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Project: Moonee Ponds Creek Naturalisation Plan Concept Report
Report Title: Naturalisation Concept Design
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1.1 Forward

This report outlines the aspiration to naturalise the most northern concrete section of the Moonee Ponds Creek.

The preparation of this naturalisation concept has engaged with stakeholders and the community for input and endorsement. It includes a business case to assist in the pursuit of funding for future implementation.
1.2 The Site

The creek corridor plays an important role in supporting the local community. It will not only provide storm water management roles but provide active transport connections and social and recreational uses connecting parks and reserves.

The Creek defines the boundary between Moreland City Council and Moonee Valley City Council and is an asset of Melbourne Water. The study area incorporates 600m of the most northerly concrete section of the Moonee Ponds Creek (Ethel Street - north to Marks Street - south).

The Creek itself is a concrete trapezoidal. Planting along both sides provide some shade, amenity and a buffer between the creek and urban interface. Areas of constrained open space, with pocket breakout spaces and links to larger recreation reserves provide opportunities to manage inundation and enhance the creek corridor. The formal share path traverses the western bank and an informal trail network on the east bank is particularly popular with dog walkers and those seeking a slower pace.

The creek links three reserves, Oak Park, Herbert and Lebanon Reserve. Collectively these provide recreational opportunities such as sports fields, cricket nets, play spaces and passive activation, as well as ecological value, particularly in Herbert Reserve.

Various community facilities have close relationships with the creek. The Strathmore North Primary School backs directly onto the creek and sporting hubs are found in Lebanon Reserve and Oak Park Reserve.

Legend
1. Strathmore North Primary School
2. Oak Park Reserve
3. Oak Park Sports and Aquatic Centre
4. Herbert Reserve
5. Lebanon Reserve
6. Strathmore Football Club
1.3 Strategic Context

Cultural Context
Before European settlement in 1835, Moonee Ponds Creek was a significant part of the areas rich and dynamic landscape. The Creek formed a ‘chain of ponds’ during drier months and swelled into an ephemeral creek during heavy rains, supporting a multitude of habitats for flora and fauna.

The Creek - originally referred to as ‘Moonee Moonee’ by the Wurundjeri tribe of the Woiwurrung language group - was and still is of significant cultural importance to local Aboriginal people. Traditionally the creek line was a travel route and its fertile lands used as a fresh water and food source.

In the four decades after 1940, The Creek’s natural and Aboriginal importance was ignored and its modification into an urban drain commenced. First land sales along the creek study area were made in the early 1900s. Since, the suburban areas of Oak Park and Pascoe Vale (east) and Strathmore (west) have developed rapidly. The Creek experienced major realignments, channelisation and bank reconfiguration under extensive works by Melbourne Metropolitan Board of Works (MMBW), changing it from a natural living ecosystem into an urban drainage mono-system that we see today. In the 1970s the Strathmore Progress Association succeeded in halting the extent of concrete channel being constructed in this location.

Now, in 2019, the ‘chain of ponds’ no longer exist - instead a concrete channel functions as a hydraulic and transport corridor, disengaged from its surrounding communities. This naturalisation plan repositions The Creek as a central resource for the community once again, weaving hydrological, ecological and social ecosystems back into The Creek’s future narrative to continue once again support a healthy community.

The site now provides a symbolic setting for change, to remove the objective of the naturalisation program is to explore how community values or community may be actively excluded for safety reasons), can be improved, to enable enjoyment and use by all members of the community.

Planning Context
The surrounding area is covered by a number of overlays including, the Moonee Ponds Creek Environmental Significance Overlay, Erosion Management Overlay and Special Building Overlay. These overlays should guide recommended options.

There is a preference to retain, where feasible, any excavated material on site with the in-situ treatment of any soil. Soil containing asbestos fragments has been discovered during the Herbert St WSUD works. A CHMP assessment of the Herbert St site in 2015 noted that the area is a highly modified constructed landscape in an urban setting. A due diligence heritage assessment will be required as part of progressing the design beyond concept.

