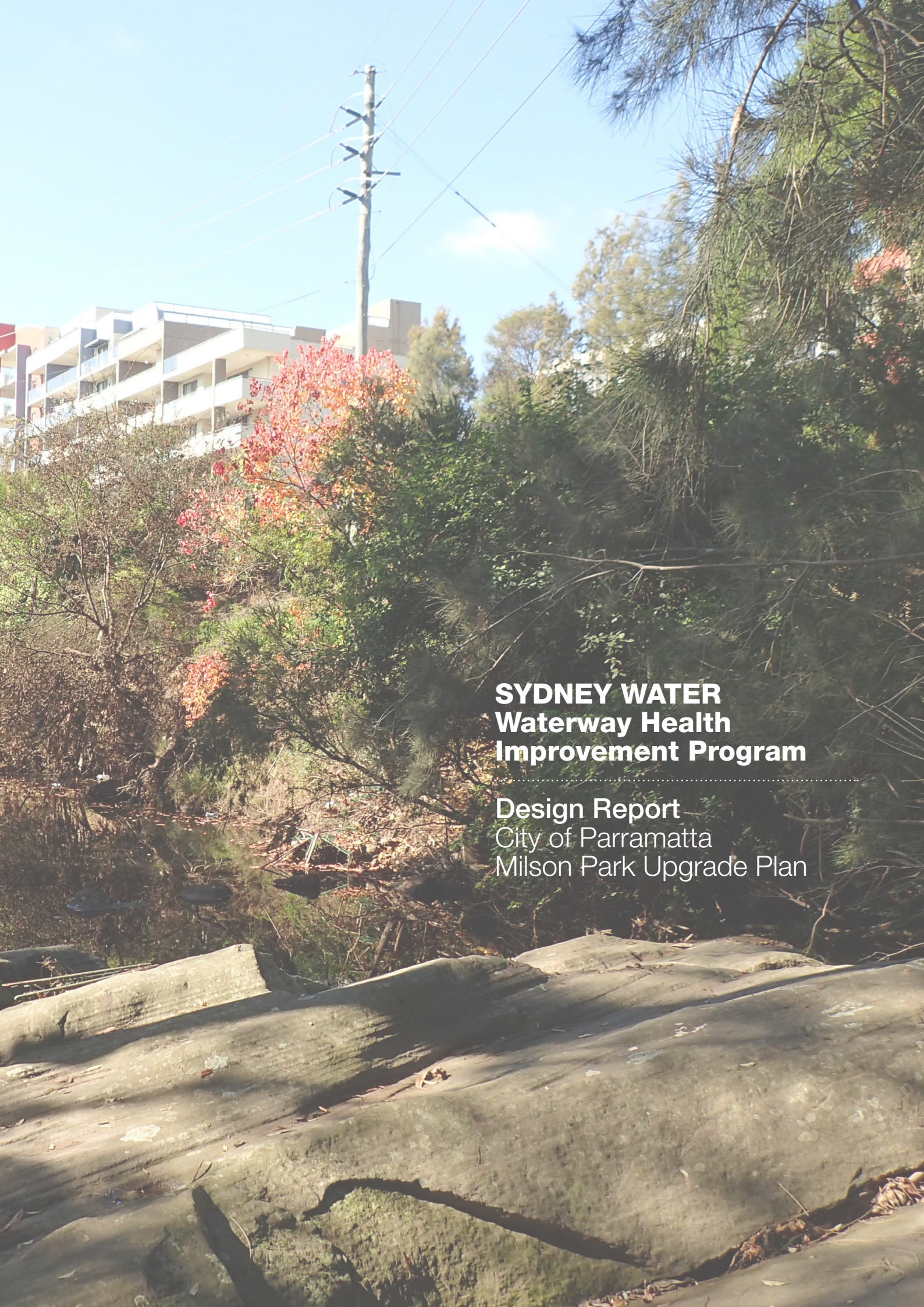

SYDNEY WATER
Waterway Health Improvement Program

Design Report
City of Parramatta
Milson Park Upgrade Plan

Client: Sydney Water
Consultants:
Studio: McGregor Coxall Sydney
Proj No: 0614SYD
Report Contact: David Knights

Revision	Status	Date	by	Checked
A	Draft for Review	03 August 2017	LP	MR
B	Revised Draft	16 August 2017	LP	MR
C	Draft Landscape Improvement Plan	03 November 2017	LP	DK
D	Revised Landscape Improvement Plan	13 November 2017	LP	DK
E	Revised Landscape Improvement Plan	17 November 2017	LP	DK
F	Revised Landscape Improvement Plan	20 November 2017	LP	DK

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1.0
INTRODUCTION

1.1 Introduction

This project is a joint project between Sydney Water and the City of Parramatta. Sydney Water is currently undertaking a Waterway Health Improvement Program [WHIP] which is focussing on treating stormwater draining to waterways. Milson Park is one of the sites that have been identified as a feasible site for stormwater treatment.

The City of Parramatta is currently developing an open space upgrade to Milson Park. The open space upgrade is looking at a range of measures to improve amenity and ecology at the park which are aligned with the community's vision and needs. The natural stormwater treatment system at Milson Park is one of the open space upgrades currently being planned.

Sydney Water has funded this report and is currently planning for a stormwater treatment system at Milson Park. Sydney Water's objectives include improving waterway health, providing habitat to improve urban ecologies and to improve the character of open space and liveability at the site.

The City of Parramatta's objectives include providing better facilities for the community, improved utilisation of open space, improved connectivity through the site and aligned with the Parramatta Ways strategy, catering for increased local population growth associated with new development and improved waterway and bushland health at the site.

This report is focussing on Milson Park. It should be noted that consultation was undertaken concurrently for Milson Park with Shannons Paddock (adjacent to Milson Park). Preliminary planning has commenced for Shannons Paddock and it is intended that a similar design report and upgrade plan be completed for Shannons Paddock in the near future.

1.2 Project Background

Sydney Water owns approximately 450 kilometres of stormwater and waterway infrastructure spread across more than 70 catchments in Sydney. This drainage infrastructure services more than half a million people. Sydney Water's assets in these catchments are typically trunk drainage which receive inflows from a range of other agencies.

Improving waterway health and enhancing urban environments is an important part of Sydney Water's strategy to enhance the liveability of Sydney. One aspect of this is reducing the impact of stormwater pollution on waterway health. Sydney Water has developed a waterway health improvement program [WHIP] to help achieve this objective. The waterway health program consists of approximately 20 projects across the catchments of the Georges, Cooks and Parramatta Rivers. These rivers are iconic parts of Sydney's cultural heritage both Aboriginal and European.

The intended physical outcomes of the program include:

- Remove 100,000 kg/year of sediment from the waterways
- Prevent 1,500 kg/year of nitrogen and 750 kg/year of phosphorus from entering these waterways
- Remove 100 m^3/year of litter from these waterways
- Achieve a 1000 ML/year reduction in annual runoff through these waterways.

