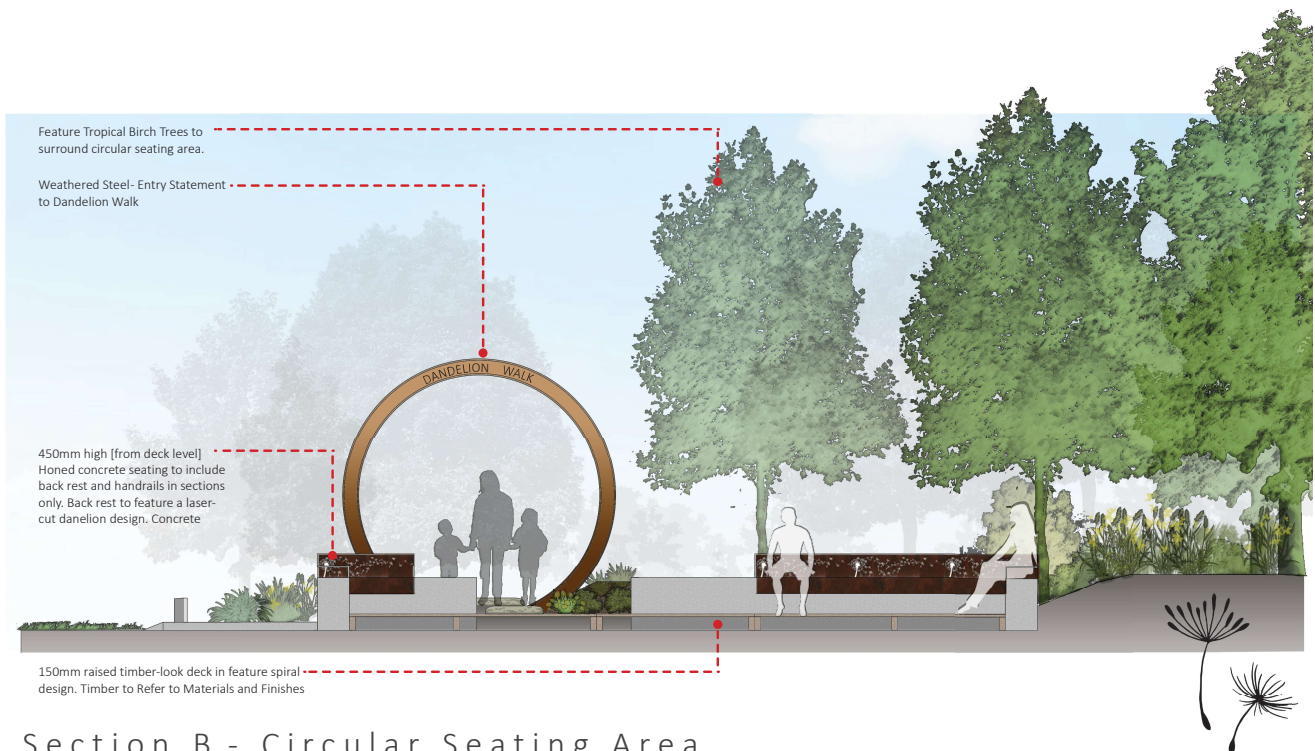
Section A - Dandelion Path Walk

Warrill Pk Cemetery - Nursery

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Section B - Circular Seating Area

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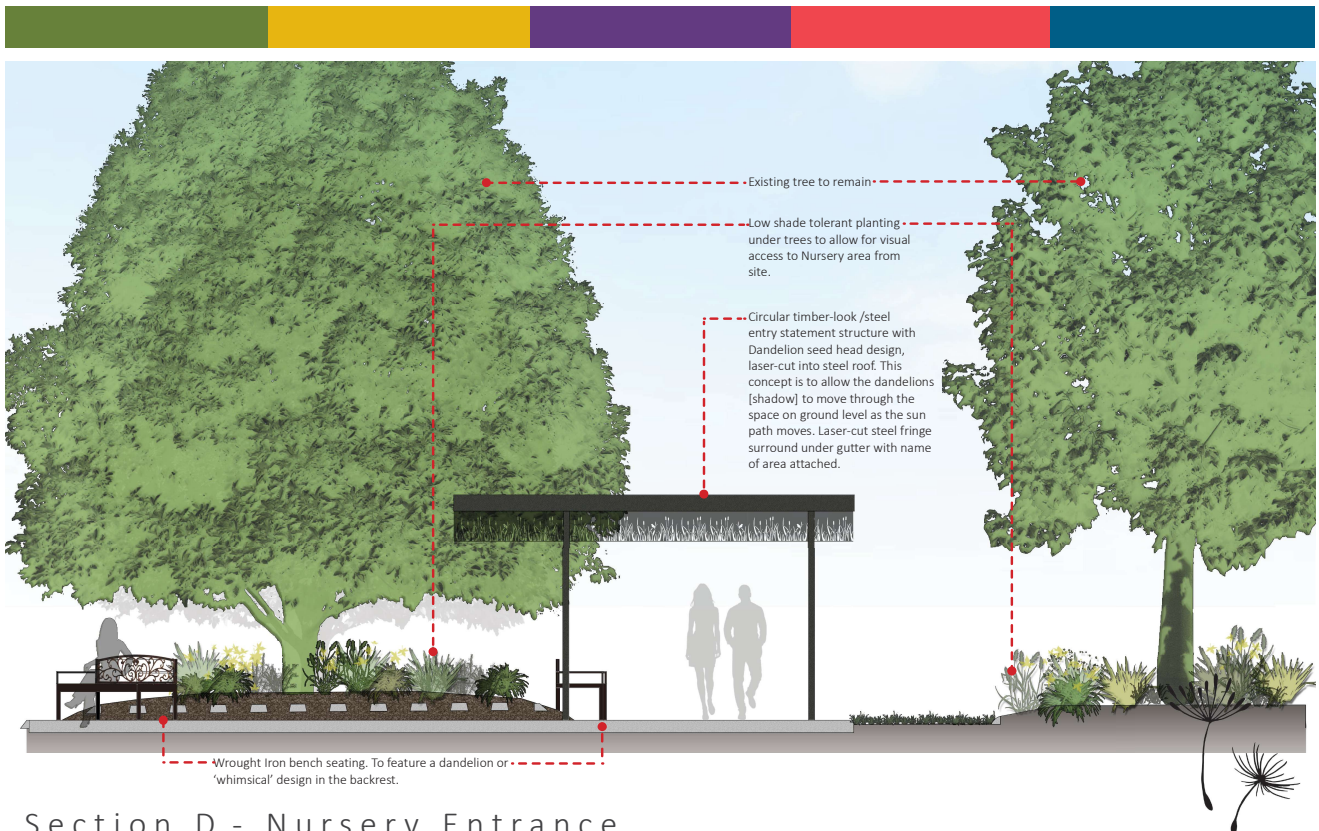