Strategic drivers

<table>
<thead>
<tr>
<th>Document</th>
<th>Summary</th>
<th>Strategic target</th>
<th>Project alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain of Ponds Plan</td>
<td>This plan re-imagines the Moonee Ponds Creek as a healthy, vibrant destination which supports native plants and animals, provides green space for leisure and recreation and helps prevent flooding.</td>
<td>Social: Linear Park</td>
<td>Contribution to strategic target</td>
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<tr>
<td>Chain of Ponds Collaboration Prospectus</td>
<td>This project is identified as #3 in the CoP prospectus developed in 2018.</td>
<td>Deliver project #3 – Essendon Crescent naturalisation study</td>
<td>Directly deliver commitments</td>
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<tr>
<td>Melbourne Water Healthy Waterways Strategy 2018</td>
<td>The strategy sets the direction for managing waterways (including wetlands and estuaries) in the Port Phillip and Westernport Region</td>
<td>Melbourne Water has a target to naturalise five kilometres of waterways across the Port Phillip and Westernport region by 2021.</td>
<td>Contribution to strategic target</td>
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<td>Melbourne Water Flood Management Strategy 2015</td>
<td>The strategy sets out a vision for flood management across Port Phillip and Westernport, and creates a framework to help guide the work of the organisations who participate in preventing or managing flood risks</td>
<td>Manage flood risk to get the best social, environmental and economic outcomes</td>
<td>Demonstrate compliance</td>
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<td>DELWP: MM Strategic Directions Statement – Maribyrnong River Catchment</td>
<td>Aims to help the government, the water sector and the community work together to better plan, manage and deliver water in Victoria’s towns and cities. It complements and feeds into existing water and land planning processes, and encourages collaboration where it will be beneficial and links between water planning and other planning processes that contribute to improving Victoria’s resilience and livability</td>
<td>Developing the Moonee Ponds Creek naturalisation study is identified as a short term action in the SDS</td>
<td>Directly deliver commitments</td>
</tr>
<tr>
<td>Moonee Valley Open Space Strategy 2009</td>
<td>Guides the future design, quantity, and management of public open spaces in Moonee Valley.</td>
<td>Retain and enhance the natural values found in open space, especially along the waterways and in nature conservation reserves. Improve the linear open space along waterways in Moonee Valley. Seek additional open space along the waterways as future. Establish interconnected networks of biodiverse green spaces, waterway corridors, streetscapes and private gardens</td>
<td>Contribution to strategic target</td>
</tr>
<tr>
<td>Moonee Valley 2040</td>
<td>The MV2040 Strategy is Moonee Valley Council’s ‘umbrella’ strategy which will guide all future work through action plans which deliver on five themes: Fair, thriving, connected, green and beautiful.</td>
<td>Various targets including: Provide a truly connected walking and cycling network. Create diverse and connected landscapes. Enhance our ecological values. Support our community to connect with nature.</td>
<td>Contribution to strategic target</td>
</tr>
<tr>
<td>Moreland Open Space Strategy 2011-2021</td>
<td>Sets a cohesive direction for the future provision, planning design and management of publicly owned open space that is set aside for leisure, recreation and nature conservation purposes in Moreland</td>
<td>Providing parks close to home. Making places for nature Developing a network of trails. Enhancing participation and use of public open space.</td>
<td>Contribution to strategic target</td>
</tr>
</tbody>
</table>
The Moonee Ponds Creek Plan represents the collaboration of Moonee Valley City Council, Moreland City Council, the City of Melbourne and Melbourne Water. The action plan is an investigation into what Moonee Ponds Creek is today and its possible future, providing a framework for change and influencing decision making along the corridor.

Chain of Ponds Toolkit

The plan includes a ‘Toolkit’ which identifies 34 initiatives to improve the ecological health of the creek, promote innovative water management, reduce stormwater runoff, improve water quality and resolve flood risks. Of these tools, 18 are off-line (catchment) initiatives, and 16 are on-line (creek) initiatives.

This naturalisation plan has drawn on the Chain of Ponds toolkit to form design options that consider flood risks while factoring the needs of the local community and environment. While this plan focuses only on on-line initiatives, it promotes the use of off-line tools within the creek catchment.
1.4 Vision

Principle Themes
Allowing nature to inform design, the naturalisation plan capitalises on natural processes—such as re-establishing the creeks historic chain of ponds, providing a natural 'relief value' for flood water, improving the riparian habitat, and enhancing access to the creek.

Reinvented as a creek filled with life, both in the channel and along its banks, the plan will improve habitats for native flora and fauna, integration of surround open spaces and recreational facilities, well-planned paths, and a host of other amenities for residents and visitors.

These improvements will transform the area while maintaining the existing level of flood protection. Based on the more ideal creek conditions upstream, the vision of the naturalisation plan is to develop, enhance, and re-establish stable creek habitats, improve water quality, and restore in-stream connectivity.

This intends to be a pilot project and will incorporate key priorities as identified by the community from earlier conversations held as part of the Moonee Ponds Creek Plan ‘Chain of Ponds’. For the purposes of this plan these have been summarised into four principle themes, hydrology, movement and access, ecology and social recreation, to solicit the ideas and dreams of the community.

Approach
A thematic site analysis was undertaken using the four principle themes. The analysis included information gathered in desktop research as well as on-ground observations and further development of thinking. These principle themes were used to identify and organise site opportunities.

The plan for this pilot project is rooted in implementation. Concept design options were developed to test the feasibility of the site opportunities and understand stakeholder requirements. The options were informed by the ‘Chain of Ponds’ toolkit to ensure it delivers on its strategic vision.

