



NO  
STOPPING  
ON  
FREEWAY

IN CASE OF  
EMERGENCY  
EXIT FREEWAY

TO EASTERN  
FREEWAY  
LEFT LANE

**MOONEE PONDS CREEK  
STRATEGIC OPPORTUNITIES PLAN**

City of Melbourne

**MCGREGOR  
COXALL**

Project Client: City of Melbourne  
Project Name: Moonee Ponds Strategic Opportunities Plan  
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# CONTENTS

<b>Introduction.....</b>	<b>01</b>
Project Purpose.....	02
Project Drivers & Influences .....	02
<b>The Creek .....</b>	<b>07</b>
Moonee Ponds Creek.....	08
Study area.....	08
Site history .....	10
<b>Strategic Context .....</b>	<b>13</b>
City of Melbourne Policies and Key Objectives.....	14
<b>Thematic Corridor Analysis.....</b>	<b>17</b>
Corridor Governance .....	18
Water corridor .....	20
Open Space corridor .....	24
Biodiversity corridor.....	28
Movement corridor .....	32
Heritage Corridor.....	36
Character Reaches.....	38
<b>Project Vision .....</b>	<b>41</b>
Strategic vision .....	42
<b>Strategic Opportunities.....</b>	<b>45</b>
Water management .....	46
Open Space .....	50
Biodiversity .....	52
Movement .....	54
History & Culture .....	56
Governance.....	58
<b>Key Projects .....</b>	<b>61</b>
Future Character Reach.....	62
The Collector .....	65
The Urban Connector .....	69
The Tidal Underpass.....	81
<b>Appendix .....</b>	<b>89</b>
Levee Design interventions .....	90
Case Studies .....	96

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IMAGE: Shareway along Moonee Ponds Creek - narrow, low underpass prone to flooding

# INTRODUCTION

*The City of Melbourne is undergoing significant urban growth and densification. The need for a single document which can be used for advocacy to communicate the future role of Moonee Ponds Creek is crucial to instigate change, guide development and seed new projects.*

# PROJECT PURPOSE

## Moonee Ponds Creek Strategic Opportunities Plan

The City of Melbourne has undertaken this project to create a Strategic Opportunities Plan for Moonee Ponds Creek, focusing on the lower reach of the creek stretching from Brunswick Road to its mouth at Docklands.

At a strategic level, this plan seeks to highlight the possibilities that exist to guide the transformation of the creek into a thriving and enduring landscape. It seeks to influence decision making; instigate and drive change; and secure a prosperous future for the creek and legacy for generations to come.

The Moonee Ponds Creek Strategic Opportunities Plan is an advocacy tool and should function as a guide to inform future planning and actions associated with the corridor. It represents both the culmination and continuation of efforts to see the Moonee Ponds Creek re-imagined as a creek imbued with life and vitality. This plan embodies the views, values and goals of the City of Melbourne community to take care of our environment and responsibly manage change.

Upstream initiatives such as the 'Chain of Ponds Master Plan', which is currently being created by the City of Moonee Valley, the City of Moreland and Melbourne Water, have been considered as part of this project. The master plan is shaping a vision for the creek north of Brunswick Road within the respective council boundaries. City of Melbourne staff have been actively engaged as part of this project and the broader efforts of the Moonee Ponds Creek Catchment Collaboration Group. However, there is currently no formalised vision for the creek within the City of Melbourne. The Moonee Ponds Creek Strategic Opportunities Plan will establish this vision for the City of Melbourne, with further work and advocacy required to ensure a holistic catchment-wide approach is undertaken.

## Project Objectives

The key objectives of the Moonee Ponds Creek Strategic Opportunities Plan are to:

- Celebrate Moonee Ponds Creek and the role that water plays in the identity, liveability and resilience of Melbourne city;
- Investigate alternative levee design and water storage solutions that effectively manage flooding and improve the amenity of the creek;
- Prepare a series of concept plans and associated graphic illustrations that spatially reflect the strategic opportunities and other solutions identified within existing Council strategies and plans, those of others, and traction to date; and
- Produce a highly visual summary document that advocates for the revitalisation of the Moonee Ponds Creek corridor.

# PROJECT DRIVERS & INFLUENCES

## Urban Growth & Densification

The City of Melbourne's population is expected to nearly double in the next 20 years, with greater Melbourne increasing from 4.5 million in 2017, to 8 million in 2037.

To plan for this substantial population change, numerous zones located adjacent to Moonee Ponds Creek are earmarked for renewal, including:

- Arden-Macaulay;
- Arden Central;
- Dynon;
- E-Gate; and
- Docklands.

As inner city industrial activity decreases, these areas become available for urban growth and densification offering residential and commercial space.

While Dynon Road and E-Gate are long term prospects, Docklands is already significantly underway, and Arden-Macaulay has been re-zoned for purpose, with development imminent.

These urban renewal zones will place increased pressure on the city, and Moonee Ponds Creek. There will be a higher demand and need for quality open space and transport links. Stormwater runoff and pollution will increase, significantly impacting Moonee Ponds Creek as a stormwater corridor and living waterway. Developments will also place further pressure on the natural environment, threatening biodiversity and increasing the need for protection of the natural environment.

There is a need to ensure that future of Moonee Ponds Creeks is a major contributing factor to the liveability of Melbourne, as a key waterway, open space, movement and biodiversity corridor.



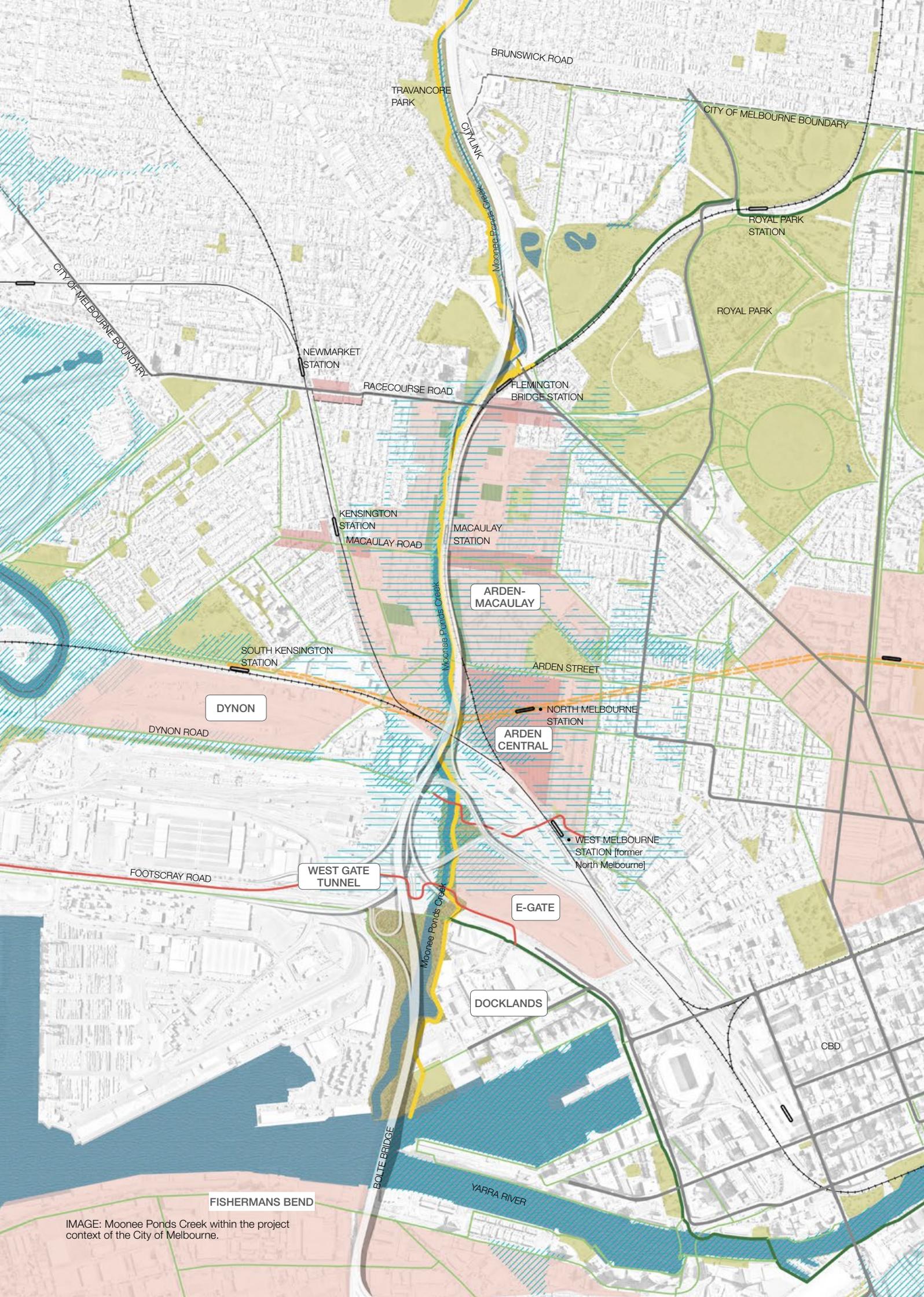


IMAGE: Moonee Ponds Creek within the project context of the City of Melbourne.

Other major infrastructure projects, including the West Gate Tunnel Project [Western Distributor], will have a significant impact on the environmental and spatial quality of Moonee Ponds Creek. While much of the planning and implementation of the West Gate Tunnel is not in the hands of the City of Melbourne, documents like this Strategic Opportunities Plan will be integral in the advocacy for outcomes which work in favour of the creek and the City of Melbourne.

It is crucial that there is a shared understanding of the future of the creek to guide development and renewal projects within the creek, its corridor, and catchment. The need for a single document which can be used for advocacy to communicate how the future of Moonee Ponds Creek can and should look is crucial to instigate change, guide development and seed new projects.

## Climate Resilience & Flooding

The City of Melbourne faces a unique waterway management challenge of being positioned at the bottom of a number of waterways, including the Moonee Ponds Creek catchment.

Arden-Macaulay is earmarked for renewal, however the existing Land Subject to Inundation Overlay areas indicate the compromised development capacity of these areas.

Projections to the Year 2100 also indicate a significant increased risk of flooding along the Moonee Ponds Creek corridor due to a combination of urban densification, sea level rise and more extreme storm and rainfall events as a result of climate change. Flood protection is high on the agenda for Moonee Ponds Creek and the surrounding lands, both for the immediate and long-term future.

To enable the renewal of land adjacent to the creek the status quo simply isn't suffice, and change is crucial.

## Global Trends

Similar to Moonee Ponds Creek, many waterways across the globe have been neglected, degraded and heavily modified. There is now a world-wide trend to reconnect cities with their creek and river environs and many benchmark examples of creek restoration initiatives and construction can be found. These examples have contributed positively to their cities through a variety of ways including:

- Innovative, dynamic flood mitigation design to increase usability of flood-prone sites;
- Revitalisation of water corridors to create improved ecology and water quality; and
- Community inclusive design to encourage and facilitate engagement with water bodies, creeks and rivers.

Some marked case study examples can be found in the appendix of this document.

## Up-stream initiatives

Up-stream initiatives include the Chain of Ponds Master Plan which is a bold visionary document initiated by the two municipalities of the City of Moonee Valley, the City of Moreland and Melbourne Water. The master plan is an investigation into what Moonee Ponds Creek is today and what it may become in the future, providing a framework for managing change and influencing decision making across the creek corridor within the two councils.

The plan includes a 'Toolkit' which identifies 34 initiatives to improve the ecological health of the creek and biodiversity within the creek corridor, promote innovative water management, reduce stormwater runoff, improve water quality and resolve flood risks. It is important to understand the creek as a product of its catchment, and catchment-wide initiatives need to be implemented to create a significant and lasting change to Moonee Ponds Creek corridor.

Investigations have been done upstream to see if large water storage can be achieved. The City of Melbourne is currently partnering with the City of Moonee Valley and City of Moreland, with the support of Melbourne Water, to investigate the ability to minimise downstream impacts of flooding by retaining water upstream.

## Stakeholder and Land Ownership

Moonee Ponds Creek sits across multiple councils and is currently managed and owned by Melbourne Water. Throughout the municipalities of Hume, Moonee Valley and Moreland, land that surrounds the creek is largely open space that is owned or managed by the relevant municipalities. Within the City of Melbourne however, this is not the case. Most of the land between Mount Alexander Road and the creek's confluence with the Yarra River is, or has until recently, been used for rail, road or port purposes. As such, the Victorian Government own and manage, through various agencies and authorities such as VicTrack, Development Victoria and the Victorian Ports Corporation, the majority of the land surrounding the creek.

Friends of Moonee Ponds Creek and Local and State Government authorities are working in partnerships, including the Moonee Ponds Creek Collaboration Project, in order to continue the reinvigoration of the Creek Corridor via co-ordinated and consistent policies. It is important to continue to partner and engage with these groups to ensure a unified approach is taken to the revitalisation of the creek, leveraging off one another to maximise efforts and ensure works are in favour of both upstream and downstream initiatives.

While the City of Melbourne has planning influence over much of the creek catchment areas at the base of the creek, the city does not currently have much influence on the corridor itself. New use of land adjacent to the creek,

including those identified by current planning reports such as the Arden-Macaulay Structure Plan, may help to unlock the vision, particularly those that are under the ownership of the Victorian Government. The City of Melbourne have already purchased private land at strategic sites adjacent to the creek corridor, and will continue this as land becomes available.

## Impacting Projects

There are numerous relevant ongoing and potential projects influencing Moonee Ponds Creek. These projects include infrastructure, planning and strategic work and are being undertaken by various government bodies. They are:

Arden Precinct Planning (VPA): Draft Arden Vision and Framework (finalisation anticipated in early 2018) and future Arden structure planning (to commence in 2018)
E-Gate (DELWP)
North Melbourne Metro Station (Melbourne Metro)
Amendment C190 to the Melbourne Planning Scheme (DELWP)
Macaulay Masterplanning (City of Melbourne)
Moonee Ponds Creek Catchment Collaboration Project
Arden-Macaulay Drainage Strategy (Melbourne Water)
Chain of Ponds Master Plan (City of Moonee Valley, City of Moreland and Melbourne Water)
Arden-Macaulay Integrated Water Management Plan (City West Water)
West Gate Tunnel Project (Western Distributor Authority)
Moonee Ponds Creek Upstream Storage Investigations (City of Melbourne)
Innovative Flood Management and Liveability Solutions for Arden-Macaulay (City of Melbourne).
East West Link Project (Transport for Victoria)





IMAGE: Moonee Ponds Creek adjacent to Dooklands where the creek widens providing a salt marsh zone.

# THE CREEK

*The Moonee Ponds Creek has lived many lives – ever changing and evolving. Once a chain of marshy ponds, teeming with wildlife, the creek bears the marks of ongoing urbanisation and manipulation. Its pulse may have weakened, but shown the care and sensitivity it deserves, this powerful landscape can thrive once again.*

# MOONEE PONDS CREEK

# STUDY AREA

## The Creek

The name 'Moonee Ponds Creek' is derived from the system's original character as a winding chain of water holes, which during heavy rains swelled into a fast-flowing temporary stream. These ponds are no longer found- instead an urbanised creek channel is encountered which primarily functions as a hydraulic and transport corridor.

Originating at the northern fringe of Melbourne's urban growth in Yuroke, Moonee Ponds Creek winds its way south, bordering and traversing the City of Hume, the City of Moonee Valley, the City of Moreland and the City of Melbourne.

Moonee Ponds Creek is a key natural and recreational asset of suburban and inner city Melbourne. Along its course of approximately 25 kilometres the creek traverses varying landscapes from the near natural setting of Woodlands Historic Park near Melbourne Airport, through the outer middle and inner suburbs of Melbourne to the Docklands where it merges with the Yarra River.

Following the creek corridor, the Moonee Ponds Creek trail provides a near continuous shared path between Woodlands Historic Park and the city. The trail enables both recreational and commuter cycling, providing journeys largely devoid of conflict with vehicles.

While there are some opportunities for recreation and relaxation, the creek and its corridor have been neglected along much of its reach and provide little opportunity for true engagement with this waterway, in particular within the City of Melbourne. Predominately a concrete channel, the neglected water course has been viewed almost solely as a stormwater corridor, with little regard for its social and ecological function and opportunity.

The delivery of large-scale transport infrastructure has contributed to its neglect. CityLink and the Tullamarine Motorway, for example, run above and adjacent to Moonee Ponds Creek for much of its lower reaches, and throughout the entirety of its presence in the City of Melbourne. The elevated highway, together with train lines and low bridges have created a 'back of house' approach to the creek and disconnect much of the surrounding community from the creek.

Whilst for a long period the corridor was largely perceived only as a drainage reserve, works undertaken by Friends Groups, Councils and Melbourne Water have seen a shift in perception. There is now a shared understanding that the Moonee Ponds Creek Corridor provides an opportunity to integrate, connect and enhance the opportunities to experience a range of recreational pursuits and a landscape of great character and quality, while improving water quality, focusing on the final segment of the creek stretching from Mount Alexander Road to its mouth at Docklands.

## The Study Area

This strategic opportunities plan focuses on the lower reach of Moonee Ponds Creek, stretching from Brunswick Road to its mouth at Docklands through the City of Melbourne Municipality.

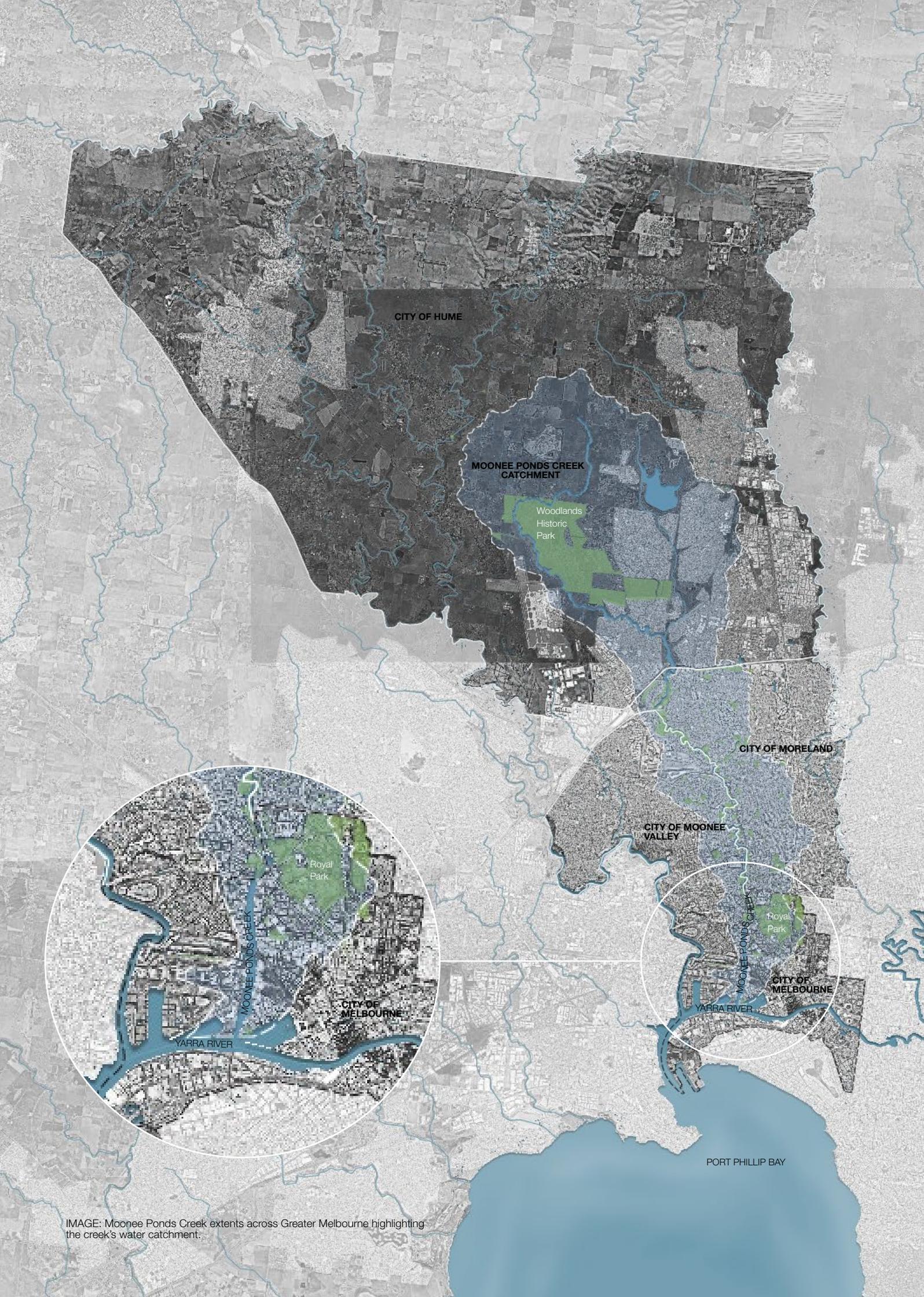
The report is looking into online initiatives, therefore focuses on the creek and its immediate corridor. Off-line and upstream initiatives are equally important, particularly in relation to water management and flooding, and this document supports these initiatives.

