5.5 BANKS RESERVE MASTER PLAN - NEXT STAGE OF IMPLEMENTATION

Attachments:
1. **Banks Reserve - Site Map**
2. **Walter's Brook Crossing - Feasibility Study**

RECOMMENDATION:

That Council NOTES:

1. **Toilet Block location for Banks Reserve shown at Attachment 1;**
2. **Banks Reserve Interpretation Node scheduled for implementation in 22/23; and**
3. **Detailed design for Walter's Brook Crossing to commence in 22/23.**

PURPOSE OF REPORT:

To note the next stage of implementation of the Banks Reserve Master Plan.

BACKGROUND:

On 5 March 2019 (Item 12.1) at its Ordinary Meeting, Council adopted the Banks Reserve Master Plan (Master Plan). The Master Plan was developed in 2018 and 2019 through a comprehensive planning and community consultation process, which attracted a broad range of views and perspectives from the public.

The Master Plan outlines a high-level vision for the future development of Banks Reserve and identifies the key components required to achieve this vision. Each key component is to be developed through a detailed design process.

Implementation of the Master Plan is strategic project #6 in the City's Corporate Business Plan 2022/23 – 2025/26.

In planning for the next stage of the Master Plan implementation, Administration completed an updated site and feature survey of Banks Reserve to provide a baseline for the detailed design phase.

DETAILS:

Toilet Block

Walter's Brook has significance as both an Aboriginal Heritage Site and as a natural freshwater asset. These would both be negatively impacted if the toilet block was located adjacent to this asset. Therefore, it is advisable to locate the toilet block away from Walter's Brook to mitigate the risk of water contamination or other potential impacts.

A location for the toilet block has been identified that is in-keeping with the Master Plan's vision, is supported by findings from the Aboriginal Heritage survey and other preliminary site investigations and allows for the continued implementation of the Master Plan.

The location of the toilet block is shown at **Attachment 1**. This can be delivered within budget and achieves the following:

- Located approximately 20 metres from Walter's Brook (to better protect the Heritage / freshwater asset).
- Avoids the ATCO high-pressure gas pipeline easement (a restricted construction activity zone).
- Improved access and safety due to the proximity to the car park and separation from the bike path.
- Existing adjacent tree screens the facility for residents overlooking the reserve (from 102 Joel Terrace).
- Removing the existing toilet opens up the view to Walter's Brook and the view to the Swan River from the grassed area, providing new opportunities for interpretation and interaction by the public. This view to the Swan River was identified as a key consideration at a meeting with the City's Elders Group.

Interpretation Node

The City considers Banks Reserve to be a key place of reconciliation, the Master Plan outlines the importance of supporting this function. The Boardwalk element was planned to tie-in with DBCA's 'River Journeys' project, incorporating interpretative artworks and cultural narrative elements, or 'interpretation nodes' that speak to the site's significance to Aboriginal history and culture, as well as the non-Aboriginal history and unique ecology of the area.

DBCA have recently paid $150,000 to the City to construct an interpretation node at Banks Reserve and have pledged an additional $50,000 of 'in-kind' services to assist in the planning and implementation of the interpretation node. To utilise DBCA's contribution, the City are required to contribute $100,000 to the construction of the interpretation node. DBCA's funding is secured until 30 June 2024.

DBCA in collaboration with the City, have drafted preliminary interpretation content that outlines the themes and narratives to be developed for inclusion in the interpretation node. The project reference group will work collaboratively to ensure that the highest quality and most relevant stories and information are developed for this project. Throughout the development process, DBCA will continue to engage with Aboriginal consultants and qualified spokespersons in the fields of river science and local history to confirm the appropriateness and accuracy of all stories.

Detailed design of the structure itself will commence following confirmation of the budget allocation. A major part of DBCA's 'in-kind' contribution relates to this phase, with DBCA assigning a team of dedicated officers who will assist the City's Landscape Architect in designing the interpretation node. Preliminary site investigations with DBCA have identified a suitable location for the interpretation node, which is shown at **Attachment 1**.

This partnership and contribution from DBCA provides the City an opportunity to implement a key component of the Master Plan.