Section C - Circular Seating Area

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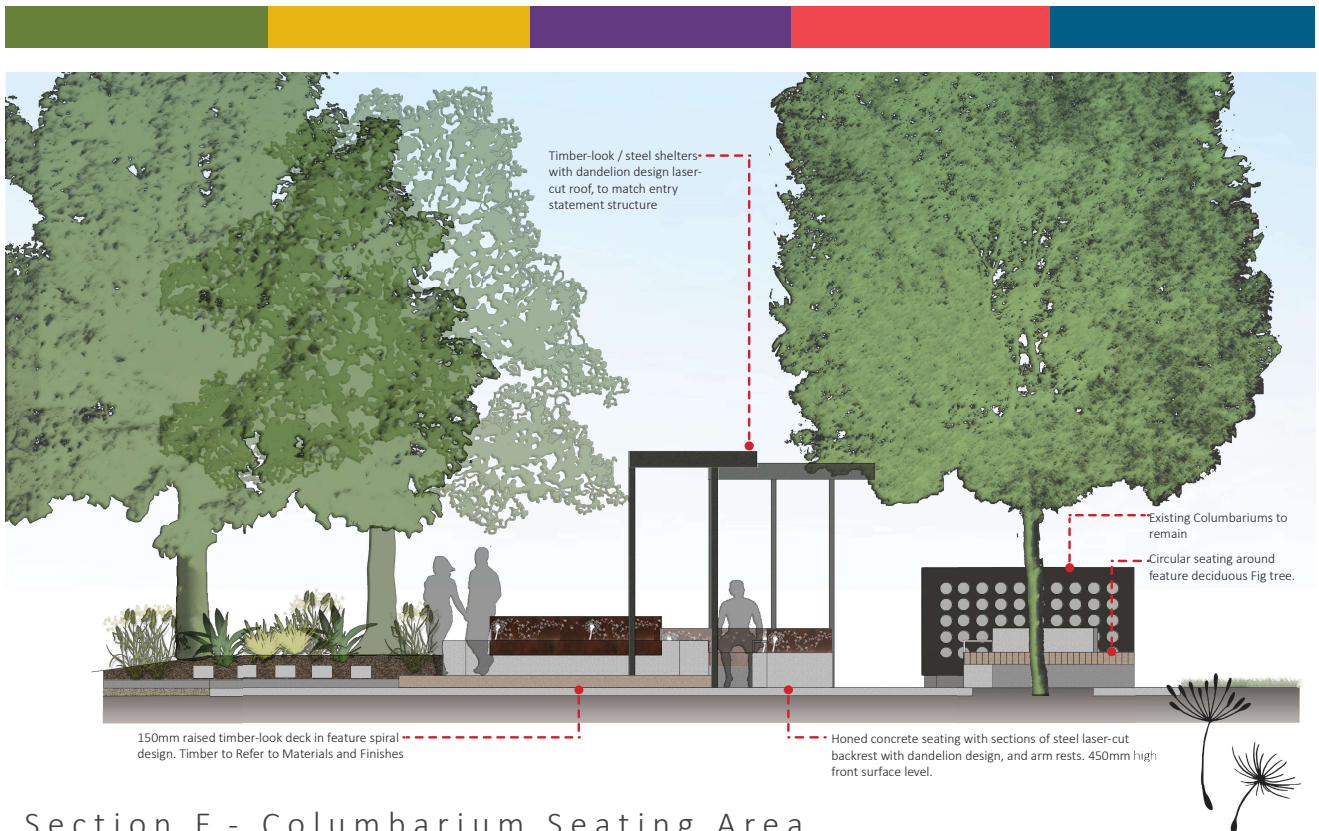


Section D - Nursery Entrance
Warrill Pk Cemetery - Nursery

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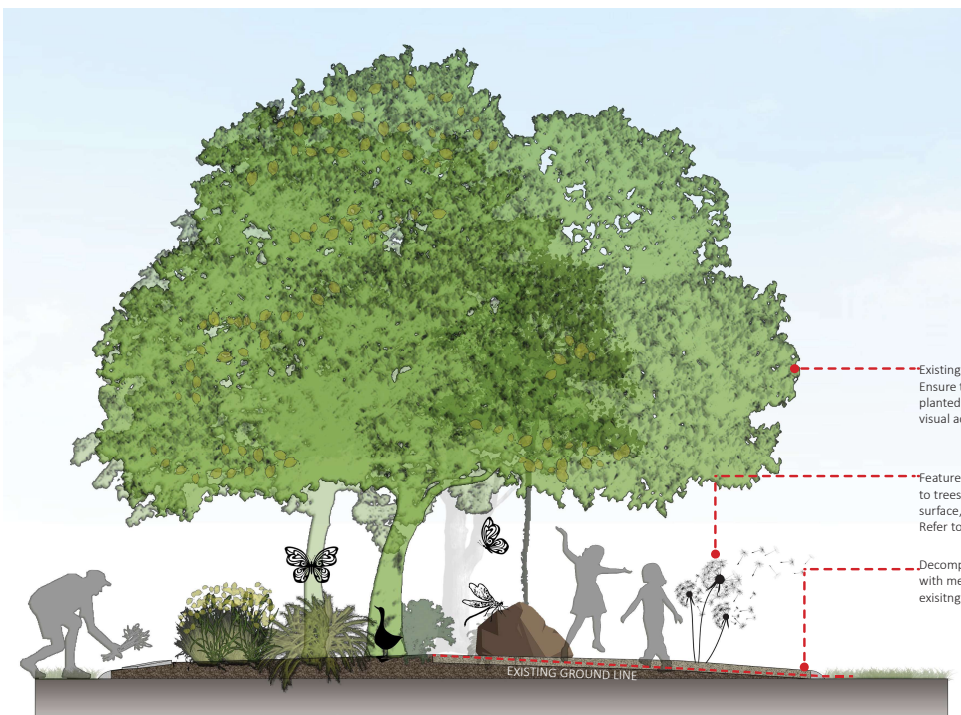
Section E - Columbarium Seating Area