### LEGEND

Waterbodies

Moonee Ponds Creek water catchment extent





CITY OF HUME

MOONEE PONDS CREEK  
CATCHMENT

Woodlands  
Historic  
Park

CITY OF MORELAND

CITY OF MOONEE  
VALLEY

CITY OF  
MELBOURNE

CITY OF  
MELBOURNE

PORT PHILLIP BAY

YARRA RIVER

YARRA RIVER

Royal  
Park

Royal  
Park

MOONEE PONDS CREEK

MOONEE PONDS CREEK

IMAGE: Moonee Ponds Creek extends across Greater Melbourne highlighting the creek's water catchment.

# SITE HISTORY

## A Nourishing Creek

[Text derived from 'Friends of Moonee Ponds Creek' Group]

Moonee Ponds Creek has been an important place for the Wurunjeri People for thousands of years.

Originally, the Creek had shallow ponds of water that formed a chain along the length of the watercourse, isolated in drier times of the year, and flowing in the wetter months after heavy rains. The creek formed a series of marshy ponds on the floodplains, with a wetland system located near the Yarra River. These ponds and wetland no doubt would have been an important source of food, water, and a space for meeting and gathering.

These environments would have provided a water source as well as abundant plant and wildlife resources. Eels and Murnong (Yam Daisy) appear to have been prominent resources along the creek. As well as these food resources, there were camp locations on the nutrient rich flood plains that, at certain times of the year would have encouraged the Aboriginal people to take advantage of its seasonal bounty.

When Europeans first settled the Port Phillip region, five Aboriginal language groups, part of the Kulin (Koolin) Nation, already occupied it. Consisting of multiple land-caring units, these clans were connected through cultural and mutual interests, totems, trading initiatives and marital rites. The local clan, the Gunung (meaning "creek dwelling people") were connected to the Moonee Ponds Creek and other waterways in the area.

Following European settlement, first land sales in the area were made in 1843 and 1845, since then Melbourne has developed rapidly and Moonee Ponds Creek has changed from a natural living creek into an urban waterway knitted into Melbourne's urban Fabric. Settlement, urbanisation, industrialisation had incremental impacts on the creek, which is now undoubtedly unrecognisable to the creek that flowed 200 years ago.

## Recent History

In 1989, the Moonee Ponds Creek Association (now Friends of Moonee Ponds Creek) was formed with the aim of protecting the Creek from further impacts of road construction, and to enhance the creek's environs. In 1992, the group initiated preparation for the strategic Moonee Ponds Creek Concept Plan 1992. Over the last two decades there has been a growing awareness of pollution issues linked to urban runoff and pollution transportation through stormwater drains into the lower Moonee Ponds Creek.

In relation to such issues, the Melbourne Water's Healthy Waterways Strategy was developed in 2012, which acknowledged amenity as key to improving the value of waterways and meeting community expectations and values.

2012 also saw the approval of the Draft Arden Macaulay Structure Plan by City of Melbourne, which specified five key directions including upgrading the Moonee Ponds Creek parkland corridor and establishing five new parks. The Structure Plan is an important document as it requires Melbourne Water and other agencies to look at the relationship between the catchment, the hydraulic capacity of the creek, the levees, and the broader impact of the flood zone on Arden-Macaulay.

In 2015, the Chain of Ponds Master Plan was commissioned, and was developed by the City of Moonee Valley, the City of Moreland and Melbourne Water. This established a vision for the creek corridor and highlighted the potential social and economic benefits of revitalising this public space.

In the following year, Melbourne Water began a Moonee Ponds Creek Collaboration Project. The first of these workshops involved 70 people, indicating both the interest in improving this corridor, and the complexity of the place.

The beginning of the collaboration process resulted in a commitment by representatives of 18 organisations and 10 supporting partners to achieve an agreed-upon vision for the catchment to: "Transform the Moonee Ponds Creek into an iconic waterway for Melbourne that enhances its natural capital and provides high social and environmental benefits to local and wider communities".

The collaboration group includes representatives from local (including the City of Melbourne) and state government, community groups, not-for-profits, businesses and research organisations — all with a strong interest in improving the Moonee Ponds Creek.

## Future Potential

While in the past there has been a trend to neglect the creek, the last 20 years have seen a significant shift in how people view the future of Moonee Ponds Creek. Key advocacy groups such as the City of Melbourne, the City of Moreland, City of Moonee Valley, Melbourne Water, and Friends of Moonee Ponds Creek, recognise that revitalisation of the creek has the potential to provide significant social and economic benefits, as well as improved ecology and biodiversity.



*“Australia’s first inhabitants have a history of more than 40,000 years, their Descendants have developed intimate knowledge and spiritual connection to their natural environment”.*

ABOVE: A diagram illustrating the evolving creek environs over time.

1. <http://www.environment.sa.gov.au/goodliving/posts/2016/07/hoarlunga-downs-wetlands>  
 2. Robert Russell / State Library of Victoria (1837).  
 3. Map of part of the colony of Port Phillip J Crofs - 1839 Collection State Library of Victoria  
 4. View of Melbourne, Port Phillip, 1843 - Joseph Lowry - National Library of Australia  
 5. Map of Hobson Bay and Yarra River leading to Melbourne 1864 - State Library of Victoria  
 6. Image: Illustrated Australian News: Sands & McDougall printers, 1882  
 7. Engraving of Melbourne Dock under construction in 1892 - State Library of Victoria.  
 8. City of Melbourne  
 9. MCGC  
 10. Atelier Dreiseitl - Kallang River Bishan Park - 2012



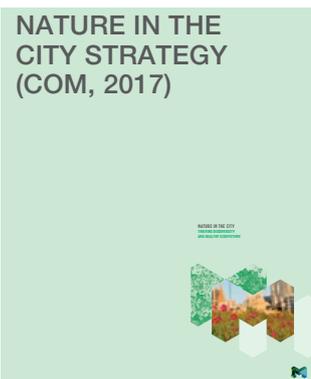
IMAGE: Reflections of the western bank of Moonee Ponds Creek

# STRATEGIC CONTEXT

*The City of Melbourne has a future vision for a ‘bold, inspirational and sustainable city’. This includes the establishment of a resilient city with healthy waterways, a connected and expansive open space network and the creation of an urban forest. Over the years numerous strategies and plans have been developed to articulate and plan for this vision.*

# CITY OF MELBOURNE POLICIES AND KEY OBJECTIVES

Below are a list of City of Melbourne documents, highlighting a snapshot vision, their relevance and key points relating to the Moonee Ponds Creek Strategic Opportunities Plan.

COM STRATEGIES & PLANS	VISION SNAPSHOT	RELEVANCE
 <p><b>MELBOURNE STRATEGIC STATEMENT [MSS]</b></p>	<p><i>“Bold, inspirational and sustainable city”.</i></p>	<p>The MSS is a plan for the growth and development of the City of Melbourne. This growth will see significant increases in resident, worker and visitor populations in the municipality, particularly in areas that surround the Moonee Ponds Creek being Arden (North Melbourne), Macaulay (North Melbourne and Kensington), E-Gate (West Melbourne), Dynon (West Melbourne) and Docklands.</p>
 <p><b>RESILIENT MELBOURNE STRATEGY (COM 2016)</b></p>	<p><i>“In a resilient Melbourne, our diverse communities are viable, sustainable, liveable and prosperous.”</i></p>	<p>Supporting our community to adapt to accelerating changes.</p>
 <p><b>CLIMATE CHANGE ADAPTATIONS STRATEGY (COM, 2017 REFRESH)</b></p>	<p><i>“Adapting well to climate change”.</i></p>	<p>Moonee Ponds Creek plays a pivotal role in responding to flooding, droughts and heat waves. The City of Melbourne aspires to be a leader in best practice in city climate change adaption, and this project represents an enormous opportunity to demonstrate our leading approach.</p>
 <p><b>OPEN SPACE STRATEGY (COM, 2012)</b></p>	<p><i>“Diverse network of high quality open space.”</i></p>	<p>Moonee Ponds Creek as an open space spine connected to a network of current and future open spaces within adjacent urban renewal areas</p>
 <p><b>NATURE IN THE CITY STRATEGY (COM, 2017)</b></p>	<p><i>“Thriving biodiversity and healthy ecosystems”.</i></p>	<p>Key goals include creating a more diverse, connected, and resilient natural environment, connecting people to nature, which includes exploring opportunities to use cultural and practical ‘Caring for Country’ principles to integrate people with nature, and demonstrating leadership (local and global recognition) in urban ecology and conservation of biodiversity. With Moonee Ponds Creek being recognised as a key biodiversity corridor and of cultural significance, this is a particularly relevant strategy. Furthermore, this project represents an opportunity to demonstrate our leading approach to urban ecology and conservation of biodiversity.</p>

COM STRATEGIES & PLANS	VISION SNAPSHOT	RELEVANCE
<p><b>URBAN FOREST STRATEGY (COM, 2012)</b></p> 	<p><i>"Making a great city greener".</i></p>	<p>The city is facing significant challenges of climate change, population growth and urban heating, placing pressure on the built fabric, services and people of the city. A healthy urban forest will play a critical role in maintaining the health and liveability of Melbourne, and an expanded Moonee Ponds Creek corridor represents an opportunity to deliver on key urban forest targets.</p>
<p><b>TOTAL WATERMARK – CITY AS A CATCHMENT (COM, 2014 UPDATE)</b></p> 	<p><i>"Creating a healthy city in a healthy catchment".</i></p>	<p>The strategy has four key focus areas being climate change adaption and flood, water for liveability, water for the environment and water use. Moonee Ponds Creek as both a key waterway in the city, and our challenge in being located at the bottom the Moonee Ponds Creek catchment present a number of challenges and opportunities that this project needs to consider.</p> <p>Arden-Macaulay and Moonee Ponds Creek are key focus areas within the plan. This plan captures the message that water is fundamental to the liveability of the city and the health and wellbeing of our community well.</p>
<p><b>TRANSPORT STRATEGY (COM, 2012)</b></p> 	<p><i>"A cycling city".</i></p>	<p>Moonee Ponds Creek (Capital City Trail) is a priority route in the city's cycle network.</p>
<p><b>ARTS STRATEGY 2014-17 (COM)</b></p> 	<p><i>"A creative city through the arts".</i></p>	<p>Key themes surrounding building upon the long-standing heritage and embrace Aboriginal and Torres Strait Islander history and culture and using art as a means of storytelling and activating the public realm.</p>
<p><b>ARDEN-MACAULAY STRUCTURE PLAN (COM, 2012)</b></p> 	<p><i>"To revitalise the Arden-Macaulay into a into a sustainable living and working environment, a thriving and liveable place that supports a new community."</i></p>	<p>Key direction to establish new parkland along an upgraded Moonee Ponds Creek with creek banks redesigned to create recreation areas, habitat protection, improved walking and cycling links and contribute to flood mitigation. Furthermore, expanding and upgrading cycling and walking networks is a key strategy within the structure plan. The structure plan identifies key opportunities to improve cycling, which include creating a north-south off road cycling link on the west side of the creek and a new underpass connecting Sutton Street and Smith Street.</p>



IMAGE: Moonee Ponds Creek as a concrete channel adjacent to Travencore Park.

# THEMATIC CORRIDOR ANALYSIS

*The creek's corridor plays an important role within the community, not only for environmental benefit, but also as a recreational and infrastructure asset. Providing the surrounding community and greater Melbourne with storm water management, transport linkages and public facilities such as sports fields and parklands.*

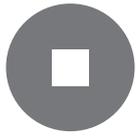
## Analysis approach

A thematic analysis of Moonee Ponds Creek has been undertaken based on the various roles the creek plays as a Water Corridor; Open Space Corridor; Biodiversity Corridor; Movement Corridor; and, Heritage Corridor.

The analysis is undertaken in the understanding of its role considered in the City of Melbourne and also incorporates a review of work including framework strategies; water quality and flood management studies and projections; ecological, social studies; and urban renewal projects linked directly and indirectly to the future of Moonee Ponds Creek.

Key studies and investigations include:

- Moonee Ponds Creek Strategic Plan
- Draft Arden Macaulay IWM Plan and Moonee Ponds Creek Masterplan
- Draft Chain of Ponds Master Plan
- Moonee Ponds Creek Catchment Collaboration Group - Summary of Key Issues
- Arden-Macaulay Precinct Drainage Investigations Report plus Peer Review
- Moonee Ponds Creek Large Scale Flood Storage Investigation
- Exploring Opportunities for Arden Macaulay and Fishermans Bend – Designing with Water in Urban Renewal Areas
- C40 Arden-Macaulay City Solutions Platform Services Workshop Outcomes Summary
- Arden-Macaulay Framed Through Water Design Investigation Stage 1



# CORRIDOR GOVERNANCE

## A Complex Corridor

Moonee Ponds Creek is a dynamic corridor that fulfils various functions. Its ownership and management is however fragmented, which has historically impeded efforts to bring about change.

The Moonee Ponds Creek corridor traverses approximately 25 kilometres through the boundaries of four municipalities (Hume, Moonee Valley, Moreland and Melbourne). Melbourne Water, as the authority responsible for the management and protection of major water resources, is responsible for the management of Moonee Ponds Creek.

The creek corridor is an important conveyor of stormwater, a linear open space with an important continual ecological link and a significant active transport link with a rich history. It has and continues to be an important waterway for Melbourne.

## Land Ownership

Much of the land surrounding the lower reach of Moonee Ponds Creek is State Government Owned. Melbourne City Council is in a unique position to influence the change in role and ownership of these lands to make a positive contribution to the city's overall city vision.

## Melbourne Water

The creek itself is owned by Melbourne Water. They are responsible for managing and protecting this water resource on behalf of the community.

In 2013 Melbourne Water released the 'Healthy Waterways Strategy', an extensive strategy which outlines the role Melbourne Water will play in managing waterways to ensure their value to the community is protected and improved. Their vision is to have healthy, valued waterways that are 'integrated with the broader landscape and enhance life and liveability'.

A challenge for Melbourne Water is how to maintain, or create, healthy waterways and delivering integrated drainage and flood management approaches while adapting to climate change, urbanisation and population growth.

## State Government

Throughout the municipalities of Hume, Moonee Valley and Moreland, land that surrounds the creek is largely open space that is owned or managed by the relevant municipalities. Within the City of Melbourne however, this is not the case.

Most of the land between Racecourse Road and the creek's confluence with the Yarra River is, or has until recently, been used for rail, road or port purposes. As such, the Victorian Government own and manage, through various agencies and authorities such as VicTrack, Development Victoria and the Victorian Ports Corporation, the majority of the land surrounding the creek.

Whilst the purpose of these various agencies and authorities significantly differ, and long term leases associated with the operation of the port and elevated road infrastructure such as CityLink complicate the issue, Victorian Government ownership remains. For the most part, surrounding suburbs of Kensington, North Melbourne, West Melbourne and Docklands have been identified for urban renewal. These are Victorian Government initiated renewal projects, which presents an opportunity to explore the appropriateness of land uses, activities and ownership and management arrangements along the creek corridor.

Furthermore, the West Gate Tunnel project will likely see the City of Melbourne made Committee of Management of the public open space delivered as part of the project. A 1.4 hectare creekside open space is proposed on rehabilitated railway land on the western bank of Moonee Ponds Creek, between Footscray Road and Dynon Road. The Minister for Planning has also publicly committed to preparing a masterplan for the section of Moonee Ponds Creek between Mount Alexander Road and the creek's confluence with the Yarra River in Docklands.

This presents an opportunity to broaden the extent of the City of Melbourne's role as Committee for Management, and see the perceived extent of the creek corridor being reflected in its status as Crown Land and zoning as 'Public Park and Recreation Zone'.

Given the complexity of land ownership and management, the ability to deliver on key outcomes for the creek requires a catchment wide collaborative governance approach.

### LEGEND

- City of Melbourne Boundary
-  Waterbodies
-  City Of Melbourne
-  Victorian Government
-  City Link
-  Vic Track
-  Port of Melbourne
-  City Wide
-  Ausnet
-  Development Victoria





A concrete channel bordered by parkland and CityLink



The creek dominated by CityLink.



The creek constrained by CityLink the rail corridor to the east, and residential to the west.



VicTrack land surrounding Moonee Ponds Creek.



Port of Melbourne developed to the edge of the creek.

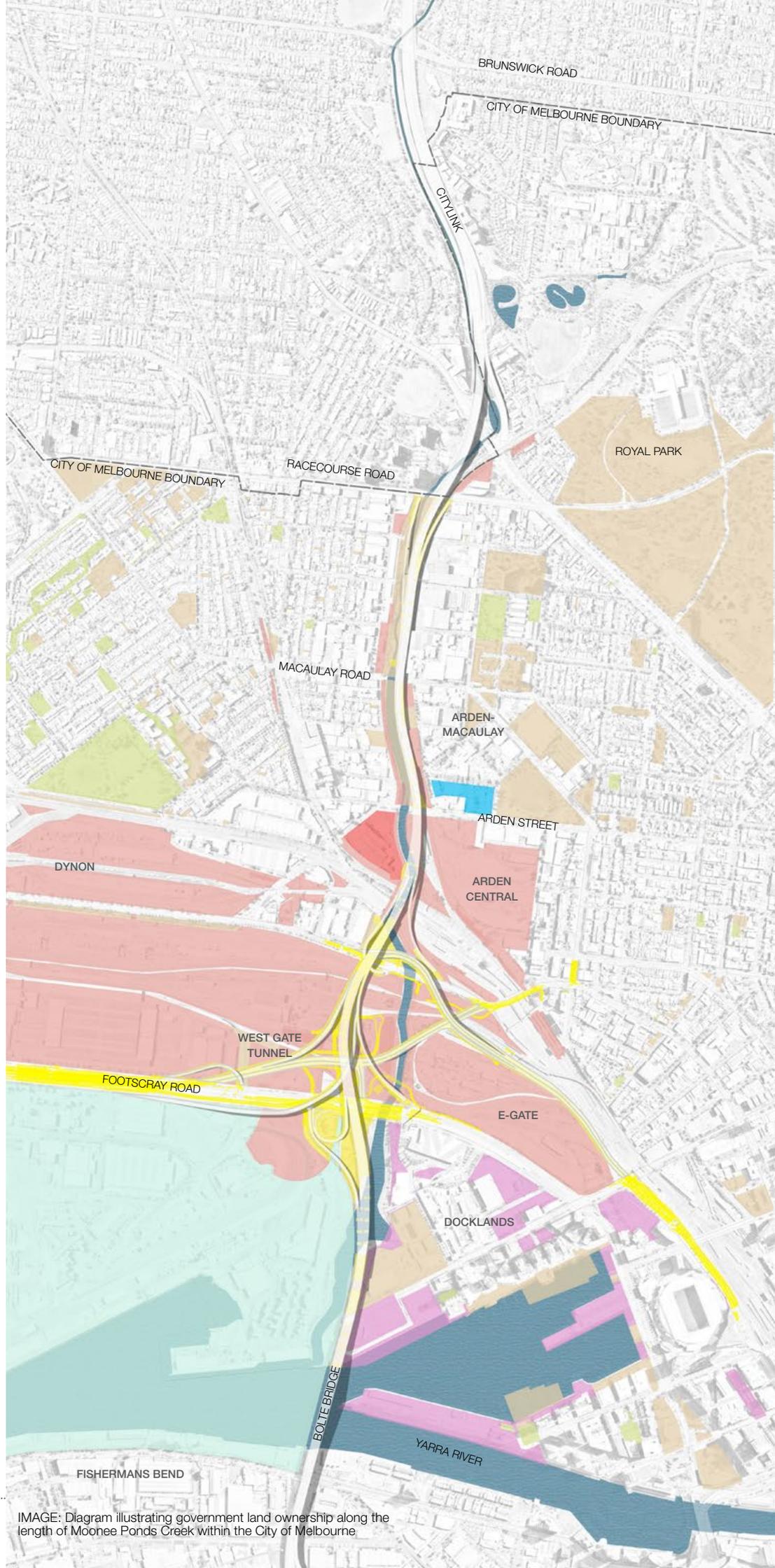


IMAGE: Diagram illustrating government land ownership along the length of Moonee Ponds Creek within the City of Melbourne.



# WATER CORRIDOR

## History

Like many cities around the world, Melbourne has a history of altering its waterways. Dredging, straightening, concrete lining, removal of vegetation, and major infrastructure projects have transformed Melbourne waterways. Moonee Ponds Creek was traditionally surrounded by low lying wetlands, and this is still evident by the extent of land surrounding the creek that is subject to inundation.

Prior to European settlement and associated landscape modification, Moonee Ponds Creek was a winding chain of water holes, which during heavy rains swelled into a fast-flowing temporary stream through what are now Melbourne's north-western suburbs. The creek fed into a large, pristine saltwater wetland teeming with life. In 1841, George McCrae described this wetlands as a 'real lake, intensely blue, nearly oval, and full of the clearest salt water' (John Lack 'West Melbourne Swamp', eMelbourne encyclopedia).

Renamed the 'West Melbourne Swamp', as European settlers moved in the wetland increasingly became a repository for industrial and household waste. Within a couple of decades from when the first settlers set up camp on the banks of the Yarra River in Melbourne, the swamp had become a foul-smelling health hazard.