The following benefits are expected from the program:

- Improve waterway health by removing sediment and nutrient flows, together with a reduction in the volume and intensity of stormwater flows from contributing catchments
- Improve the visual appearance of the waterways by reducing litter/gross pollutants loads
- Create a positive stakeholder and customer response in areas where waterway health works are delivered.
- Increase the capability of Sydney Water and Councils to undertake projects of this nature in the future.

1.3 Study Area

Milson Park is located in the Parramatta City Local Government Area (LGA) within the Parramatta River Catchment. It is one of a number of local parks and open spaces in the Parramatta City LGA measuring 6.9 ha. It provides a playground and passive recreational open space for the local community. The site contains a Sydney Water owned stormwater drainage channel which flows to Toongabbie Creek and ultimately to Parramatta River.

1.4 Report Structure and Project Methodology

This report will be updated progressively over the course of the project with the ultimate goal of producing a single, stand alone Design Report for all of the 13 WHIP sites. This report will be supported by a range of technical reports that cover various aspects of the project in further detail.

The Design Report will cover the evolution of each site through the initial project analysis phase, concept design options, preferred concept development and finally the detailed concept design stage. The diagram opposite illustrates the design stages, as well as the expected inputs that will feed in and support the design report at each stage.

The current content of the design report is outlined below:

1.0 Introduction: Contains a background to the overall WHIP including a geographical understanding of the project sites and the catchments included in the works. A description of the site in the context of its local suburb/neighbourhood is also provided.

2.0 Site Analysis: This section outlines the key findings of the project team covering a wide range of topics including history, overview of site features, receiving waters, environment, access and movement as well as services and infrastructure that need to be considered during the design process.

3.0 Design Principles: This section summarises the key findings and sets out the design objectives and principles for the concept design phase.

4.0 Landscape Improvement Plan: This section contains the preferred landscape improvement plan option and highlights the key design elements associated with ecology and habitat, connectivity, amenity and recreation opportunities.

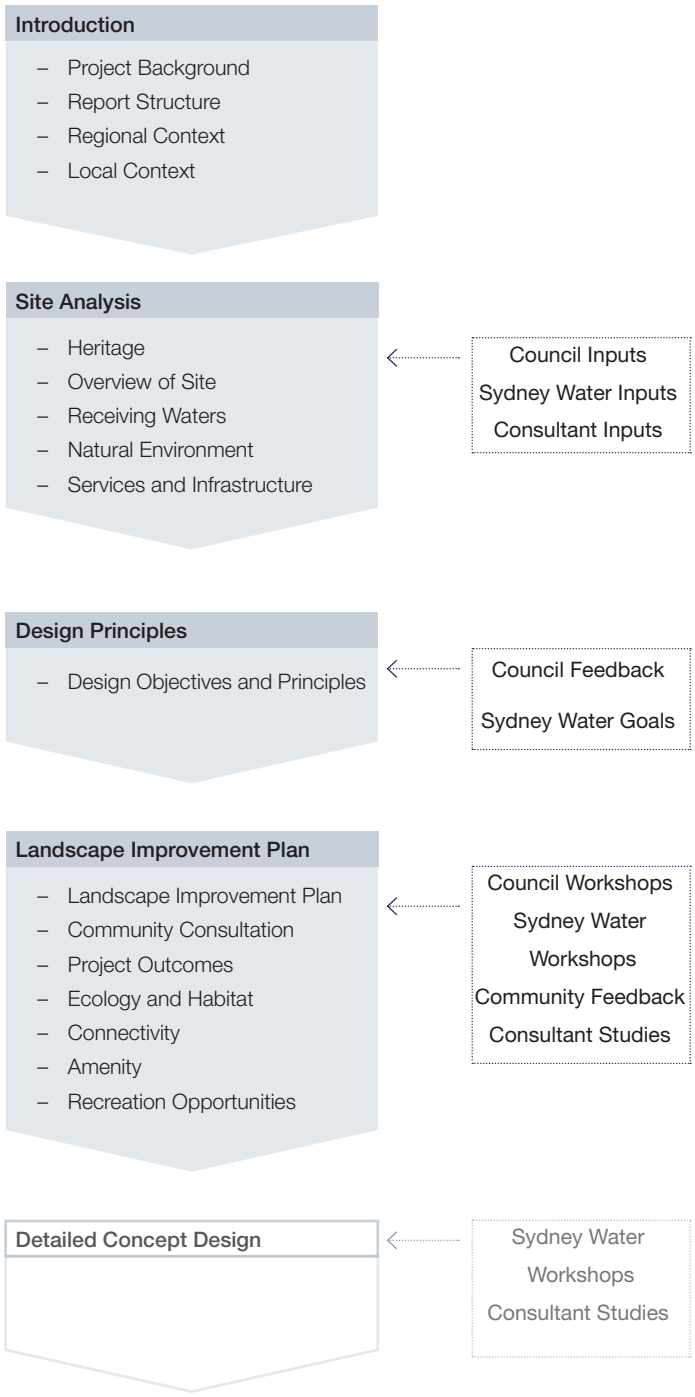

Figure 1.01 - Report Structure and Project Methodology

Figure 1.02 Regional Context

1.5 Regional Context

Of the 20 capital projects to be undertaken, this WHIP is focusing on 13 stormwater treatment systems including swales, bioretention systems, wetlands and waterway naturalisation works.

The 13 projects are located in the inner to middle ring suburbs of Sydney. Sydney is home to 4.3 million residents and as the capital of NSW, is a significant hub. Sydney's natural environment of mountains, beaches and its waterways provide a backdrop for the built environment and are a significant contributor to its liveability. A key tenet of the NSW Government's (2014) *"A Plan for Growing Sydney"* is to recognise these highly prized environments and put in place safeguards to protect and enhance them. The Plan identifies the West Central Subregion, which includes the Greater Parramatta district, as a key area for protecting the natural environment, including improving the health of waterways and aquatic habitats. This project is one aspect which contributes to this goal.

This project is focused on the following waterways and their catchments within Sydney:

- **Parramatta River catchment** which is more than 250,000 hectares in size and home to approximately 1 millions people
- **Georges River catchment** which is more than 900,000 hectares in size and home to more than 1 million people
- **Cooks River catchment** which is more than 100,000 hectares in size and home to approximately 400,000 people

These catchments are made up of highly diverse communities and a wide range of land-uses including residential, industrial, commercial, bushland and open space.

The rivers and their associated waterways and riparian zones are used by a variety of communities for a range of recreational activities including swimming, boating, fishing, walking, cycling, sports and passive recreation. They are also home to a range of flora and fauna, including birds, fish, frogs and reptiles, some of which are critically endangered.

Figure 1.03 Local Context

1.6 Local Context

This report focuses on one of the 13 WHIP sites, Milson Park and Shannons Paddock in Westmead. The site is located in the Parramatta City LGA and measures approximately 6.9 ha with the southern section of Shannons Paddock measuring approximately 2.45 ha. It is surrounded by a range of land uses including, educational and health facilities, a range of residential densities, general industrial, environmental conservation areas and natural waterways.