Warrill Pk Cemetery - Nursery

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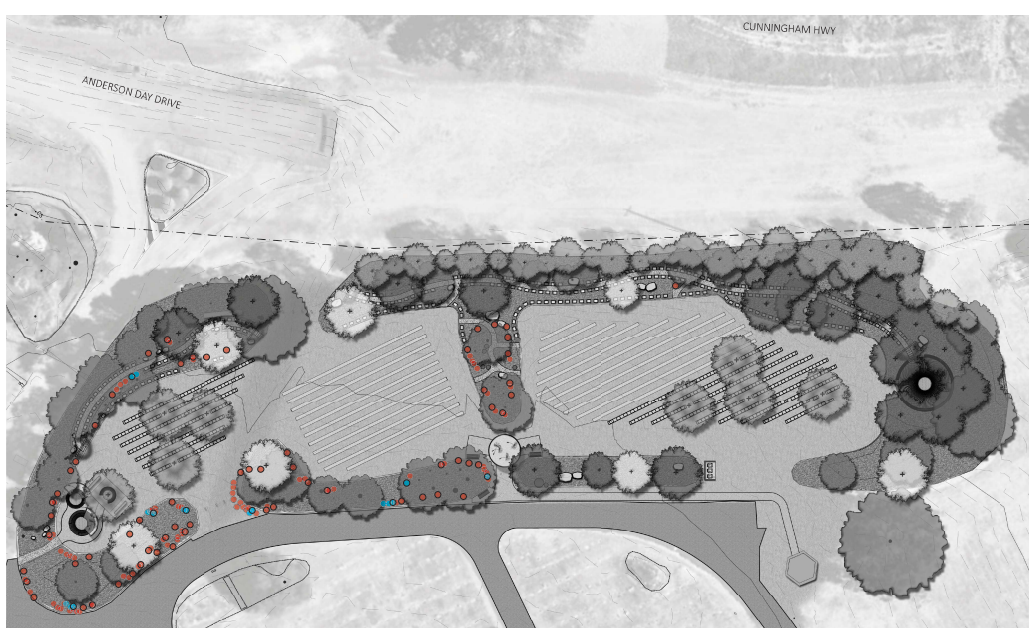


Section F - Adventure Walk

Warrill Pk Cemetery - Nursery

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LEGEND

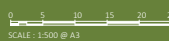
- Inurnment Plot
- Reserved Inurnment Plot



PlotBox Data Overlay

Warrill Pk Cemetery - Nursery

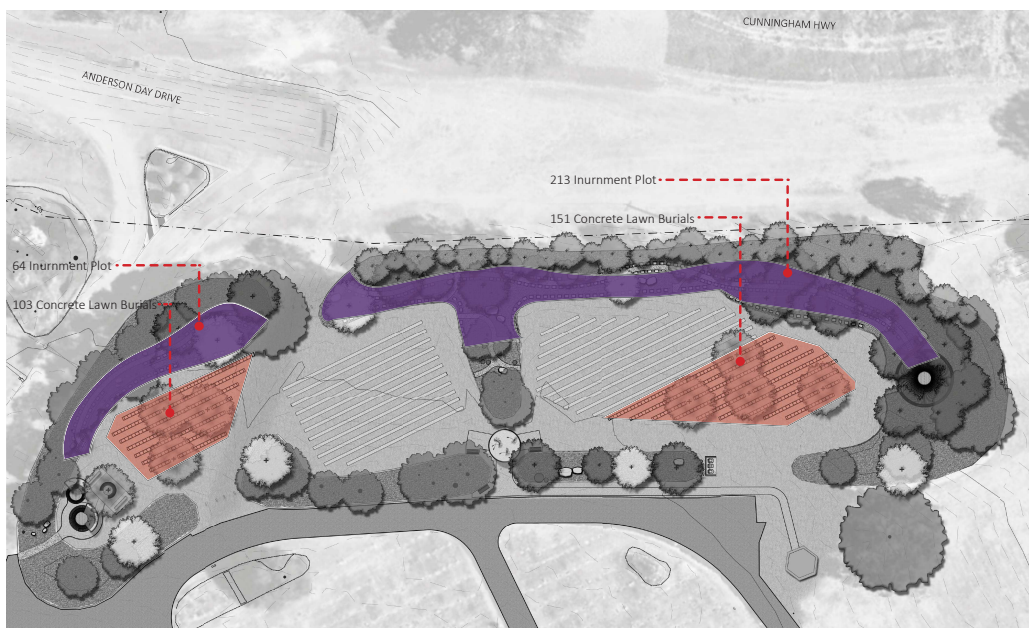
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- YIELDS
- 254 Concrete Lawn Burials
 - 277 Inurnment Plot
- 531 PROPOSED YIELD ***

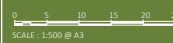
* Yields are indicative and will need to be confirmed in future design phase.