Around 1900, the wetland was drained.

The largely urbanised environment that developed around this area resulted in considerable alteration to the creek between the 1950's and 1980's for flood protection and redirection for dock developments. [Melbourne Water 2006]

Removal of bank vegetation and in-stream debris, as well as the installation of a concrete lining throughout much of the lower reaches of the creek, were undertaken to protect the flow of water, as well as to combat periodic flooding and prevent further erosion. Realignment of the creek and further reinforcement occurred alongside the construction of the Tullamarine Freeway, with modifications conducted as part of an extensive urban development of the lower floodplain. As a result, much of the creek through the inner northern suburbs is now expressed as a concrete stormwater drain that runs parallel to the Tullamarine Freeway/City Link corridor [Moonee Ponds Creek Strategic Plan 2011].

During the first decade of the 21st century, several pumping stations were constructed along Moonee Ponds Creek in order to drain stormwater across levee banks in the Kensington area. These pumping stations were designed to cater to instances of peak discharge from a 20-year ARI storm.

## Current Condition

Moonee Ponds Creek is subject to periodic flooding, with much of its adjacent land in its lower reaches subject to inundation. Currently, concrete levees exist within sections of the creek corridor to protect areas such as North-Melbourne and Kensington (Arden-Macaulay) from periodic flooding.

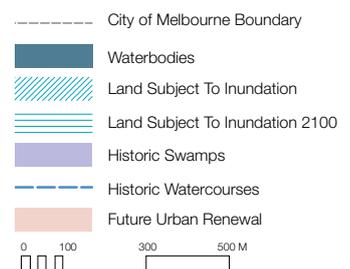
Currently undergoing renewal, Arden-Macaulay has significant flooding and drainage problems. High flood levels breach the existing levees, flowing into low lying areas. This is due to a combination of flood waters conveyed down from the upstream Moonee Ponds Creek catchment, downstream tidal surges and hydraulic restrictions of bridges. Once the levee height is breached, the creek can no longer function as a stormwater outlet for the local catchment as pump stations become somewhat redundant.

Lower sections of an urban stream like Moonee Ponds Creek tend to present challenges in terms of management and protection from flooding. The problem originates upstream, and therefore solutions are best implemented upstream. However, the city has already been developed and it would be very difficult to now reduce the runoff from the upstream catchment, both for physical and economic reasons.

In Moonee Ponds Creek's downstream environment, where it reaches the City of Melbourne, there are limited options for the authorities, particularly at Arden-Macaulay where corridor space is limited. In the past, and to some extent now, there has been a focus on managing the hydraulic capacity of the creek and building levees to ensure the livelihoods and safety of the community are protected in the frequent flooding and storm events.

In maintaining the hydraulic capacity of the creek, any impediments to the flow, from bridges, road crossings, litter, and gross pollutants, will reduce the ability of the creek to quickly drain flood waters. Maintenance of the creek system is an ongoing problem that Melbourne Water, Transurban, and City of Melbourne are constantly grappling with.

### LEGEND





Port of Melbourne developed to the edge of the creek.



Where fresh water meets salt water.



Drainage and stormwater pipes discharging into the creek.



Where the creek widens out, with a vegetated levee on the west, and rail and CityLink on the east.



The mouth of the creek meeting the Yarra River.

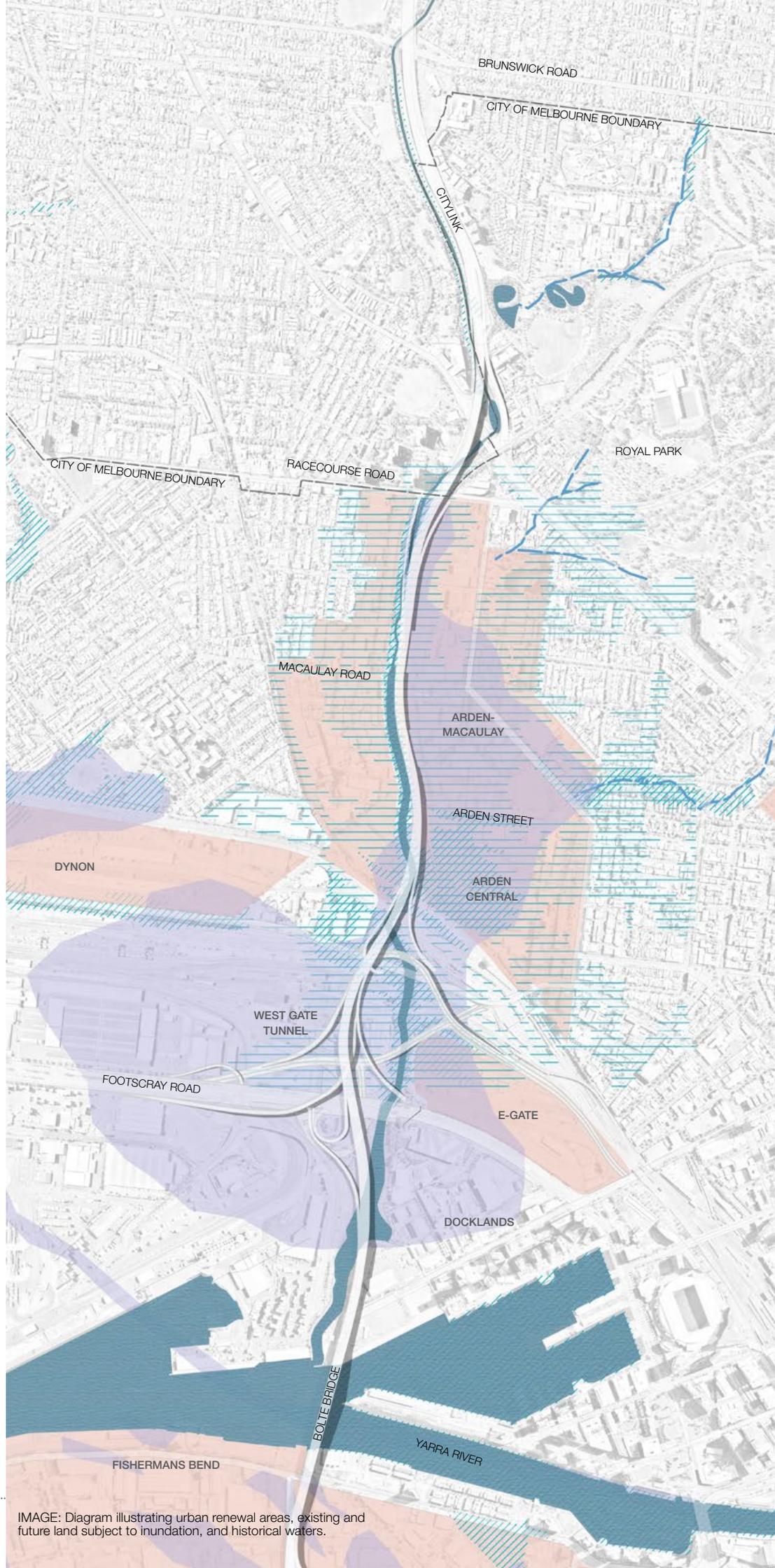


IMAGE: Diagram illustrating urban renewal areas, existing and future land subject to inundation, and historical waters.



## Potential Future Condition

Increased frequency and intensity of storm events and sea level rise due to climate change will see increased pressure on Moonee Ponds Creek, with increased storm surges and flash flooding [Arden-Macaulay Structure Plan, COM 2012].

Previous drainage investigations have found that the height and length of these levees would need to be increased, nominally between 0.3m and 0.9m, to safeguard these areas into the future [Arden-Macaulay Drainage Investigations Report, Engeny, October 2016)]. These investigations also consider positive contributions to flood management, assuming a combination of works including:

- Raising or hydraulically improving bridges;
- Utilising above ground and underground flood storages;
- Upgrading the six existing pump stations; and
- Pressurisation and upgrade of drainage pipes.

These works have direct impact of levee height.

Channel deepening to mitigate flooding will have limited impact at this part of the creek unless deepening also occurs upstream.

Levees play an important role in flood conveyancing and minimising the threat of inundating surrounding properties, however increasing the height and length of concrete levees within the Moonee Ponds Creek corridor is at odds with aspirations to revitalise the creek, as it reinforces existing physical and visual barriers.

## Current Initiatives

In 2017, the City of Melbourne commenced a research project on Moonee Ponds Creek and flooding issues under the international C40 'City Solutions Platform' banner. This project relates to earlier work completed for City of Melbourne in reviewing the nature of flooding, and potential solutions to flooding, in Arden-Macaulay. This project has recognised that collaboration is essential to developing integrated solutions and there must be more alternatives to addressing this flood problem than simply increasing the height of the levee.

The cumulative effect of this environmental and political context surrounding the Moonee Ponds Creek is that the City of Melbourne is currently seeking to explore viable alternatives to concrete levees within the Moonee Ponds Creek corridor. The City of Melbourne commenced this process as part of the C40 Cities Arden-Macaulay City Solutions Platform series workshop in June 2017, which identified the opportunity to offset the need to raise and lengthen concrete levees by retarding flood flows

further upstream and considering alternative integrated levee design options. Alternative levee design options included levee gates, vegetated levees, gradual levees, multifunctional levees and re-directed flow paths.

The City of Melbourne is taking a water sensitive city approach to water management in Arden-Macaulay. This approach will integrate flood management with open space requirements and use water to drive attractive and water sensitive urban design, to utilise its ecological benefits and to celebrate water as a driving element of the identity of the precinct. Flood management tools being investigated include 'cloudburst' roads and parks being used to detain flood waters, rain water tanks and green roofs being optimised to store flood water as well as traditional flood management such as upgrades to pipes, pumps and levees.

The City of Melbourne's 'Resilient Melbourne Strategy', underpins the vision for Melbourne as a resilient, liveable and sustainable city. Exploration needs to be undertaken of intelligent alternatives to conventional flood protection solutions, which have historically been shown to sever connections between waterbodies and their adjacent communities. Where engineering assets are necessary, such as levees and detention basins, the opportunities to establish a sense of place and contribute to the connection between the waterway and surrounding communities should be strongly considered.

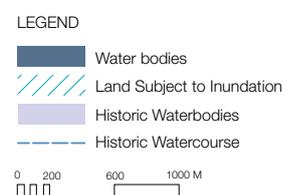




IMAGE: Existing and historic waterways and waterbodies within the City of Melbourne



# OPEN SPACE CORRIDOR

## A Community Open Space Corridor

The City of Melbourne's population is expected to nearly double in the next 20 years while greater Melbourne will increase from 4.5 million in 2017 to eight million. As the city becomes more densely populated, we are seeing unprecedented demand for open space.

A lack of green open space is prominent in the western inner city suburbs. This is historically due to the intensity of industrial uses.

The Moonee Ponds Creek corridor has a vital regional role to play, adding significant communal and social value to Melbourne. Currently, the creek functions as an armature linking together a series of open spaces, including Travencore Park, Debnays Park and Ron Barrassi Snr Park, which offer a diverse range of recreational features and functions.

Currently Moonee Ponds Creek sits within a long narrow open space corridor, providing limited recreational activities beyond walking and cycling (in often low quality open space), with poor connections to the limited neighbouring open spaces. Within the City of Melbourne, the breadth of the creek corridor is constrained.

## Adjacent Urban Development

### Arden-Macaulay

Arden-Macaulay Urban Renewal zone aims to create a sustainable, thriving and liveable place that supports new community- creating places for people. The majority of the land will be zoned Mixed-Use and will significantly increase the living and working population in the area. With increased population comes a need for increased public open space. Currently there is insufficient space to provide for future projected active recreation demands.

The Arden-Macaulay Structure Plan (2012) identifies Moonee Ponds Creek as an expanded open space network supporting a range of social, hydrological and ecological functions.

### Arden Central

Arden Central will be developed as a new extension of Melbourne's Central City, featuring the new North Melbourne Metro Station, which is scheduled to open in 2025. Intensified commercial activity will bring significant job and population growth, adding additional pressure and need for open space. Any additional open space should accommodate WSUD.

### West Gate Tunnel

Currently this section of Moonee Ponds Creek is devoid of major overpasses above and is less constrained in

width from existing development. Additional flyover and bridge connections over creek corridor from the Western Distributor will heavily impact on spatial quality. The construction will have environmental impacts, including 0.14 ha of remnant Brackish Wetland vegetation lost from the east and west banks during construction.

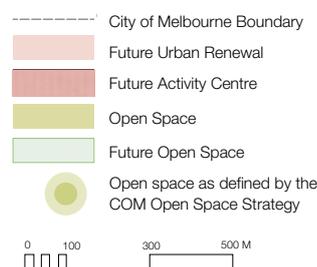
In 2017 the Minister for Planning recommended in the 'West Gate Tunnel - Ministers Assessment Final 23112017', that any planning process associated with the West Gate Tunnel should "respond appropriately to the opportunity to activate community spaces along the banks of Moonee Ponds Creek", recommending that "a masterplan be produced for a linear reserve along Moonee Ponds Creek between Dynon Road and Footscray Road".

### E-Gate

Current planning promotes the notion of a linear reserve for the Moonee Ponds Creek corridor with activated community spaces along the banks. There is an opportunity to inform the planning for E-Gate and other developments as they progress to ensure the overarching vision for Moonee Ponds Creek is realised.

The City of Melbourne Open Space Strategy recommends that a Capital City open space be established adjacent to Moonee Ponds Creek, of a size and design capable of holding major events and contributing to the future core character and values of the urban renewal areas in the north west along with the a new Municipal open space being established at E-Gate to cater to the future local population and also in the Melbourne 3000 central city, Docklands and solve demand associated with the Arden-Macaulay urban renewal area.

### LEGEND





Un-welcoming and under-utilised open space.



Dog walkers and cyclists utilising the open space under the CityLink flyover by the creek.



Child playing on the boulders by the creek



Narrow stretch of open space on the eastern bank of the creek.



The green western creek banks.

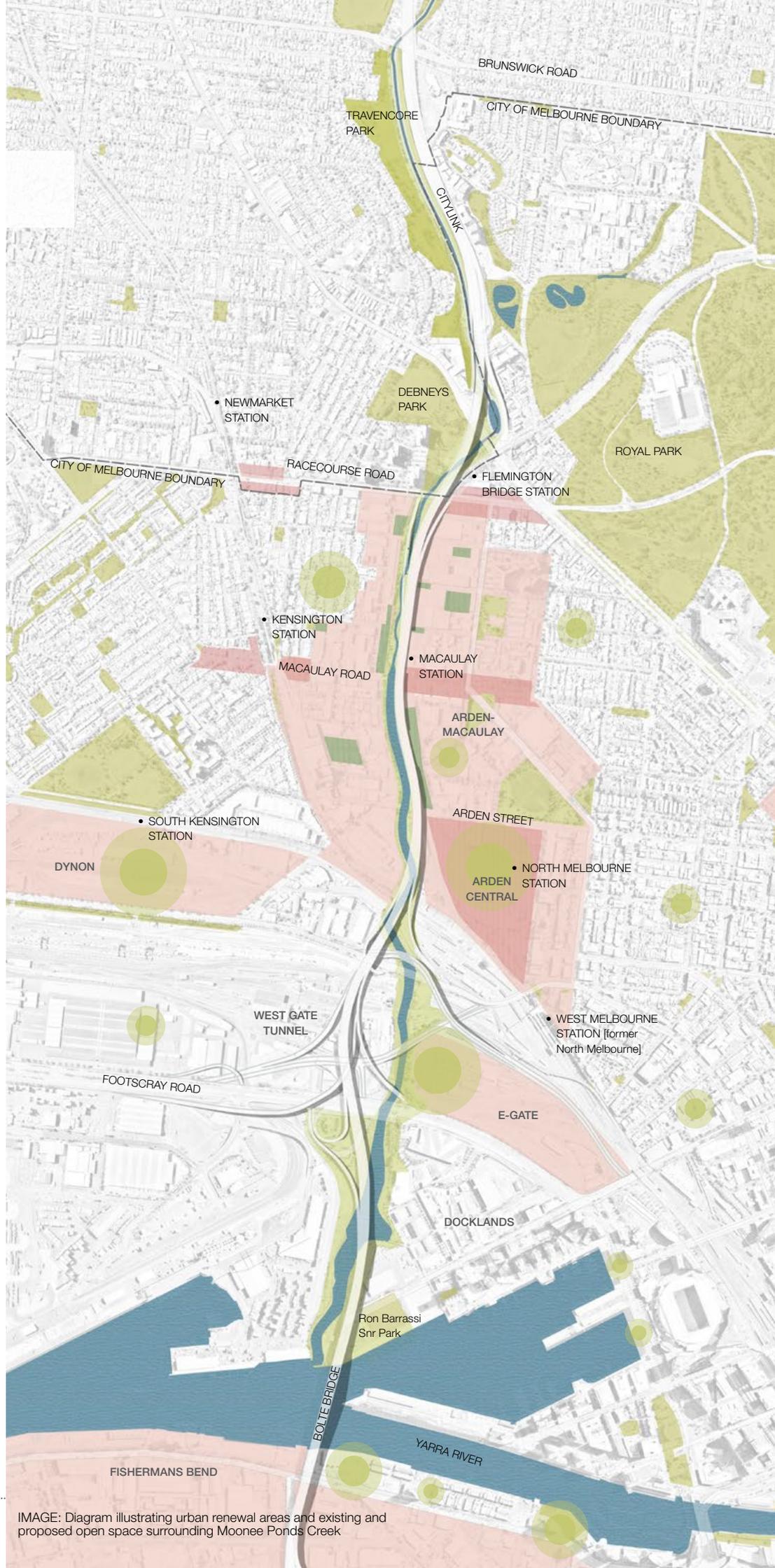


IMAGE: Diagram illustrating urban renewal areas and existing and proposed open space surrounding Moonee Ponds Creek



## Adjacent Open Space

### *Royal Park*

Royal Park is a significant open space asset and is the largest and most unique inner city Melbourne park. Currently it is disconnected from Moonee Ponds Creek. CityLink currently acts as a barrier, restricting access from Parkville and popular landscape features such as Royal Park and the Trin Warren Tam-Boore Bellbird Wetlands.

### *Travancore Park*

Parkland running adjacent to Moonee Ponds Creek, containing playgrounds, sporting facilities, dog park, and open passive recreational space.

Wide open extent of the creek lined by concrete with CityLink and parkland running along adjacent sides. The parkland has high recreational value for the surrounding residents. Water way has been highly manipulated resulting in a disconnect from the creek with poor creek health.

### *Ron Barrassi Senior Park*

Ron Barrassi Senior park is a major open space asset for the community of Docklands, with active recreational zones, a playground, barbecues and sports pavilion. Currently there is minimal connection to the creek. This is the end of the Moonee Ponds Creek Trail.

## Future Open Space

The City of Melbourne's Open Space Strategy (2012) identifies Moonee Ponds Creek as an open space spine connected to a network of current and future open spaces. This includes new major (Capital City / Municipal) open spaces in Arden, Dynon, E-Gate and Docklands along with a network of new smaller (Neighbourhood / Local / Small Local) open spaces in North Melbourne, Kensington and Docklands. Moonee Ponds Creek and adjacent open spaces have the ability to make a meaningful contribution to the vision of making our great city greener and creating a city within a forest rather than a forest within a city (Urban Forest Strategy, 2012). This project has the opportunity to see key targets such as increasing canopy cover and urban forest diversity within new areas of open space, and expand the habitat offering for wildlife.

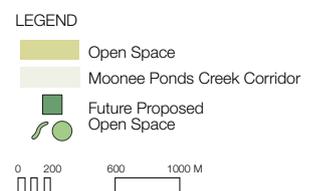




IMAGE: Major open space within the City of Melbourne



# BIODIVERSITY CORRIDOR

## A Changing Corridor

The City of Melbourne is experiencing significant urban growth and densification, which is placing tremendous pressure on its natural systems and resulting in loss of biodiversity.

Moonee Ponds Creek corridor was once an important wildlife zone with rich and varied flora and fauna, and although its course has been severely modified in sections, it still offers an important ecological corridor for the movement of birds and other significant wildlife.

The City of Melbourne is committed to protecting and increasing biodiversity. A suite of conservation actions and initiatives including the 'Urban Forest Strategy', 'Nature in the City' and 'Linking Nature in the City' aim to improve the habitat suitability and connectivity of the urban environment for a range of taxa. It is evident that while Moonee Ponds Creek does not currently fulfil the City of Melbourne's aspirations for biodiversity, there is significant potential to contribute further to the cities biodiversity through the implementation of these strategies.

## History

Moonee Ponds Creek continues to be an important blue and green link from the north of Melbourne to the Yarra River.

The historical wetland, which Moonee Ponds Creek previously fed in to, was once visited and described by John Batman in 1835, stating- "When we got on the Marsh [wetland], the Quails began to fly and I think at one time. I can safely say I saw 1,000 Quails flying at one time, quite a Cloud, I never saw anything like it before... I should think from the distance I saw that it was upwards of a mile across and full of swans, ducks, geese." [Source: Excerpt – Transcript – John Batman's Hand Written Journal – Sunday 7th June 1835].

