Studio Octopi

Visualising the potential for swimming in Greater Sydney's waterways.

Exploring design concepts to support Sydney Water's Urban Plunge program.

20.03.2023

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Acknowledgement of Country

Sydney Water respectfully acknowledges the Traditional Custodians of the lands and waters on which we work, live and learn. Their lore, traditions and customs nurtured and continue to nurture the waters (saltwater and sweetwater) in Sydney Water's operating area, creating wellbeing for all. We pay our respect to Elders, past and present.

We encourage those working on waterway projects to use the Connecting with Country Draft Framework prepared by the Government Architect NSW to inform project planning, design, and delivery. www.governmentarchitect.nsw.gov.au/projects/designing-with-country

Forward by Sydney Water

We believe everyone who lives in Greater Sydney should have easy access to clean, safe and healthy waterways for swimming and recreation. We know that people who swim in waterways are more likely to champion waterway health and protection.

That's why Sydney Water developed Urban Plunge. We want to accelerate the delivery of swimming and aquatic recreation opportunities in waterways across the city by supporting councils, government agencies, businesses and the community to realise this vision.

Creating the ability to swim and recreate in rivers and natural water-bodies has the capacity to transform amenity, recreation, health and create economic opportunities across Greater Sydney. This is particularly so in Western Sydney, which experiences more extreme summer temperatures and where access to established swimming sites is limited.

Of course, we also understand that opening new swimming sites is complex and no two sites are the same. That's why we've partnered with Studio Octopi to demonstrate what's possible. By drawing from precedents around the globe, this document is designed to inspire and encourage all those involved in the championing and delivery of swim sites to take the plunge with us.

BAYVIEW PARK SWIM SITE
Canada Bay Council officially opened for swimming
November 2022

Image - Sydney Water

For further information about Urban Plunge or the concepts in this report, please contact the team at UrbanPlunge@sydneywater.com.au or visit urbanplunge.com.au

BAYVIEW PARK SWIM SITE
Visitors enjoying the reopening of Bayview Park for swimming after 60 years

Image - Sydney Water

Design Team

Studio Octopi (Architects)

Royal Institute of British Architects, Chartered Practice

Chris Romer-Lee and James Lowe co-founded UK based architecture practice Studio Octopi in 2005. The practice makes architecture with clear intent and entrepreneurial spirit.

They believe architecture is a social, environmental and technical art, about simple ideas delivered to the greatest effect. It can enhance lives and address the most important issues of the day, and as a result people are the foreground and focus of their work.

Studio Octopi specialises in projects involving and improving access to water for recreational purposes. The practice is working on new outdoor pools and the restoration of heritage protected complexes across the UK and Ireland. The restoration and extension of Category A Listed Tarlair Outdoor Pool in Scotland and the revival of the Grade II Listed Grange Lido in north-west England are two significant projects driven by the local community. Thames Baths CIC is a social enterprise founded by the practice to deliver a floating lido in the River Thames. The project has been widely published as a pivotal part of London's debate around the use of and access to urban water for recreation.

Nicole Larkin Design (Architectural Consultant)

Nicole Larkin is a Sydney-based practicing architect in the coastal design, urban strategy and strategic planning sectors. The significance and preponderance of ocean pools in NSW is a central focus of her work. Her research to date in this field has been recognised by significant industry, government and professional bodies in Australia. Currently, in collaboration with DPIE and local government, Nicole is developing best design practices for coastal and foreshore design and planning in NSW.

Royal HaskoningDHV (Marine Engineers)

Royal HaskoningDHV is a leading engineering consultancy providing technical design and construction input for maritime, water-based projects. Nick Lewis and Greg Britton provided key input on maritime structural engineering. Nick is a company Director responsible for the Water Team in Australia. As a Chartered Scientist Nick's background is in Coastal, Estuarine and River Environmental Science and Engineering.

Short Pants Consulting (Environmental Consultant)

Short Pants Consulting (SPC) is one of Australia's leading environmental and sustainability consultancies. They bring together clear and robust solutions to complex challenges in environmental planning, impact mitigation, sustainability planning, environmental management and project delivery.

SPC's involvement in this project is to assist in the integration of natural terrestrial and aquatic processes into the design, and the mitigation of impact to existing and future ecology. SPC has extensive experience ensuring environmental and sustainability practices are included in projects, at both a design and construction stage, creating innovative and ecologically diverse infrastructure for the community and infrastructure providers.

Goeldner Consulting (Cost Consultant)

Craig Goeldner established Goeldner Consulting in 2016, a construction consultancy firm providing quantity surveying services to engineering and commercial construction projects around the world. Craig has over 30 years experience in construction activities within various sectors including ports and marine, mining, chemical, oil and gas, civil and infrastructure, commercial and residential.

THAMES BATHS, LONDON, UK
A 50m floating pool alongside an existing jetty in east London. A new pavilion on the jetty provides changing facilities, a cafe and restaurant

Image - Studio Octopi

Studio Octopi
NICOLE LARKIN DESIGN ARCHITECTURE
Royal HaskoningDHV
short pants consulting
goeldnerconsulting construction cost consultants

About this project

Approach to this work

Sydney Water identified four scenarios that are typical of potential swim sites across Greater Sydney. While these scenarios are fictional, the intention is that the barriers and the design solutions suggested will be relevant to a range of real-life opportunities and challenges.

For each scenario the report includes a swim site concept design, engineering considerations and habitat creation opportunities.

These concepts have been inspired by real-life examples across the globe and are intended to help visualise the potential for swimming across a range of locations.

The four concepts

Each concept responds to a specific scenario described in the report, reflecting a range of typical topographical or technical conditions, challenges and opportunities that a swim site manager may need to consider.

Constraints such as flooding, poor water quality, legacy contamination, competition with other users and availability of space both in the water and landside may dictate whether full immersion swimming in a natural waterway is possible, or if a greater intervention approach is required.

The resulting concepts are described in the table opposite.

Concept 1 - Light touch approach to natural swim site

Scenario conditions

- Natural riverside or waterway setting
- Freshwater or estuarine sites
- Changing river height
- Altering river flow
- Chance of debris
- Risk of flooding
- Risk of bank instability
- Restricted access to riverbank

Concept 2 - Offline natural pool

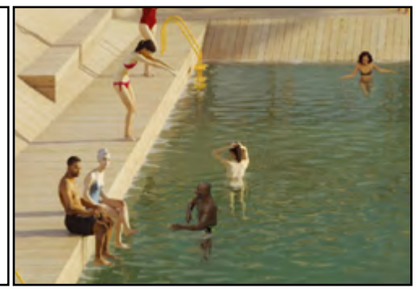
Scenario conditions

- Riverside or foreshore site
- Inaccessible water due to topography or water quality
- Risk of flooding
- Sloping bank
- Maintain foreshore connection

Concept 3 - Tow-in-pool

Scenario conditions

- Harbour or riverside
- Temporary activation, interim or permanent solution
- Water quality is suitable for swimming
- Possible contaminated sediment
- Limited land available on the foreshore
- Suitable in urbanised environment
- Potential conflict between swimmers and marine traffic



Concept 4 - Pop-up pool

Scenario conditions

- Temporary installation
- Opportunity to test proposal for swimming and get community feedback
- Site not currently safe for swimming
- Need to provide public access to water in a rapid timeframe
- Interim solution as approvals are sought or scoping is done for longer term swim site options

Concept 1

Light touch approach to natural swim site

Scenario conditions:
- Natural riverside or waterway setting
- Freshwater or estuarine sites
- Changing river height
- Altering river flow
- Chance of debris
- Risk of flooding
- Risk of bank instability
- Restricted access to riverbank

CONCEPT 1
Existing scenario

Image - Studio Octopi

Precedents

BEKKELAGSBADET, NORWAY
Painted steel ladder provides easy access to a new fjord swimming area

Image - Studio Octopi

BEKKELAGSBADET, NORWAY
Free to access diving platform and staircase

Image - Studio Octopi

SON SPA, NORWAY
A steel staircase enables safe access over the rocky foreshore into the fjord

Image - Studio Octopi

NATURERLEBNISBAD
BINGERBRÜCK, GERMANY
Floating platforms

Image - Polyplan-Kreikenbaum Gruppe GmbH

Design Statement

Due to the environmentally sensitive location, Concept 1 is a light touch solution. Interventions selected do not detract from the natural qualities of sites of this type and what makes them special. The objective being to make a swim site safer with the simplest of additions. The intention of these additions is that anything that is added could also be removed equally as easily in the future.