Proposed Yield

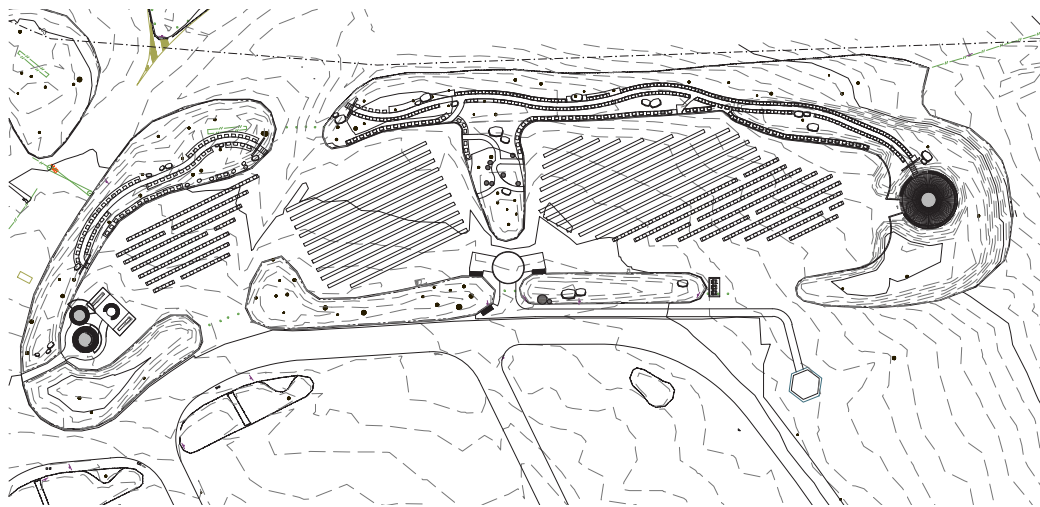
Warrill Pk Cemetery - Nursery

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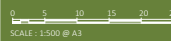
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CAD Based Yield Layout

Warrill Pk Cemetery - Nursery

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Raised deck- timber-look material



Sculptures



Natural stone seating



Decorative cast iron bench seat



Decorative laser-cut weathered steel: seat back-rest and entrance statement roof



Concrete seat with decorative metal seat overlay



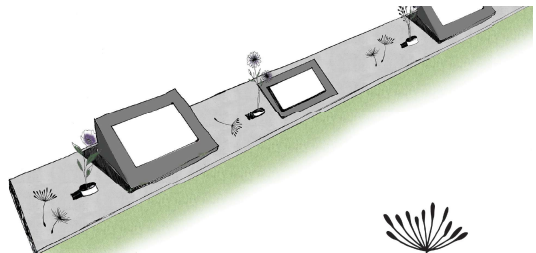
Dandelion Walk entrance statement



Deco path with metal edging



Butterfly attracting plant species



Stainless steel Dandelion seed head embedded into concrete lawn beams



Character Exemplars

Warrill Pk Cemetery - Nursery

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Laser-cut roof for shade structures - dandelion design



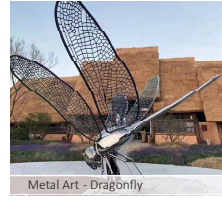
Fairy with Dandelion Sculpture



Dandelion Sculpture



Marine grade steel inlay - Dandelion



Metal Art - Dragonfly



Weathered steel circular entry statement to Dandelion Walk



Metal Art - Bee



Metal Art - Duck



Steel Silhouettes



Metal Art - Butterfly

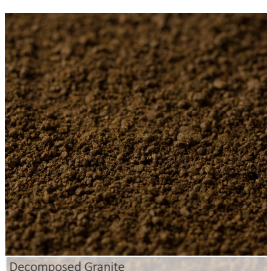


Sculpture Exemplars
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Composite timber- smoked oak



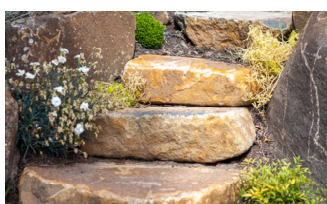
Decomposed Granite



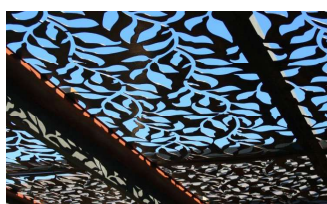
Weathered steel edging to deco path



Metal Adventure Walk objects



Stone steps at entry to Dandelion Walk



Decorative roof to shade structures [Dandelion design]



Weathered Steel- Dandelion Walk Entry



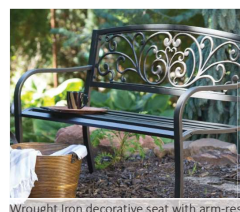
Cypress mulch



Honed concrete seating



Aluminium Slat bins enclosure



Wrought iron decorative seat with arm-rests



Material and Finishes

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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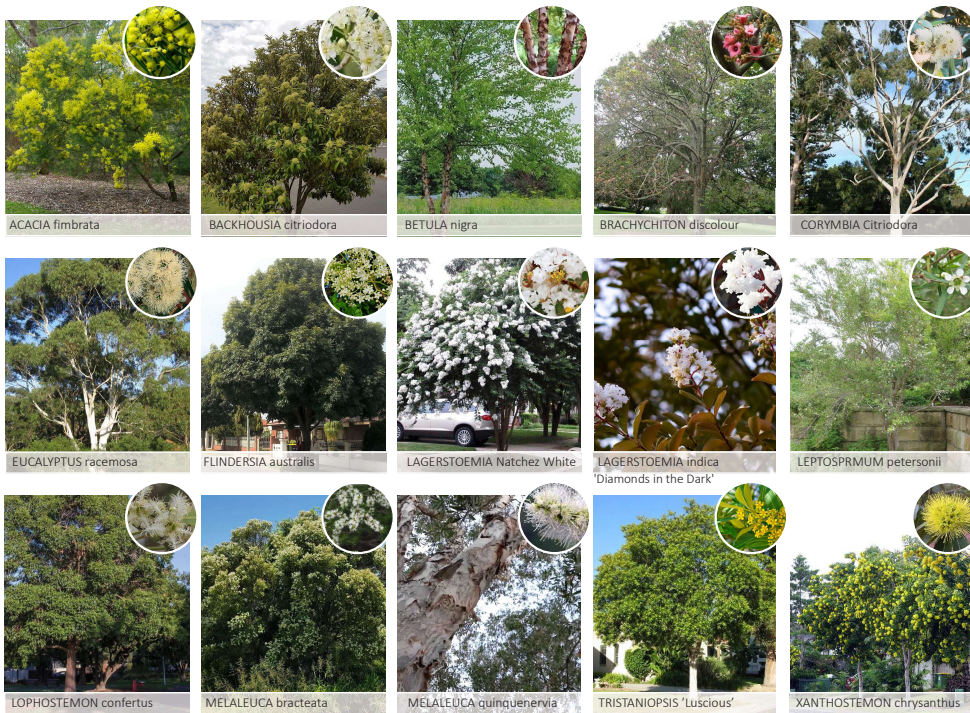
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Plant Species to be Removed
Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306