Milson Park is located in a culturally diverse area. The 2016 Census states that 74.6% of the total population in Westmead were born overseas. The top three birth places for overseas residents were India (36.3%), China (4.8%), Sri Lanka (4.2%). 25.4% of the population were born in Australia.

Westmead features a number of educational and health facilities and is considered one of the largest health, education, research and training precincts in Australia (Westmead Redevelopment, 2017). Within a 500 m radius, there are approximately 13 educational and health facilities including Westmead Private Hospital backing on to Milson Park.

The City of Parramatta is aspiring to improve the liveability of Parramatta through the implementation of additional cycling and pedestrian networks as part of the 'Parramatta Bike Plan' and 'Parramatta Ways'.

The Parramatta Bike Plan is proposing bike facilities throughout the Westmead area which features a route through Shannons Paddock and Milson Park. The proposal features an off road shared path that will travel from Wentworth Ave in the south, along the Finlaysons Creek corridor and through Shannons Paddock and Milson Park. This route is planned to link into the Mons Road shared path and travels further east along the Toongabbie Creek corridor towards the Parramatta River.

Milson Park is located between the suburbs of Wentworthville to the west and North Parramatta to the east. Toongabbie Creek transects the site to the north with Darcy Road and Briens Road bounding the southern and western edges of the park.

The site is overlooked by a number of mixed use housing blocks on the south-eastern boundaries which have no direct access to the park. Through site movement is very poor, especially with regards to pedestrian connections to the existing fitness station in the eastern section of the park, approximately 300 m from the nearest pedestrian access point into the park.

A water catchment area is any area of land where precipitation collects and drains of into a common outlet. The local catchment for the site covers an area of 92.9 ha. The catchment starts along the northern side of Great Western Highway and falls towards the north through residential lots, local roads and various open spaces.

2.0
SITE ANALYSIS

2.1 Heritage

The British settled in Parramatta in the late 1700's soon after they discovered Sydney's sandy coastal soil was no good for farming. Parramatta provided good soils and a source of fresh river water which was ideal for farming.

The area of Westmead, previously known as West Meadow, is a subdivided section of land from the western section of the Governors Domain. Since the establishment of Westmead in 1889, orchards were established by many of the settlers on the fertile flood plain soils.

The 1943 aerial image below shows Milson Park and the surrounding area of Westmead to be largely occupied by farming land. The image also shows Finlayson's Creek meandering around 2 lots on the south-eastern side of Briens Road. Today, this is a stormwater canal that runs straight through those former lots, parallel to Briens Road.

A place of Aboriginal heritage significance exists at the junction of Finlayson's Creek and Toongabbie Creek. This zone is shown in Figure 2.01.

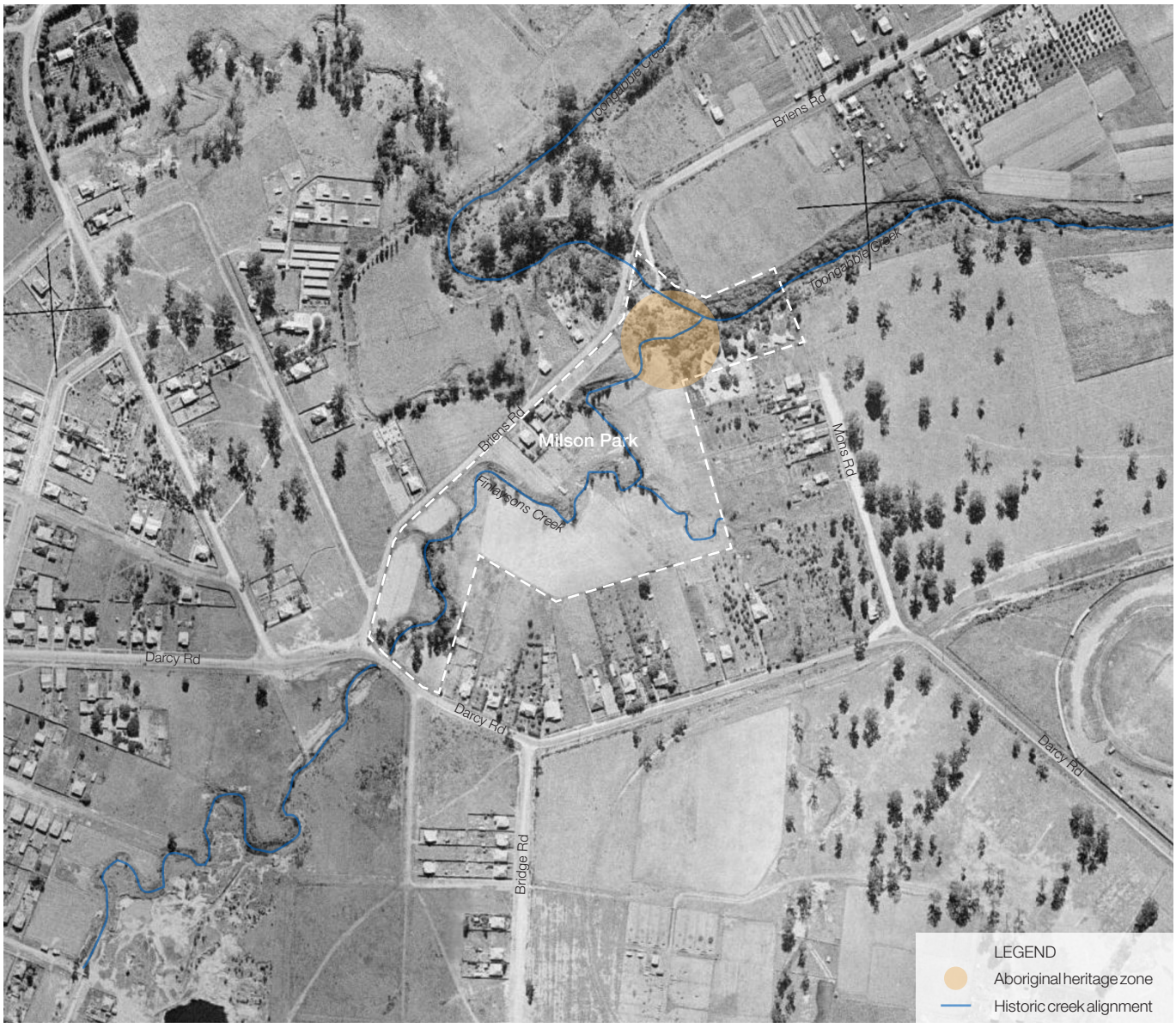

Figure 2.01 1943 Aerial of Milson Park site [maps.six.nsw.gov.au]

2.2 Overview of Site

2.2.1 Type of Open Space

Milson Park is a large passive open space made up of dense vegetation and large areas of lawn. The lawn to the eastern and western sides of the park are maintained regularly whereas the central area is fenced and is informally home to a local resident's horses.

Finlaysons Creek runs through the site in the form of an open storm water canal which replaced the meandering path of the previous Finlaysons Creek, this connects to Toongabbie Creek. Toongabbie Creek is approximately 9 km long and passes through the northern section of Milson Park flowing to the east before adjoining to the head of the Parramatta River. Toongabbie Creek is a highly polluted watercourse that brings high flows through the site during heavy rain fall events. Llarge amounts of rubbish also pass through during these events.