The design addresses the challenges of flooding as the water level can vary considerably. Debris, fast moving water and a rapidly changing riverbank have all been considered in this design. The propositions for Concept 1 are based around a responsive and good design solution that is resilient, engaging and practical. There are 3 different additions being considered for this concept:

1. The first solution is a sensitively coloured, circular steel structure that provides the following practical facilities to assist a visitor to the swim site where there are no formal change rooms, lockers etc near by:

    - Timber bench
    - Steel wire locker to securely store belongings whilst swimming
    - Phone charger (within the locker, powered by PV)
    - Display or storyboard about the site and what to do in an emergency
    - Canopy providing shade with potential to install PV
    - Emergency beacon

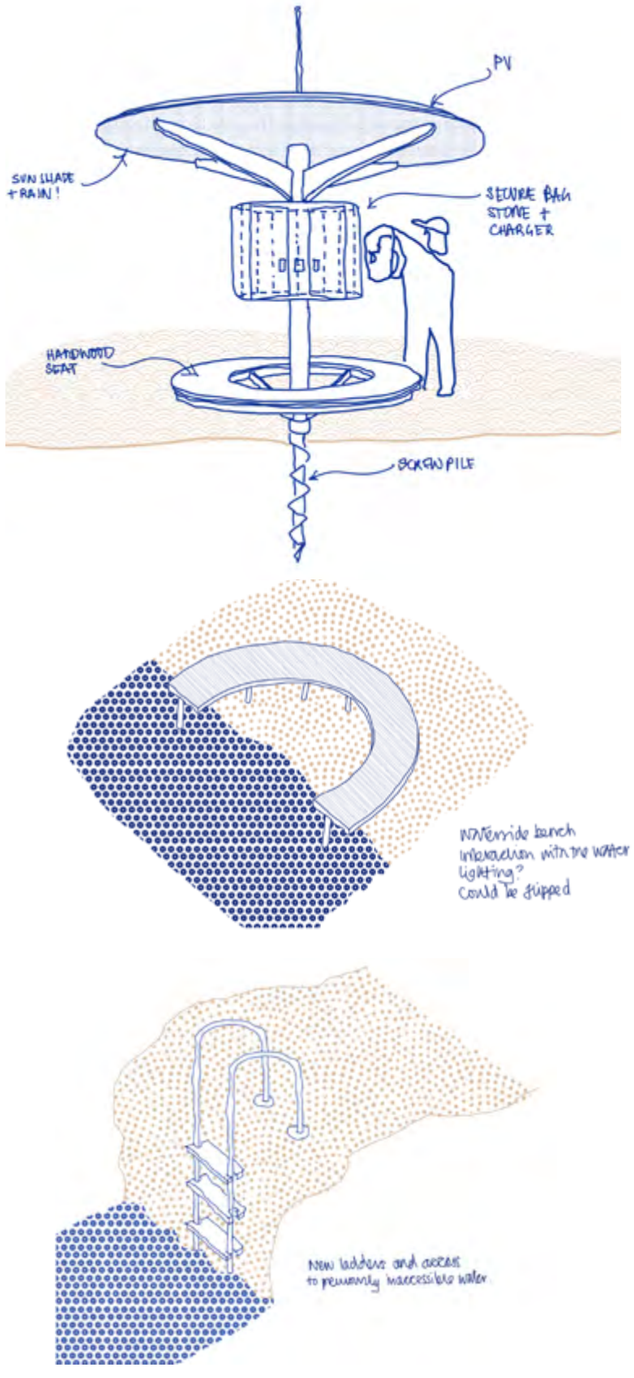
2. Floating timber pontoon located in the river.

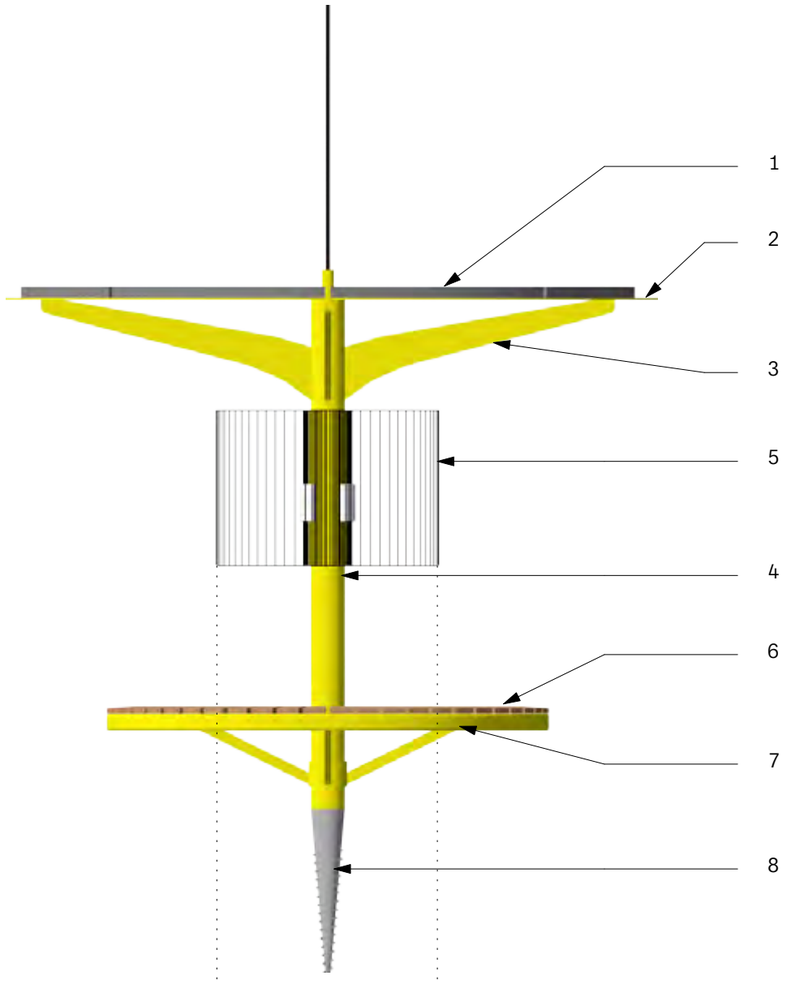
3. Steel ladder off the rocky area of the foreshore that eases entry and exit from all types of terrain.