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PLANTING PALETTE		
BOTANICAL NAME	COMMON NAME	PLANTING DENSITY
TREES		
ACACIA fimbriata	Brisbane Wattle	1 / 4m2
BACKHOUSIA citriodora	Lemon Myrtle	1 / 5m2
BETULA nigra	Tropical Birch Tree	1 / 10m2
BRACHYCHITON discolor	Lacebark Tree	1 / 20m2
CORYMBIA citriodora*	Lemon Scented Gum	1 / 15m2
EUCALYPTUS racemosa	River She-Oak	1 / 15m2
FLINDERSIA australis	Crows Ash	1 / 10m2
LAGERSTOEMIA 'Natchez' White	Crepe Myrtle White	1 / 5m2
LAGERSTOEMIA indica 'Diamonds in the Dark'- Pure White	Crepe Myrtle- Diamonds in the Dark- Pure White	1 / 2m2
LEPTOSPERMUM petersonii	Lemon-scented Tea Tree	1 / 2m2
LOPHOSTEMON confertus*	Queensland Brush Box	1 / 10m2
MELALEUCA bracteata	Black Tea Tree	1 / 10m2
MELALEUCA quinquenervia	Paper Bark	1 / 10m2
TRISTANIOPSIS 'Luscious'*	Water Gum	1 / 10m2
XANTHOSTEMON chrysanthus	Golden Penda	1 / 10m2



Tree Palette

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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TREES

- EUCALYPTUS racemosa
- MELALEUCA quinquenervia
- ACACIA fimbriata

LARGE SHRUBS

- ACMENA smithii 'Sublime'
- BACKHOUSIA citriodora
- BACKHOUSIA myrtifolia
- CALLISTEMON 'Hinchinbrook'
- GREVILLEA 'Moonlight'

SMALL SHRUBS

- XANTHOSTEMON verticillatus
- DIETES bicolour

GROUNDCOVER

- PENNISETUM 'Nafray'
- LOMANDRA 'Lime Tuff'

PLANTING PALETTE		
BOTANICAL NAME	COMMON NAME	PLANTING DENSITY /1m2
SCREENING TREES		
TREES		
EUCALYPTUS racemosa	Scribbly Gum	1 per 5m2
MELALEUCA quinquenervia	Paper Bark	1 per 5m2
ACACIA fimbriata	Brisbane Wattle	1 per 5m2
LARGE SHRUBS		
ACMENA smithii 'Sublime'	Lilly Pilly	2
BACKHOUSIA citriodora	Lemon Myrtle	2
BACKHOUSIA myrtifolia	Grey Myrtle	2
CALLISTEMON Hinchinbrook	Bottlebrush	2
GREVILLEA 'Moonlight'	Grevillea	2
XANTHOSTEMON verticillatus	Little Penda	2
SMALL SHRUBS		
DIETES bicolour	Peacock Flower	5
PENNISETUM 'Nafray'	Swamp Foxtail Grass	5
GROUNDCOVER		
LOMANDRA 'Lime Tuff'	Mat Rush	5

Note: Screening species are not to be trimmed or hedged, unless required to promote healthy growth.
Small shrubs and groundcovers to be set back from headstones and path edge minimum 300mm.



Screening Species

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD. 4306

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PLANTING PALETTE		
BOTANICAL NAME	COMMON NAME	PLANTING DENSITY /1m ²
SHRUBS		
ABELIA grandiflora nana	Glossy Abelia	2
ACACIA fimbriata Dwarf 'Crimson Blush'	Dwarf Wattle	1
DIETES bicolour	Peacock Flower	4
EREMOPHILA 'Magic Bush'	Emu Bush	2
LEPTOSPERMUM 'Pink Cascade'	Tea Tree	2
NEOMARICA gracilis	Walking Iris	5
PENNisetum 'Nafray'	Swamp Foxtail Grass	5
PHYLLANTHUS multiflorus	Waterfall Shrub	2
RHAPHELOPIS 'Snow Maiden'	Indian Hawthorn	2
WESTRINGIA 'Wynabbie Gem'	Coastal Rosemary	2
XANTHOSTEMON chrysanthus	Little Penda	2

Shrubs Palette

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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PLANTING PALETTE		
BOTANICAL NAME	COMMON NAME	PLANTING DENSITY /1m2
SHRUBS		
ASPLENIUM australasicum	Birds Nest Fern	1
BLECHNUM Silver Lady	Lady Lucky Fern	2
HYMEMOCALLIS littoralis	Spider Lily	4
LIRIOPE 'Just Right'	Lilyturf	8
NEOMARICA gracilis	Walking Iris	5
SPATHIPHYLLUM Sensation	Peace Lily	4



Shade Shrubs Palette
Warrill Pk Cemetery - Nursery
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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PLANTING PALETTE		
BOTANICAL NAME	COMMON NAME	PLANTING DENSITY /m ²
GROUNDCOVERS		
ACTINOTUS helianthi	Flannel Flower	4
AGAPANTHUS 'White'	Lily of the Nile	8
ALYSSUM	Alyssum 'Carpet of Snow'	9
BANKSIA 'Roller Coaster'	Banksia	4
BRACHYSCOME 'Lemon Twist'	Native Daisy	4
GARDENIA 'Radican'	Rock Gardenia	2
GAZANIA rigens (Yellow)	Gazania Yellow	4
GREVILLEA 'Mt Tamboritha'	Grevillea	4
LIRIOPE 'Just Right'	Lilyturf	8
LOMANDRA 'Lime Tuff'	Mat Rush	5
MYOPORUM pavifolium *	Boobialla	4
POA labillardierei	Tussock Grass	4

* MYOPORUM pavifolium will need to be set back 600mm from headstones and concrete edging due to growth rate.