The modification (draining) of the wetland and the creek following European settlement has caused significant disturbance to the historic ecologies which once thrived.

## Current Condition

The creek is an important biodiversity corridor, housing water and land ecologies and habitats, however, the creek is currently under-maintained and challenged with an abundance of weeds and litter, providing harbour for pests, including rabbits. While many of the species once found along its banks have now disappeared, the potential still remains to encourage flora and fauna species to return to the creek and its environs. As such, the creek continues to play a vital role in providing a food source and habitat for biodiversity.

In 2016 the City of Melbourne undertook surveys along Moonee Ponds Creek recording flora and birds. Sites surveyed showed some botanical significance in containing some patches of vegetation that appear to be remnant, and two species listed as rare. These remnant patches, heavily weed infested, are attributable to Estuarine Wetland and Coastal Saltmarsh EVC's. The vegetation at these site are important for the habitat it provides for several bird species.

Other existing vegetation communities include reed beds, rushland, woodland, open scrub, herb understorey, thicket and mud banks. Mangroves are naturally establishing in the Moonee Ponds creek and hold huge potential for carbon sequestration in addition to their roles as powerhouses of biodiversity and other ecosystem services such as softening storm surges.

Moonee Ponds Creek provides significant habitat for bird species for the City of Melbourne. Biodiversity records have shown sightings of 139 different species in area, 9 of which are considered threatened. Many of these species are water birds and frequent well-vegetated wetlands, shallow river margins and floodplains. The creek also provides a significant amount of habitat for bats, and other aquatic and amphibious fauna.

### LEGEND

- City of Melbourne Boundary
- Historic Swamps
- Historic Watercourse
- Environmental Significance Overlay
- Open Space
- Future Open Space
- Brackish Grassland
- Brackish Lake Aggregate
- Brackish Wetland
- Coastal Saltmarsh
- Creepline Grassy Woodland
- Damp Sands Herb-riish woodland
- Grassy Woodland
- Grassy Plains Woodland
- Swampy Scrub
- Waterbody - Fresh





The 'Nankeen Night Heron' a species listed as near threatened in the Victorian Advisory List (DEPI), and found at the creek.



Weed infestation and poor edge ecology to the creek.



An inlet creating a different habitat away from the fast flowing creek.



Prominent bird life in the lower reach of Moonee Ponds Creek.



An abandoned shopping trolley provides perch for birds in Moonee Ponds Creek.

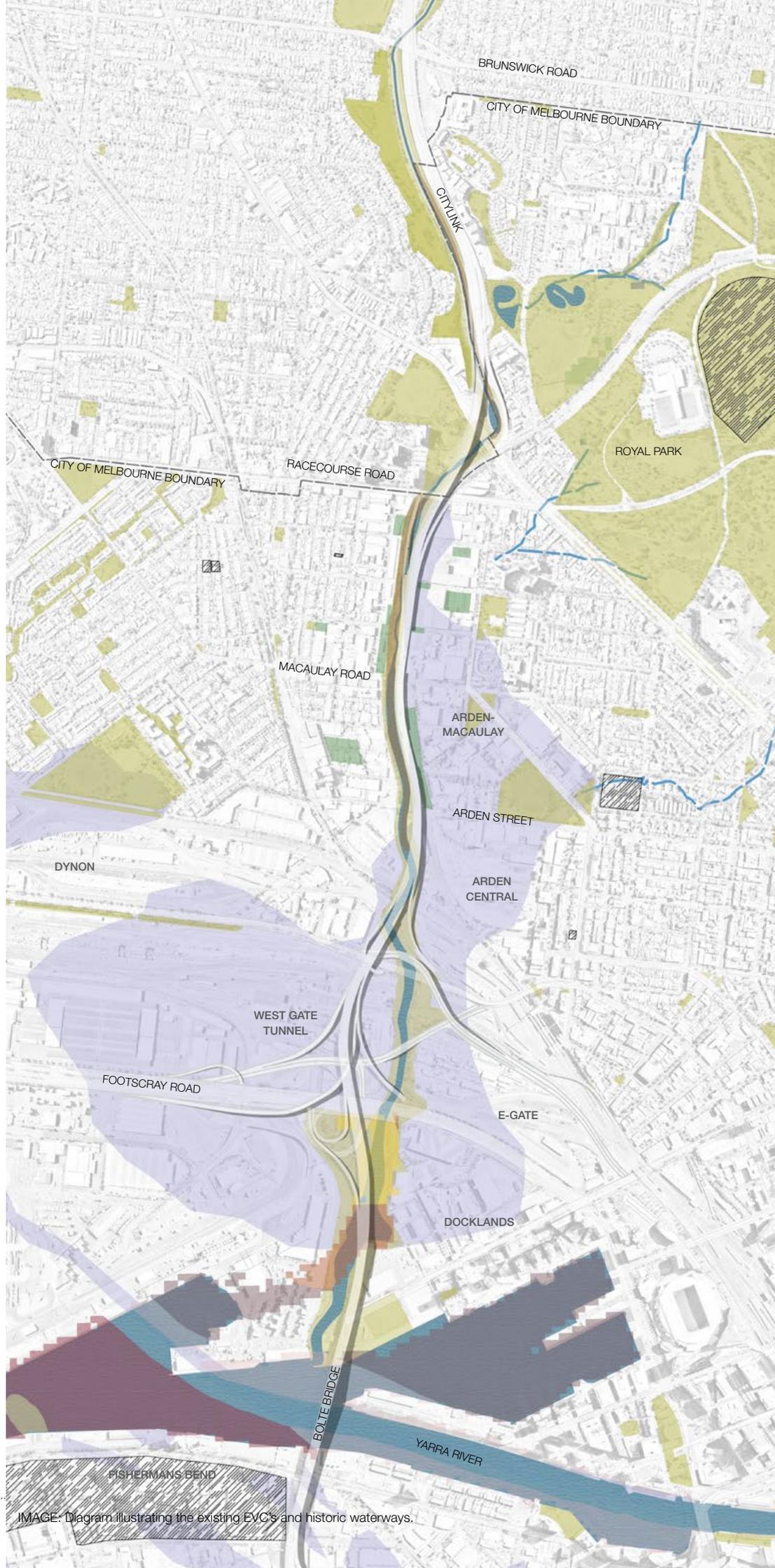


IMAGE: Diagram illustrating the existing EVC's and historic waterways.



## Biodiversity Links

A key consideration for maintaining biodiversity in urban spaces is the capacity for species to move across the landscape. How 'connected' different patches of habitat are is integral.

To guarantee their survival and long-term population viability, species need to be able to move through a landscape and access resources such as food, shelter, and suitable mates. Habitat in urban landscapes is often highly fragmented, frequently containing patches of remnant vegetation and/or semi-natural habitats surrounded by a matrix of land uses that prioritise human activities. Other key habitat threatening processes include artificial light, excessive noise, chemical pollutants, weeds and pests.

While the city has a wide variety of open spaces, they are generally disconnected by roads and major infrastructure. The ongoing degradation of remnant vegetation sites across Melbourne points to the value of consolidating and connecting these sites within the wider landscape.

Moonee Ponds Creek corridor allows many species to move up and downstream, however limitations such as water weirs, bridges and other infrastructure hinder many species including in-stream fauna. The Moonee Ponds Creek has the potential to act as a key connector, but currently lacks substantial riparian habitat and is fragmented by major road crossings.

The overall aim should be to improve the natural values of biodiversity, habitat, native flora and fauna along the whole creek corridor and to promote biolinks with significant sites outside the creek corridor.

Tools for ecological improvement, such as the City of Melbourne Urban Forest Strategy (2012), Nature in the City and Linking Nature in the City (2014), should be applied to strengthen the creek corridor and its role as a rich and diverse urban biotope that positively contributes to the city's bio footprint. The role of Moonee Ponds Creek as a key open space corridor is supported by these documents, which highlights its importance as a key biodiversity corridor within the city.

### Pre 1750 EVCs

Since European settlement, the original landscape has been severely degraded, and ecological vegetation classes (EVC) which existed have almost all but gone.

Prior to European settlement there were four dominant EVCs surrounding the creek:

#### EVC 934: Brackish Grassland

A grassland or sedgeland occurring on silts in low-lying areas within brackish floodplains.

#### EVC 9: Coastal Saltmarsh

This EVC occurs on and immediately above marine and estuarine tidal flats and contains distinct floristic communities. It consists of a range of life forms including succulent herbs, low succulent shrubs, rushes and sedges.

#### EVC 636: Brackish Lake Aggregate

This is a collective label for the various zones of vegetation associated with the floors and verges of brackish lakes. Identifiable components of the aggregate variously include Brackish Aquatic Hermland, Brackish Lake Bed Hermland, Brackish Hermland and Brackish Wetland Aggregate.

#### EVC 53: Swamp Scrub

Closed scrub to 8 m tall at low elevations on alluvial deposits along streams. The EVC is dominated by Swamp Paperbark *Melaleuca ericifolia* (or sometimes Woolly Tea-tree *Leptospermum lanigerum*) which often forms a dense thicket, out-competing other species. Occasional emergent eucalypts may be present. Where light penetrates to ground level, a moss/lichen/liverwort or herbaceous ground cover is often present. Dry variants have a grassy/herbaceous ground layer.

Moonee Ponds Creek presents an opportunity to create a "green" corridor that can restore much of its historical EVC's, encouraging its original biodiversity.





IMAGE: 1750's EVC classes across the city of Melbourne



# MOVEMENT CORRIDOR

## An Active Corridor

Moonee Ponds Creek is a key natural and recreational asset of suburban and inner city Melbourne. The creek traverses a varying landscape along its course of approximately 25 kilometres, from the near natural setting of Woodlands Historic Park, through the outer and inner suburbs of Melbourne to the Docklands. The corridor offers an opportunity to experience a microcosm of Melbourne's landscape character.

## Active Transport

The creek corridor hosts the Moonee Ponds Creek Trail, a popular route for bicycle commuters and leisure riders. However, issues of safety, convenience and amenity hinder the trail's potential.

Much of Moonee Ponds Creek Trail passes under bridges, creating blind corners, low head heights and is subject to frequent flooding. The relatively narrow trail also often poses conflict between high and slow speed users. Where the trail doesn't pass under bridges, often convoluted and at times unsafe connections are provided across roads, creating time consuming and sometimes unintuitive crossings.

## Transport Infrastructure

Moonee Ponds Creek forms a strong north-south imprint on the Melbourne landscape, connecting in with the Capital City Trail which provides an eastern connection. Within the City of Melbourne, the creek divides the western suburbs of Flemington, Kensington and parts of West Melbourne and eastern suburbs of North Melbourne, parts of West Melbourne and Docklands.

This connection has been re-enforced by transport infrastructure that sits within, along side and above the creek corridor. Between Arden Street and Footscray Road, a network of railyards and railway lines interface with and cross the creek corridor. CityLink, an elevated freeway, weaves its way along and across the creek corridor overshadowing the creek below.

The use of waterways for major transport infrastructure projects in the inner city has had a significant impact.

In the City of Melbourne, the amenity of Moonee Ponds Creek trail is far lower than other trails including the Capital City Trail and Maribymong River Trail. The corridor is poorly maintained and overgrown with weeds, creating an uninviting space for many community members.

Whilst the Moonee Ponds Creek Trail provided opportunities to engage with the creek of the eastern edge, no formal connections exist along the western side of the creek.

## Connections

Another significant movement spine is CityLink motorway, running adjacent to the creek. This major piece of infrastructure dominates the creek environs with a harsh visual and audio presence.

The Upfield train line also runs adjacent to much of the creek, with CityLink elevated above. Both create a physical and visual disconnection of current and future communities east of Moonee Ponds Creek. East-west connections across the creek are further challenged by the presence of existing levees that exist to protect the railway line and adjacent properties from periodic flooding.

While the creek is in close proximity to many train stations, with tram lines and buses crossing the creek, the creek's trail is disconnected from these public transport nodes with poor wayfinding. In particular, Macaulay Station and Flemington Bridge Station have poor, uninviting connections down to the creek and surrounding urban environment more broadly.

There are opportunities to strengthen the relationship between trail and nearby communities, and leverage access to train stations.

### LEGEND

- City of Melbourne Boundary
- Waterbodies
- Train Lines
- Tram Lines
- Bus Routes
- Moonee Ponds Creek Trail
- Bike Paths
- Capital City Trail
- Western Veloway
- Train Stations
- Future Train Stations
- Future Metro Tunnel
- Tram Stops
- Bus Stops





Hairpin turns and ramps connecting to Moonee Ponds Creek Trail.



An underwhelming shared path.



Moonee Ponds Creek trail- subject to flooding, blind corners and low head heights.



A dubious crossing at Macaulay Station.



The final stretch of Moonee Ponds Creek trail near the mouth of the creek.

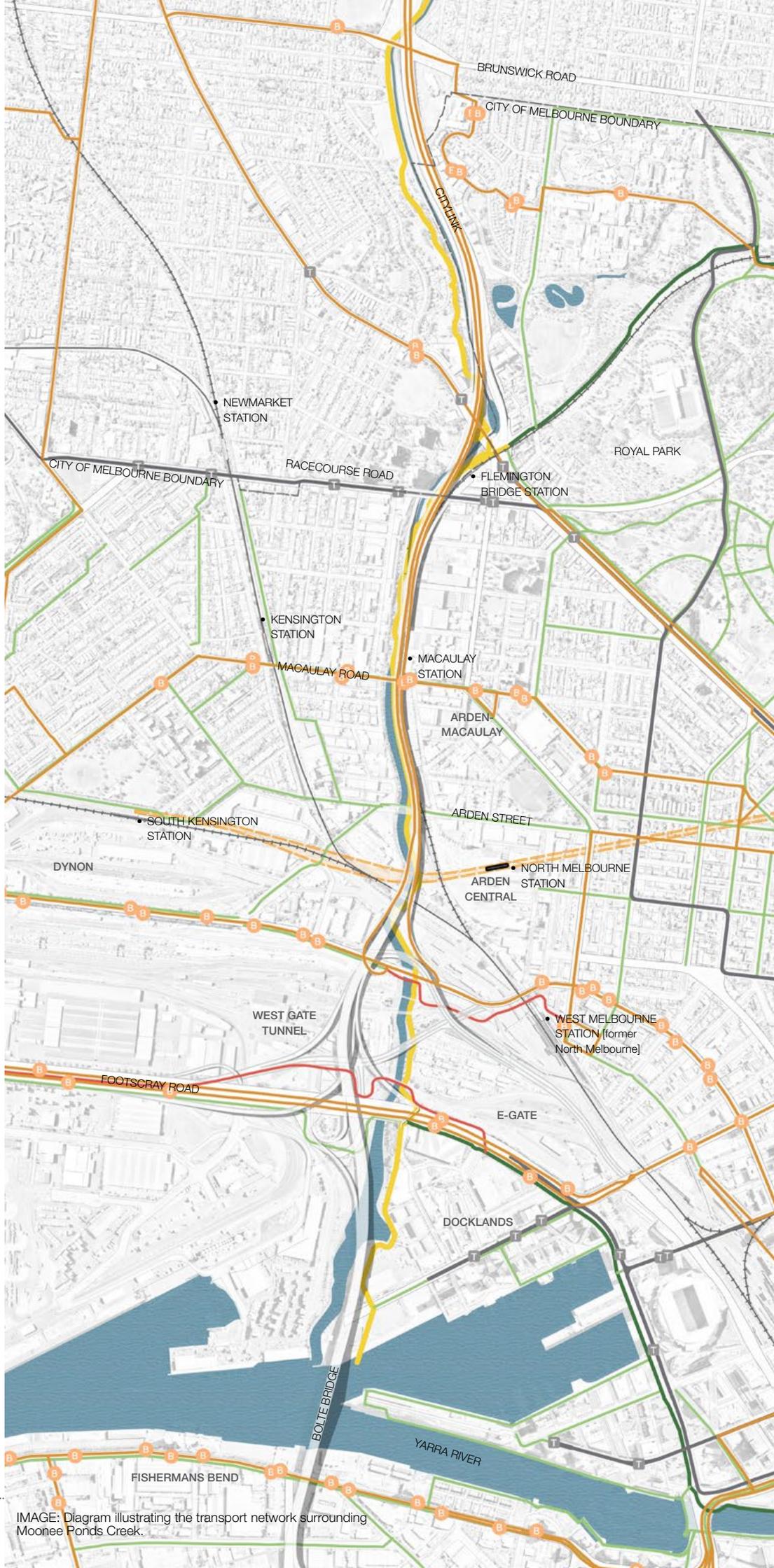


IMAGE: Diagram illustrating the transport network surrounding Moonee Ponds Creek.



## Future Transport Works

The new Metro station in North Melbourne will be a key project in the renewal of the Moonee Ponds Creek catchment, and will provide a new layer in the public transport network.

The Arden-Macaulay Structure Plan (2012) recommends creating new east-west pedestrian and cycling connections at Smith Street and Sutton Street and Chelmsford Street across to Langford Street. The Structure Plan also proposes improving existing underpasses and overpasses for pedestrians and cyclists at Macaulay Road/Canning Street and Arden Street.

CityLink, an elevated freeway, weaves its way along and across the creek corridor overshadowing the creek below. The West Gate Tunnel project will see this situation worsen as new elevated connections to CityLink, Footscray Road, Dynon Road and Wurundjeri Way are established. As part of the West Gate Tunnel project a new Veloway will pass over Moonee Ponds Creek as an off-road path, connecting in to Moonee Ponds Creek Trail at Footscray Road.

As part of the works, a new shared-use path bridge over Moonee Ponds Creek will also connect Spencer Street and Dynon Road, providing a new east-west connection from Moonee Ponds Creek Trail.

## Future Demands

Active transport, including walking, cycling and other non-motorised transport, is gradually becoming more popular in higher density inner suburbs of Australian cities. Some of the important factors driving an increase in active transport in inner city areas include:

- Increasing congestion, encouraging people to use alternative transport modes;
- Increasing recognition of the roles of active transport in public health and environmental sustainability;
- Improving provision of active transport infrastructure and end-of-trip facilities; and,
- Availability of a wider range of bikes and scooters, including cargo bikes, e-bikes, folding bikes and share bikes, suitable to a broader range of people for a broader range of purposes.

Moonee Ponds Creek Trail serves as a major recreational feature of the City of Melbourne, and contributes to its image as one of the world's most livable cities. As the population surrounding the creek increases, there will likely be increased pressure on Moonee Ponds Creek Trail as a significant cycle commuter trail into the CBD.

Opportunities will be created to strengthen and extend the offer provided along creek corridor, and its connections, and provide localised amenities for cyclists, such as picnic facilities, rest stops and bike hubs, which enable users to better engage with the environmental context of the trail.

### LEGEND

-  Roads
-  Train Route
-  Tram Route
-  Future Metro Tunnel
-  City Link
-  Bike Paths
-  Capital City Trail
-  Moonee Ponds Creek Trail
-  Western Veloway





IMAGE: The City of Melbourne transport network



# HERITAGE CORRIDOR

## A Historical Corridor

Prior to European settlement, Moonee Ponds Creek was a healthy, living system integrated into the broader ecology of greater Melbourne. The large wetland lagoon that existed near the creeks mouth, would have been teeming with life and no doubt an important source of food, water, and a space for meeting and gathering.

The length of the creek is now considered an Aboriginal Heritage Sensitivity Area, and is generally regarded as likely to contain Aboriginal cultural heritage.

Currently, however, there is no physical connection to it's past. Dominated by concrete and infrastructure, the creek is seen more as a drainage channel than the living creek it once was. Currently there is little cultural expression along the creek, with Indigenous history entirely under-represented in the area.

The heavy modification of the creek is a result of continued attempts to control the creek flows and flooding, and prioritise developments such as industrial land, housing, motorways, rail infrastructure and roads. The straightening, channelling and other such modifications have had little regard for the creek and role as a living system.

Moonee Ponds Creek is now a reflection of the city's evolving nature and attitude toward the creek.

## Changing Uses

Surrounded by industrial uses and seen by many as a 'back of house' asset, Moonee Ponds Creek is a hidden and forgotten waterway which has lost its identity. This is further reflected in the way that development has historically responded to the creek. Existing industrial buildings in North Melbourne and Kensington turn their back on the creek, and West Melbourne is dominated by rail infrastructure.

There is an important story to tell of the cultural, environmental, architectural and industrial heritage of the area. With increased use, education, signage, interpretation and access, the vast history of the creek could become an integral layer in the creek experience and promote a sense of place.

As the surrounding land undergoes yet another transition, from an industrial centre within the inner city, to a residential and commercial zone, developments such as E-Gate and Arden-Macaulay precinct will yet again transform the Moonee Ponds Creek and surrounds and our relationship to it.

## Applying Caring For Country in the City

- Nature in the City (2017) adapted extract -

The City of Melbourne is committed to applying 'Caring for Country' in the city. Country is the term used by Aboriginal people to describe their home – the land, water, air, natural systems, living things, and stories that make up a place.

In a practical sense, 'Caring for Country', recognises that natural resources are finite and must be managed sustainably; and in a cultural and spiritual sense, it's about respecting and valuing natural systems as the source of all life.