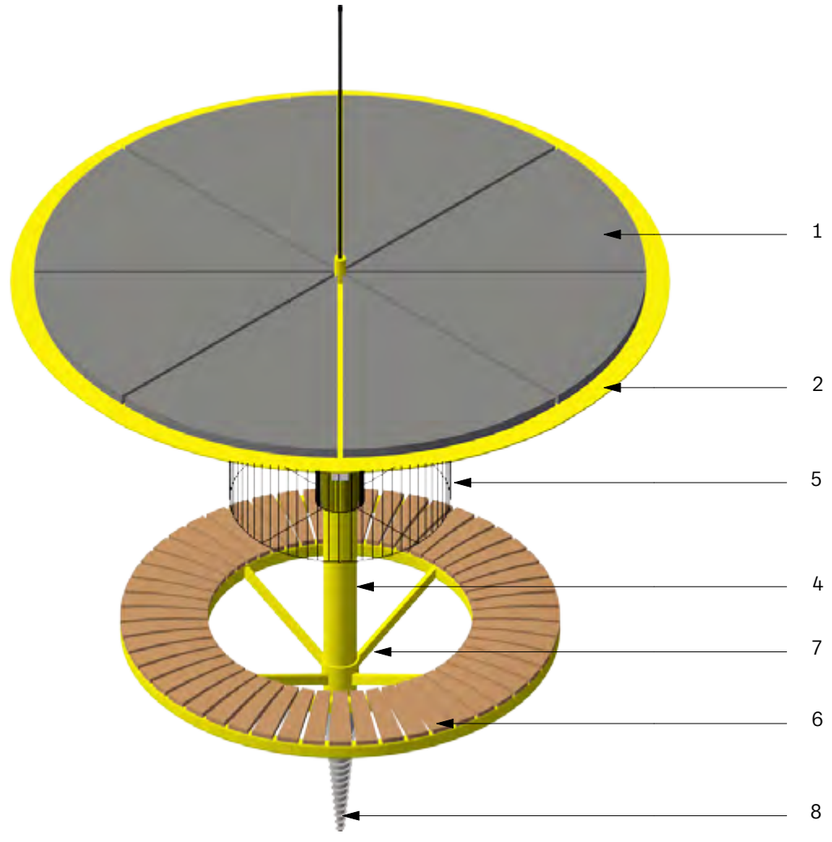
CONCEPT 1
Proposed scenario

Image - Studio Octopi

Design Development







CONCEPT 1
Design development sketches and models exploring light touch infrastructure

All images - Studio Octopi

CONCEPT 1 - KEY

1 PV array
2 10mm circular steel plate shade
3 10mm shaped steel plate welded to central column and shade
4 CHS central column
5 4no. storage lockers with phone charger fabricated from 5mm stainless steel 50x50mm mesh, fixed back to central column
6 Profiled timber seat radial segments
7 RHS frame to seat with steel struts
8 Screw pile with bolt connection to central column

Technical Statements

Structural Statement

Clean, healthy waterways are the ideal spot for natural swimming sites. Prior to these sites becoming official swim sites an analysis of the environmental conditions is required to ensure a full understanding of the ground and water conditions.

These might include:
- Frequent inundation from flood water
- Impact of floating debris, particularly following heavy rain, flood or storm conditions, on additions to the creek or foreshore
- Morphological changes of the creek such as channel realignment, through the scour or removal of material on the foreshore

This concept design incorporates a number of structures, including shelters with storage and seating, floating pontoons and a steel ladder which have been developed in response to the risks typical to this scenario.

Shelters should be fabricated from steel (either galvanised or painted) to withstand typical site challenges and have been designed as a modular kit of parts that can be easily assembled on site. The design of the shelters ensure a minimal impact to the natural setting by using screw piles on their base. Screw piles can be adapted to suit differing ground conditions encountered, i.e. sand, soil or rock. Where rock is encountered, it is likely that prior drilling and grouting will be necessary.

Floating pontoons will need to account for changing flood levels and varied flow velocities. This can be achieved through appropriate anchoring to the riverbed.

Environmental Considerations

Sustainable material selection must consider the full life cycle impacts of the material options. This includes raw materials sourcing, transport, maintenance and/or replacement requirements over the life of the infrastructure, and end of life disposal or reuse options.

By weight, GRP/FRP material typically has 20 times more embodied energy, water and GHG emissions than hardwood, meaning sustainably sourced hardwood can be preferable (source: EPiC LCA database). Lower maintenance requirements and durability in certain conditions may however mean that GRP/FRP materials can be the sustainable choice.

CONCEPT 1
Impact of flooding

Image - Sydney Water

Concept 2

Offline natural pool

Scenario conditions:
- Riverside or foreshore site
- Inaccessible water due to topography or water quality
- Risk of flooding
- Sloping bank
- Maintain foreshore connection

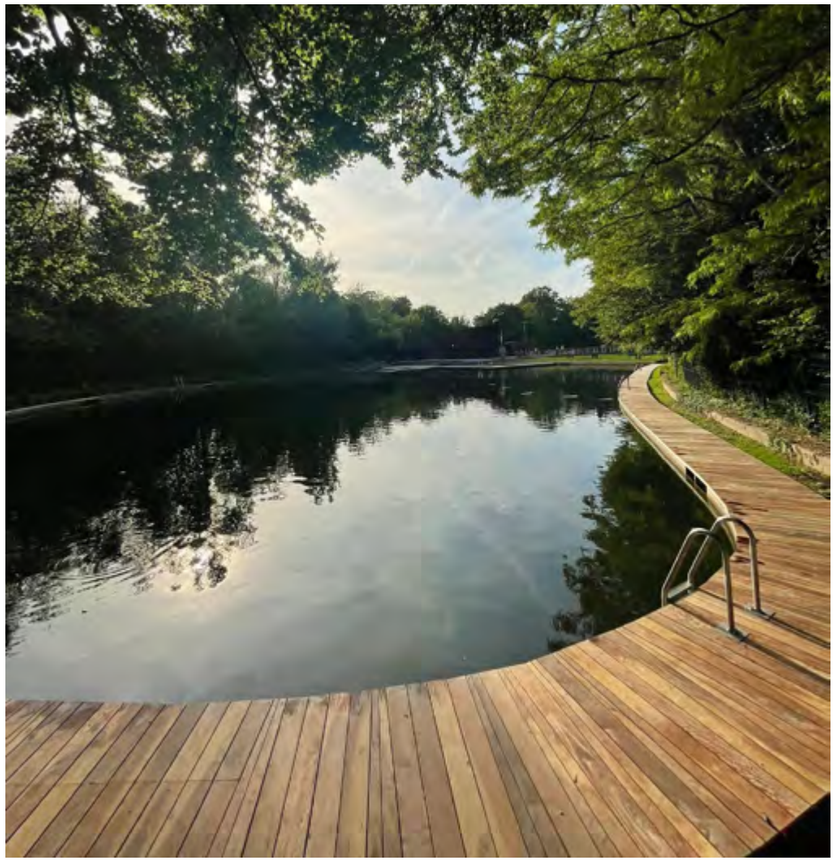
CONCEPT 2
Existing scenario

Image - Studio Octopi

Precedents

MURHENA, GERMANY
Natural swimming pool run by the council

Image - Polyplan Kreikenbaum



BOEKENBERG POND, BELGIUM
Boekenberg is an old swimming pool where chlorine has been replaced by plants to purify the water naturally

Image - swimmersjournal.substack.com

PRINCE ALFRED PARK POOL, AUSTRALIA
Secure but unobtrusive steel perimeter fencing allowing a seamless connection with the landscape

Image - Studio Octopi

NATURBAD RIEHEN, SWITZERLAND
A biologically filtered bathing lake. It can accommodate up to 2,000 bathers per day, and features indoor changing facilities and a waterside cafe

Image - Christoph Junk

Design Statement

The design is based on a naturally filtered pool that is its own ecosystem. The filtration of the pool occurs naturally using a managed reed bed solution. There are various ways to achieve a chemical free pool, some of which may be more appropriate depending on site conditions. A natural pool and its ecosystem provides an opportunity for the facility to also be an educational resource for the community. With a natural pool the 'contaminants' are the swimmers, so numbers need to be managed to ensure the ecosystem can remain healthy and safe.