Groundcover Palette

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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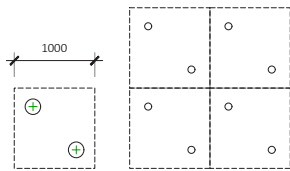


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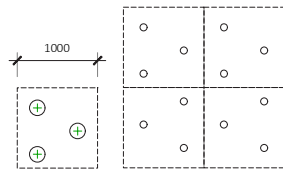
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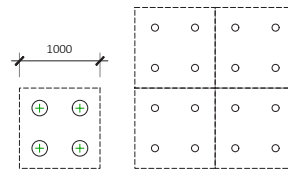
PLANTING DENSITIES



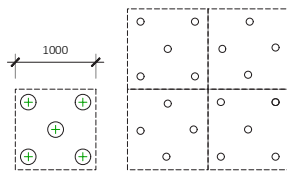
1 Planting density - 2 per 1m²
Approx 760mm spacings
Scale 1:10 @ A3



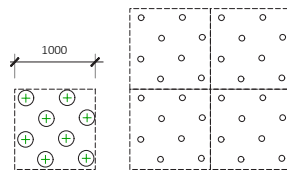
2 Planting density - 3 per 1m²
Approx 570mm spacings
Scale 1:10 @ A3



3 Planting density - 4 per 1m²
Approx 500mm spacings
Scale 1:10 @ A3



4 Planting density - 5 per 1m²
Approx 480mm spacings
Scale 1:10 @ A3



5 Planting density - 8 per 1m²
Approx 350mm spacings
Scale 1:10 @ A3



Rules for Planting - Planting Densities

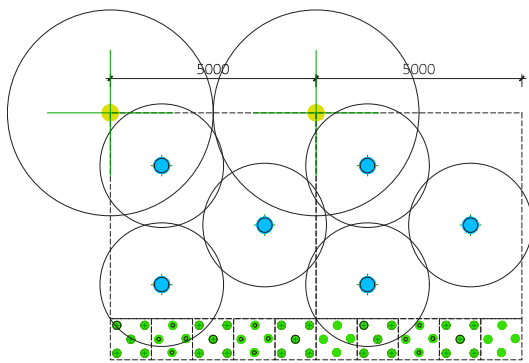
Warrill Pk Cemetery - Nursery

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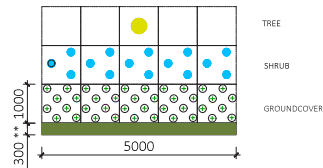


GENERAL PLANTING ARRANGEMENTS



1 GENERAL PLANTING ARRANGMENT - SCREENING PLANTS

NOTE:
These arrangements are 'general' and need to be adapted to site and location.
Refer to Planting Palettes for specific trees, shrubs and groundcovers suggested densities.



**300mm space between planting and Headstones.

2 GENERAL PLANTING ARRANGMENT - GENERAL PLANTING AREAS

Rules for Planting - General Arrangements

Warrill Pk Cemetery - Nursery

12 ANDERSON DAY DRIVE, WILLOWBANK, QLD.4306

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Warrill Park Lawn Cemetery

Master Plan

ORIGINAL CEMETERY RESERVE REVIEW

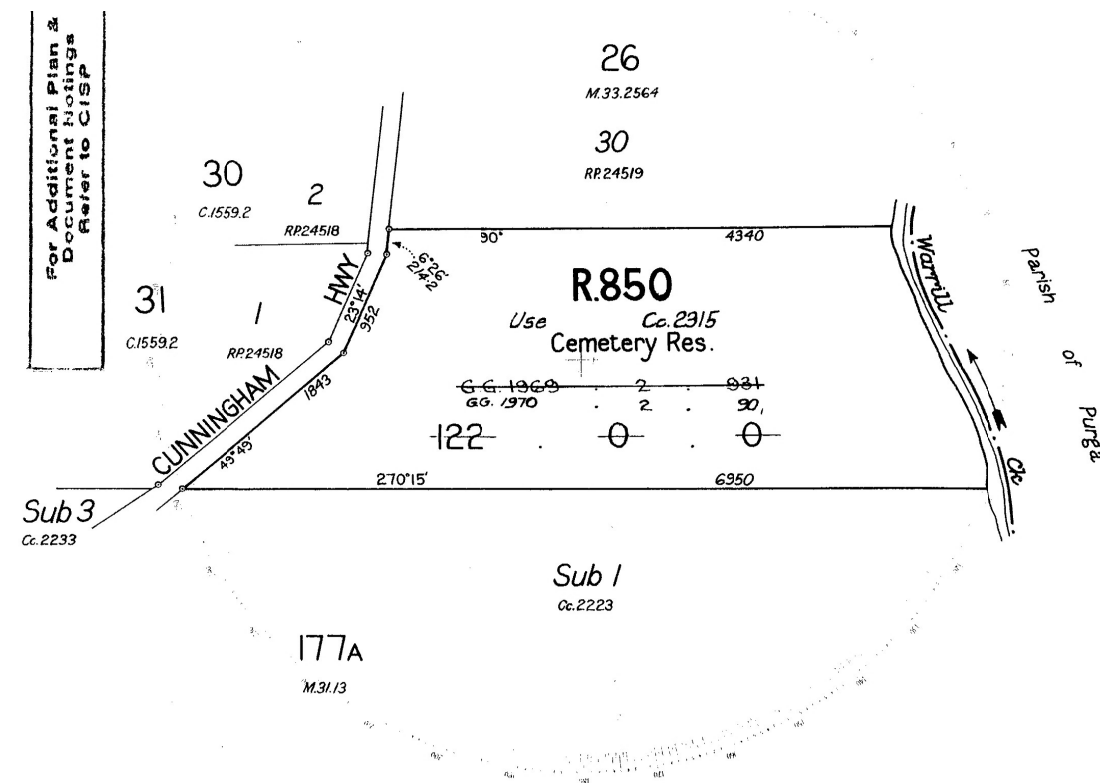


ANNEXURE 04

ORIGINAL CEMETERY RESERVE REVIEW

The original cemetery reserve incorporated the current land parcel of 58 Anderson Day Drive. The Cemetery Reserve was sub-divided in 1969 creating an equal size lot to the east of the current cemetery, Lot 284.

A preliminary site assessment has been undertaken of Lot 284 which has determined that it is a future opportunity for expansion of the existing cemetery. Preliminary concept design work indicates that although the site will have similar constraints to the current site, approximately 14.5 ha of the land will be suitable for development of cemetery activities.