Finlaysons Creek also passes through Shannons Paddock to the south. Shannons Paddock, measuring approximately 2.45 ha, features large areas of open space surrounded by residential development. There is planting featured around the boundary of the site with a children's playground in the northern corner which is accessible from Darcy Road.

2.2.2 Key Site Users

The park is used by neighbouring residents for walking, relaxation, experiencing nature and for the fitness station at Milson Park. A section of Milson Park is also used as an informal paddock for horse owners.

Figure 2.02 Finlaysons Creek stormwater canal at southern end of the park

Figure 2.03 Horses grazing in central open space area

Figure 2.04 Rubbish collected around flood line of Toongabbie Creek

Figure 2.05 Fitness station backing onto neighbouring residents

Figure 2.06 Access to Toongabbie Creek

Figure 2.07 Dense vegetation along creek embankment

2.3 Receiving Waters and Flood Impacts

The site is bounded by Finlaysons Creek and Toongabbie Creek. A small creek line also drains through the site and into Finlaysons Creek. The majority of Finlaysons Creek is a concrete lined channel except for a small section of natural channel in Milson Park. Toongabbie Creek flows into the upper Parramatta River, upstream of the weirs, before flowing into the lower esturine part of the Parramatta River.

The receiving waters have been heavily altered and impacted by urbanisation and have poor water quality. Figure 2.08 shows that parts of Milson Park are flood affected from overlapping and overland flow associated with Finlaysons Creek.

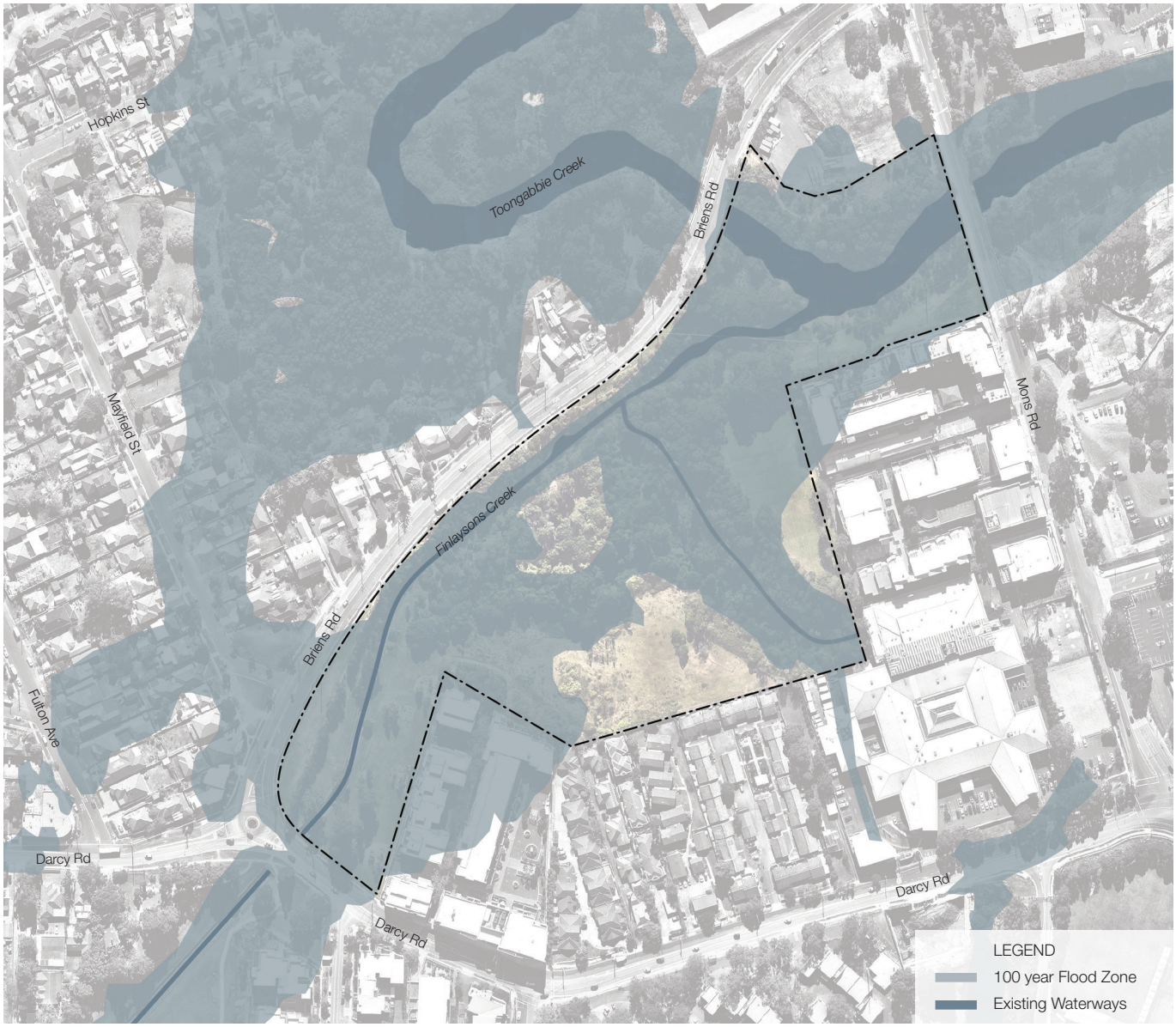

Figure 2.08 Flood Impacts

2.4 Land Ownership and Zoning

Milson Park is zoned RE1 public recreation and is surrounded by a range of land uses including, educational and health facilities, a range of residential densities, general industrial, environmental conservation areas and natural waterways. The natural waterways located throughout the park divide the site into a number of different spaces. To the north of Milson Park there are a number of environmental conservation zones that that are made up of Cumberland Riverflat and Swamp Oak Riparian Forest, these zones are surrounded by natural waterways, general industrial and low density residential land uses. Land zoned under B4 mixed use contains medium density residential, low density residential and hospital / health services.

Toongabbie Creek and the creek embankments underneath Briens Road bridge are registered as crown owned land, as well as a block of land zoned as RE1 to the east of Mons Road. Finlaysons Creek stormwater canal is owned by Sydney Water.