Each option was coupled with a 3D earthworks model for hydraulic modelling in an iterative design process to understand their limitations. Along with the key stakeholders the options were tested for their hydrological performance, ease of movement and access, ecological merit, recreational offering, connection to water and nature, maintenance requirements, user safety, implementation cost and project value.

Following testing of the four options a final concept was developed for further community input and informed a business case to support the pursuit of funding. The preferred option was a hybrid of two options presented at a stakeholder workshop.

The project intends to demonstrate implementation techniques that can be tested, assessed overtime and subsequently applied further downstream.
2.1 Constraints + Opportunities

Hydrology

Inundation
- The 1% AEP (Annual Exceedance Probability) flood inundation extents for the Creek indicate floods are well contained within the existing channel.
- Eight lateral sub-catchments discharge into the creek study area from Moreland City Council.
- During 1% AEP storms council’s stormwater systems that drain into the creek cause flooding in road ways and private property. It is not clear whether the creek has an indirect role in this through the influence of back water.
- An objective of the design is to avoid any increase in water level in the creek for 1% AEP flows or any flow that may cause nuisance.
- Changes to the waterway levels can impact the capacity of the upstream council pipes. It is recommended that further hydraulic impact assessment is carried out at detailed design.
- Increased frequency and intensity of storm events due to climate change will see pressure on the creek.
- Many reaches of the waterway have generous free board. It is tolerable to increase water levels in the creek where there are no pipes outlets and where there is free board.
- Headwalls at existing outlets may require adjustment to match a new channel form. No alterations to the pipe size or alignments are proposed.
- Location, capacity and operation of GPTs (Gross Pollutant Traps) will need to be factored into naturalisation plans.

Note: 1% AEP inundation not available from Moonee Valley Council Area

Note: council stormwater system not available from Moonee Valley Council Area
Movement + Access

Cycle + Pedestrian Networks

- The sharepath runs 25 km into Melbourne CBD. The thoroughfare is a popular route for cyclists. This trail is relatively narrow often posing a conflict between the high and slow speed bicycle users and pedestrians.
- An informal path on the east bank provides for recreational walking.
- Two footbridges provide crossing opportunities, but don’t meet current standards and are in need of refurbishment or replacement.
- Creek access is provided from east-west adjoining streets - many are stepped or informal.

Boundaries + Views

- Open views along the creek provide site lines for cyclists and pedestrians.
- Steep creek banks make access to water level difficult to orientate.
- Property boundaries frame the creek edges.
- Planting create physical boundaries between connecting reserve and the creek.
- Viewsheds add to visual amenity along the creek.
Ecology

Forest + Vegetation

- Trees populate the length of the creek providing shade, amenity and habitat.
- Significant trees and vegetation, including remnant vegetation, should be retained.
- Much of the vegetation along the creek has been planted, very little remnant vegetation remains. These areas strengthen the habitat corridor and provide a buffer between urban development.
- Shrubs, lower storey plants and grasses are increasingly being planted along the creek, contributing to increased biodiversity and habitat.
- Revegetation plant selection should be in keeping with the Moonee Ponds Creek Corridor Revegetation Guidelines 2000.

Habitat

- The concrete channel has manipulated the creek’s natural function, resulting in poor creek habitat health.
- The upstream habitat is noticeably healthier, supporting riparian and aquatic ecologies.
- Herbert Reserve provides some of the most ecological rich biodiversity out of the three reserves despite contamination.
- Continuing programs of revegetation along the Creek, including riparian zones, using associations of indigenous plants would further enhance the ecology of the Creek and strengthen biodiversity and habitat.
- In naturalising the creek, the appropriate type of rocks and earth formations and appropriate placement should be used to enhance habitat provision, noting hydrological requirements.
Open Space

- The spatial aspect and physical connection to joining open space is poor.
- Oak Park and Lebanon Reserve provide little supporting ecological and hydrological value. Integrated off-line water management will enable a consolidated and structured strategic response to issues.
- Herbert Reserve provides the best opportunity to expand the creek corridor. Further investigation is required around potential contamination.

Social Recreation

Built Form

- Strathmore North Primary School backs directly onto the creek with direct connections from Margaret Street Bridge. However, the school has limited recreation or learning opportunities within the creek corridor.
- Lebanon Reserve and Oak Park Reserve sporting hubs provide active recreation. Oak Park Sports and Aquatic Centre provides a regional recreational facility for the wider community.
- Urban development has been permitted close to creek and property fences are prominent along the embankment. Opportunities to enhance interfaces through setbacks, activated frontages and sensitive design will support improved amenity and public safety outcomes along the creek.

Open Space

- Concrete maintenance ramp into concrete channel
- Typical east-west street creek interface (Main Street)
- Oak Park stormwater easement
- Brosnan Crescent interface