R.850 was formerly Sub 31 of Portion 26

ADJUSTMENTS				INITIALS & DATE			COMPILED FROM RP24519		POR. No. R.850	
POR.	REF.	PREV. AREA	DRAWN	EXAM'D	CHARTED			PARISH OF JEEBROPILLY		
R.850	Cem.561	Estab	TWK	C.E.G	B.M.			COUNTY OF CHURCHILL		
			10-6-69	10-6-69	11-6-69			L.A.D. OF IPSWICH		
						SCALE 10 CHAINS TO AN INCH MERIDIAN				
						REF: 69-478556				
						SURVEY OFFICE				
						COMPILED PLAN		Cc. 2255		

Image 1: Original Survey Plan - Cemetery Reserve 1969

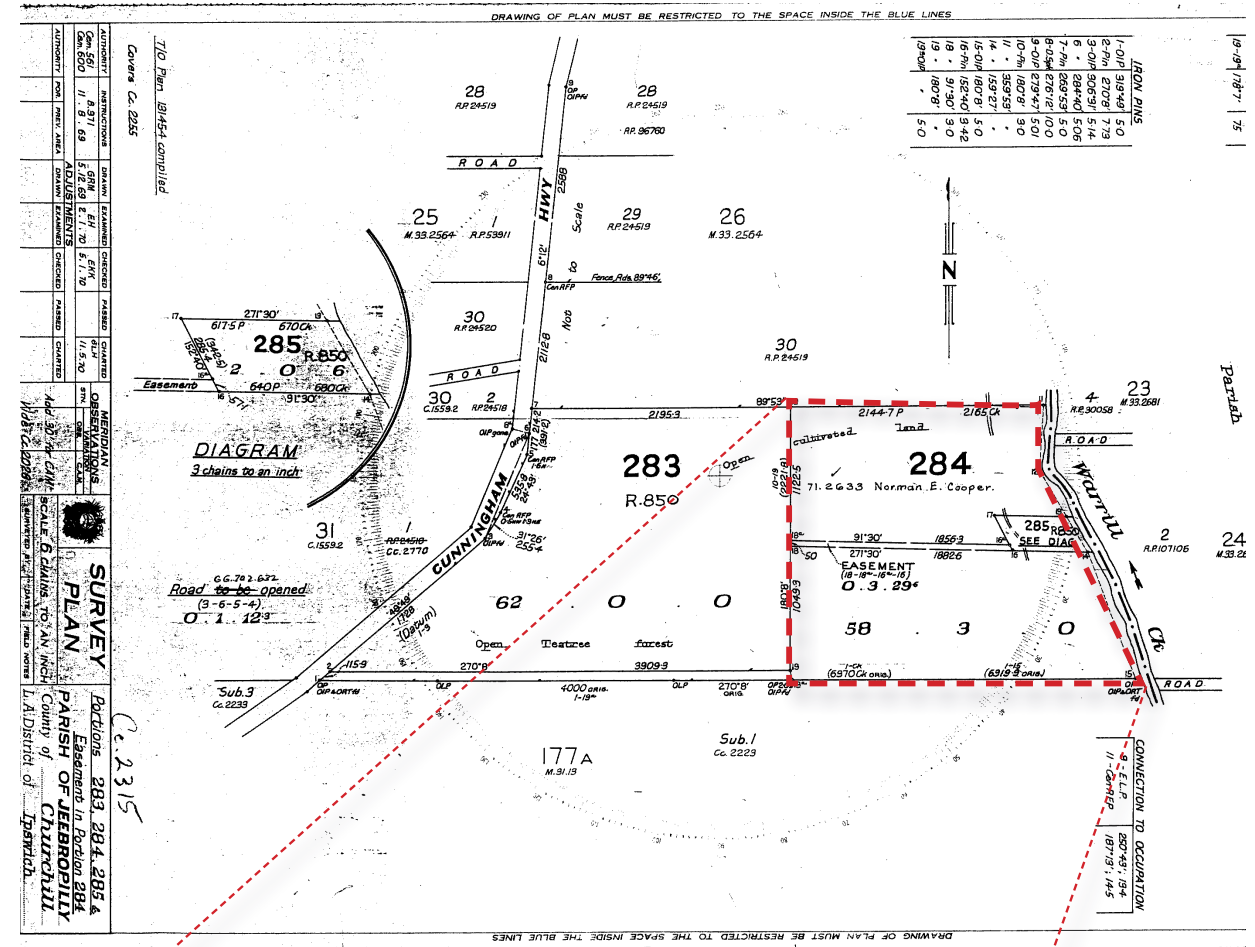


Image 2: Sub-division - Lot 284 CC2315 - 1969 Cemetery Reserve 1969

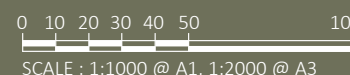


Image 3: Preliminary Site Assessment. Concept by Ipswich City Council [2025]



MASTER PLAN [MP-10] - PRELIMINARY SITE ASSESSMENT - EXPANSION OPPORTUNITY

Warrill Park Lawn Cemetery Master Plan
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD 4306



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KEY PLAN

Warrill Park Lawn Cemetery Master Plan
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD 4306

0 10 20 30 40 50 100
SCALE : 1:1000 @ A1, 1:2000 @ A3



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MASTER PLAN 11- MEMORIAL WAY AND WATER FEATURE

MEMORIAL GARDEN BEDS:

- Lush vegetation to include grasses and flowering shrubs surrounded by inurnments to the edges
- Inurnments to include family burials with natural stone surround.