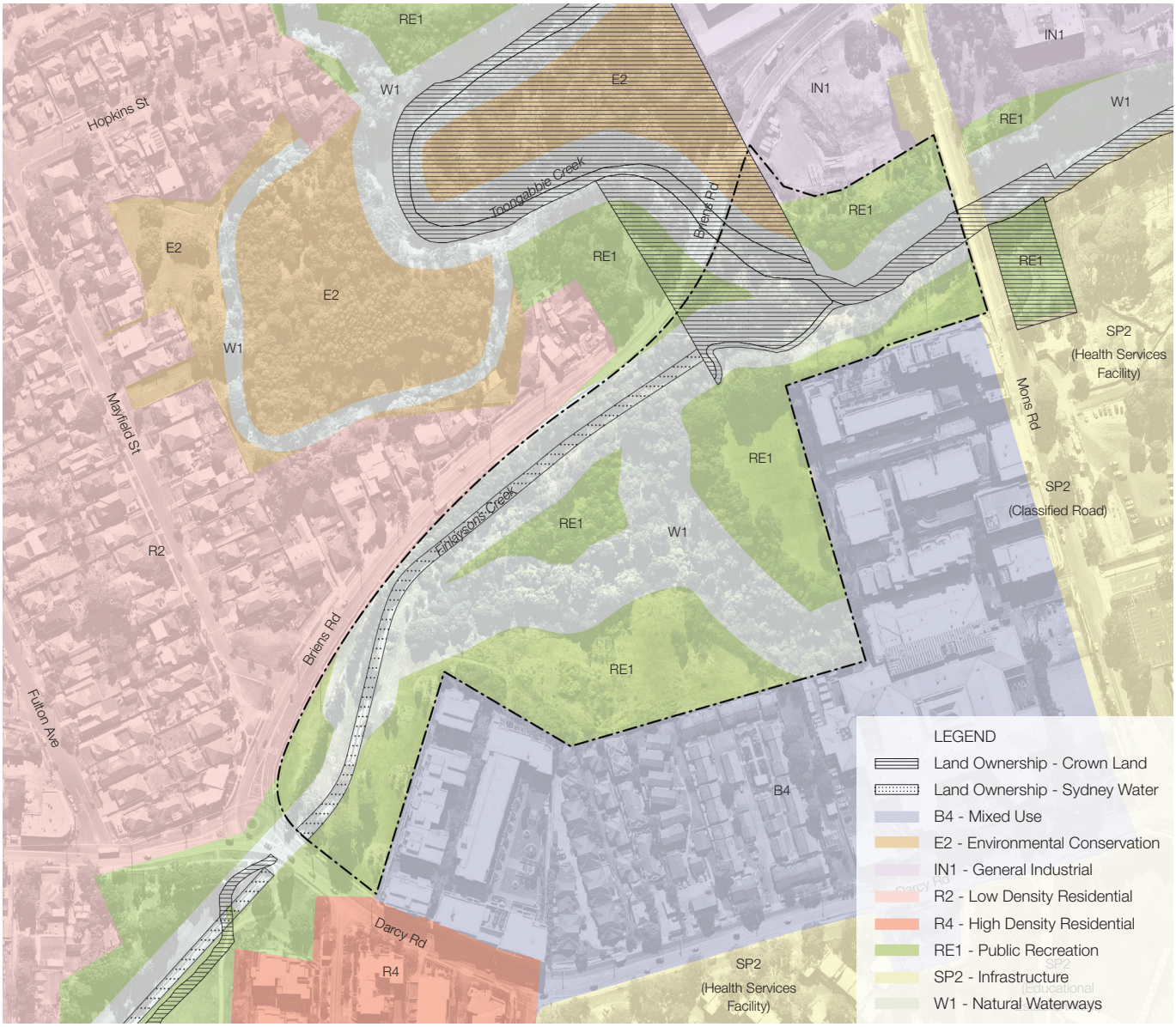

Figure 2.09 Land Ownership and Zoning

2.5 Access and Movement

The site is a destination for passive recreation users families that use the playground amenities. The surrounding roads are relatively busy with Darcy Road made up of 4 lanes providing a majority of east-west movement throughout Westmead.

Mons Road features an on-road cycle route that turns into a shared path over Toongabbie Creek. This cycle route continues down Darcy Road travelling south-east before connecting into Parramatta Park. The north bound cycle route connects onto Briens Road and onto a shared path that travels north-west parallel to the North-Western Transit way.

Pedestrian movement throughout the site is very poor. Entrance to the park is accessible from the surrounding pedestrian footpaths. Toongabbie Creek is also accessible from Briens Road. The Finlayson's Creek stormwater channel is a barrier to pedestrians accessing the park from Briens Road. Access to the children's playground is poor yet there are desired pedestrian lines that extend from Shannon's Paddock in the south, crossing Darcy Road and extending towards Toongabbie Creek in the north. Access from the north-eastern corner of Milson Park is off Mons Road, with vehicle access off the eastern side of Mons Road. The Redbank Track runs alongside Toongabbie Creek and adjoins with a network of other bushwalk tracks in the City of Parramatta Council area. The Redbank bushwalking track hugs the banks of the Toongabbie Creek and connects to the Pemulwuy Loop track in the north and the Governor Philip Walk in the south along the Parramatta River.