Walter's Brook Crossing

Walter's Brook is classified as an Aboriginal Heritage Site (Swan River – Site 3536). In discussing the proposed crossing/bridge, Administration was advised by DPLH to apply for ministerial consent under Section 18 of the *Aboriginal Heritage Act*.

Administration facilitated an Aboriginal Heritage survey of the area to support a Section 18 application to allow Walter's Brook Crossing to proceed. Administration engaged a consultant to coordinate the Section 18 consultation and prepare an application to DPLH. The consultation was held at Banks Reserve and was attended by seven Aboriginal consultants. The session focused on Walter's Brook and its significance in Aboriginal history and culture.

In assessing the Section 18 application, DPLH advised that the proposed bridge element is permissible, and the City requires consent for construction under Regulation 10 of the *Aboriginal Heritage Act*; it is understood that some tree branches will need to be cut to allow for the bridge installation. Administration can apply for Regulation 10 consent once the detailed design is complete and the required tree works have been confirmed.

An engineer was then engaged to prepare a construction feasibility report of the bridge. A copy of the feasibility study report is shown at **Attachment 2**. The report found the proposed bridge to be feasible, noting a minor revision to its span and alignment. It was also recommended that further investigation is undertaken to better understand the trees, geotechnical profile, and flood levels of the proposed project area.

The next steps for Walter's Brook Crossing is to commence with detailed design of the bridge and engage suitable consultants to provide the required design inputs, as described above.

It is estimated the proposed bridge will cost approximately $300,000 to construct.

Development Control Policy 5.3

Banks Reserve is zoned for 'Parks and Recreation' under the Metropolitan Region Scheme (MRS). Development Control Policy 5.3 provides guidance on development which may be permitted on land reserved for Parks and Recreation under the MRS and outlined the following Policy Measure:

The use and development of land reserved for Parks and Recreation under the MRS or Regional Open Space under the GBRS or PRS shall be restricted to that which is consistent with furthering the enhancement of the reserve and facilitating its use for recreational or conservation purposes.

Under Clause 29 of the MRS, a Form 1 application for approval to commence development should be submitted to the West Australian Planning Commission (WAPC) for determination. This process will be followed for all development at Banks Reserve.

Development Control Area

Any proposed development at Banks Reserve will be subject to an application for development within the 'Swan Canning Development Control Area' which is administered by DBCA.

CONSULTATION/ADVERTISING:

In developing the content and artwork for the interpretation node, the City and DBCA will continue to consult with the Aboriginal consultants, Elders Group, and Reconciliation Action Plan Working Group members to ensure the accuracy and appropriateness of all stories prior to finalisation.

LEGAL/POLICY:

Nil.

RISK MANAGEMENT IMPLICATIONS

Low: It is low risk for Council to note the next stage of implementation of the Banks Reserve Master Plan.

STRATEGIC IMPLICATIONS:

This is in keeping with the City's *Strategic Community Plan 2018-2028*:

Enhanced Environment

Our parks and reserves are maintained, enhanced and well utilised.
Our urban forest/canopy is maintained and increased.
We have minimised our impact on the environment.

Accessible City

Our pedestrian and cyclist networks are well designed, connected, accessible and encourage increased use.

Connected Community

We recognise, engage and partner with the Whadjuk Noongar people and culture.
We are an inclusive, accessible and equitable City for all.
An arts culture flourishes and is celebrated in the City of Vincent.
Our community facilities and spaces are well known and well used.

Thriving Places

Our physical assets are efficiently and effectively managed and maintained.

Innovative and Accountable

Our resources and assets are planned and managed in an efficient and sustainable manner.

SUSTAINABILITY IMPLICATIONS:

This is in keeping with the following key sustainability outcomes of the *City's Sustainable Environment Strategy 2019-2024.*

Water Use Reduction/Water Quality Improvement
Urban Greening and Biodiversity

PUBLIC HEALTH IMPLICATIONS:

This is in keeping with the following priority health outcomes of the City's *Public Health Plan 2020-2025*:
Reduced exposure to environmental health risks

FINANCIAL/BUDGET IMPLICATIONS:

Prior to the first quarter budget review, the City's Four Year Capital Works Program for 2022/2023 included an allocation of $200,000 for the Banks Reserve Master Plan.

