

Heritage Impact Statement

Causeway Link Alliance

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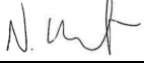
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REV.	DATE	SECTION	DESCRIPTION
A	16/09/22	Heritage	Heritage Impact Statement to support Development Application submission.

	NAME	TITLE	SIGNATURE	DATE
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Causeway Pedestrian and Cycle Bridge

Heritage Impact Statement

Causeway Bridge Alliance

September 2022 | 21-403



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the art and science of place

WARNING

Aboriginal and Torres Strait Islander readers are advised that this document may contain the names and images of people that have passed away. In some communities this may cause sadness, distress or offence.

NOTES

The word Nyoongar is the generic term used today to define people of Aboriginal descent who occupy the south-western corner of Western Australia. The Nyoongar nation is made up of fourteen different language groups for which the Perth region is Whadjuk.

Variations in spelling occur. For this report we use the City of Perth's preferred spelling for terms and place names (e.g. Whadjuk, Nyoongar, Boorloo), except when referencing an external agency, organisation or source that uses alternative spelling.

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Acknowledgement of Country

We acknowledge the Whadjuk people of the Nyoongar nation as the Traditional Owners of the lands, seas and skies of Boorloo (Perth).

We acknowledge and respect their enduring culture, their continuing connection to Country, the contribution they make to the life of this city, and Elders, past and present.

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1. Summary

1.1 Purpose

This Heritage Impact Statement has been prepared by **element** to set out the potential heritage impact of the proposed Causeway Pedestrian and Cycle Bridge on the cultural heritage significance of the State Heritage Registered *Causeway Bridges* (PO3631). It specifically addresses the design proposal prepared by the Causeway Bridge Alliance (CBA) and submitted for development application.

The proposed works do not fall within the registered curtilage of the *Causeway Bridges* but due to proximity of associated archaeology and structural elements, there remains potential for impact on the heritage values that warrants analysis to identify strategies for amelioration where required.

Other heritage listings include the local government listing of McCallum Park, which is included in the Town of Victoria Park's Heritage List and four Aboriginal heritage sites, which are protected under the *Aboriginal Cultural Heritage Act 2021*. This HIS does not set out the potential heritage impact on this five sites, but they have been considered as part of the design process, particularly through the co-design process with the Matagarup Elders Group (MEG) outlined in section 4.1.

1.2 Findings

The report concludes that the proposal will have minor impacts on the heritage values of the *Causeway Bridges*, which relate to the archaeology of the previous bridges and the scale of the new bridge. These minor impacts will be ameliorated through implementation of the Archaeological Management Plan and Interpretation Plan. The benefits arise largely from the integration of interpretive opportunities into the design process. These will enable the community to better appreciate the history and heritage of this important river crossing point.

The successful mitigation of heritage impact is greatly assisted by the quality and sensitivity of the design response to its context. It shows respect for the cultural context of the site and the strength, scale and character of the existing bridge. While taller, its separation and refined design does not overpower the existing Causeway Bridge. Due to design including embedded interpretation, the proposed new bridge will have a positive role in the interpretation of the heritage significance of *Causeway Bridges*.