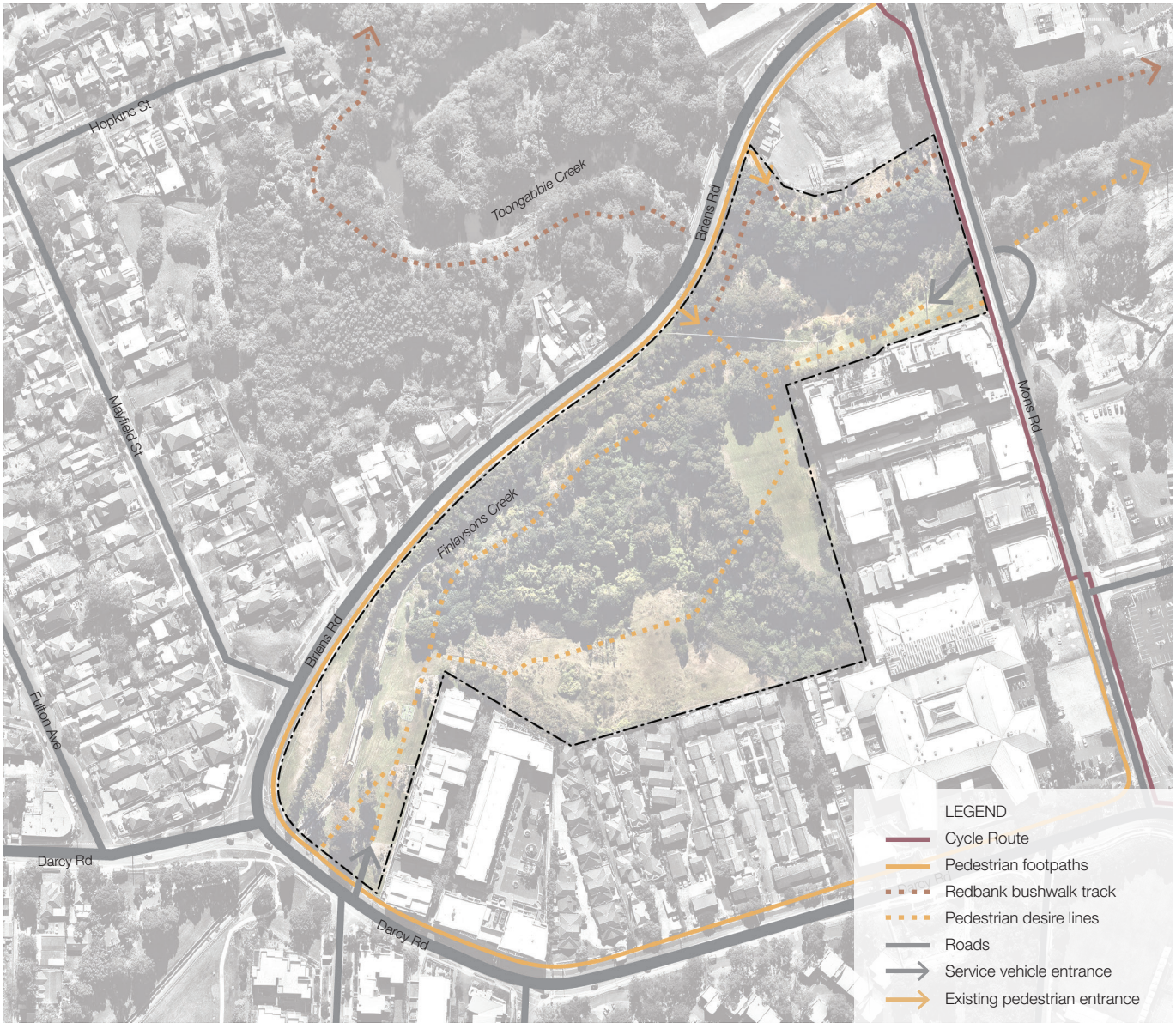

Figure 2.10 Access and Movement

2.6 Services and Infrastructure

A Dial Before You Dig (DBYD) survey was conducted in June 2017. The survey revealed the presence of underground services from a number of utilities in the vicinity of Milson Park.

The majority of services in the area are located around the southern perimeter of Milson Park. Underground services include Sydney Water stormwater pipes that connect to the Finlayson's Creek stormwater canal (also owned by Sydney Water). Sewer mains enter the site at various locations and join a transect line that travels through the middle of the park from the south-west to north-east, discharging into Toongabbie Creek in the north.

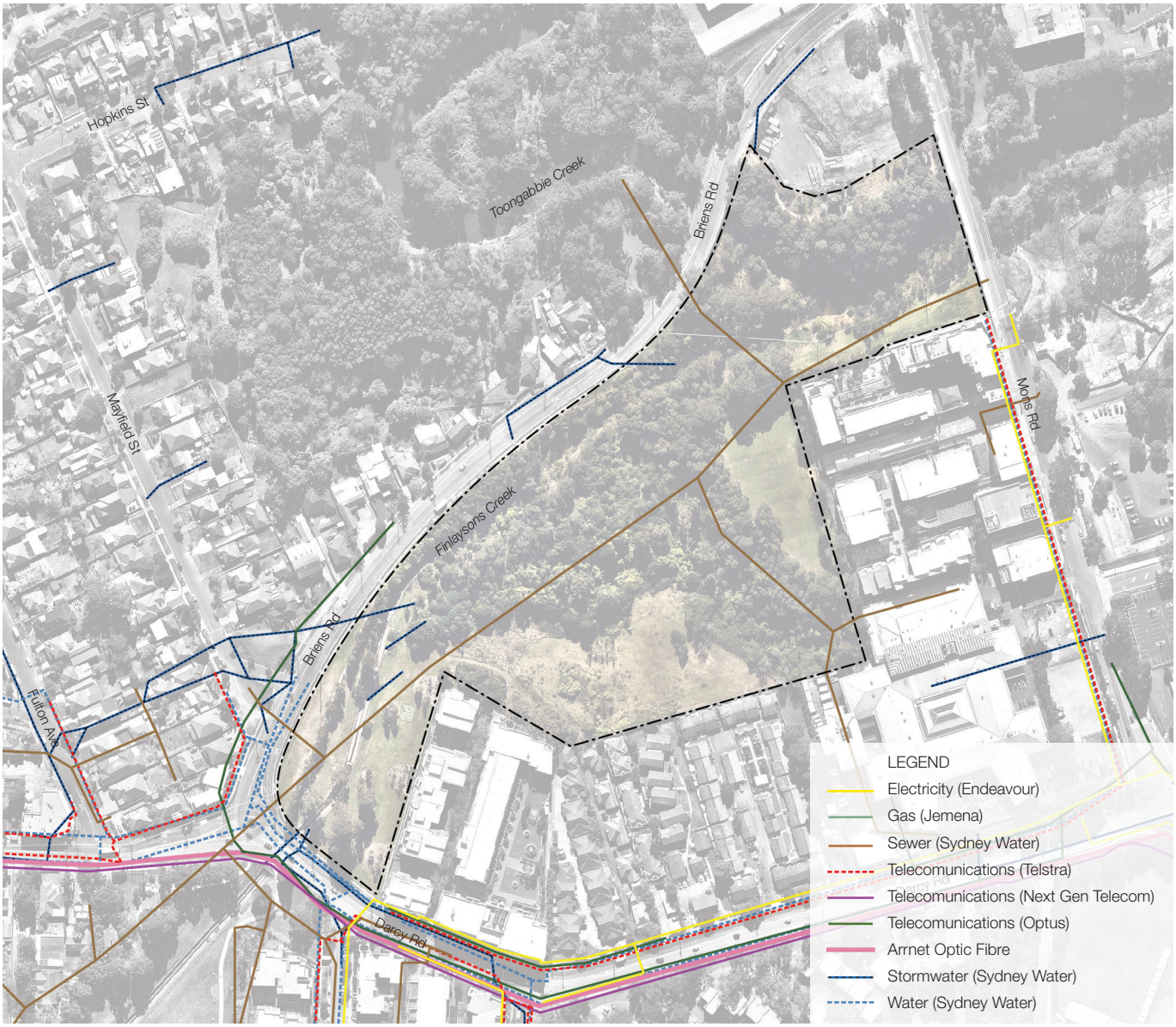

Figure 2.11 Services and Infrastructure

2.7 Natural Environment

2.7.1 Vegetation Communities

Vegetation at Milson Park consists of mown and unmown grass and dense mature vegetation predominately around the waterways. The vegetation is categorised as Cumberland Riverflat Forest and Cumberland Swamp Oak Riparian Forest. A number of Casuarinas along the former creek line are considered remnant as are the Eucalyptus close to Briens Road on either side of the canal.

There is a formalised line of planting between Finlayson's Creek stormwater channel and Briens Road that runs for approximately 200 m before merging into the revegetated planting of the creek line embankment which has been undertaken periodically over the past two decades.

2.7.2 Geology and Soils

The geological formation at Milson Park is Bringelly Shale of the Wianamatta Shales Group. The lithology is made up of shales and clays with some fine to medium grained sandstone.

Overlying this geology is the blacktown soil landscape (bt), which is a reflection of the underlying geology. The bt soil landscape is residual and formed through leaching and weathering of the underlying parent rock. It is made up of sandy clays that are highly erodible and have poor fertility and drainage (Eco Logical Australia, 2010).