As per the first quarter budget review, the following amendments have been made:

- $200,000 of Local Roads and Community Infrastructure Program (LRCI) funding has been allocated to the Banks Reserve Master Plan.
- The municipal contribution to the Master Plan implementation for 2022/2023 has been reduced by $100,000 due to the allocation of the LRCI funding.

The commencement of detailed design for Walter's Brook Crossing does not prompt any financial/budget implications.


JOEL TERRACE
CAR PARK RENEWAL (PLANNED FY 24/25)
EXISTING TREE TO BE RETAINED
NATIVE PLANTING
TOILET BLOCK
NATIVE PLANTING
EXISTING PICNIC SHELTER
WALTER'S BROOK (SWAN RIVER) ABORIGINAL HERITAGE SITE 3536
TOILET TO BE REMOVED
INTERPRETATION NODE (LOCATION AND SIZE IS INDICATIVE)
CITY OF VINCENT
COPYRIGHT
NOTES
REVISION
No. DESCRIPTION DRAWN DATE
A ISSUE FOR REVIEW MM 05.10.22
BANKS RESERVE MASTER PLAN
IMPLEMENTATION STAGE 2
JOEL TERRACE, MOUNT LAWLEY
STATUS FOR REVIEW
REVISION A
DRAWING TITLE IMPLEMENTATION PLAN
DWG NUMBER L000
SCALE 1:200 @ A1 1:400 @ A3
N

4th July 2022

OCHREWEST
CONSULTING ENGINEERS

City of Vincent
Landscape Architect

Attention: Max Marshall

BANKS RESERVE PROPOSED FOOTBRIDGE FEASIBILITY STUDY

Dear Sir:

The City of Vincent are proposing to install a prefabricated steel-truss bridge across Walter's Brook, Banks Reserve, East Perth. The proposed bridge will provide connection from existing pathway, BBQ, and associated facilities south of Water's Brook to the north existing pathway. The bridge will span Aboriginal Heritage Site 3536 as detailed on drawing L001 attached as Appendix A.

The City has commissioned Ochre West Consulting Engineers (OWCE) to carry out a site inspection and feasibility report on the proposed bridge and provide advice around the recommended construction methodology/product.

We are pleased to provide the following report in response to the City of Vincent's recent request.

SITE INSPECTION

Site inspection was undertaken 18 June 2022.

The City's initial location for the bridge is shown in Appendix A.

The bridge location crosses the waterway at a location with vegetated banks. The proposed south bridge path entry is positioned between 2 large trees on the top bank edge at an approx. natural surface level of 1.85. The north bridge entry dissects vegetation, bush, and low trees at approximate natural surface level 1.70 at the top of the waterway bank.

Photo plates 1 to 6 are shown detailing location

Civil & Resource Infrastructure, Accommodation Villages
Ochre West Pty Ltd

T 9246 9094

E admin@ochrewest.com.au

22 Partlet Road DUNCRAIG, WA
P.O. Box 735 Balcatta 6914

ABN 82 159 197 609

Plate 1 South Bridge Location	Approximate bridge location is shown- note proximity to left tree
Plate 2 South of Walter's Brook view east	Start of bridge shown inside fence line
Plate 3 Walter's Brook	Walter's Brook - note stormwater pipe outlet
Plate 4 South Walter's Brook view to southeast	View from within fence showing bridge start line
Plate 5 North Walter's Brook bridge location	Approximate location of north bridge edge
Plate 6 North Walter's Brook view southeast	Existing vegetation along north bank and bridge edge

Plate 1 South Bridge Location

Plate 2 South of \ Walter's Brook view east

Plate 3 Walter's Brook

Plate 4 South \\ Walter's Brook view to south east

Plate 5 North Walter's Brook bridge location

Plate 6 North Walter's Brook view south east

The initial location appears reasonable although consideration to the proximity to the existing trees on the south side and in particular left tree will need to be undertaken by the foundation engineer and the City.

We have assumed City has considered the potential impact of foundation construction on the existing trees and the tree root system and stability.

BRIDGE OPTIONS

The City of Vincent are considering adopting the 'Murray' steel truss pedestrian bridge by Landmark, a product OWCE is familiar with.