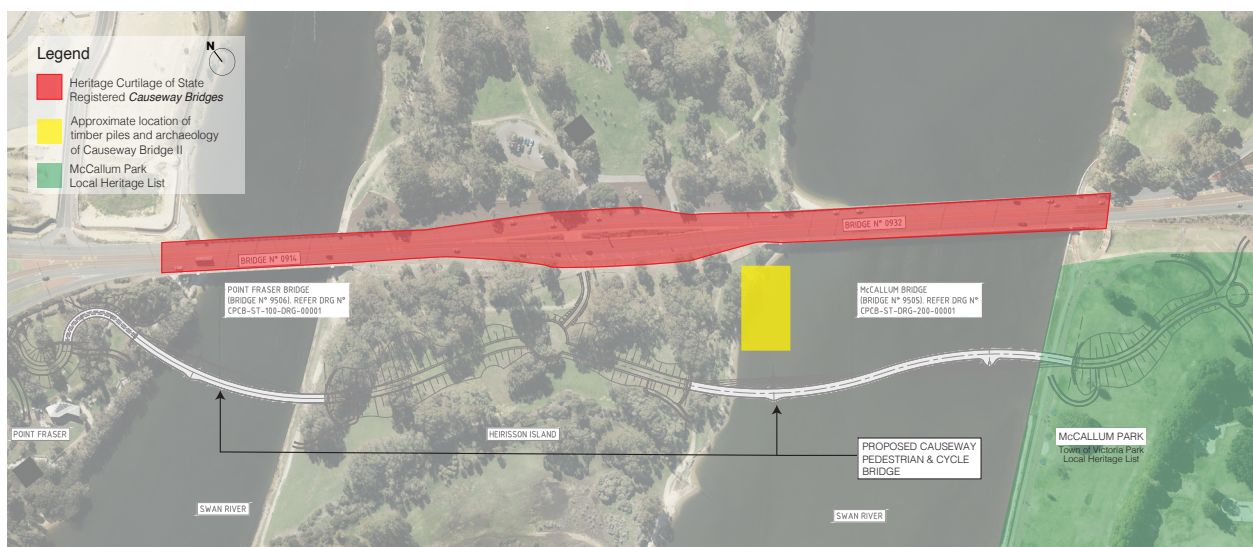


Figure 1. Plan showing location of proposed new pedestrian and cycle bridge in the context of heritage places and archaeology. (MNG Access and element, 2022)

2. Introduction

2.1 Background

The Causeway Pedestrian and Cycle Bridge project will be delivered by the Causeway Bridge Alliance (CBA), comprising Main Roads WA (MRWA), Seymour Whyte, WSP and Civmec. The design team is comprised of Dissing + Wietling (Bridge Architects), Hassell (Urban and Landscape Designers) and WSP (Bridge Engineers).

The project will introduce two interconnected landmark pedestrian and cycle bridges across the Derbal Yerrigan (Swan River). One bridge spans from the eastern banks of Point Fraser within the City of Perth, touching down on Heirisson Island. The second spans from Heirisson Island to McCallum Park in the Town of Victoria Park. The site is on Whadjuk Nyoongar boodja with the area in the vicinity of the Causeway Bridge having a high level of integrity as a continual and significant river crossing point throughout the history of Boorloo (Perth).

Located in a rich historic and cultural context, the new bridge and associated landscape is intended to serve as a canvas to bring together a number of important cultural heritage messages to exhibit and act as a forward-looking piece of civic infrastructure. Since 2021 **element** has worked with the design team to deliver a future vision for the bridge and the surrounding precinct. This has included the delivery of a draft Interpretation Plan and provision of advice to the design team to guide its ongoing implementation and engagement with the Traditional Owners and Knowledge Holders.

In June 2021, an Archaeological Management Plan and Heritage Impact Assessment report was prepared by Archae-aus, which set out the potential for the new bridge to impact on sites of archaeological and cultural value. That report has informed the chosen alignment of the bridge and protocol for managing archaeological finds. The implementation of the archaeological management plan is being undertaken by Aboriginal Land Services whose report '*Section 16 project plan for proposed archaeological investigations within Heirisson Island (DPLH ID:3589) and Swan River (DPLH ID: 3536), on Whadjuk Nyungar Country*' is attached to this heritage impact statement

A Heritage Impact Statement (HIS) is usually required to accompany all development applications relating to development proposals affecting State Heritage Registered Places that include:

- Alterations or additions to an individually State Registered Heritage Place.
- New construction visible from the streetscape or with potential to affect adjacent State Registered Heritage Places.

2.2 Subject Site and Place

The existing bridges and the proposed new bridge cross the Derbal Yerrigan on the site of an ancient crossing point used by the Whadjuk Nyoongar people called Matagarup. A very important place in Nyoongar culture, it connects through songlines and stories to places east of Perth, to the wheatbelt and interior, and across the whole continent.

As the Swan River Colony was developed, bridges were built to cross at certain points of the rivers. The third iteration of a bridge on this site is the current road bridge, called the *Causeway Bridges*, which was built in two parts in 1952. It has a high level of integrity for its continuous use as the location for both vehicular and pedestrian traffic since 1843, when the first bridge was built. Evidence of the second bridge still exists; piles can be seen at low tide. Prior to these methods of transport, these fluvial mud flats were crossed by foot for thousands of years.

In addition to the history of previous bridges and ancient crossings, the *Causeway Bridges* is a distinctive landmark that marks the crossing of the Swan River between the City of Perth and the Town of Victoria Park. It demonstrates the use of steel and reinforced concrete materials using advanced principles of structural analysis to produce efficient structures of lasting durability, indicative of the period in which it was built. This crossing point along with the historical values of the *Causeway Bridges* underpins the community's sense of place.

2.3 Methodology

As heritage advisors for the new bridge project, **element** has undertaken site visits to the place and gained a detailed understanding of the cultural heritage significance, interpretation opportunities and future aspirations of the project.

The overarching aim of this report is to assess the potential impact of the proposal on the cultural heritage significance of the *Causeway Bridges*. The proposal has been assessed in accordance with the guiding document prepared by the Department of Planning, Lands and Heritage (DPLH) entitled Heritage Impact Statement – A Guide (Heritage Council of WA, 2012) to address the following questions:

How will the proposed works affect the heritage significance of the place?