WATER FEATURE:

- Concrete path surrounding the water body is to include space for headstone placement
- 2 x water fountains to oxygenate the water and provide a serene setting
- Turf terraces enabling people to sit on the grass and enjoy the space

TREE AVENUE:

- Brush Box tree [*LOPHOSTEMON confertus*] to be planted as a continued line from the existing site, providing deep shade when grown, and a strong wayfinding element through the combined sites

- Opportunity to place memorial plaques at base of trees for war veterans or other

SHARED VEHICLE AND PEDESTRIAN ZONE:

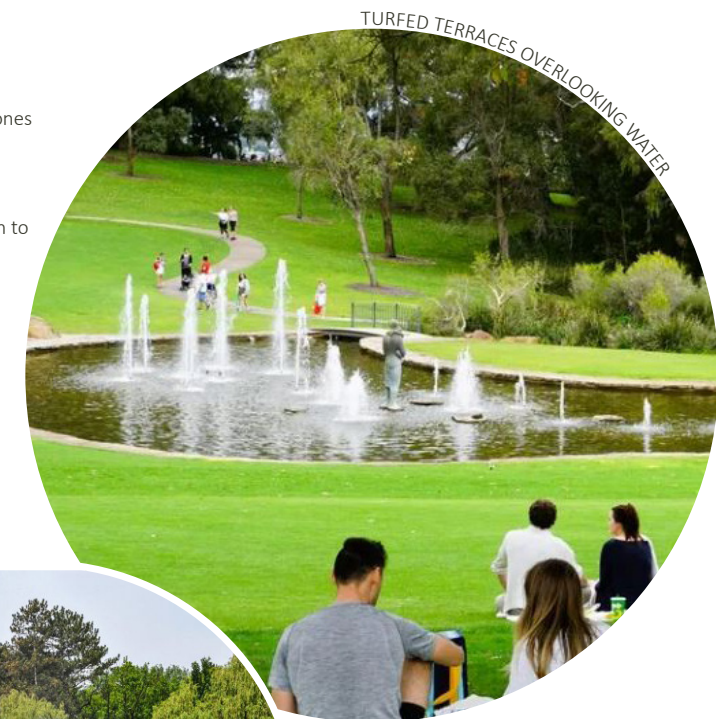
- To be clearly defined with signage and road material change. This could include cobble stones with a decorative street art band.

MEMORIAL WAY:

- An open lawn space with varying widths and dotted shade trees that leads people through to the water feature and beyond

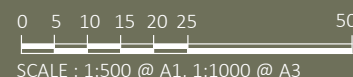
SHELTER:

- To match existing shelters on site. Placement to be within garden areas



MASTER PLAN MP-11 - MEMORIAL WAY AND WATER FEATURE

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MASTER PLAN 12- MEMORIAL WAY AND GATHERING AREA

LARGE SHELTER:

- Large hexagon shaped shelter to match existing smaller shelters on site, offering views to the Koala Habitat area and Warrill Creek
- Roof to be corrugated sandwich panel to reduce heat
- Concrete path to extend out from shelter with honed concrete and timber seating wall to edges
- Gardens to entry area and carpark with PWD parking
- Solar panels on roof to run a light for evening use.
- This space can be a bookable area for larger groups

MEMORIAL WAY:

- An open lawn space of varying widths, dotted with shade trees that lead people through to the large shelter gathering space.

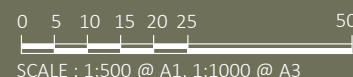
AMENITIES:

- An off-grid type toilet facility and water tank. To be solar powered for lights and water to be gravity fed from tank.



MASTER PLAN MP-12 - MEMORIAL WAY AND GATHERING AREA

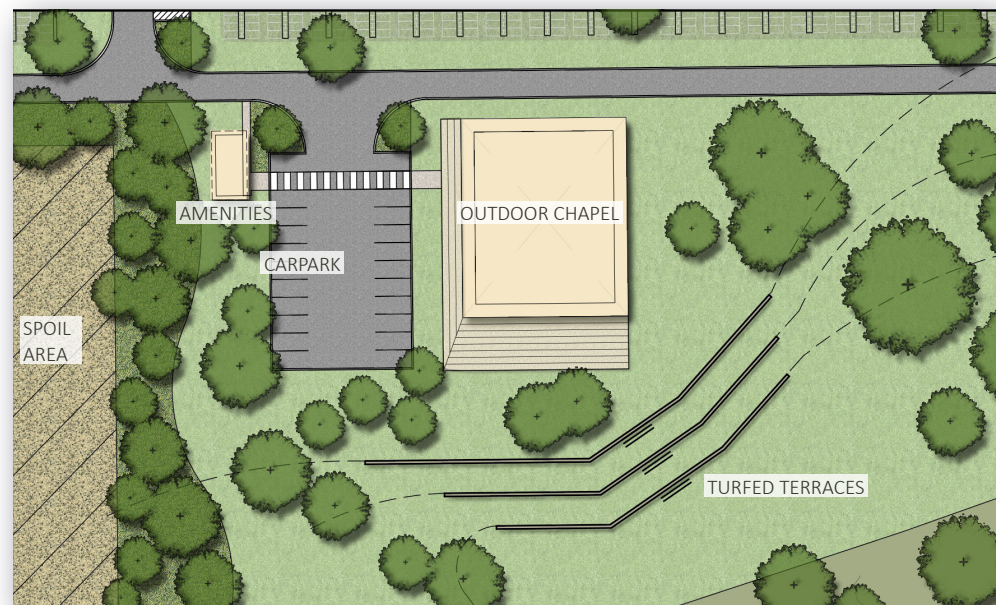
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MASTER PLAN 13- OUTDOOR CHAPEL, AMENITIES, TURFED TERRACES

OUTDOOR CHAPEL:

- Materials similar to outdoor chapel on LP-07. Added stone pillars or similar. Timber batten pergola with vine over.

TURFED TERRACES:

- Low block walls with turf infill, act as extra spill-out area for guests. Highlighting views to Koala habitat area and dam.

SPOIL AREA:

- Area to accommodate excess spoil. Heavy vegetation screening to edges.



MASTER PLAN 14- COLUMBARIUM, TURFED TERRACES AND DAM

COLUMBARIUM:

- Circular area with curved columbarium with stone exterior garden bed in middle and curved seating of concrete and timber.
- Surrounded with lush planting and shaded trees.

TURFED TERRACES:

- Concrete path from burial area to turfed terraces
- Terraces to be low block walls with turf infill

KOALA HABITAT:

- Native koala friendly tree species

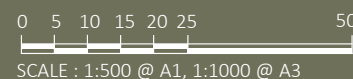
DAM:

- Native grasses and trees to banks of dam.
- Consider River Red Gums to edge and other Koala friendly tree species



MASTER PLAN MP-13 & 14 - OUTDOOR CHAPEL, TERRACES & COLUMBARIUM

Warrill Park Lawn Cemetery Master Plan
12 ANDERSON DAY DRIVE, WILLOWBANK, QLD 4306



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