Figure 2.12 Dense vegetation surrounding waterways

Figure 2.13 View south-west through planting beds

Figure 2.14 Finlayson's Creek changing from stormwater canal to creek

Figure 2.12 View east towards playground and neighbouring residents

2.7.3 Topography

The areas surrounding Milson Park generally fall towards Toongabbie Creek. The park itself falls in a number of different directions that are consistent with the existing layout of the waterways that transect through the site. The areas that feature open lawn are relatively flat. A topographic map of the site (with 2 m contours) is shown in the figure below.

2.7.4 Acid Sulphate Soils

A review of the Office of Environment and Heritage NSW Acid Sulphate Soil mapping database indicates that there is no record of acid sulphate soils on the site.

Figure 2.13 Topography [2 m Contours]

2.8 Future Development

According to 'Westmead Innovation District: Building Western Sydney's jobs engine Strategic Vision 2016-2036', the following facilities are projected to be completed as a part of the Westmead Precinct Redevelopment:

- University of Sydney educational and Research Facilities (2019)
- Westmead Innovation Centre (2020)
- Children's Medical Research Institute Stage 2 (2020)
- Westmead redevelopment Stage 1 (2020)
- Western Sydney University campus redevelopment (2021)
- Parramatta Light Rail arrives at Westmead (2023)
- Children's Medical Research Institute stages 3,4,and 5 (2025)
- Parramatta North Urban Transformation Program (2026).

The above highlights the growth around Milson Park will continue and will increase its value to the community as a programmed open space.

2.9 Key Opportunities and Constraints

The following key opportunities and constraints have been identified through the site analysis and are illustrated in the diagram below.

These opportunities and constraints include:

- Finlayson's Creek Channel as a barrier for east-west movement
- Poor movement network and conections with surrounding developments within the park in all directions
- Opportunity to enhance all waterways transecting through the site
- Large number of surrounding residents with back turned to park
- Opportunity to connect to Shannon's Paddock in the south-west
- Opportunity to connect to Parramatta Park in the east.

These opportunities and constraints will inform the landscape improvement plan concept to be developed for Milson Park.

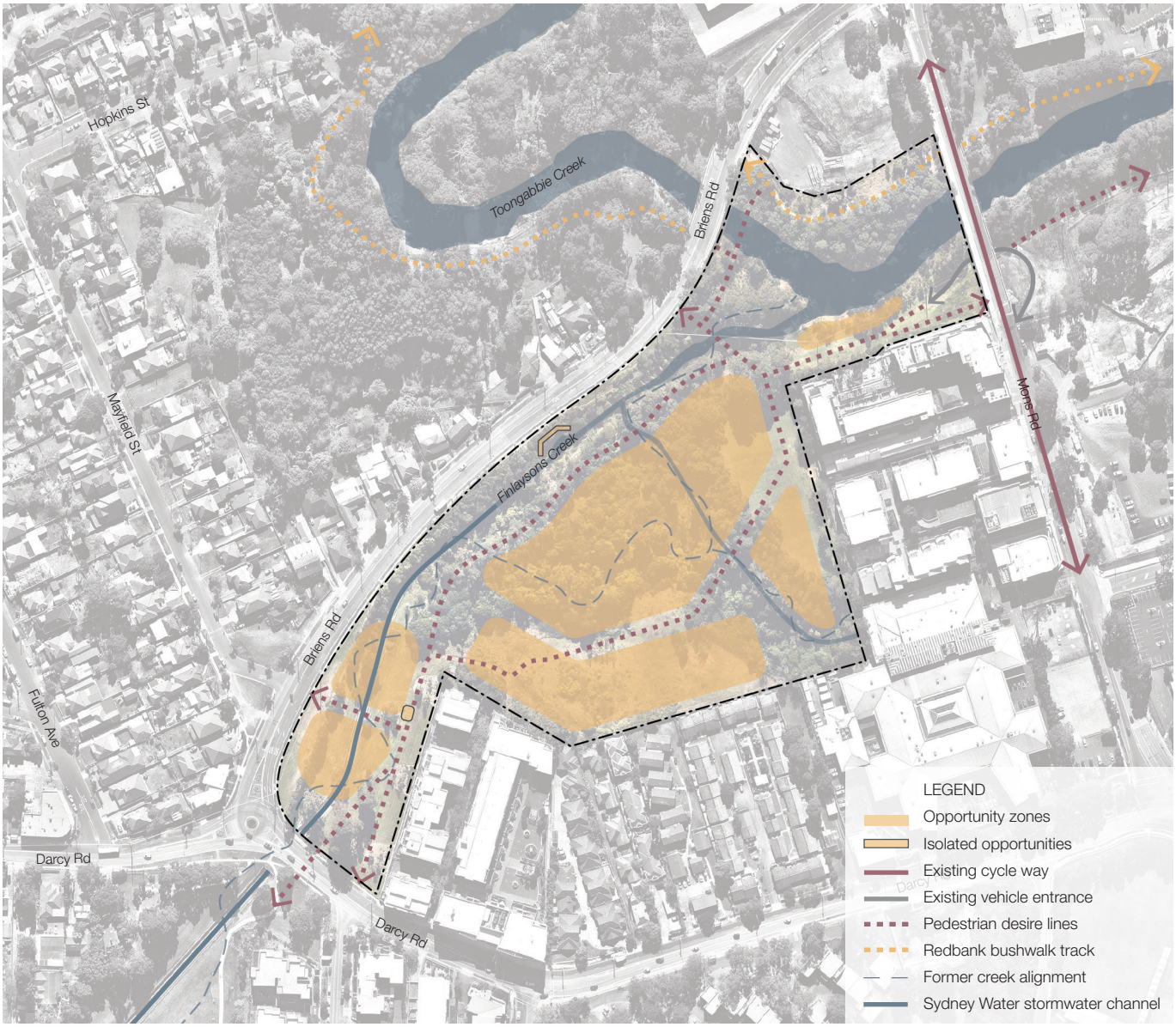

Figure 2.14 Key Opportunities and Constraints

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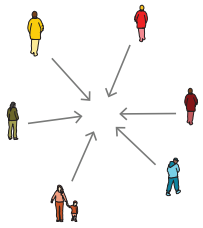
3.0
PRINCIPLES AND OBJECTIVES

3.1 Design Principles

The design principles provide a platform from which the design concepts for Milson Park will be developed. The principles ensures a consistent design approach that considers all factors influencing and impacting the site.

Principle

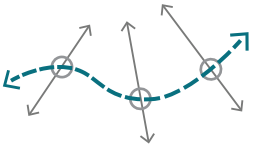
1



An integrated and collective approach

Create holistic and integrated design solutions generated by collaboration with stakeholders, the community and government bodies.

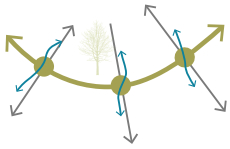
2



A water element integrated within its context

Understand the local catchment and landscape and respond in a respectful manner that seeks to enhance and contribute to the site's context.

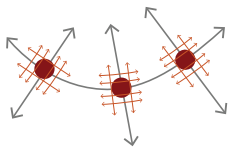
3



An environmental vision

Create a sustainable and enduring design response which enhances ecological values of the site and connects with the wider green grid.