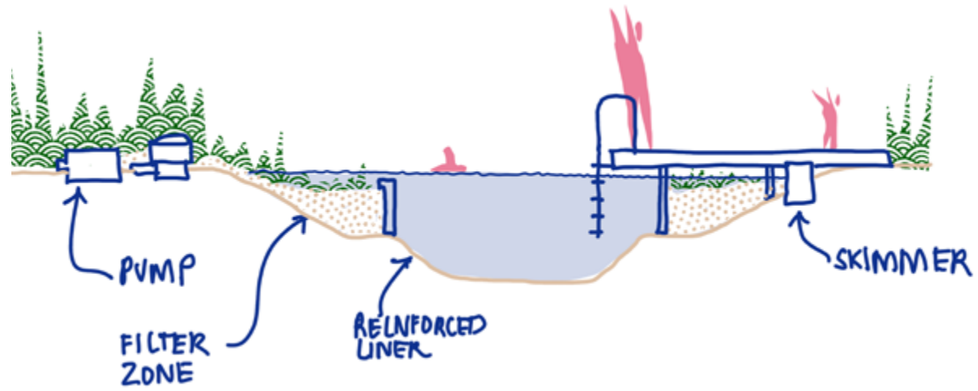
The design includes a 25 x 12m pool (offering occupancy of circa 100 people) and below that an approximately 100m2 splash pool that is 300mm deep. To enable small river craft to dock safely, adaptations could be made to the foreshore as illustrated below the bridge. Access to this area for small craft is under a bridge that ensures the existing or proposed riverwalk is uninterrupted by the pool complex. The bridge or similar viewing area would offer people visibility of the pool and river.

The main pool is enclosed by a fence to the rear boundary. A public pathway follows this rear boundary and overlooks the pools from an elevated position. The fence is an open link steel fence allowing views through or the option to grow plants over it. Crucially the fence is as minimal as possible to ensure minimum impact on the natural setting.

The two natural pools are separated by a gabion cage retaining wall and access to the larger pool is via a pavilion. The retaining wall height is determined by the flood risk of the site and should be above the flood line. The splash pool is open to the public foreshore and riverside walk and under the regulations for pools, does not need to be enclosed due to its shallow depth.

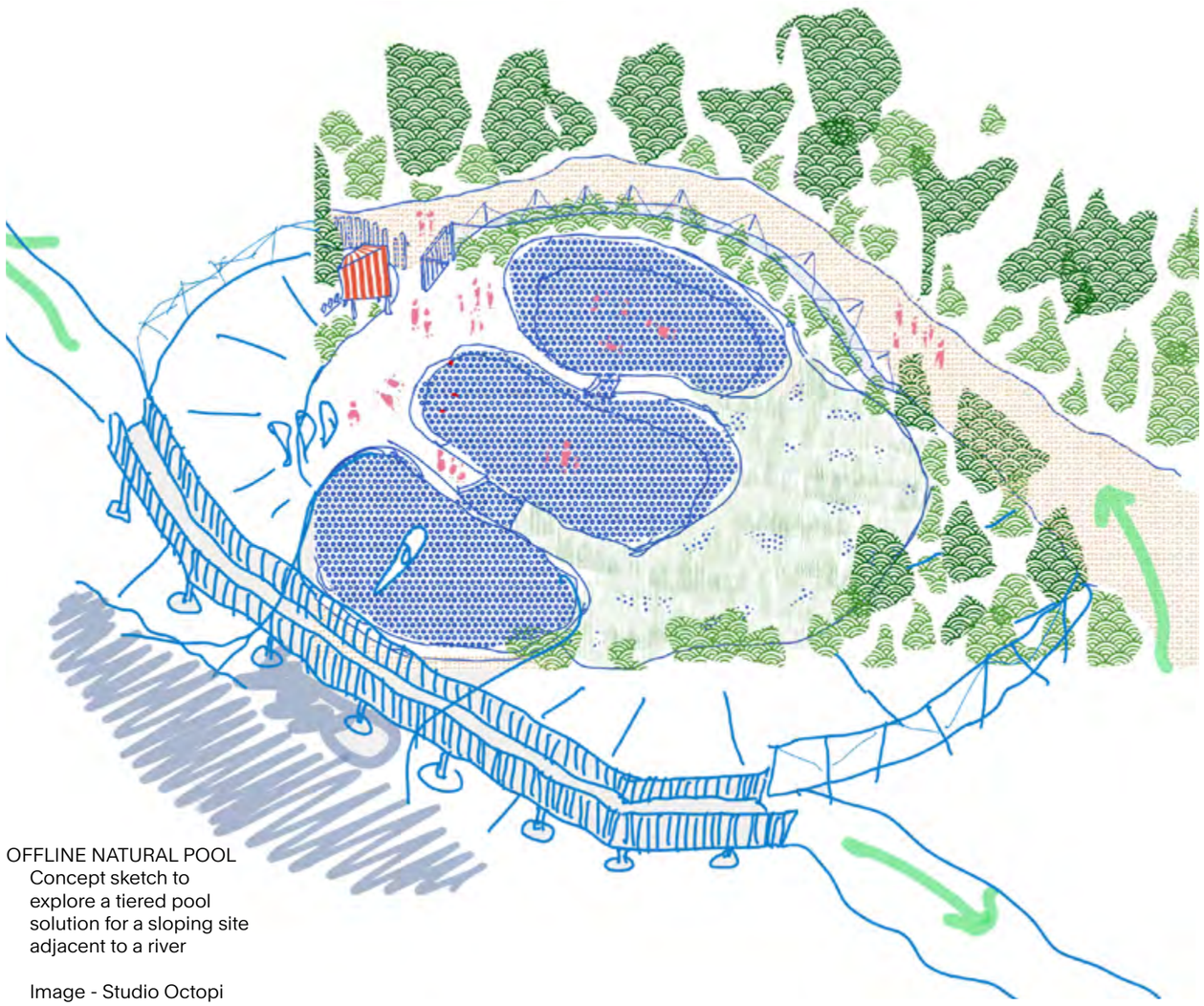
'Of Soil and Water: King's Cross Pond Club' and other public and private natural swimming pools were the inspiration for this concept.

This concept has been designed to include changing room, toilet and shower facilities as supporting infrastructure for the swim site.



OFFLINE NATURAL POOL
Diagram to explain how a naturally filtered pool works

Image - Studio Octopi



OFFLINE NATURAL POOL
Concept sketch to explore a tiered pool solution for a sloping site adjacent to a river

Image - Studio Octopi

Offline natural pool

Technical Statements

Structural Statement

Installation of a swimming pond in a river side location requires a comprehensive analysis of the environment to ensure an understanding of the river and foreshore conditions.

Consideration should be given to the following items:
- Frequent inundation by flood water, including scale of inundation and impacts on the riverbank
- Loads from significant flow velocities
- Flash flooding and the impact on pool structures if there is limited preparation time
- Debris collision from trees or other large floating debris
- Addition of debris to the channel or foreshore following flooding
- Stability of riverbank and susceptibility for erosion

Many creeks within Sydney are capable of large flood stages[1], for example Toongabbie Creek has a typical 100-year flood stage of 6m in most places. Therefore, infrastructure must be designed to manage flooding, and lower portions of the swim site would need to be designed to be fully submerged at times.