Alternatives to the Landmark products for small span prefabricated steel truss bridges are limited in Western Australia- mainly due to limited demand within Western Australia with other suppliers located in the eastern states fabricating in their workshop then transporting to Western Australia. Other typical prefabrication companies include:

- ENCAT Australia located in NSW; and
- GR Design Construct located in Victoria.

Capital House Australasia offer an alternative and are based in Western Australia and will provide a flat pack product that will need assembly and installation including foundations by the purchaser.

A further alternative is Fibre Reinforced Polymer products which are becoming increasingly popular such as provided by Sustainable Infrastructure Systems based in NSW and by Capital House Australasia, again both products are supplied in kit form and will need assembly.

GR Design and Construct have completed bridge projects within Perth and could be considered as an option to the Landmark product. We are unsure if the Banks reserve project would be of sufficient size for GR Design and Construct to consider if asked to be competitive with Landmark.

BRIDGE LOCATION

OWCE have reviewed the survey details provided and considered the current location for the pedestrian bridge.

While the initial location nominated by the City is acceptable subject to further investigation, OWCE is proposing some minor adjustment to the bridge location to improve constructability as follows and as shown in Figure 1:

- Extend the south bridge entry by 1.0m and move approximately 1.0m to the east;
- Move the north bridge entry approximately 1.5m to the west.

The minor adjustments to the bridge location will move the south bridge entry 0.7m further away from the existing tree and will allow the foundations to be installed on flat ground further away from the top of bank. Moving the north bridge entry slightly to the west aligns the bridge closer to perpendicular to the waterway, moves the north bridge foundation further from the north top bank edge and further away from the existing drainage pipe discharging to the Waterway.

We highlight the OWCE location increases the bridge span from 20 to 21 metres and will require the relocation of the existing bin enclosure.

Figure 1 OWCE Proposed Bridge Location

CONSTRUCTABILITY

Steel truss bridges like the Landmark product are relatively light weight. The single span structure is supported either end tied to concrete foundation.

Typical elevation sketch for a steel truss bridge is shown in Figure 2 and Plate 7 shows a similar Landmark product recently installed in the City of Gosnells.

Plate 8 shows a typical abutment with bridge clear of natural ground and mortar stone pitching prevent wash out from under the concrete path connection from sheet flow.

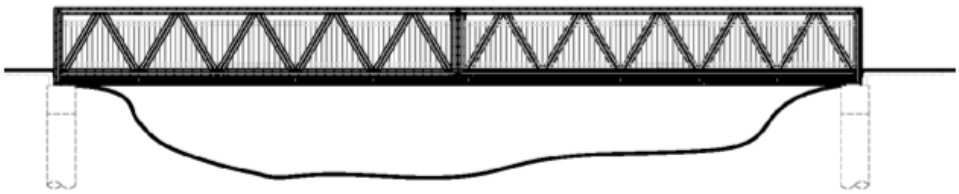


Figure 2 Typical Bridge Elevation

Plate Steel Truss bridge – City of Gosnells

Plate 8 Path erosion protection

Constructability of the bridge is contingent on various factors at Bank Reserve the key factors are:

- Proximity of existing trees;
- Walter's Brook Flood level;
- Erosion protection; and
- Foundations

Proximity of existing trees

The south bridge entry is located between 2 existing trees, with approximately 3.0m clearance to the west and 5.0m clearance to the tree to the east. The construction of bridge abutments is likely to impact on the existing tree root system. The proposed OWCE alignment will increase the clearance to the west tree marginally. OWCE has not considered the impact of bridge construction on the existing tree root network or long term stability, it is assumed the City will investigate or asses the likely impact of works on the vegetation on the area.

Further consideration should also be given to the type of tree root system that exists and possible long term impact on bridge foundations such root ingress to piles occur. This information will need to be considered by the bridge foundation engineer and the City and additional root protection for the foundation included, if deemed necessary.

Water's Brook Flood level

Consideration needs to be given to the water level in Walter's Brook during rainfall events. The bridge should allow passage of a designated flood event below the bridge with sufficient clearance to allow obstacles transported by the flow to safely pass under.

If the water level in Walter's Brook exceeds the bridge platform level, the bridge will become an obstacle to flow and will collect debris and rubbish from flood water on rails, if the City anticipates regular flooding will occur to the bridge, then the bridge foundation designer will need to consider the impact of flooding.