A fundamental premise of applying 'Caring for Country' is to recognise that humans not only rely on the abundance of nature to survive, but also to be happy and healthy. Essentially, the health of our environment is the foundation of the health and wellbeing of our community. This belief is at the very heart of this Strategic Opportunities Plan and then need to deliver a different future for the creek than current exists.

### LEGEND

- City of Melbourne Boundary
-  Historic Swamps
-  Historic Watercourse
-  Aboriginal Heritage Sensitivity Area
-  1953 Industrial Area
-  1953 Melbourne Port Zone





1837 sketch from Batmans Hill looking west to the wetlands.



Historical drawing of West Melbourne Dock.



Heritage brick building adjacent to the creek.



CityLink poles used as a canvas for art.



The port container stacks on the western bank of the creek.

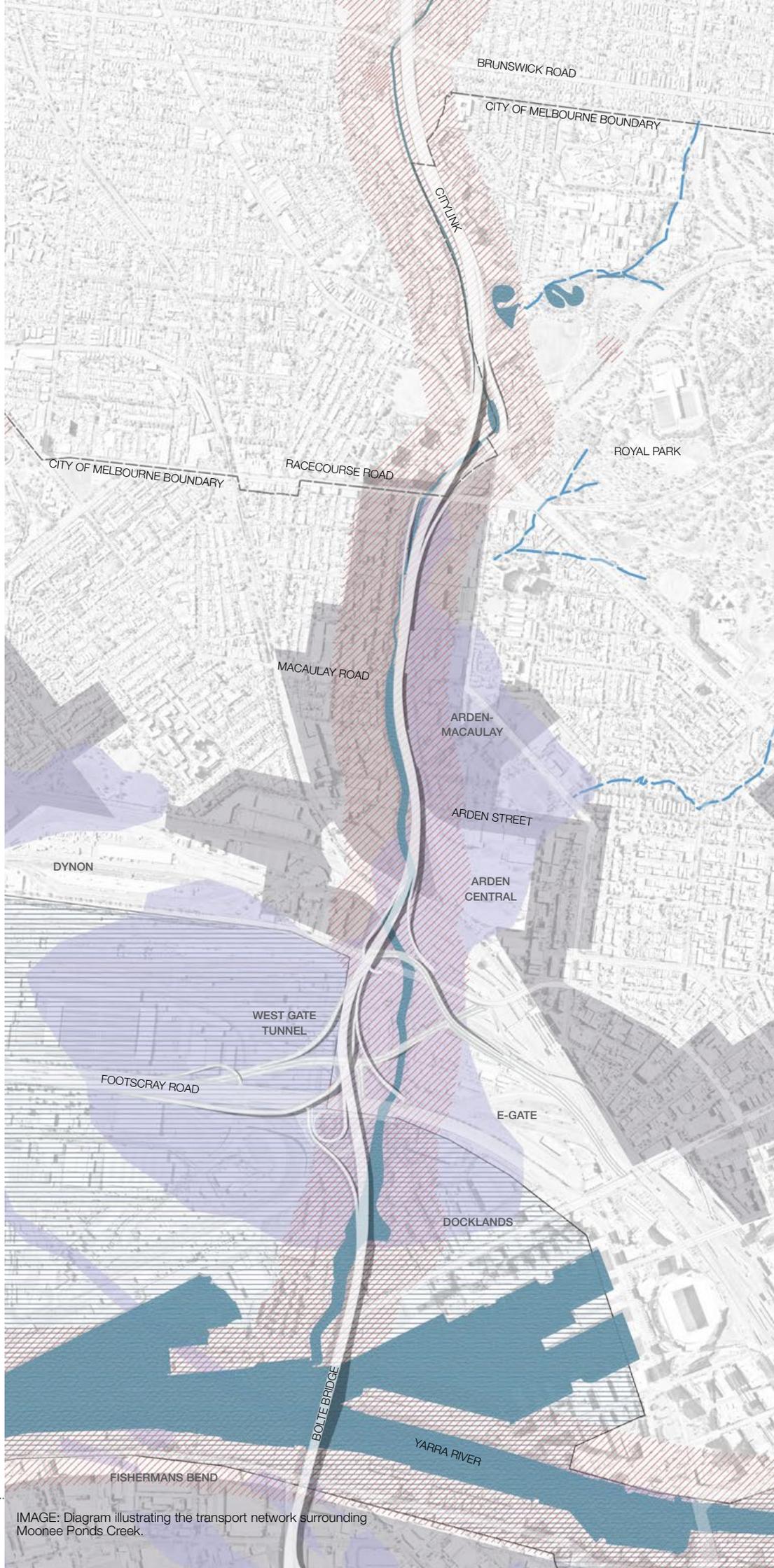


IMAGE: Diagram illustrating the transport network surrounding Moonee Ponds Creek.

# CHARACTER REACHES

## Three Character Reaches

Stemming from the thematic analysis, the creek has been characterised into three reaches, reflecting the differing creek and contextual environment.

### ● *'The Collector'*

From Brunswick Road to Racecourse Road, this northern reach can be understood as 'The Collector'. This is a reflection of the established community that surround the creek and parklands and the vision for a naturalised creek that could become a focal point- collecting water, community and biodiversity into one stream.



### ● *'The Urban Connector'*

From Racecourse Road to Dynon Road, this middle reach is known as 'The Urban Connector'. This stems from the existing industrial character and future urban renewal which will see mid-density mixed-use buildings closely abutting the creek, proving for a densely populated, emerging community, and the need for the creek to act as a connector between the communities east and west of the creek.



### ● *'The Tidal Underpass'*

From Dynon Road to the Yarra River, this lower reach is identified as 'The Tidal Underpass'. This tidal zone is predominately surrounded by government owned rail and overshadowed by road infrastructure. This unique space is could be re-purposed and provide a significant open space within the city of Melbourne, providing significant environmental and ecological benefits, as well as amenity for the growing Melbourne population.





BRUNSWICK ROAD

RACECOURSE ROAD

DYNON ROAD

YARRA RIVER

BOLTE BRIDGE

IMAGE: The three 'reaches' of Moonee Ponds Creek



IMAGE: Reflections of the western bank of Moonee Ponds Creek

# PROJECT VISION

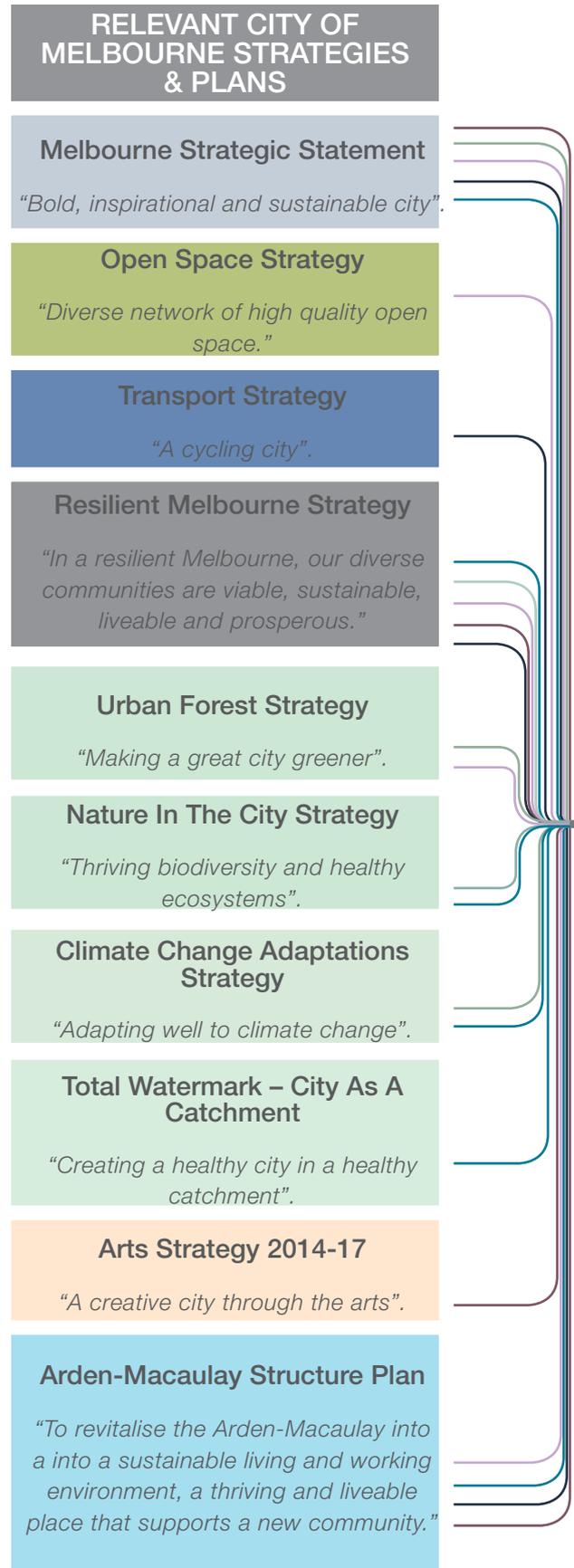
*The vision for Moonee Ponds Creek encompasses the collective aspirations and objectives of the guiding framework and strategies of the City of Melbourne, resulting in a bold, visionary statement that supports the change required to create a resilient place rich in natural and cultural values.*

# STRATEGIC VISION

The future potential of Moonee Ponds Creek needs a clear vision. It is integral that this vision represents a shared understanding of its future direction, summarising the collective aspirations and objectives for the creek.

The Moonee Ponds Creek Strategic Vision brings together the City of Melbourne's overarching strategies and plans to provide a succinct statement that captures the creeks future.

From here, five goals have been developed with supporting objectives which outline what needs to be achieved in order to fulfil the vision.



## MOONEE PONDS CREEK STRATEGIC VISION

**‘A thriving creek corridor that supports the liveability and resilience of the city.’**

*The Moonee Ponds Creek continues to re-invent itself whilst retaining and revealing stories of its past. Pulsating with life, Moonee Ponds Creek is a thriving creek corridor supporting a diversity of life forms. The Creek is fundamental to the strength, resilience and liveability of the city. Its richness permeates surrounding communities creating an expanded network of open spaces and biodiversity habitats.*

## MOONEE PONDS CREEK KEY GOALS BY THEME



### Water Management

*A resilient creek adapted to current and future extreme weather events*



### Open Space

*A diverse network of open spaces to support the growing needs of the city*



### Biodiversity

*A healthy waterway and thriving ecosystem*



### Movement

*A highly accessible and connected creek corridor*



### History & Culture

*A celebrated past and shared vision for the future*



### Collaborative Governance

*Advocate for transformational change*



# STRATEGIC OPPORTUNITIES

*Strategic Opportunities outline how the vision, goals and objectives for Moonee Ponds Creek could potentially be realised, and illustrate how they align with key City of Melbourne goals and targets and implementation mechanisms.*

## Strategic Opportunities Overview

The strategic opportunities identify a number of opportunities to re-imagine Moonee Ponds Creek. Guided by the vision of Moonee Ponds Creek as “thriving creek corridor that supports the livability and resilience of the city”, the strategic opportunities are a manifestation of the six key goals:



### **Water Management**

*A resilient creek adapted to current and future extreme weather events*



### **Open Space**

*A diverse network of open spaces to support the growing needs of the city*



### **Biodiversity**

*A healthy waterway and thriving ecosystem*



### **Movement**

*A highly accessible and connected creek corridor*



### **History & Culture**

*A celebrated past and shared vision for the future*



### **Collaborative Governance**

*Advocate for transformational change*

These strategic opportunities are supported by the City of Melbourne strategies and plans, which directly shape the opportunities. These opportunities are then broken down into key moves and projects.

Key moves should be implemented along the length of the creek, and generally refer to governance actions.

Projects are identified for specific locations along Moonee Ponds Creek, and are spatially located in the following chapter 'Key Projects'.



# WATER MANAGEMENT

Strengthen the creeks climate resilience

## Strategic Opportunities

## City of Melbourne Strategies & Plans - Key Points

Increase flood capacity within the creek in creative ways to provide places for people and ecology- weaving the creek into the urban fabric, making a positive contribution to water quality. Work with Melbourne Water and other authorities to develop creative ways to manage flood capacity whilst providing places for people.

### *Resilient Melbourne Strategy (COM 2016)*

- Create and sustain buildings, infrastructure and activities that promote social cohesion, equality of opportunity and health.

### *Total Watermark – City As A Catchment (Com, 2014 Update)*

- Further integrate our city with our waterways, both natural and man-made, in order to enhance the city and community's resilience to heat impacts.
- Green infrastructure is used to respond to current and future flood risk.

Continue to work collaboratively with partners to develop upstream initiatives to reduce the impacts of flood events downstream, adapting to climate changes.

### *Climate Change Adaptations Strategy (Com, 2017 Refresh)*

- Shape our built form and urban renewal areas to withstand future climate change impacts.
- Build effective partnerships with service providers, the private and public sectors and those who live, work or play in our city.

Projects/ Key Moves	Location	Benefits
<ul style="list-style-type: none"> <li>– Advocate for the rezoning of State Government owned land adjacent to creek as 'Public Park &amp; Open Space Zone'.</li> </ul>	– NA	  
<ul style="list-style-type: none"> <li>– Continue to work in partnership with Melbourne Water and the Victorian Planning Authority to prepare a comprehensive flood-mitigation strategy for Arden-Macaulay.</li> </ul>	– NA	
<ul style="list-style-type: none"> <li>– Increase the surface permeability of the creek corridor.</li> </ul>	– NA	 
<ul style="list-style-type: none"> <li>– Where possible, widen the creek corridor and upgrade cross creek structures such as bridges that currently impede flows and exacerbate flooding.</li> </ul>	– NA	
<ul style="list-style-type: none"> <li>– Continue to advocate for the implementation of upstream initiatives to store flood waters.</li> </ul>	– NA	  
<ul style="list-style-type: none"> <li>– Continue to undertake Moonee Ponds Creek catchment modelling and analysis to determine how to prioritise the best options to detain water higher in the catchment to reduce downstream flooding and the future re-naturalisation of the creek.</li> </ul>	– NA	 

Where possible, widen the creek corridor and upgrade cross creek structures such as bridges that currently impede flows and exacerbate flooding.

*Climate Change Adaptations Strategy (Com, 2017 Refresh)*

- Shape our built form and urban renewal areas to withstand future climate change impacts.

*Municipal Integrated Water Management Plan (July 2017)*

- Enable city growth and help mitigate the challenges of climate change through an integrated holistic approach to water management.

*Total Watermark – City As A Catchment (Com, 2014 Update)*

- Consider the risk of flood in future design and re-design of the public and private realm.

Find opportunities to mimic chain of ponds that once existed to temporarily hold water in severe rainfall events.

*Resilient Melbourne Strategy (COM 2016)*

- Create and sustain buildings, infrastructure and activities that promote social cohesion, equality of opportunity and health.
- Enable strong natural assets and ecosystems alongside a growing population.
- Reduce our exposure to future shocks and stresses.

*Climate Change Adaptations Strategy (Com, 2017 Refresh)*

- Enhance the natural environment and green spaces of our municipality.
- Shape our built form and urban renewal areas to withstand future climate change impacts.

*Open Space Strategy (Com, 2012)*

- Improve riparian vales of Moonee Ponds Creek.

*Total Watermark – City As A Catchment (Com, 2014 Update)*

- Further integrate our city with our waterways, both natural and man-made, in order to enhance the city and community's resilience to heat impacts.
- Green infrastructure is used to respond to current and future flood risk.

Explore sites adjacent to the creek corridor that can be used as above or below ground flood storages.

*Climate Change Adaptations Strategy (Com, 2017 Refresh)*

- Shape our built form and urban renewal areas to withstand future climate change impacts.

*Total Watermark – City As A Catchment (Com, 2014 Update)*

- Design and upgrade the drainage network to cater for current and future flood risk.

*Arden-Macaulay Structure Plan (Com, 2012)*

- Locate and design public space to help mitigate flooding.

Improve water quality by increasing water cleansing initiatives of stormwater discharging into Moonee Ponds Creek.

*Total Watermark – City As A Catchment (Com, 2014 Update)*

- Improve water quality from poor to moderate condition.

*Municipal Integrated Water Management Plan (July 2017)*

- Enable city growth and help mitigate the challenges of climate change through an integrated holistic approach to water management.

Projects/ Key Moves	Location	Benefits
<i>W1. Redesign of Bridges (new bridges)</i>	<ul style="list-style-type: none"> <li>– Brunswick Road</li> <li>– Mt Alexander Road</li> <li>– Racecourse Road</li> <li>– Macaulay Road</li> <li>– Arden Street</li> <li>– Dynon Road</li> <li>– Footscray Road</li> </ul>	 
<i>W2. Travencore Park Creek Naturalisation</i>	– Travencore Park	  
<i>W3. Mt Alexander Road Nature Gateway</i>	– Mt Alexander Road	    
<i>W4. Debneys Water Park</i>	– Debneys Park	    
<i>W5. Moonee Ponds Creek Civic Overflow Route</i>	– North/south between Racecourse Road and Macaulay Road, adjacent to Citylink	    
<i>W6. Langford Road Linear Stormwater Park</i>	– North/south along Langford Road.	    
<i>W7. E-Gate Stormwater Park</i>	– E-Gate	  
<i>W8. Levee Banks Water Storage</i>	– Arden-Macaulay	 
<i>W9. Travencore Park Ponds</i>	– Travencore Park	  
<i>W10. Motorway Water Collection</i>	– CityLink	 



# OPEN SPACE

Deliver an expanded network of open spaces

## Strategic Opportunities

## City of Melbourne Strategies & Plans - Key Points

Establish Moonee Ponds Creek as an expanded linear open space network supporting a range of social, hydrological and ecological functions.

### *Resilient Melbourne Strategy (COM 2016)*

- Enable strong natural assets and ecosystems alongside a growing population.

### *Climate Change Adaptations Strategy (Com, 2017 Refresh)*

- Enhance the natural environment and green spaces of our municipality.
- Shape our built form and urban renewal areas to withstand future climate change impacts.

### *Open Space Strategy (Com, 2012)*

- Increase open space along creek, currently there is a lack of open space to cater for existing and future residents.
- Improve riparian vales of Moonee Ponds Creek.

### *Arden-Macaulay Structure Plan (Com, 2012)*

- Locate and design public space to help mitigate flooding.
- More open spaces will be required to support the health and wellbeing of the people who will live, work and visit Arden-Macaulay.
- A significant opportunity to expand and upgrade the Moonee Ponds Creek corridor to improve habitat values, provide new opportunities for recreation.

### *Nature In The City Strategy (Com, 2017)*

- Improve ecosystem health and biodiversity.

Create destination nodes with concentrated community activity, coinciding with adjacent urban activity along the creek.

### *Resilient Melbourne Strategy (COM 2016)*

- Enable strong natural assets and ecosystems alongside a growing population.

### *Nature In The City Strategy (Com, 2017)*

- Connect more people to nature to improve social resilience, health, and wellbeing.

### *Arden-Macaulay Structure Plan (Com, 2012)*

- More open spaces will be required to support the health and wellbeing of the people who will live, work and visit Arden-Macaulay.

Projects	Location	Benefits
<i>OS1. Levees as Places for People</i>	– Arden-Macaulay Stubbs Street	    
<i>OS2. Macaulay Green Links</i>	– Macaulay	   
<i>OS3. Expanded Creek Environs</i>	<ul style="list-style-type: none"> <li>– Arden-Macaulay</li> <li>– Arden Central</li> <li>– E-Gate</li> </ul>	    
<i>OS4. Macaulay Terraces</i>	– Corner of Stubbs St & Macaulay Rd	    
<i>OS5. Moonee Ponds Creek Mouth- A Community Hot Spot</i>	– Mouth of creek at Docklands	 



# BIODIVERSITY

Support a thriving ecosystem

## Strategic Opportunities

## City of Melbourne Strategies & Plans - Key Points

Enhance Moonee Ponds Creek's role as an important biodiversity and habitat corridor connecting biodiversity across the city.

### *Nature In The City Strategy (Com, 2017)*

- Create a more diverse, connected, and resilient natural environment, connecting people to nature

### *Arden-Macaulay Structure Plan (Com, 2012)*

- There is a significant opportunity to expand and upgrade the Moonee Ponds Creek corridor to improve habitat values, provide new opportunities for recreation.

Restore native EVCs that once were found in the Moonee Ponds Creek corridor.

### *Nature In The City Strategy (Com, 2017)*

- Improve ecosystem health and biodiversity.
- Develop a more ecologically connected urban landscape.
- Explore opportunities to use cultural and practical 'Caring for Country' principles to integrate people with nature.

Extend tree canopy to achieve a minimum 40% cover and use a variety of tree species to improve biodiversity and create diverse ecologies.

### *Urban Forest Strategy (Com, 2012)*

- Increase public realm canopy cover from 22% at present to 40% by 2040.
- The urban forest will be composed of no more than 5% of any tree species, no more than 10% of any genus and no more than 20% of any one family.
- Protect and enhance a level of biodiversity that contributes to a healthy ecosystem.

Increase understorey cover by a minimum 20% with a focus on the creation of ecologies and habitats that support vulnerable or threatened species.

### *Nature In The City Strategy (Com, 2017)*

- Improve ecosystem health and biodiversity.