This concept design incorporates a number of structures including a flood wall, sheds, a walkway and the pools, which have been designed in response to risks typical to this scenario.

The design incorporates a flood wall, the top of which should be at or above the 100-year flood stage to protect the upper pool from inundation. The splash pool and area below the wall would need to be designed to manage regular inundation.

Sheds should be robust enough to be flooded and withstand the impact of high velocity flood waters and debris and would likely comprise piled foundations.

There are examples of walkways designed and constructed to be submerged by flood water in Sydney, such as the escarpment board walk near Charles St Weir in Parramatta that consists of piles and concrete.

The designs would need to take into account circumstances where, in-channel infrastructure could exacerbate flood impact and even increase water levels[2], as well as present issues around blockage of structures. However, the configuration of the site layout may also present opportunities to reduce flood risk, through the provision of a greater floodplain area or areas of flood storage.

Given the issues this scenario is designed to accommodate, the most suitable material for the pools is concrete. This will be particularly important for the pools closer to the river. Other methods such as liners encapsulated by stacked rock walls would provide a more sustainable option where possible.

Environmental Considerations

The integration of ecological improvement within recreational projects demonstrates capacity to promote and execute sustainable development and subsequently sustainable communities. Effective ecological enhancement along a highly urbanised shoreline, as part of community driven development, has been shown to improve biodiversity, while developing relationships with the community through educational and recreational engagement.

Natural pool systems rely on a balanced ecosystem ensuring an enhancement of habitat and ecological structure as part of the construction and management process.

The regeneration of a degraded waterway shoreline will have a direct positive impact on the waterway through riparian habitat development, reduction in sedimentation and reduction in weed movement through the system.

1 Vertical changes in water level during flooding

2 Increase flood water levels and / or extend due to in-channel infrastructure

CHARLES STREET WEIR, PARRAMATTA
Pathways are designed to withstand flood waters and fencing on top of the weir is designed to collapse under load to minimise upstream flood impacts

Image - RHDHV

NØRREBRO, DENMARK
A network of sunken basins and water-purifying planting to help avert flooding

Image - SLA/Beauty and the Bit

NØRREBRO, DENMARK
The basins and planted areas after heavy rainfall

Image - SLA/Beauty and the Bit

Concept 3

Tow-in-pool

Scenario conditions:
- Harbour or riverside location
- Temporary activation, interim or permanent solution
- Water quality is suitable for swimming
- Possible contaminated sediment or other reason not to disturb the bed of the waterway
- Limited land available on the foreshore
- Suitable in urbanised environment
- Potential conflict between swimmers and marine traffic

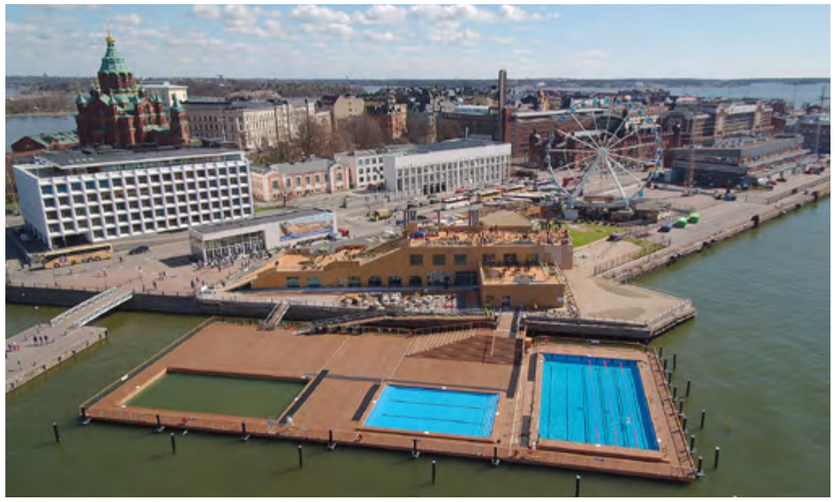
CONCEPT 3
Existing scenario

Image - Studio Octopi

Precedents

VÖK BATHS, ICELAND
Floating geothermal pools on Lake Urriðavatn

Image - Bluet



ALLAS SEA POOL, FINLAND
Allas Sea Pool floats in Helsinki Harbour. Two heated pools are combined with a generous deck and seawater pool

Image - Bluet

SØRENGA SEAWATER POOL, NORWAY
Sørenga Seawater Pool is in Oslo Fjord. It offers multiple ways to access the fjord, sheltered swimming areas and a kayak dock

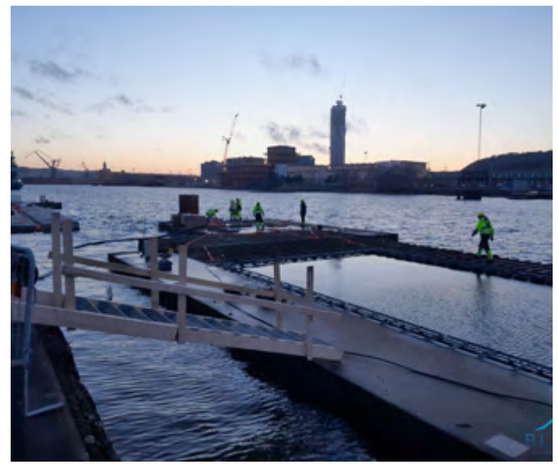
Image - Studio Octopi

ALLAS SEA POOL, FINLAND
The barge pool leaves the shipyard

Image - Bluet

ALLAS SEA POOL, FINLAND
The pontoons are floated into place within Helsinki Harbour

Image - Bluet



ALLAS SEA POOL, FINLAND
The pontoons and barges are bolted together in Helsinki Harbour

Image - Bluet

Design Statement

This pool is towed in and moored to piles driven into the riverbed. The design takes its inspiration from the Floating Lady Pool in NYC, the floating pools in Gothenburg Harbour and Thames Baths. The pool is a 25m river water pool with a ‘colander’ style basin. A ‘colander’ basin is a pool net or cage that is submerged, allowing river water to pass freely between river and pool. There are various designs that let river water into a basin; some have an open slot along the perimeter so the water flows back and forth. These methods protect swimmers from both disappearing under the pontoon and from marine animals entering into the pool.

There is an undulating deck around the perimeter of the pool on three sides providing seats to look at the pool or out across the river. The water level within the pool is the same as the river. There may be a stepped edge to the pool surround to reduce the depth of the deck construction. The infinity edge to the main pool allows views across the water and visually connects swimmers with activity on the waterway.

The circular paddling pool is only 300mm deep and shade is provided by the canopy overhead. Amphitheatre style seating encloses around the paddling pool to ensure it is safe and well monitored.