What measures (if any) are proposed to ameliorate any adverse impacts?

Will the proposal result in any heritage conservation benefits that may offset any adverse impacts?

2.4 Supporting Documentation

This HIS has been informed by the following key documents:

- Causeway Bridges (P03631), Assessment documentation for State Register, Heritage Council of Western Australia, 1998
- Causeway Pedestrian and Cyclist Bridge Project: Section 16 project plan for proposed archaeological investigations within Heirisson Island (DPLH ID:3589) and Swan River (DPLH ID: 3536), on Whadjuk Nyungar Country by Aboriginal Land Services, September 2022
- Archaeological Management Plan and Heritage Impact Assessment for Causeway Pedestrian Bridge Project, for Main Roads WA by Archae-Aus Pty Ltd, 2021
- Causeway Bridge Conservation Plan for Main Roads prepared by G.B. Hill Consulting Engineers., 1997
- Causeway Pedestrian And Cycling Link Pre-Feasibility Study on Innovative and Cost-Effective Designs, WSP For Main Roads WA, 2021

2.4.1 Heritage Status and Significance

Cultural Heritage Listings

Places of cultural heritage value in Western Australia are identified through a range of different heritage listings. Some of these listings give statutory protection to heritage places, through requirements for heritage-related approvals or referrals. Other listings are unofficial or quasi-official designations, often arising from local, community-based or thematic surveys.

Aboriginal Heritage

While not the focus of this report, the project area intersects with the immediate surrounds of four Aboriginal heritage sites. Aboriginal heritage sites and objects are protected under the *Aboriginal Cultural Heritage Act 2021* (ACH Act). Aboriginal sites in Western Australia are listed on the Register of Aboriginal Sites. Information pertaining to these sites and their status is available via the Aboriginal Heritage Inquiry System (AHIS).¹

The AHIS shows the Aboriginal sites which intersect with the immediate surrounds of the project area are 3536 Swan River, 3589 Heirisson Island, 21621 Kilang Minangaldjkba and 29278 Midgegooroo's Execution and Burial. There are eight additional Aboriginal heritage sites that are in the wider vicinity of the project area: 3694 Claisebrook Camp, 3701 Burswood Island, 3767 East Perth Power Station, 15915 Burswood Island Camp, 17061 Old Campsite 1, 3789 Perth Town Hall, 3798 Government House, and 3799 Victoria Square.

¹ The ACH Act is in a transition phase from the *Aboriginal Heritage Act 1972*, expected to take full effect by 1 July 2023. The AHIS will also be transitioning to a new database.

Historic Heritage

The following places are adjacent to or will be potentially impacted by the proposed new bridge. Their relevant Statements of Significance are reproduced below.

Table 1: Historic Heritage listings

Place	Type	Responsible Organisation	Relevant legislation	Year of Current Listing
Causeway Bridges	State Register of Heritage Places	Heritage Council of Western Australia	<i>Heritage Act 2018</i>	1998
McCallum Park	Heritage List Municipal Inventory Place, Category B	Town of Victoria Park	<i>Planning and Development Act (2005) Town of Victoria Park Town Planning Scheme 1 (TPS1)</i>	2007

2.4.2 Statement of Cultural Heritage Significance

Causeway Bridges

The cultural heritage significance of the *Causeway Bridges* has been defined by the Heritage Council of Western Australia as part of the State Heritage registration process. This Statement of Significance has been reproduced in full below.

Causeway Bridges consisting of two bridges, one over the eastern channel of the Swan River between the eastern shore and Heirisson Island and the other over the western channel between the Island and the western shore and connecting roadway, has cultural significance for the following reasons:

the place consists of the first bridges in Western Australia constructed of steel and reinforced concrete materials using advanced principles of structural analysis to produce efficient structures of lasting durability;

the place is representative of the bridge building technology of the period during which they were constructed, with its structural, balustrading and bridge pier treatment design. The 1952 bridges were also innovative in lighting design;

the place represents almost 120 years of continuous bridge building endeavour up to the completion of construction in 1952;

the place is important as the river flats presented a navigation barrier to early explorers and settlers, and from the establishment of the settlement of Perth, work was carried out at the site to improve river navigation and provide a river crossing;

the place has associations with E W C Godfrey, who designed and supervised its construction, and with the Department of Public Works and the Main Roads Department. The place also has historical associations with Surveyor General J S Roe, Superintendent of Works Henry Trigg and Major F C Irwin, who designed and modified the first Causeway opened in 1843, and with Richard Roach Jewell, who designed the second Causeway that was built by convicts and opened in 1865;

the place represents a continuous point of crossing between the eastern and western shores of the Swan River, traditionally for Aboriginal people and then for European settlers; and,

the place is part of an important road link in the history of Western Australia connecting Perth with the southern suburbs and providing access to inland areas. The place is highly valued by the community in providing a link over the river for pedestrians, cyclists and vehicle transport and access to the adjacent landscaped recreational areas.