### *Resilient Melbourne Strategy (COM 2016)*

- Enable strong natural assets and ecosystems alongside a growing population.

### *Urban Forest Strategy (Com, 2012)*

- Protect and enhance a level of biodiversity that contributes to a healthy ecosystem.

Where natural habitats cannot be achieved, novel habitat enhancements or artificial habitats should be used.

### *Nature In The City Strategy (Com, 2017)*

- Explore innovative ways to introduce wildlife habitat into built form.

Naturalise the creek bed with a focus on creating diverse aquatic, interstitial and terrestrial habitats and ecology.

### *Open Space Strategy (Com, 2012)*

- Improve riparian values of Moonee Ponds Creek.

Projects	Location	Benefits
<i>B1. CityLink Land Bridge</i>	– Storage Wetland Park to Delth Reserve.	  
<i>B2. E-Gate Saltmarsh and Mangrove Reserve</i>	– E-Gate	  
<i>B3. Expanded Salt Marsh Zone</i>	– E-Gate	  
<i>B4. Docklands Biodiversity Hot Spot</i>	– E-Gate/Docklands	 
<i>B5. Moonee Ponds Creek Forest</i>	To be deployed across all open space zones.	 
<i>B6. Native Grassland Restoration</i>	To be deployed along all creek banks.	  
<i>B7. Novel Habitats</i>	To be deployed across all open space zones.	
<i>B8. The Research Wetlands</i>	– E-Gate	  



# MOVEMENT

Enhance creek accessibility and connections

## Strategic Opportunities

## City of Melbourne Strategies & Plans - Key Points

Create a safe, legible, connected & permeable active transport corridor knitted into surrounding street networks and open spaces.

### *Transport Strategy (Com, 2012)*

- Walking and cycling will develop as predominant local modes of inner urban travel.
- Deliver a safe, interconnected network for people of all ages and ability to ride bikes.
- Create an excellent and safe walking environment for residents, workers and visitors, with seamless high-priority links between the city's public spaces and the public transport system.

### *Arden-Macaulay Structure Plan (Com, 2012)*

- Increase permeability and connectivity across Arden-Macaulay which encourages walking and cycling.

Create a corridor that supports a range of recreation & active transport needs for the diverse population.

### *Transport Strategy (Com, 2012)*

- Moonee Ponds Creek Trail is identified as a priority route for cycling and pedestrians.
- Walking and cycling will develop as predominant local modes of inner urban travel.
- Deliver a safer and well-lit environment for people to ride bikes.
- Increase bicycle-friendly facilities, support stations, and parking to make it easy to travel by bike and park.

Projects / Key Moves	Location	Benefits
– Work with authorities to leverage associated public contributions such as open space and active transport work which could positively contribute to the future vision of Moonee Ponds Creek.	– NA	 
– Leverage off public works upgrades, including bridge and road works, to mitigate unsafe travel paths including blind corners, hairpin turns and paths in areas subject to frequent flooding.	– NA	
– Leverage public transport upgrades, including the Upfield Train line, to integrate flood protection and addition of social infrastructure/ assets.	– NA	 
– Leverage off adjacent urban renewal to instigate the redevelopment of the existing Macaulay Train Station.	– NA	 
<i>M1. Flemington Bridge Station Connection Upgrade</i>	– Flemington Bridge Station	 
<i>M2. Dynon Canal Cycle Link</i>	– Dynon Road	  
<i>M3. The Connected Veloway</i>	– Footscray Road	
<i>M4. Fishermans Bend Connection</i>	– Yarra River, Docklands	 
<i>M5. Arden-Macaulay Pedestrian Bridges</i>	– Arden-Macaulay	 
<i>M6. Moonee Ponds Creek Cycling &amp; Walking Trails</i>	To be deployed along the length of the creek	 



# HISTORY & CULTURE

Celebrate and reveal stories

## Strategic Opportunities

## City of Melbourne Strategies & Plans - Key Points

Establish Moonee Ponds Creek as a corridor that provides a platform for ongoing cultural expression & a locale for quality public art.

### *Arts Strategy 2014-17 (Com, 2014)*

- Support artists to present work in the public realm.
- Lead and partner in the delivery of significant arts projects.
- Support projects that acknowledge, interpret and reinterpret Melbourne's heritage.

### *Arden-Macaulay Structure Plan (Com, 2012)*

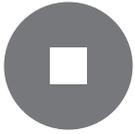
- Provide creative and cultural spaces for the development, production and presentation of arts, supporting local artists and designers.

Integrate art and new infrastructure to create dynamic, innovative responses.

### *Arts Strategy 2014-17 (Com, 2014)*

- Support artists to present work in the public realm.
- Lead and partner in the delivery of significant arts projects.
- Encourage new and meaningful connections between artists, audiences and communities.

Projects / Key Moves	Location	Benefits		
<ul style="list-style-type: none"> <li>– Undertake a Cultural Heritage Values Assessment along the length of Moonee Ponds Creek to identify and understand traditional and contemporary value an meaning held by the Wurundjeri people, in a meaningful and ways in which these values can be interpreted in a meaningful and practical way.</li> </ul>	– NA			
<i>H1- Moonee Ponds Creek Art Trail</i>	To be deployed along the length of the creek.			
<i>H2- Community Canvas</i>	– Travencore Park			



# GOVERNANCE

Advocate for transformational change

## Strategic Opportunities

Continue to work with councils, authorities, and interest groups, such as Moonee Ponds Catchment Collaboration Group, to take an integrated catchment management approach.

Support City of Moonee Valley, the City of Moreland and Melbourne Water to realise their Chain of Ponds Master Plan.

## Key Moves

– Continue to work with the Catchment Collaboration Group to determine effective governance and management arrangements to optimise the effectiveness of catchment wide decision making.

– Work with the Victorian Planning Authority to prepare a master plan and implementation framework for the creek corridor and surrounds.

– Continue to advocate for change along Moonee Ponds Creek, supporting the 'Chain of Ponds Master Plan' as a positive project that benefits residents of the City of Melbourne.

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# KEY PROJECTS

*Underpinned by the creek analysis and City of Melbourne strategic context, key strategic projects are located along Moonee Ponds Creek to enable the manifestation of its future vision.*

# FUTURE CHARACTER REACH

Key projects identified in the strategic opportunities section are spatially located in the following pages under each character reach. Visualisations, precedent imagery and text describe the potential character and programme of each project.

## ● *'The Collector'*

*A green open space, collecting and cleansing water, attracting and growing community.*

The Collector character is a green open space, collecting and cleansing water, attracting and growing community.



## ● *'The Urban Connector'*

*An urban creek interface creating engaging places for people.*

The Urban Connector is characterised by an urban creek environment interface creating engaging places for people.



## ● *'The Tidal Underpass'*

*A stormwater park and biodiversity hotspot. A place to meander and rest by the waters edge.*

'The Tidal Underpass', characterised as a stormwater park, wetlands and biodiversity hotspot, a place to meander and rest by the waters edge.





BRUNSWICK ROAD

Tullamarine Freeway

Debnays Park

Royal Park

RACECOURSE ROAD

FLEMINGTON BRIDGE STATION

MACAULAY ROAD

MACAULAY STATION

ARDEN STREET

DYNON ROAD

FOOTSCRAY ROAD

E-GATE

WEST MELBOURNE STATION  
[former North Melbourne]

DOCKLANDS

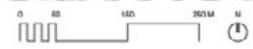
Ron Barrassi Snr Park

Plan: Future vision of Moonee Ponds Creek.

Yarra River



IMAGE: Future strategic vision for 'The Collector'



# THE COLLECTOR

*A green open space, collecting and cleansing water, attracting and growing community.*



## Travancore Park Creek Naturalisation

Naturalise and meander creek into Travancore Park, with the removal of the concrete channel and replaced with a reconstructed and rehabilitated creek with plantings, rock work and access to the water. This reach will focus on flood mitigation, with potential for detention terraces to improve detention capacity, water quality and low flow performance. Increase ecology with a focus on providing habitat for local threatened species.

Water detained on site can be treated in wetlands and be used for park irrigation and other grey water uses.



## Redesign of Bridges

Remove or re-construct pipe bridges and transport bridges to reduce the hydraulic constraints they impose, while improving cycle and pedestrian connections to, through, and over the bridges.



## Motorway Water Collection

Along the length of the motorway, collect motorway runoff and divert to wetlands/water treatment zones before releasing into Moonee Ponds Creek.



## Community Canvas

Utilise the motorway noise wall for temporary and permanent art, re-imagining the noise wall as an integrated part of the park. There is a potential to hold community and council activities such as light installations and cinema screenings.



## Moonee Ponds Creek Cycling & Walking Trails

Where space permits, create a separated high-speed commuter path, providing an alternative route devoid of conflict with recreational users.

Along the length of the creek, provide localised amenities for cyclists, such as picnic facilities, rest stops and bike hubs, which enable users to better engage with the environmental context of the trail.





TRAVANCORE PARK

W9

O'FLYNN (ROLLROAD)

B1

STORAGE WETLANDS PARK

TRIN WARREN TAMBORRE BELLBIRD WATERHOLE

M6

DELTH RESERVE

ROYAL PARK

MOUNTAIN STREET

W10

MOUNT ALEXANDER ROAD

B7

W3

MANNINGHAM STREET

DEBNEY'S PARK

W1

VICTORIA STREET

W4

FLEMINGTON HOUSING ESTATE

MOONEE PONDS CREEK TRAIL

M1

FLEMINGTON BRIDGE STATION

BOUNDARY ROAD

FLEMINGTON ROAD

IMAGE: Future strategic vision for "The Collector"





### Travancore Park Ponds

Widen the creek channel and create a series of ponds that can be used as water storage. Following water treatment this water can be used for park irrigation and other grey water uses.



### Mt Alexander Road Nature Gateway

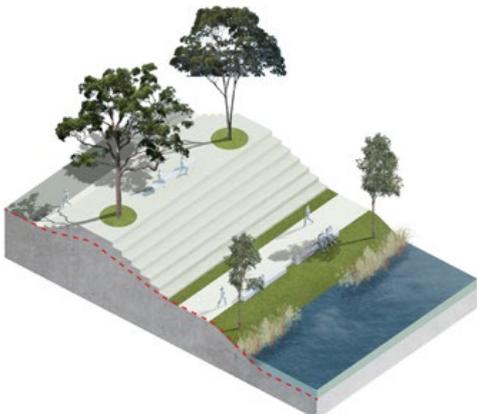
Increase capacity of detention basin at Melbourne's art gateway to help mitigate flood flows and express the basin as a natural landscape, providing amenity in both low flow and flood conditions.



### Debneys Water Park

Together with the development of Flemington Housing Estate, utilise WSUD principles, displaying the capturing and cleansing of stormwater. Establish large underground water storages, reducing flows to the creek with potential for reuse onsite, for example the irrigation of community gardens and parklands.

Create physical connections from Flemington Housing Estate down to Moonee Ponds Creek and its associated trail.



### CityLink Land Bridge

Link Storage Wetland Park, Moonee Ponds Creek and Travancore Park with a lands bridge (as proposed in the 'Chain of Ponds' Master Plan) over CityLink tollroad. The bridge acts as a biodiversity link between two significant habitat corridors, stitching together a major gap in the open space network.

A link between two currently separated neighbourhoods is also achieved, knitting together the community fabric.



### Flemington Bridge Station Connection Upgrade

Upgrade connections from train station to adjacent parklands.



### Novel Habitats

Where natural habitats cannot be achieved, create novel habitats such as bee hotels, hollows for wildlife and in-stream habitat structures. Hard structures, such as bridges, noise wall should provide benefit for habitat, including the provision of nesting boxes or other denning opportunities.





FLEMINGTON  
BRIDGE STATION

RACECOURSE ROAD

W1

PARSONS STREET

OS3

M6

M5

OS2

ALFRED STREET

SMITH STREET

OS1

W5

W10

M5

OS2

SUTTON STREET

STUBBS STREET

M5

W7

OS3

M5

OS2

ROBERTSON STREET

MARK STREET

OS4

MACAULAY  
STATION

MACAULAY ROAD

W1

CLAYTON  
RESERVE

CHELMSFORD STREET

LANGFORD ROAD

MACAULAY ROAD

MOONIE PONDS CREEK TRAIL  
CITYLINK (TOLL ROAD)



IMAGE: Future strategic vision for "The Urban Connector"

# THE URBAN CONNECTOR

*An urban creek interface creating engaging places for people.*



## Arden-Macaulay Pedestrian Bridges

New pedestrian bridges will connect the eastern and western communities of Moonee Ponds Creek. The bridges will be designed as lightweight structures that do not impede water flows, with integrated art initiatives, improving access to the creek and trail with formalised connections back to the urban fabric.



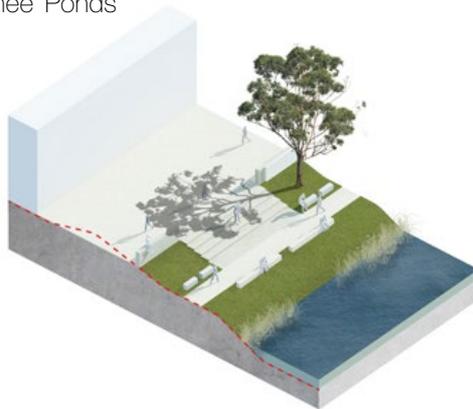
## Levees as Places for People

Increase flood capacity in creative ways using levee design interventions that create places for people and ecology- weaving the creek into the urban fabric. Deploy levee design interventions that respond to community open space needs while balancing the need for areas of increased ecology to support habitat.



## Expanded Creek Environs

Merge adjacent open space with the creek corridor to expand creek environs. Open space assets to accommodate for the growing population, with the introduction of community barbecues, picnic lawns, micro-retail and infrastructure to support community events. Inclusion of a planting to support the 40% canopy cover target and targeted ecologies. Create a new pedestrian connection along the western edge of Moonee Ponds Creek.



## Macaulay Terraces

Create a new, thriving public space that invites community down to the creeks edge, encouraging people to linger, and drawing on surrounding footfall from the local town centre, Macaulay Train Station, Moonee Ponds Creek Trail and local community.



## Macaulay Green Links

Re-purpose 'ends of the road', discontinuing existing roads currently connected to the rail corridor. This expanded network of green open spaces will provide stormwater detention, biodiversity links and amenity.



## Moonee Ponds Creek Civic Overflow Route

Create an overflow creek pathway, as linear open space, behind the levee between Racecourse Road and Macaulay Road to accommodate the over-topping of the levee at Racecourse Road.

OS4 **MACAULAY TERRACES**

*Shared street*

- Raised, shared street with public park/plaza.
- Tree lined, granitic sand, kiosk facing street and park with tables and chairs.

*Levee Wall*

- Levee wall as dynamic flood gate with integrated grassed berm. Berm to include terrace seating facing plaza.
- Potential to include cafe/kiosk.

*Stormwater-cleansing terraces*

- Terraced landscape as stormwater cleansing system capturing street and bridge water runoff and cleansing before water enters Moonee Ponds Creek.

*Picnic terraces*

- Terraces with shelter and picnic facilities.

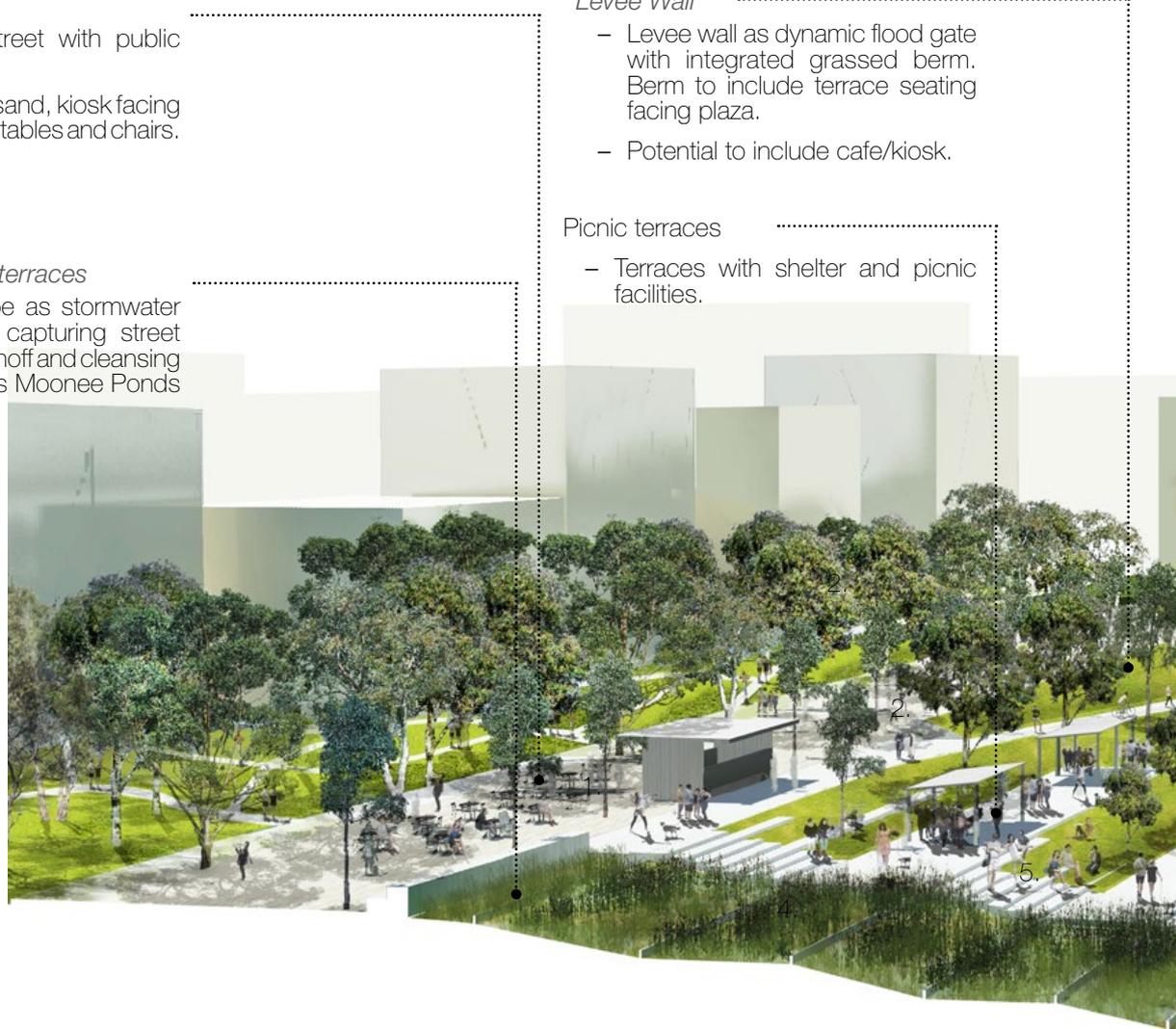


IMAGE: Artistic impression of 'Macaulay Terrace'



*Sloped lawn*

- Sloped lawn with trees running down to creek as an activated edge.
- Accessible ramp down to waters edge.

*Expanded riparian zone*

- Widening of creek riparian zone.

*Creek corridor rehabilitation*

- Revegetation of native riparian species.

*Celebration of water transition*

- Formalisation and celebration of saltwater/freshwater transition. Inviting public interaction with water.





IMAGE: Artistic impression of 'Macaulay Terrace' - a sunny afternoon.