The City should investigate and determine the waterway level for various flood events, we suggest the 20% (1 in 5 year) 10% (1 in 10 year), 5% (1 in 20 year) and 1% (1 in 100 year) Annual Exceedance Probability (AEP) events – the AEP % indicates the likely chance of this event occurring in any single year.

The City may reason it impractical to design for the 1% AEP, but the City will need to determine an acceptable level of risk and ensure the bridge platform is above this level with clearance below the bridge for debris to pass.

The City will then need to accept that any rainfall event exceeding the acceptable risk level will become an obstacle and bridge could be subject to damage.

Erosion protection

Depending on flood levels determined above consideration also needs to be given to the stabilisation of existing banks.

The initial location for the bridge proposed by the City shows foundation construction at the edge of the top bank, particularly at the south bridge entry. OWCE proposes extending the bridge by 1.0m and moving the south entry further away from the top of bank.

It is suggested mortar rock protection like that shown in Plate 8 should also be placed for 1.0m width surrounding the bridge foundation to protect the concrete abutment pad.

Sheet rainfall flow from the surrounding natural ground also needs to be considered. The path connection between the bridge and concrete path is likely to be above ground level and will concentrate runoff at the foundation, it is important that erosion protection as shown in Plate 8 is provided to protect against wash out from under the concrete pathway.

Foundations

A geotechnical investigation and study should be undertaken at the final bridge location to provide the foundation design engineer with required information and advice on the stability of the existing Walter's Brook banks following bridge construction.

Depending on the findings of the Geotechnical investigation and flood level assessment additional mortar stone pitching maybe required to waterway banks for stabilisation.

The bridge is considered a relatively light weight structure and likely will require screw pier foundations or pile footings, typical examples are attached in Appendix B. It is important the bridge foundation chosen is cognisant of the surrounding bank conditions and is protected during flood events.

The bridge will be tied and connected to concrete pad abutments fixed to piles as designed for purpose

RECOMMENDATION

The proposed bridge location is deemed suitable subject to further geotechnical and flood level consideration. We note that the City's initial location shows a 20m bridge span and the OWCE alternative proposes a 21 metre span.