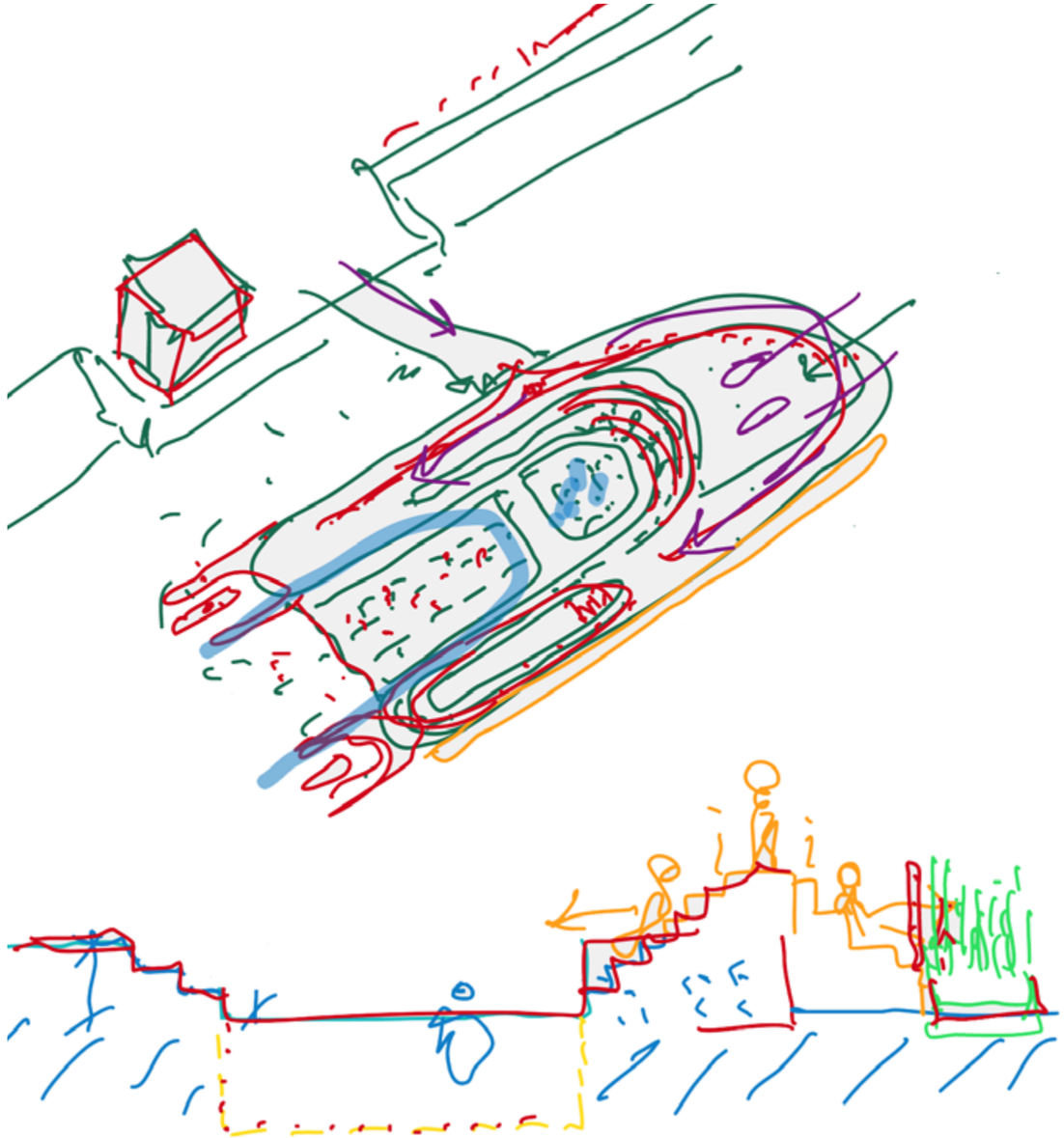
Access from the quayside is via a bridge link that connects with a staircase and ramp down. Level access to the high-level walkway around the brow ensures the tow-in-pool is accessible to everyone, swimmers or not.

Small craft such as kayaks and canoes would be able to dock alongside the pool. Changing rooms including toilets would be provided by landside facilities to avoid additional bulk.

The pool could be smaller or larger than illustrated, and include more or less ancillary infrastructure e.g. café space. The concept illustrated accommodates around 100 swimmers.

In locations where the water quality is not suitable for swimming or there is a desire to provide a heated pool to support swimming all year round, the ‘colander’ style basin could be replaced with a fully enclosed basin with water being filtered and treated. This is often referred to as a closed system. An example of this is Allas Sea Pool in Finland.

Each of these two options will increase the cost and would require the infrastructure to filter and/or heat the water to be sensitively integrated into the design.



TOW IN POOL
Concept sketch to explore the shape and circulation options

Image - Studio Octopi

Tow-in-pool

Technical Statement

Structural Statement

Regardless of whether a floating pool is temporary or permanent, large scale marine works are likely to be necessary if the river is tidal with strong currents. A piled solution is most suited for this scenario. For more sheltered sites, an anchored solution would be preferable.

The following should be considered when assessing a site for a floating pool:

- Tidal range. The pool structure will need to rise and fall with the tide. For example, Port Jackson (Sydney Harbour) has a tidal range of 1.95m[1]
- Wave loading, wind, waves and / or vessel wake
- Debris collision, particularly after a storm
- Proximity to the navigation channel and other moorings

Depending on the river's tide and currents, there are a number of structural solutions to be considered:

- Fixed structure (i.e., a reclamation, or suspended deck)
- Floating structure anchored to riverbed and / or land
- Floating structure on piles (similar to a floating pontoon or ferry wharf). An example of such includes McMahons Point Ferry Wharf

An anchored floating structure would be able to be moved around the harbour to different locations. In areas with a large tidal range or strong currents, anchoring would become more complex.

A pool secured by piles would be suited to a more permanent feature, however there is still the potential for the pool to be moved around the harbour to different locations, with the piles removed each time and potentially reused. Piles could be driven or spun into the riverbed.

Regardless of the fixing method, the floating structure would likely be either steel or heavy-duty plastic. Both materials are regularly used for pontoons and jetties.

Environmental Considerations

The installation of large artificial structures in estuarine and marine environments can modify ecosystems. The extent of modification of waterways in Sydney, resulting in a need for swimming structures to be transported to site, and the temporary nature of such a structure, would mitigate the long term impacts of this proposal.

The installation of a floating swimming structure could also improve habitat value within heavily urbanised waterways. Installing hanging/suspended structures under the swimming enclosure provide valuable habitat substrate for many sessile species, while being an aggregation point for mobile species.

Intertidal habitat and terrestrial landscaping are additional features that can be integrated into the design to develop new habitat zones and re-connect fragmented landscapes, while increasing the aesthetic, social, educational and cultural values of the swimming structure.

MCMAHONS POINT FERRY WHARF, SYDNEY
The piled floating pontoon

Image - RHDHV

1 High Water Solstices Springs to Indian Spring Low Water 1

Concept 4

Pop-up-pool

Scenario conditions:
- Temporary installation to test community appetite for swimming in a particular location
- Site not currently safe for swimming e.g. water quality issues
- Need to provide public access to water in a rapid timeframe
- Interim solution as approvals are sought or scoping is done for longer term swim site options

Unlike the other scenarios explored in this document concept 4 evolved into a live project and the pop-up was designed and built within a few months. Sydney Water worked with Studio Octopi to develop the initial concept for a pop-up swim site based on a single container pool and a series of smaller plunge pools.

A workshop to test the initial design with other key players involved in the design, delivery and operation of the pop up was held early in the process. This included:
- Studio Octopi (development of concept plans)
- Because Creative Experiences (experience/event management)
- Wotbox (production documentation, on ground project design and construction)
- Aquapools (container pools supplier)
- Sydney Water (overall project manager)

It was important to have all teams involved in designing, building and operating the site bringing different expertise and experience to the project and contributing to the final layout, material etc.

A decision was made to use two container pools rather than the smaller plunge pools.

CONCEPT 4
Existing scenario

Image - Sydney Water

Concept 4

Responding to Site Conditions

The site selected for the pop-up installation was the car park adjacent to Andrew Campbell Reserve at Prospect Reservoir parklands, in Western Sydney. The land is owned and managed by Sydney Water. Although the reservoir offers huge potential as a swim site and for other water recreation, swimming is not currently permitted.