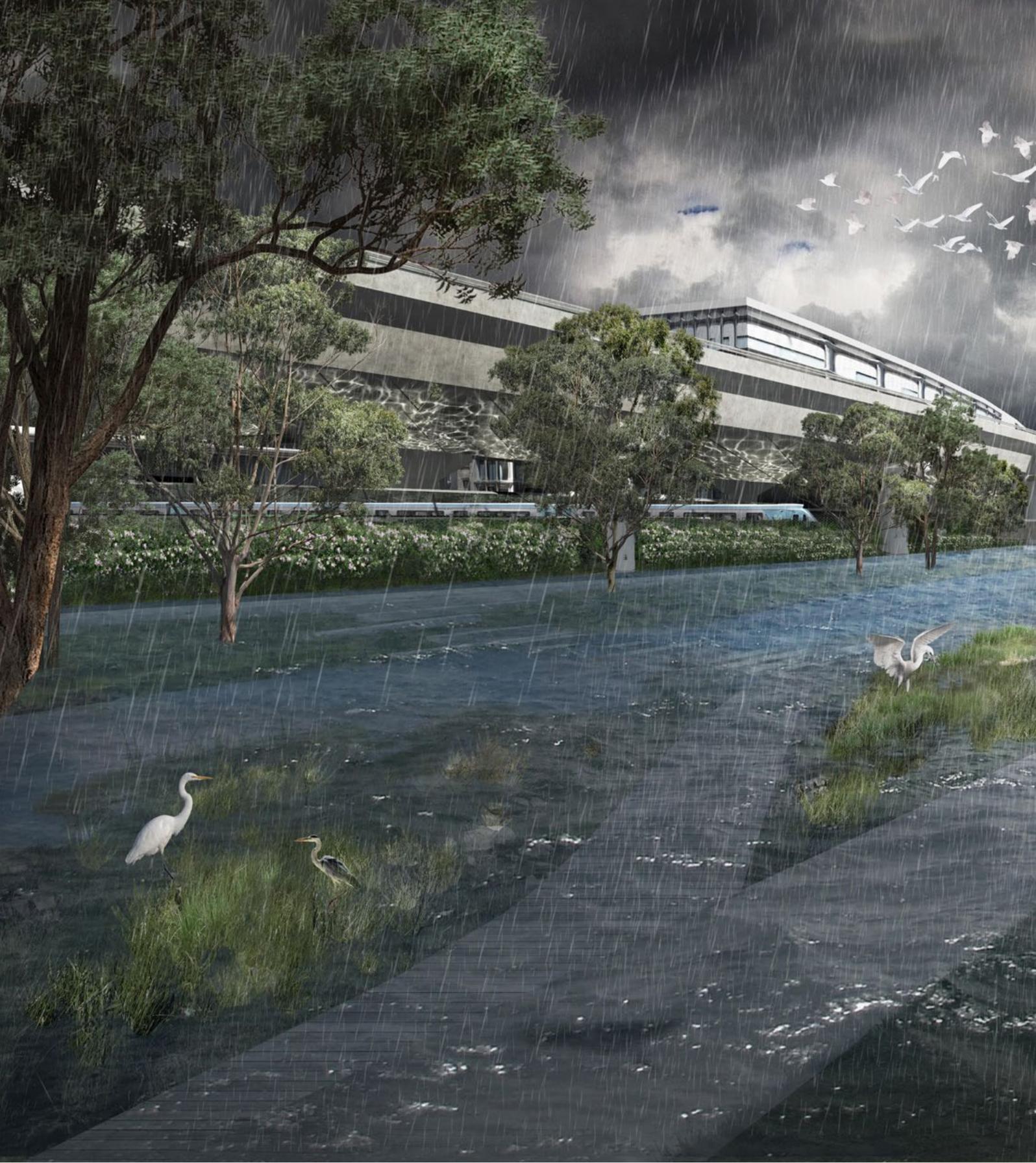


IMAGE: Artistic impression of 'Macaulay Terrace' - a major rain event.





IMAGE: Artistic impression of W5 'Moonee Ponds Creek Civic Overflow Route' - after a high water event.





MACAULAY STATION

MACAULAY ROAD

W8

W6

CHELMSFORD STREET

M5

W10

STRAKER STREET

B6

W8

M5

W6

W1

ARDEN STREET

M6

ARDEN STREET

LLOYD STREET

B6

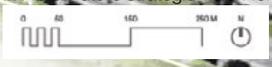
H1

OS3

W1

W1

IMAGE: Future strategic vision for "The Urban Connector"





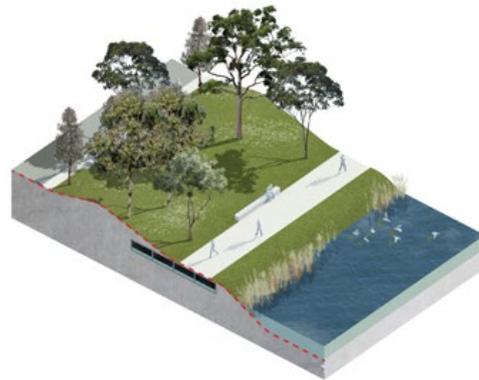
### Langford Road Linear Stormwater Park

Create an activated, linear open public space with recreational spaces. Install an alternative flow drain adjacent to the creek, enabling storm water flows to be diverted through to create more habitable space.



### Levee Banks Water Storage

Construct culverts under levees to re-engage the floodplain storage. Improved use of western creek berms south of Macaulay Road. Here, berms are relatively wide and could be altered and re purposed to fulfil open space needs of the future community.



### Arden-Macaulay Pedestrian Bridges

New bridges will connect the eastern and western communities of Moonee Ponds Creek. This bridge will be designed with integrated art initiatives, improving access to the creek and trail.



### Expanded Creek Environs

Expand the creek corridor environs to Arden Central, providing seamless access from the development zone to Moonee Ponds Creek. Connect the network of future open spaces within the precinct and make water a visible feature of the landscape to celebrate water as a distinctive element of place identity.



### Moonee Ponds Creek Art Trail

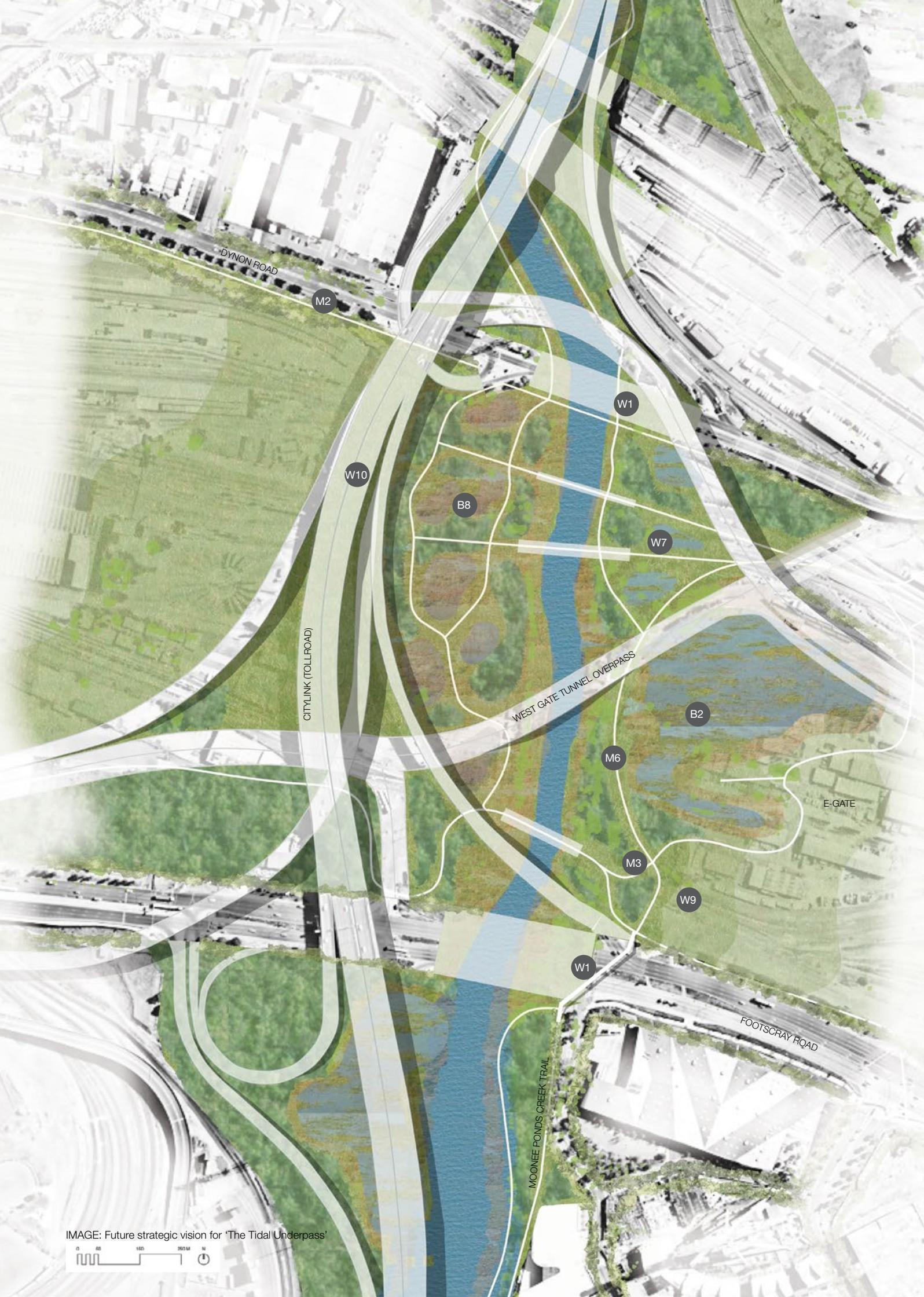
Establish a heritage trail along the length of Moonee Ponds Creek to highlight the cultural, environmental, architectural and industrial heritage of the area. Educate people through art and other means, and make people aware of the creek, its history and its role in flooding and water management, water quality and improvement.



### Native Grassland Restoration

Restore native vegetation, including brackish grasslands of the creek corridor.





DYNON ROAD

M2

W10

CITYLINK (TOLLROAD)

B8

W1

W7

WEST GATE TUNNEL OVERPASS

B2

M6

E-GATE

M3

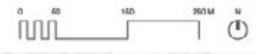
W9

W1

MOONEE PONDS CREEK TRAIL

FOOTSCRAY ROAD

IMAGE: Future strategic vision for 'The Tidal Underpass'



# THE TIDAL UNDERPASS

*A stormwater park and biodiversity hotspot. A place to meander and rest by the waters edge.*



## Dynon Canal Cycle Link

Clean and rehabilitate Dynon Road tidal canal, and create a shared cycling and pedestrian shaded path, providing connection between the two major waterways.



## The Research Wetlands

Create a series of salt-water wetlands fed by Moonee Ponds Creek as a site for research and education, with links to surrounding universities.

A piped network to and between wetlands allows flexibility and control over water and salt levels, with potential to create wetlands with varying vegetation, habitat and ecologies. There is an opportunity to prioritise the use and research of high-value carbon sequestration ecologies such as mangroves.

Motorway stormwater can also be captured, treated and discharged into wetlands for further cleansing before entering Moonee Ponds Creek.

A simple boardwalk system would allow passive public engagement with and observation of the landscape.



## The Connected Veloway

Leverage West Gate Tunnel works to improve cycling connections, to create a landmark feature bridge connecting east-west and north-south trails. Tying into works on the West Gate Tunnel, a new veloway connects commuter cyclists from Footscray Road and Moonee Ponds Creek Trail providing bridged, safe access over Footscray Road.



## E-Gate Stormwater Park

A series of wetlands capture and cleanse catchment stormwater before entering Moonee Ponds Creek. Following treatment, water can also be detained and used for park irrigation and other grey water uses.



## E-Gate Saltmarsh and Mangrove Reserve

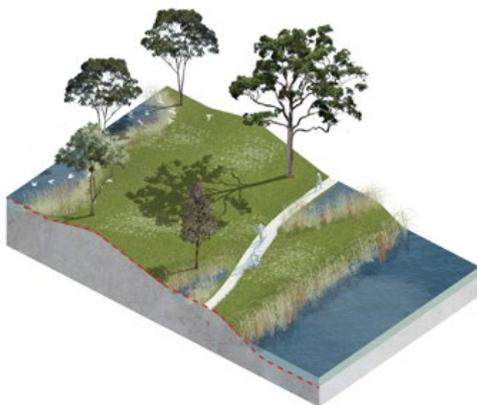
The expansion and naturalisation of the creek corridor provides widened salt marsh and mangrove zones, with the creation of an enlarged water body on the east of the creek increase the perimeter ecology.

This provides significant open space for future communities of E-Gate and to the wider City of Melbourne community as Capitol City and Municipal open space.

Decommissioned rail bridges are converted into pedestrian and cycle bridges, providing ready access from east and west of the creek and linking future potential communities.

Mitigating the effects of tidal storm surges, a tidal barrier protects upstream development, such as Arden-Macaulay, from associated flooding.

Current planning promotes the notion of a linear reserve for the Moonee Ponds Cree corridor with activated community spaces along its banks, and cycle connections to West Melbourne train station. There is an opportunity to inform the planning for E-Gate and other developments as they progress to ensure the overarching vision for Moonee Ponds Creek is realised.



# THE TIDAL UNDERPASS

## B8 *The Research Wetlands*

- Salt-water wetlands fed by Moonee Ponds Creek. Piped network allows flexibility and control over water levels. Varying water levels, and therefore salt, create varying vegetation, habitat and ecologies. Area to be a site for education and research, with links to surrounding universities.
- Capture of motorway stormwater to be pre-treated and discharged into wetlands for cleansing.
- Simple boardwalk system moving through site allow passive public engagement with the landscape.



IMAGE: Artist impression of the northern section of 'The Tidal Underpass'

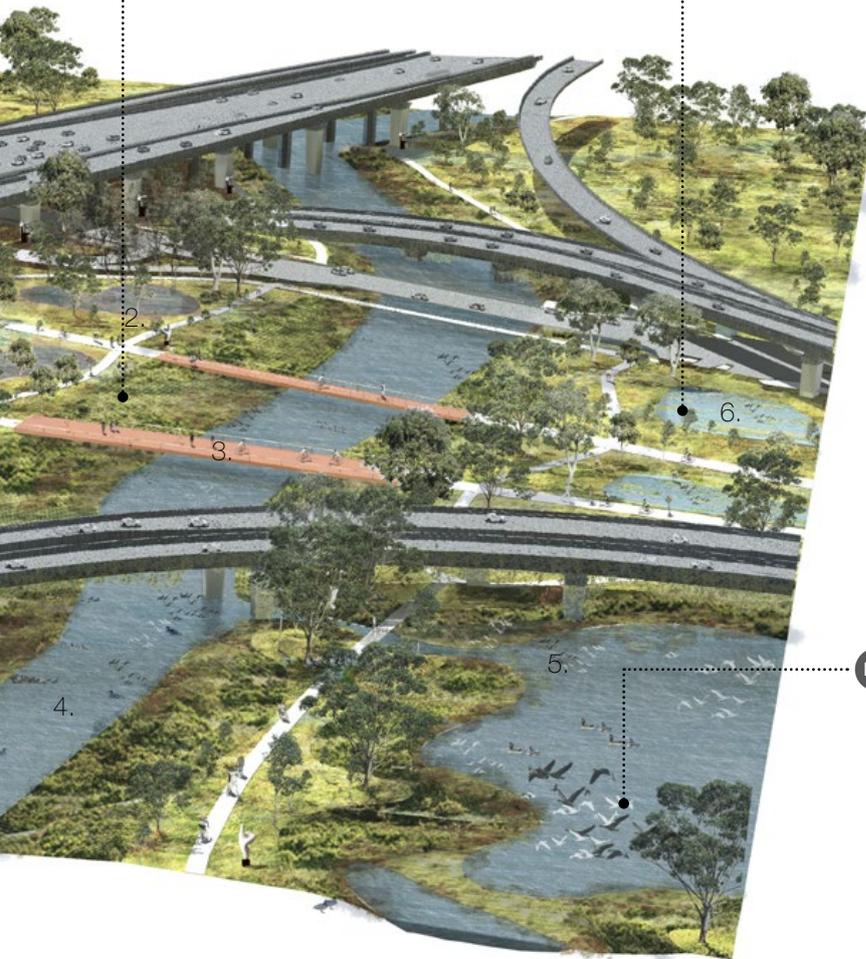


*Moonee Ponds Creek*

- Widened salt marsh and mangrove zone.
- Reuse of train bridges as pedestrian crossing

**W7** *E-Gate Stormwater Park*

- Capture of stormwater to be pre-treated and discharged into wetlands for cleansing before entering Moonee Ponds Creek.
- Simple boardwalk system moving through site allow passive public engagement with the landscape, with connections to North Melbourne.



**B2** *E-Gate Saltmarsh and Mangrove Reserve*

- Expansion of creek to create a widened water body and increase the perimeter ecology.





IMAGE: Artistic impression of the 'Tidal Underpass' - Sunday morning.





IMAGE: Future strategic vision for 'The Tidal Underpass'





### Docklands Biodiversity Hot Spot

The creek corridor is expanded, creating wetlands and detention ponds that support a vast array of species with a multitude of habitat zones. A space biodiversity, this parkland will be largely devoid of visitors, with a focus on flood mitigation and habitat for threatened species. Given it's lack of proximity to any community, the area could be significantly enhanced to provide a diverse range of habitats for flora and fauna, particularly instream biodiversity. Its isolation could prove beneficial for fragile ecologies.



### Expanded Salt Marsh Zone

Salt marsh ecosystems are one of the most cleared and threatened types of ecosystems in the world. These marshes, however, are important for carbon sequestration and opportunities for their protection and restoration need to be found.



### Moonee Ponds Creek Mouth- A Community Hot Spot

A destination for locals and trail users, the mouth of Moonee Ponds Creek will be celebrated. The end of the Moonee Ponds Creek Trail will be an activated space, with an opportunity for a kiosk, cafe or beer garden, encouraging people to visit and stay longer- a destination point along the creek.

Engagement with the creek will be encouraged, with activities such as canoeing and boardwalks at the waters edge. Create a boardwalk along the eastern bank for slow-speed usage.



### Fishermans Bend Connection

A new connection linking Docklands to Fishermans Bend, linking the two communities.





# APPENDIX

# LEVEE DESIGN INTERVENTIONS

*Levee design interventions can be deployed to tackle flood impacts while improving environmental and community connections.*

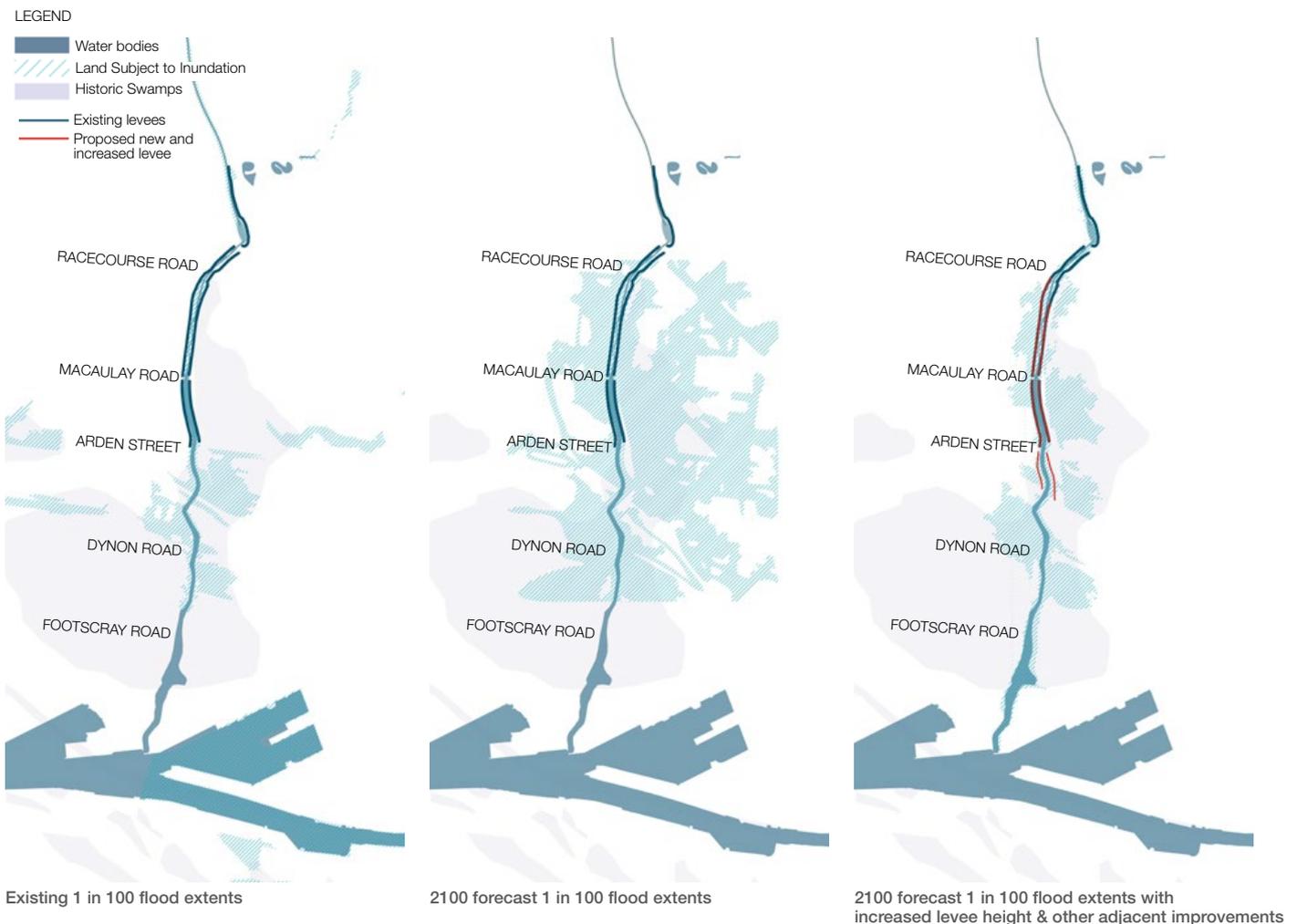
## Flood mitigation at Arden-Macaulay

Arden-Macaulay is earmarked for renewal, however the existing Land Subject to Inundation Overlay areas indicate the compromised development capacity of these areas, with flooding projections for 2100 showing a scenario far worse.

Over the course of 2016, Melbourne Water commissioned a series of studies to investigate and model the flood risk in Arden-Macaulay. The studies examined a selection of flood mitigation options and recommended an optimal combination of drainage works. One of the flood mitigation sub-options included raising and lengthening existing concrete levees within the Moonee Ponds Creek corridor.