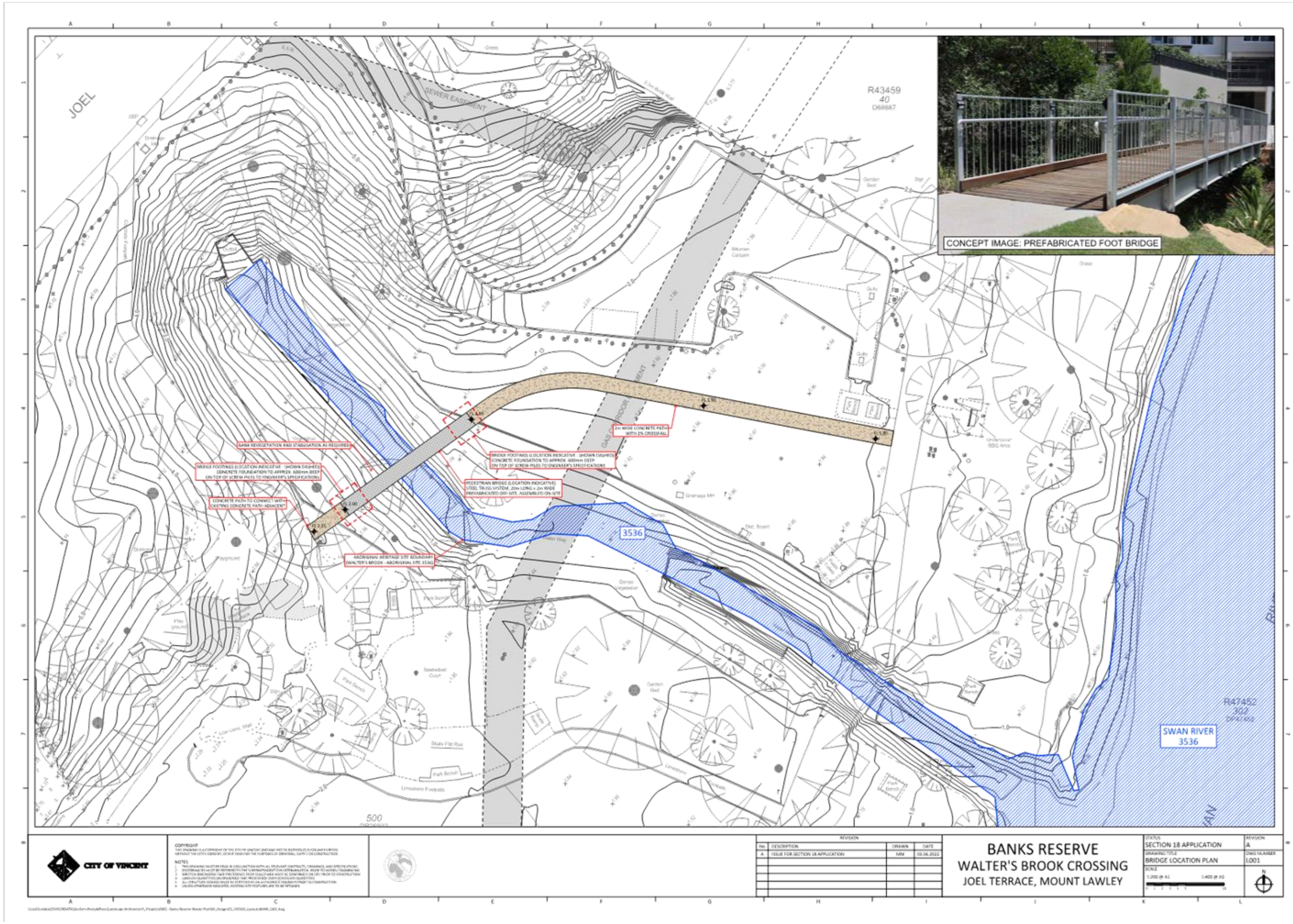
It is recommended the OWCE alternative location be accepted as a minimum.

Subject to the geotechnical site investigation should stability of the banks be an issue the option of increasing the bridge span further to allow greater clearance between bridge abutments and the waterway banks.