The pop-up in this location was designed to initiate a conversation about swimming in local waterways as part of the Urban Plunge program, act as a demonstration project of what is possible in the short term to deliver a swimming outcome, and provide a free place for people to cool off on a hot summer's day.

Pop-up swim sites could be located in a range of locations including town centres, shopping centre car parks, large hard standings within city parks, accessible land adjacent to a potential swim site or areas of land awaiting development.

A pop-up works best where there is already a large footfall either coming to the site for other activities or proximity to a community hub that supports a range of activities.

Other operational considerations that should be considered when selecting a site could include:

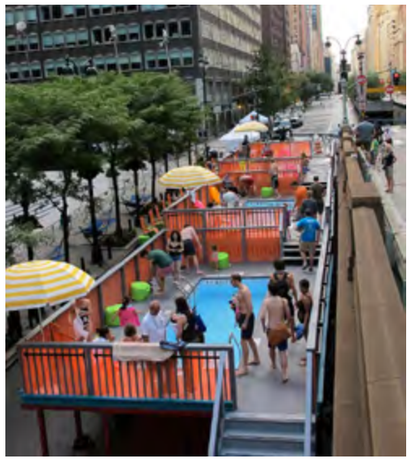
- Access for visitors, including public transport options or parking facilities
- Water and power supply
- Management of wastewater
- Proximity to existing toilets and facilities

CONCEPT 4
Existing scenario

Image - Sydney Water

Precedents

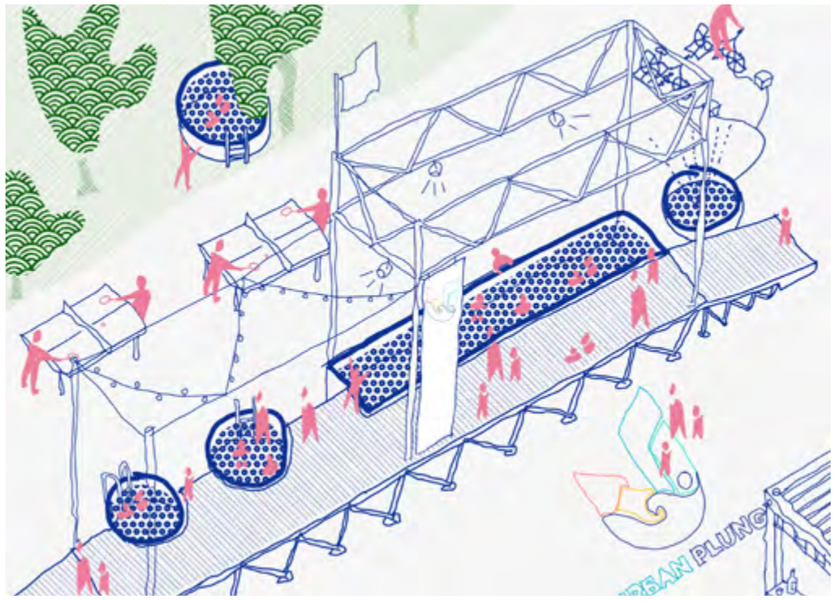
SWIMMOBILE, USA
In 1967, New York City authorities provided open-top containers filled with water from fire hydrants. They were left in place for a day, and then driven away to their next destination



DUMPSTER POOLS, USA
In 2010, three container pools were position along Park Avenue, New York City. 420 swimmers took a dip over three Saturdays in August

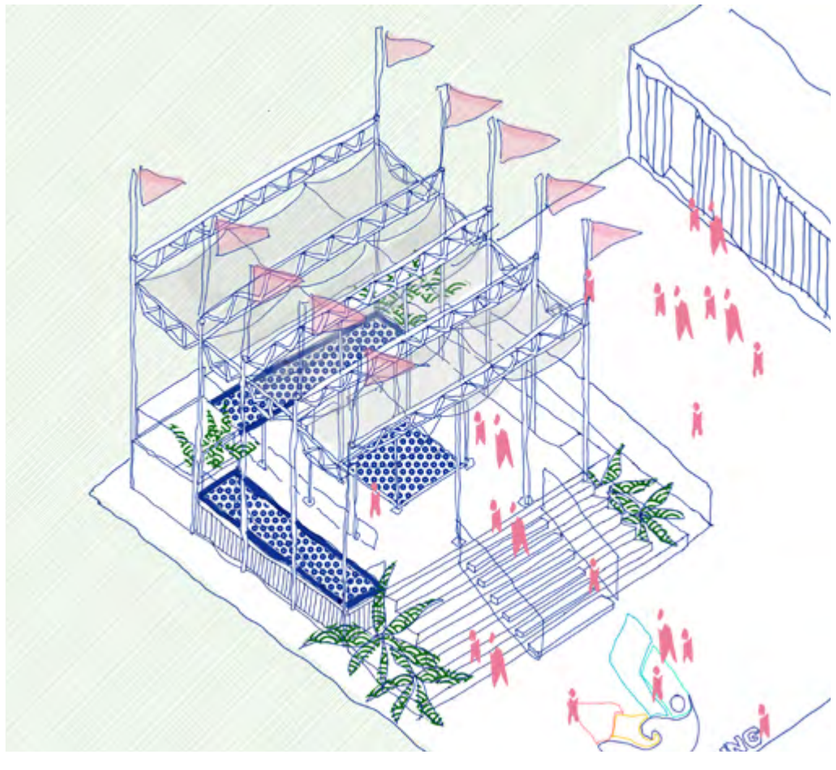
DUMPSTER POOLS, USA
Only 10 people could swim comfortably at a time. Each 8 x 22 ft dumpster pool was surrounded by a wrap-around deck and had its own built-in water filtration system

Design Development



THE LINEAR POP-UP
Sketch design exploring how a variety of pool shapes and sizes could be linked by a walkway

Image - Studio Octopi



THE PIAZZA POP-UP
Designed to accommodate a hard-standing with a change in level

Image - Studio Octopi

Design Statement

Studio Octopi developed two options for the pop-up at Prospect Reservoir parklands. The first was a linear design where the pools were end to end and accessed off an elevated walkway. The second, developed with the wider project team, was a rectangular design, where the pools were at right angles to each other and accessed off a raised platform or piazza. This second option was ultimately constructed.

To manage costs, reduce waste and support circular economy objectives both designs utilised a readily available kit of parts. The kit of parts is scheduled out and can either be hired for the install or purchased and reused annually. In the case of the built pop-up, this included:

- Scaffolding for the frame (hired)
- Painted plywood that could be reused for the decking (purchased)
- Re-purposed shipping containers for the pools (purchased)
- Fencing, ancillary containers, temporary bathroom facilities (hired)
- Ping pong and picnic tables that could be reused elsewhere on site (purchased)

The linear design is best suited for sites that are broadly level, otherwise there will be awkward level changes across the length of the walkway. It can work well in any position across a hard-standing.

This design is inspired by coastal town promenades. Ramping up and down provides ease of access for all and potentially reduces construction costs with the possibility of using more off the shelf scaffolding materials and less bespoke construction.

The promenade provides level access to the container pools and a place to relax, enjoy the view of the pools and surrounds or supervise children. Having the pools end to end increases the perceived size of the swimming area.

Where there is a fall in levels across a site, the rectangular design should be used. The arrangement is more conducive to a corner position on a hard-standing. That way both pools have a view out and a degree of engagement with their surroundings.

Attention should be given to locating the stair on the highest ground to keep it as short as possible. The relationship between the pop-up entrance and the stair is key. The stair should be wide and visible from the point of arrival.