Levees play an important role in flood conveyancing and minimising the threat of inundating surrounding properties, however increasing the height and length of concrete levees within the Moonee Ponds Creek corridor is at odds with aspirations to revitalise the creek, as it reinforces existing physical and visual barriers.

The City of Melbourne is currently seeking to explore viable alternatives to concrete levees within the Moonee Ponds Creek corridor. The City of Melbourne commenced this process as part of the C40 Arden-Macaulay City Solutions Platform series workshop in June 2017, which identified the opportunity to offset the need to raise and lengthen concrete levees by retarding flood flows further upstream and considering alternative levee design options.



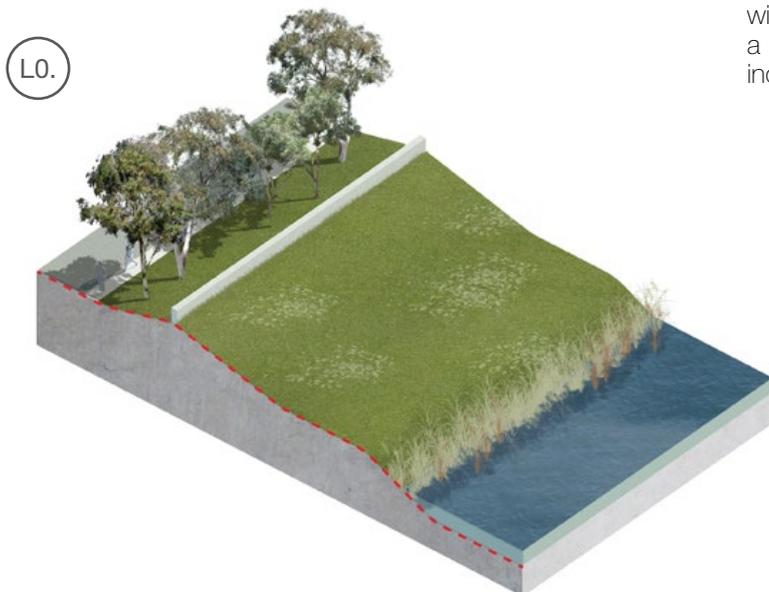
## Upstream Initiatives

While increased levee heights safeguard adjacent properties, they do not improve flood conditions downstream, and in some cases simply shift the problem downstream to low-lying areas such as E-Gate. Levees are one way to manage the risk, but are not the only option.

Off-line and upstream initiatives, like retention devices, are widely encouraged to minimise flood issues and create a positive environment within the catchment area. Initiatives to retain flood waters further upstream are crucial to depressurise downstream areas.

Investigations have suggested that the provision of large scale flood storages to hold back and slow down flows has the greatest potential to reduce peak flows in Moonee Ponds Creek. Of particular relevance is the investigation of a flood storage zone north of Racecourse Road- providing benefits downstream.

A high level investigation identified 407 hectares of land as potential flood storage sites between Jacanda Retarding Basin and Racecourse Road . With an assumed 1m depth of storage, 4,000,000 cubic metres of storage could be achieved. The investigation noted that 400,000 cubic metres of flood storage would benefit development planning downstream of Racecourse Road. The estimated 4,000,000 cubic metres is in well excess of this, and it is suggested could be used as an alternative to raising levee heights.



Indicative proposed increased levee height

## Levee Design

Managing the development of Arden-Macaulay, at the lower end of an urban catchment, requires a lot of creativity to re-imagine how this precinct is built and deals with the extremes of the forecasted natural condition.

Existing levees form a barrier along the creek, disconnecting the existing and future communities within the creek corridor, and reducing the benefits of social and recreational interaction that Moonee Ponds Creek could provide. Raising and extending the levees may further reduce the value that Moonee Ponds Creek could offer to the broader community of Melbourne.

While flood protection is critical, the need for levees to not conflict with the vision of the creek corridor is crucial. A set of levee design interventions have been created to find ways to increase flood capacity while providing places for people with activation, access and connection to the creek.

The levee design interventions have been categorised into two groups:

1. How do we find additional flood volume without increasing levee height?
2. How do we use the increased levee height to benefit urban life?

The levee design interventions are only concerning the on-line conditions, and can be deployed along the length of the creek where appropriate. As mentioned previously, off-line and upstream initiatives, like retention devices, are widely encouraged to minimise flood issues and create a positive catchment environment, reducing the need for increased levee heights.

# 1. How do we find additional flood volume without increasing levee height?

As already summarised in the 'Chain of Ponds Master Plan', a number of common engineering solutions can be identified to mitigate and off-set increased flood flows through creek corridor environs. This spread shows three interventions suited to the

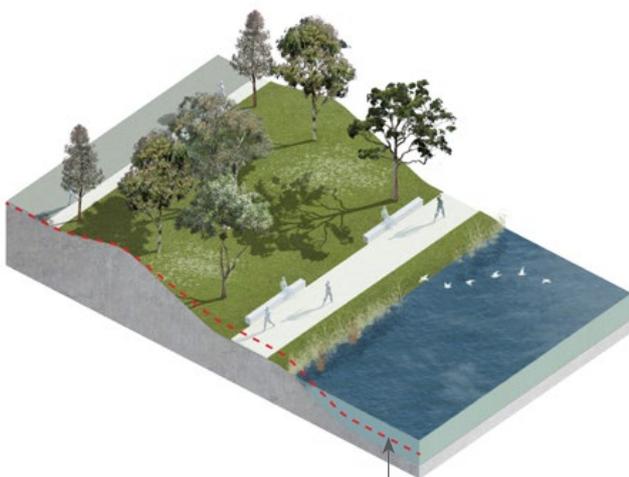


## L1. Deepening/ Widening of the channel

Maximising the cross section through excavation to deepen and widen the creek.

Physical considerations:

- Not appropriate for limited corridor width
- Steeper edges may become less accessible



Indicative existing creek profile



Increased flood capacity achieved.



Potential to locally create an urban edge for increased activity to the creek. Any assets on lower terraces need to be designed as flood-proof. Post-flooding maintenance required.



Potential to expand flood plains, with opportunity for tree planting and diversifying ecologies and habitat.



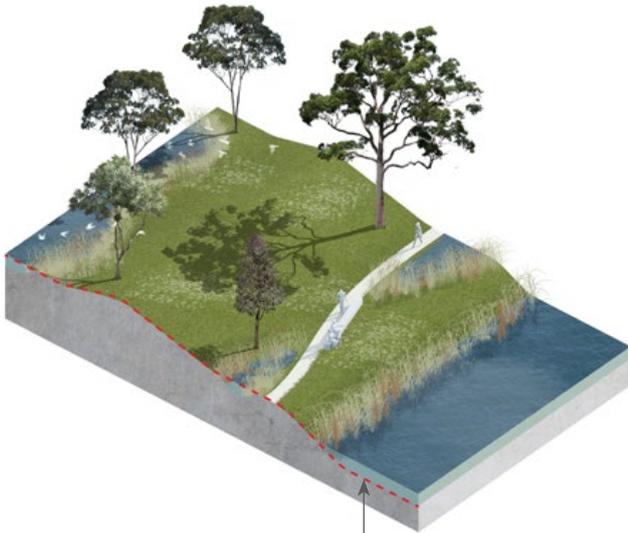
Potential to provide a slow-speed trail by the waters edge for use outside of flooding times, introducing a new space away from high speed commuter cyclists and recreational users.



Landscapes that become inundated could be designed to express and interpret the history of the creek.

## L2. Additional at-grade flow volume

Additional flow capacity can be offered by cutting a second water channel or offering localised detention volume by the introduction of creek meanders, billabongs or wetlands.



Indicative existing creek profile



Increase in water quality.  
Opportunity to link this with off line initiatives such as cloudburst street design.  
Limited flood detention capacity.



Creation of a new landscape typology for community interaction.



Creation of wetlands and billabongs, diversifying ecological habitat zones.



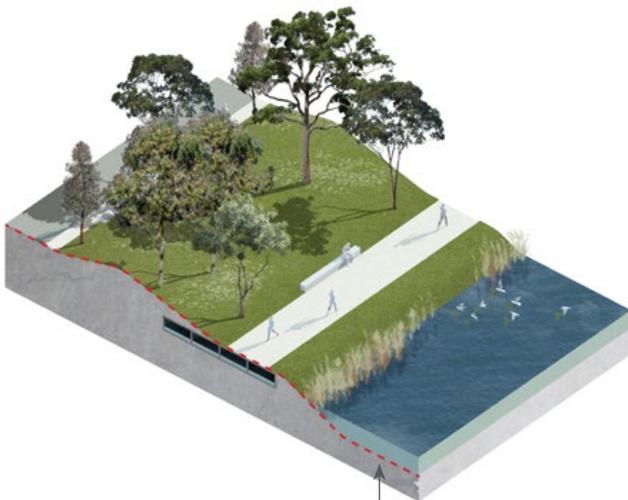
Potential to provide a slow-speed trail meandering around wetlands, divorcing high speed commuter cyclists and recreational users.



Utilise wetlands and billabongs as a tool to express and interpret the history of the creek.

## L3. Additional below-grade flow volume

Additional flow capacity can be offered by the introduction of high flow capturing pipes or culverts. These are activated once a specific flood volume is reached to protect the open creek environment.



Indicative existing creek profile



Increased flood capacity achieved with additional underground infrastructure.



All public space is retained as usable public space through flood events.



Ability to operate culverts to retain water and treat and reuse it for environmental flows, to supply a third pipe scheme or to irrigate open spaces and urban forest.



Pedestrian and cycleways are not affected in flood events.



Display the process of flow diversion as a

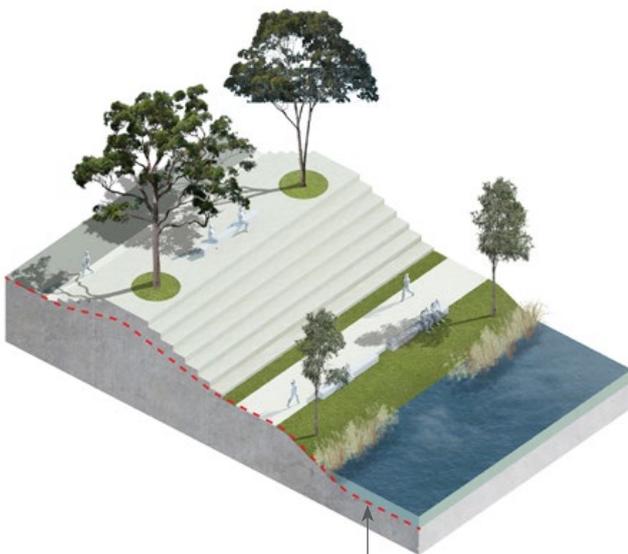
## 2. How do we use the increased levee height to benefit urban life?

Should increasing the levee height be necessary, how could we design and utilise this height to mitigate the negative effects of levee, and increase social benefits?



### L4. Benefit from levee height

Extend levee slope and shape to create activated parkland, for example paved or vegetated terraces, amphitheatres and vertical play elements. Use the levee height to create vantage points, elevated walkways with engaging vistas.



Indicative existing creek profile



Increased flood capacity achieved [assuming levees extend along whole length of creek].



Creation of dynamic and engaging spaces. Height of levee can create visual and physical barrier.



Utilise increased levee height to establish tree canopy cover.



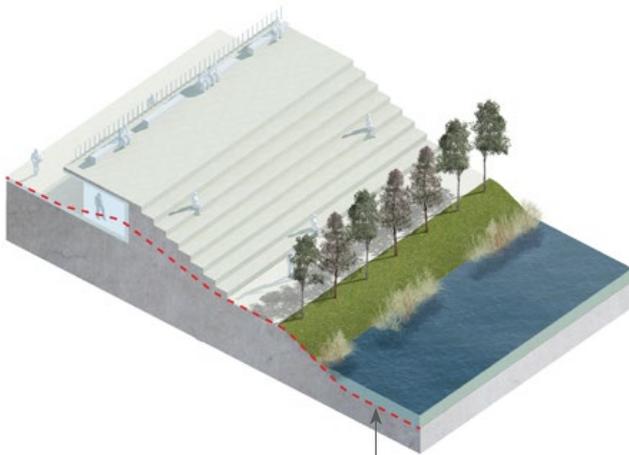
There is potential to separate commuter cyclists and slow-speed travellers with two different user paths.



Terraces and amphitheatres could be complimented with infrastructure for event modes such as community cinema (i.e. hanging movie screens off CityLink).

### L5. Use the levee height to create activated city edge

The creek topography is extended over a single storey building that in turn can offer recreational, retail or cultural programme.



Indicative existing creek profile



Increased flood capacity achieved.



Building space could be for public or commercial use, providing an activated and engaging edge with a changing to adapt to changing community needs.



Potential to create flood plains, with opportunity for tree planting and diversifying ecologies and habitat.



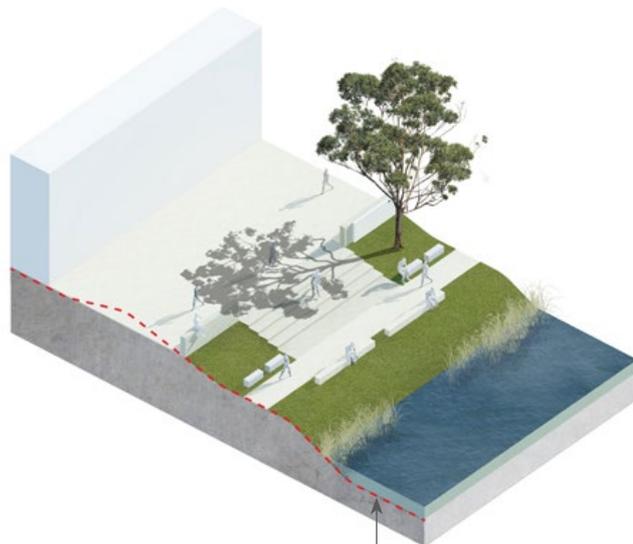
Building space could be for public uses such as bicycle storage.



Building space could be for public or commercial use such as a gallery space.

### L6. Dynamic flood protection/flood gates

Flood gates are widely used in northern European cities such as Hamburg and Rotterdam either directly at building openings or as part of as levee/ weir wall protection system between water and city, where flood gates are closed only during flood events. An integrated management system required.



Indicative existing creek profile



Increased flood capacity achieved.



Visual and physical barriers are removed from creek corridor and surrounds, allowing seamless connections.



No significant environmental reward.



Commuter or shared-trail to be located outside flood gates where possible to ensure accessibility during flood events.



Potential to use flood gates as linear art wall and community canvas.

# CASE STUDIES

## Case Study Overview

There is a world-wide trend to reconnect cities with their creek and river environs. The following is a summary of 7 relevant projects that have contributed positively to their cities through a variety of ways including:

- Innovative, dynamic flood mitigation design to increase usability of flood-prone sites;
- Revitalisation of water corridors to create improved ecology and water quality; and
- Community inclusive design to encourage and facilitate engagement with water bodies, creeks and rivers.



### Cheonggyecheon River

LOCATION	SEOUL, SOUTH KOREA
YEAR	2000-2005
SIZE	15.8 KM

### DESCRIPTION

A green oasis in a concrete jungle, this inspiring urban renewal success underwent a dramatic transformation from a traffic-choked elevated freeway and concrete paved waterway into a lush, 3.6-mile-long “day-lit” stream corridor. The restoration process has also provided huge boosts to local biodiversity and catalysed economic development.



### LEARNINGS

- Cities can replace freeways with open natural waterways, and thrive economically and socially.
- Linking waterway design with overarching broader policies to gain traction and funding from multiple sources.
- Offsetting of flood waters into adjacent culverts under roads.

## Hamburg HafenCity

LOCATION

HAMBURG, GERMANY

YEAR

2003-ONGOING

SIZE

157HA



### DESCRIPTION

Hamburg has worked hard to identify where they can create more room for river flows and mimic the natural floodplain environments, slowing water and allowing for groundwater recharge.

HafenCity is the re-birth of a city centre, “a new downtown” that contains an intricate network of offices, public spaces, commercial spaces, around 2,000 inhabitants and 10.5 kilometres of publicly accessible quayside promenades.

### LEARNINGS

- Dynamic flood response programme using flood gates enabling activated river edges within flood levels.
- Traditional vernaculars [Warften] were reinterpreted through the proposal of elevated buildings with activated, flood protected podiums [car park, retail], lifting the habitable space 8m over water level.

## Buffalo Bayou Promenade

LOCATION

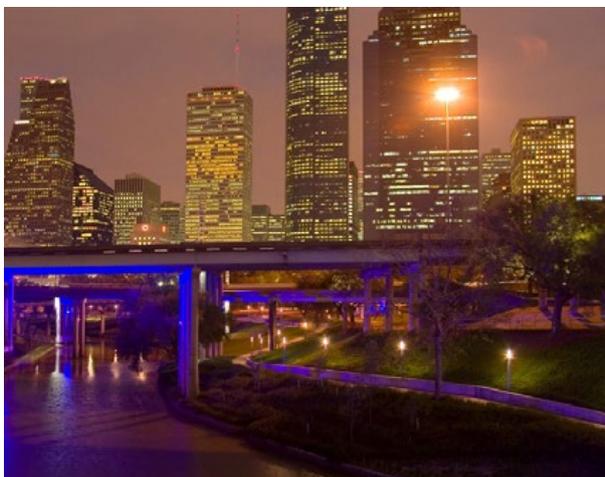
HOUSTON, USA

YEAR

2006

SIZE

8HA



### DESCRIPTION

Once neglected eyesore—intimidating to pedestrians and detrimental to flood control efforts— is converted into a linear urban parkland providing a gateway to downtown Houston and adding over 20 acres of park space to Houston’s inner city. The project features naturalization of gently sloping banks, extensive native landscaping, hike and bike trails, public art, dramatic artistic lighting, 12 new street-to-bayou entryways, stairs and ramps reconnecting people to the bayou, a major north-to-south pedestrian bridge, way-finding, and interpretive signage.

### LEARNINGS

- Reshaping the river banks to increase flood capacity whilst providing amenities such as cycling paths, access to water and biohabitat.
- The project demonstrates that the quality of a river parkland can be realised despite motorway flyovers.

## Bishan Ang Mo Kio Park

LOCATION SINGAPORE  
 YEAR 2012  
 SIZE 63 HA



### DESCRIPTION

The vision was to transform the country's water bodies beyond their functions of drainage and water supply, into vibrant, new spaces for community bonding and recreation. A 2.7 km long straight concrete drainage channel has been restored into a sinuous, natural river 3.2 km long, that meanders through parkland.

### LEARNINGS

- The use of off stream detention systems to relax flood pressures and allow community engagement with the waterway.
- Turning 'back-of-house' spaces to thriving, engaging community places.

## The Dry Line New York

LOCATION NEW YORK, USA  
 YEAR 2013 ONGOING  
 SIZE 16 KM



### DESCRIPTION

The Dryline (BIG U) proposal addresses New York City's vulnerability to coastal flooding with a protective ribbon in Southern Manhattan. The 12 km-long infrastructure barrier incorporates public space with the high-water barrier doubling as parks, seating, bicycle shelters or skateboard ramps. Embankments add green areas and spaces beneath elevated roadways are built out with pavilions for public use. In an emergency, the shutters close forming a floodwater barrier.

### LEARNINGS

- Combine social infrastructure with flood management infrastructure.
- Innovative ways to rethink weir walls in a synergetic way to combine flood protection linked with community infrastructure.
- Utilise community engagement for advocacy and education.
- Turn neglected urban spaces into opportunities for active social engagement through design.

## Los Angeles River Revitalisation

LOCATION	LOS ANGELES, USA
YEAR	1996 - ON GOING
SIZE	82 KM



### DESCRIPTION

The Los Angeles River Revitalization Master Plan (LARRMP) guides the city's policy and project implementation along the Los Angeles River and in its watershed. The master plan looks at the naturalisation and revitalisation of this river corridor.

The LARRMP Priority Project List is a list of projects stemming from the master plan, consisting of approximately 240 projects proposed by the LARRMP. The project listing includes projects for bridges, recreational bike paths, parks and associated facilities, and riparian restoration features.

### LEARNINGS

- The LARRMP Priority Project List is used to focus attention on a subset of projects that have the potential to be implemented through partnerships and outside funding.
- An example of bold ambitions to revitalise a forgotten waterway into a city-wide asset, focusing on connectivity and community access to the river.

## Chicago Riverwalk

LOCATION	CHICAGO, USA
YEAR	2009-2016
SIZE	3.6HA



### DESCRIPTION

The Chicago Riverwalk is an open, pedestrian waterfront located on the south bank of the Chicago River in downtown Chicago with distinct sections, each with a unique programme. The Riverwalk contains restaurants, seating, boat rentals, and other activities along its length.

The construction of the Riverwalk began in 2001 with the rebuilding of Wacker Drive, where the street was purposely relocated to allow for development of the walk.

### LEARNINGS

- Designed levee edge for active urban life.
- Underside of bridges utilised for public art.
- Water quality improved to a level which allows public activities and interaction with the water.

Major urban changes, such as the relocation of a road to allow the development of the walk.



NO STOPPING ON FREEWAY

IN CASE OF EMERGENCY EXIT FREEWAY

TO EASTERN PK LEFT LANE