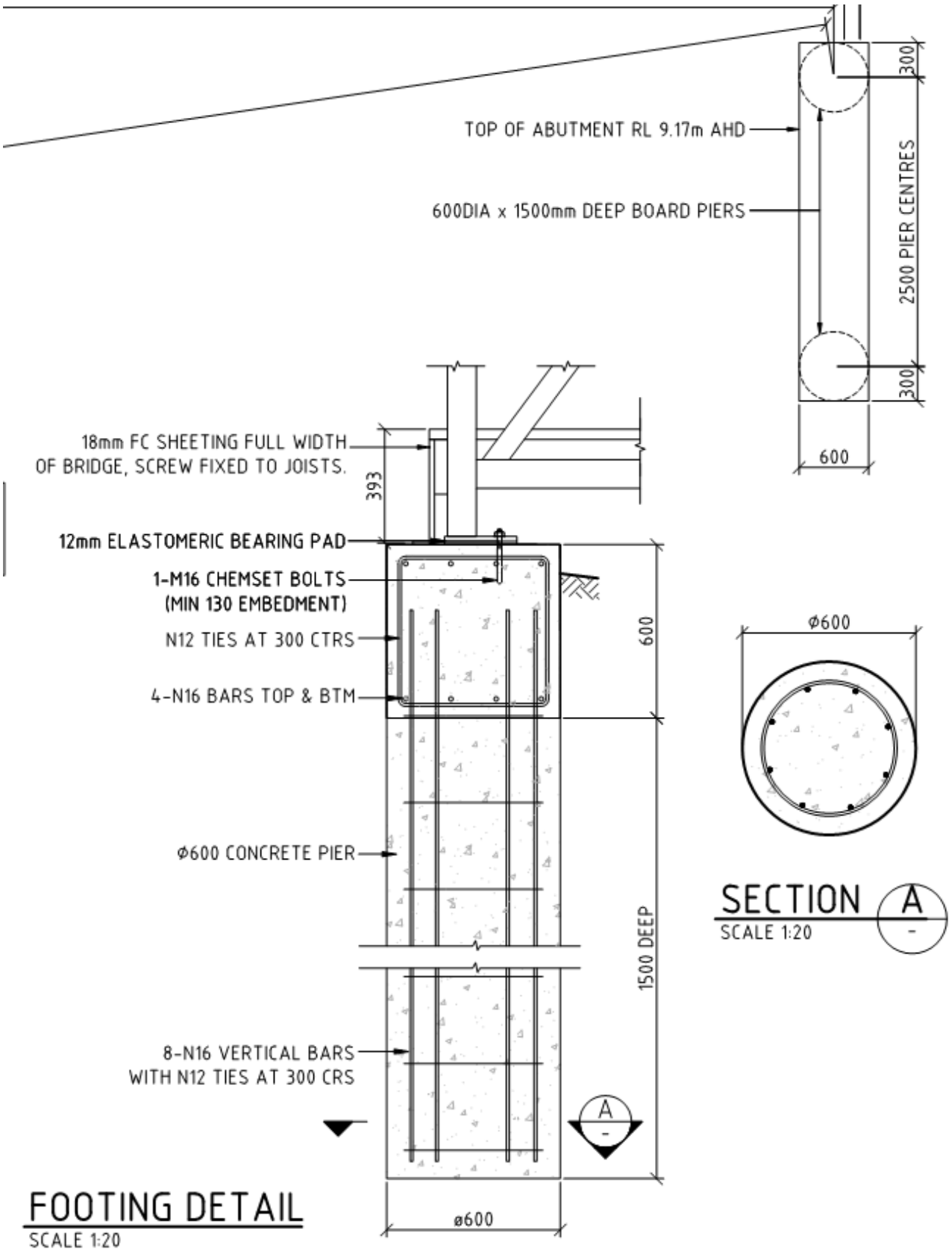
Yours faithfully

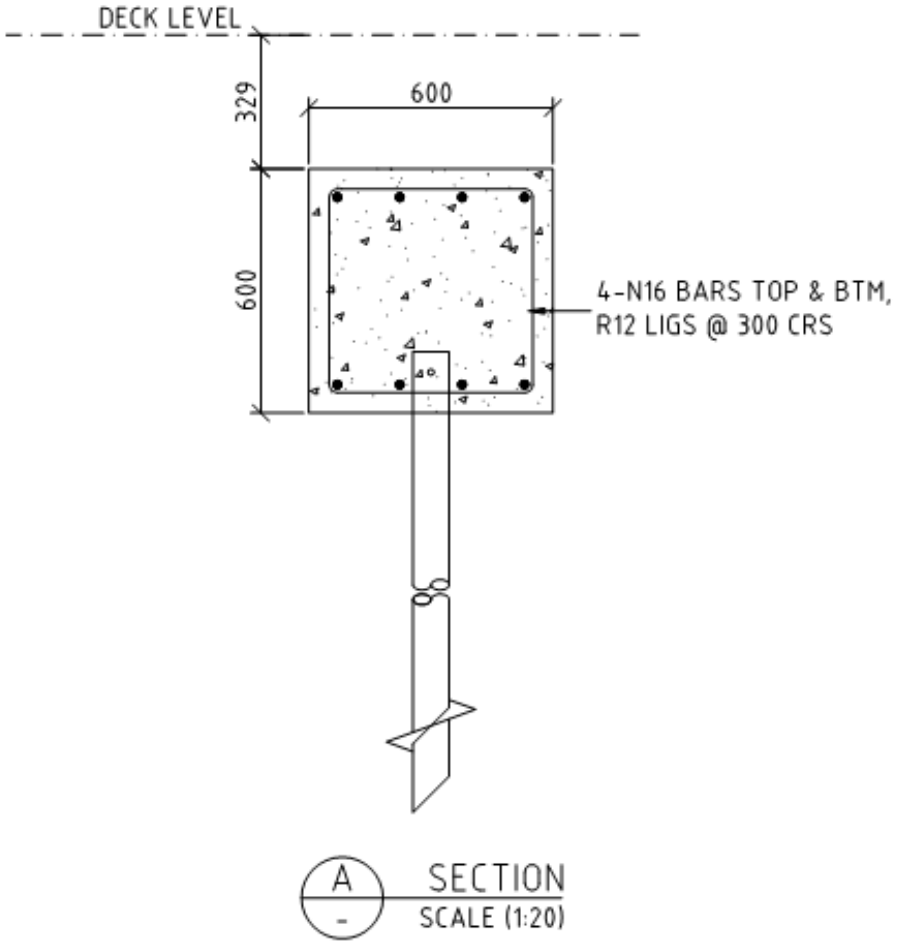
COLIN FINGHER
DIRECTOR

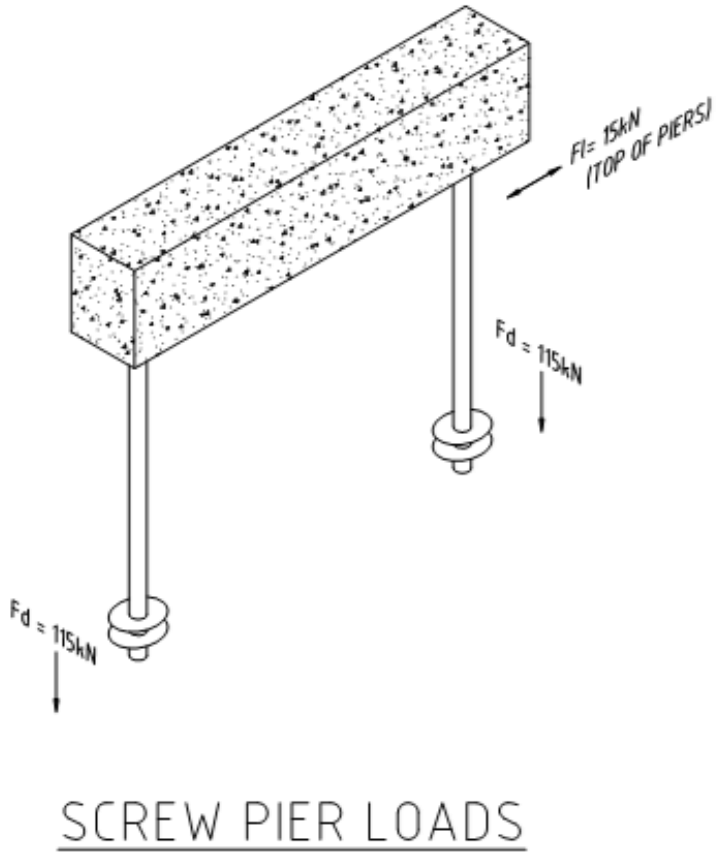
APPENDIX A BANKS BRIDGE LOCATION L0007


JOEL
SEWER EASEMENT
R43459
40
D6R687
CONCEPT IMAGE: PREFABRICATED FOOT BRIDGE
GAS PIPELINE EASEMENT
3536
SWAN RIVER
3536
R47452
302
DP47458
BANKS RESERVE
WALTER'S BROOK CROSSING
JOEL TERRACE, MOUNT LAWLEY
CITY OF VINCENT
SECTION 18 APPLICATION
BRIDGE LOCATION PLAN
L001

APPENDIX B TYPICAL PILE FOUNDATIONS


TOP OF ABUTMENT RL 9.17m AHD
600DIA x 1500mm DEEP BOARD PIERS
300
2500 PIER CENTRES
300
600
18mm FC SHEETING FULL WIDTH OF BRIDGE, SCREW FIXED TO JOISTS.
393
12mm ELASTOMERIC BEARING PAD
1-M16 CHEMSET BOLTS (MIN 130 EMBEDMENT)
N12 TIES AT 300 CTRS
4-N16 BARS TOP & BTM
600
Φ600 CONCRETE PIER
1500 DEEP
8-N16 VERTICAL BARS WITH N12 TIES AT 300 CRS
A
-
ø600
FOOTING DETAIL
SCALE 1:20
Φ600
SECTION A
SCALE 1:20


DECK LEVEL
329
600
600
4-N16 BARS TOP & BTM,
R12 LIGS @ 300 CRS
A
-
SECTION
SCALE (1:20)


Fl= 15kN
(TOP OF PIERS)
Fd = 115kN
Fd = 115kN
SCREW PIER LOADS