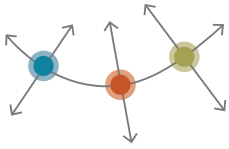
4



Cross scale connection of spaces

Prioritise both local and regionally significant connections that respond to broader issues, aims and initiatives of the local neighbourhoods and the city.

5



Place sensitive design

Celebrate and work with the character of the site, responding to unique histories, materiality, built fabric, cultural context, landform and ecologies.

3.2 Design Objectives

The design objectives are site specific responses to the design principles and have been generated based on the site analysis and initial workshops with stakeholders. These objectives will be used to guide the concept designs and assess them as they progress.

Objectives

- Work with stakeholders to deliver the project
- Hold regular stakeholder workshops to contribute to design options
- Acknowledge the cultural diversity and backgrounds of park users
- Engage the local community and foster a sense custodianship of the waterway and landscape

- Create opportunities for ecological restoration in harmony with existing ecological assets
- Use the existing topography to inspire water quality improvement elements in the park
- Intergrate water quality treatment elements with other site objectives such as park user amenity, improved access and movement
- Interpret historical creek line within the works

- Utilise durable, sustainable and long lasting materials and timeless design
- Reuse materials on site wherever possible to minimse project footprint
- Explore environmental education opportunities integrated within the design response
- Use endemic plant species to build on existing site planting, including shrub and groundcover planting
- Maintain and enhance small bird habitat currently provided by overgrown creek corridor

- Enhance connectivity with local streets, facilities, neighbourhoods and green spaces
- Enhance north-south and east-west park connections and connect existing park assests e.g. playground, Toongabbie Creek
- Ensure equal access for all by creating safe spaces

- Respect and respond to the local cultural context
- Increase the legibility of the site and create spaces for the community to meet and interact
- Enhance the rich canopy cover found throughout the site
- Explore a range of active and passive recreation to create a valuable green space for local residents
- Maintain the unique and tranquil characteristic of the park through design

4.0
LANDSCAPE IMPROVEMENT PLAN

4.1 Community Engagement

Prior to developing the Milson Park Improvement Plan, Sydney Water and City of Parramatta Council undertook a range of community engagement activities to enable local residents to have their say as to what Milson Park should look like. Shannons Paddock was also included in the discussions with the community due to its close proximity and the complementary uses possible in this park. Shannons Paddock will be the subject of a separate Improvement Plan to be undertaken at a later date.

The community engagement consisted of a number of opportunities for the community to provide feedback to the project team on how they currently use both Milson Park (the subject of this Upgrade Plan) and Shannons Paddock (the subject of a future Upgrade Plan) and what future improvements they would like to see. Consultation was for the neighbouring parks of both Milson Park and Shannons Parks. Milson Park is the initial upgrade plan, Shannons Paddock Upgrade Plan will come at a later date.

Open Day

An open day was held at Shannons Paddock on Saturday 4 November 2017 from 11am - 3pm. A total of 37 people visited the event and provided feedback to the project team. The event was advertised in the Parramatta Sun as well as via Sydney Water's and City of Parramatta's social media channels. A newsletter advertising the event and providing background information on the project was distributed to approximately 1500 residents within a 500m radius of the site.

Feedback Form

Feedback forms were mailed to surrounding residents in conjunction with the newsletter drop, asking how they use the park/s as well as what they would like to see in the future. The feedback form also asked specific questions around whether the community would like to see existing grass areas replaced with planted stormwater treatment areas to guage community feeling towards Sydney Water's core works. As of the 17th of November, 70 feedback forms have been returned.

Online Feedback Form

An online feedback form mirroring the hardcopy forms used to survey the community at the open day was also uploaded to Sydney Water's www.sydneywatertalk.com.au website. As of 7 November no surveys have been filled out online.

Following is a summary of the outcomes of the Community Engagement.

Figure 4.01 Community engagement boards

Community Engagement Outcomes

The feedback received from the community shows significantly more people use Shannons Paddock than Milson Park. The primary uses of the parks included walking, relaxation, experiencing nature and cycling. Current use is primarily in the afternoon and evenings with little use in the early morning. Most people stay for between 30 minutes and 2 hours, highlighting opportunities for providing facilities to encourage longer stays.

The community indicated a clear preference for additional walking and cycling paths, followed by natural stormwater treatment, community gardens, bush regeneration and habitat improvements, picnic and barbecue areas. Additional play opportunities were also requested.

The 'dot-mocracy' boards used on the day asked the community to select their 3 most desired uses with most popular being nature trails, walking and cycle/shared paths. Bush regeneration and habitat improvement, fishing, nature play for children and stormwater treatment were also popular responses.

Overall the community engagement process highlighted the importance of the parks to the local community, especially those living in the medium-high density areas, close to the parks. Interestingly, Milson Park is used regularly despite the lack of facilities and amenity provided, pointing to its value as an open space asset for the growing local community if upgrades are undertaken and access is improved.

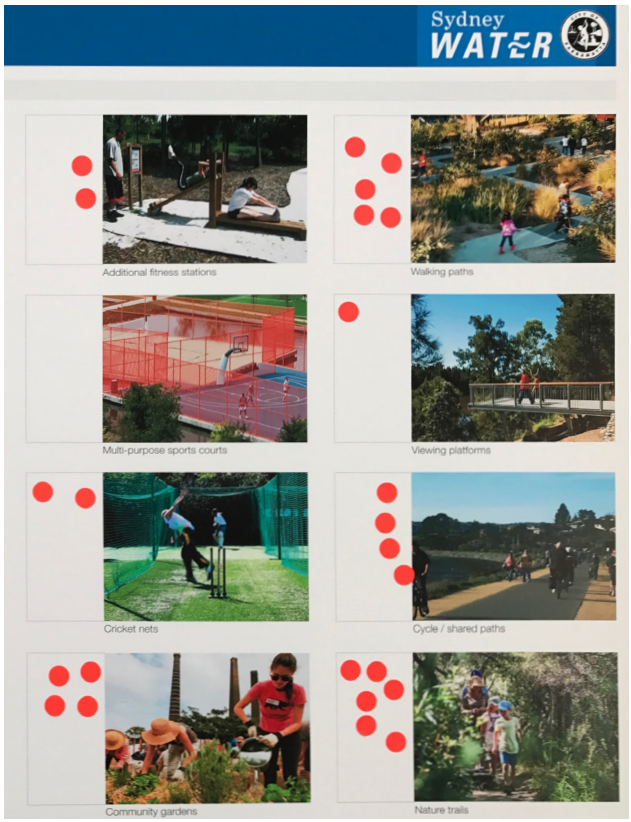


Figure 4.02 Community engagement boards feedback

Q. Which park/s do you use?

46% Shannons Paddock
23% Both parks
22% Milson Park
9% No answer

Q. Do you support the idea of replacing some existing open grassed areas with stormwater treatment areas?

YES 60% NO 31% Unsure 9%

Q. Would you support the following activities/facilties at Milson Park and/or Shannons Paddock?

22% Walking and cycling paths

17% Community gardens

16% Bush regeneration and habitat

15% Stormwater treatment

15% Children's playground

15% Picnic and barbecue areas