At Prospect Reservoir parklands, the rectangular design was built due to the hard-standing being on a gradient. The containers with supporting activities and functions were placed around the perimeter of the pool, allowing space between the pool structure and the containers.

CONCEPT 4
Aerial view of installed pop-up

Image - Sydney Water

CONCEPT 4
Designed to use off the shelf shade cloths and scaffolding to reduce cost and reduce construction time

CONCEPT 4
Two 40ft container pools
with central shaded piazza

Image - Studio Octopi

On the raised platform there is a bench and deck chairs for seating, all gathered under shade cloths. To ensure easy access to the container pools, a raised platform or piazza is required. The elevated position at Prospect Reservoir parklands enabled views of the reservoir and surrounding landscape, reinforcing the connection of ‘blue’ and ‘green’ spaces.

Adjacent to the pool are three showers constructed from readily available plumbing parts that were inexpensive and reusable.

The stair width was reduced for Prospect Reservoir parklands and the ramp removed to enable a wheelchair lift. The final site design and two pools were fully accessible. The site included:

- Scaffolding for the frame (hired)
- 2no. pool hoists to help swimmers into the water
- Aquatic wheelchair
- Floating sling for use with hoist

In addition, accessible change rooms were provided on site and accessible toilets were available in the surrounding parklands.

CONCEPT 4
Both containers had glass balustrades to provide unobstructed views to the surrounding bushland from the pools and platform

Image - Studio Octopi

CONCEPT 4
Both containers offer branding opportunities

Image - Sydney Water

Technical Statement

Container pools

Two shipping container pools were manufactured off-site and trucked and craned into position. One of the pools was an off the shelf product which is 1.5m deep and the second was adapted to provide a toddler pool which was 0.4m deep. The re-purposed shipping container exterior of the pool was painted to blend in with the bushland surroundings.

Glass balustrades were chosen to provide uninterrupted views to the surrounding bushland.

The pools were chlorinated with ozone treatment added. Pools may need to be periodically topped up, however there is no need to change water in the pools provided pool water quality is managed to appropriate health regulations. At the end of the activation, pool water was removed off-site and disposed of at a treatment facility or discharged to a sewer in accordance with relevant approvals.

Options for installing temporary pools are limited. There are a small number of companies that manufacture pools suitable for a pop-up. A container pool company based in NSW was chosen as they had experience working with NSW regulations. The pools could also be sold after the event if required.

Other pool options considered included smaller corrugated iron tank style plunge pools and inflatable pools. Whilst not selected for this pop-up project, they may be suitable for other installations.

The management of water quality and other aquatic safety considerations are of utmost importance in running a pop-up. At Prospect Reservoir parklands, all aspects of aquatic safety were managed by Royal Lifesaving NSW. Local company Poolwerx were responsible for daily cleaning of the pools and adjusting pool chemicals.

Plywood deck

18mm tongue and groove plywood was used as the decking material for the Prospect Reservoir parklands pop-up. Other off the shelf decking solutions were ruled out for cost or practical reasons as:

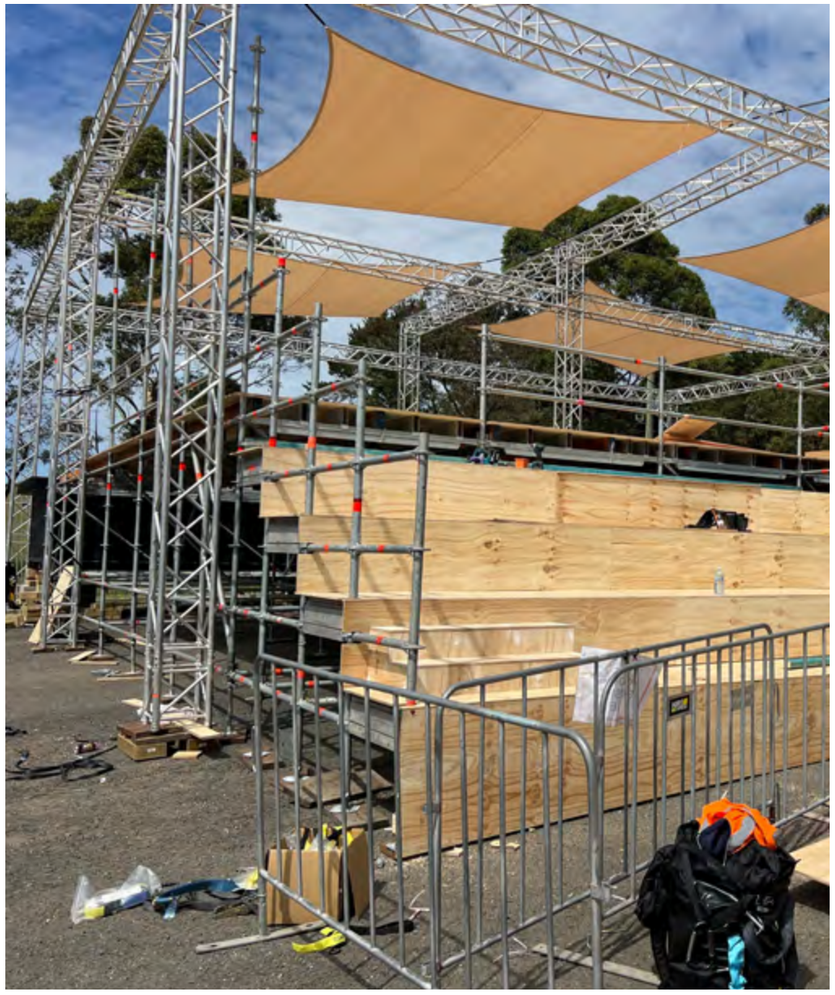
- Most required a substrate of plywood to fix to
- On a number of options the suitability of the material on the steps was questioned
- Real wood decking was considered prohibitive

The plywood used was easily sourced and quick to work with to form the steps and raised platform. The plywood did not need to be protected during the installation as early on it was agreed the finish would be painted. Therefore, there was no wasted protection required. The paint finish was chosen for its natural sandy colour, eco credentials and non-slip finish. This non-slip finish was particularly important given the proximity of water and steps.

Scaffold

From a design perspective, a kit of readily available, cost-effective parts that can be refined down to a minimum quantity, is excellent. There needs to be some care as to the refinement of the quantity of the parts. This needs to be done in conversation with the designer and user, as seemingly small actions can have considerable impact on the visual appearance or usability.

The scaffold worked extremely well in terms of installation. It was fast and easy to build around the container pools. The gradient on the hard-standing meant the structure needed to be levelled. More importantly the visual appearance was greater. Ensuring any slope is integrated into the design is key.



CONCEPT 4
The raised platform was constructed using standard scaffolding materials built around the container pools and then clad in plywood

Image - Sydney Water

Technical Statement

Structural statement

The infrastructure required for this type of project is significant, but the use of quality event teams, who are comfortable with pop up structures, is critical from a safety and quality of execution point of view.

Site considerations for pop-ups include:
- Access for cranes and plant equipment over multiple days or constructions
- Parking facilities for users
- Shade is critical for the pool deck, but also for the surrounding area

Weather does not play a significant part in this type of project outside of attendance.

Use of containers as the core material is a sensible way of repeating a modular process – easily transported, modified to suit and easy to store.

CONCEPT 4
First container and box housing filters and pumps installed on sloping site

Image - Sydney Water

CONCEPT 4
The platform and pools were are all fully accessible

Image - Sydney Water

CONCEPT 4
Second container pool craned into position

Image - Sydney Water

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