This assessment does not include the traffic interchanges and the roadways over Heirisson Island have little heritage significance.

McCallum Park

McCallum Park has been identified by the Town of Victoria Park as having cultural heritage significance to the local community and is included on their Heritage List afforded statutory heritage protection under the Local Planning Scheme. McCallum Park has cultural heritage significance for the following reasons:

The place has social value as a gathering place for the local and broader Western Australian community; and

The place has historic value for its association with Alexander McCallum, who was the Minister responsible for much of the reclamation of the river foreshore during the 1920s.



3. Brief Historical Background

The following table provides an overview of key historical events relating to the *Causeway Bridges*. This information has been drawn directly from the Draft Heritage Interpretation Plan (element, 2021).

3.1 Summary of Major Events

Date	Event
Deep time	Nyittingy (The Dreaming) Nyoongar people of the Bibulmun Nation occupied the South West of Australia for at least 50,000 years without interruption.
8,000 to 12,000 years ago	The most recent Ice Age caused the sea levels to rise. Tasmania separated from the mainland, New Guinea from Cape York, and islands off the coast of Western Australia emerged, including Ngooloomayup (Carnac), Wadjemup (Rottne) and Meeandip (Garden) islands.
1616	Dirk Hartog's exploration of the Western Australian coastline.
1629	Dutch ship 'Batavia' wrecked off WA coast.
1697	Vlamingh names and sails up Swan River to Heirisson Island
1801	The French, explore up to and past Heirisson Islands mapping the Claisebrook area
1827	The British explore the Swan River under Stirling and Fraser and name Claisebrook as Clauses Creek
1829	At the time of European arrival the Swan Coastal Plain was occupied by a number of different groups with defined territories, the northern side of the site area was within the estate of Yellagonga, with the estate of Beeloo on the southern side. Colonisation and establishment of towns on the Derbal Yerrigan: the sea port at Walyalup (Fremantle), the administrative centre at Boorlo (Perth) and the inland port at Mandoon (Guildford). Land surveys by J. S. Roe and land grants issued.
1830	First recorded flood (post-colonisation) in Perth
1833	Arrowsmith's map of Perth Yagan is killed and his head taken to Liverpool Museum in England
1840	Claisebrook used to drain the lake chain
1840-43	First Causeway built
1850	First industry built at Claisebrook, the abattoirs Convicts introduced to the Swan River Colony
1862	The great flood of Perth
1864	Piles along the first Causeway Bridge had sunk and the bridge was considered to be in a dangerous state.
1867	Causeway Bridge II officially opened by Governor John Stephen Hampton
1874	Claisebrook main drain under construction
1883	The first major river reclamation project occurred for the construction of Barrack Square. The Heirisson Islands were also consolidated into a single land mass at this time ²
1905	The <i>Native Welfare Act</i> (1905) is introduced
c. 1906	Trams in service over the Causeway

2 Seddon p.81-82

Date	Event
1921-37	More of Perth Water is filled in. Foreshore between Barrack Square and the Causeway is realigned and widened. Heirisson Island is reshaped and raised. ³
1925	Swan River Improvement Act passed
1927	Aboriginal people are barred from the city centre
1929	East Perth declared a factory area 'Tea Tree Lagoon', the last of Perth's lake chain was filled in
1949	Construction of the third Causeway Bridge commenced
1952	Third Causeway Bridge opened
1953	Second Causeway Bridge demolished
1954	Aboriginal people are permitted back into the city centre
1972	The <i>Aboriginal Heritage Act</i> (1972) is introduced
1975	The <i>Racial Discrimination Act</i> (1975) is introduced
1984	A bronze statue of Yagan by sculptor Robert Hitchcock is erected on Heirisson Island
1991	East Perth Redevelopment Act 1991
1992	Landmark case Native Title case <i>Mabo v Queensland</i> rejects the concept of <i>terra nullius</i> , meaning 'empty land', the basis upon which the exclusion of Indigenous land rights at the time of colonisation had been based
1993	The <i>Native Title Act</i> (1993) is introduced Nyoongar people lodged an application for determination of native title which is contested by the WA State Government
1997	Yagan's head is repatriated Vandals remove the head from the bronze statue of Yagan on two separate occasions
1998	Five female western grey kangaroos were introduced to the island with a male joey added in 2000
2008	Masterplan for the Heirisson Island Sculpture Park is prepared
2012	A 'Working Congress Party' is staged at Kings Park to communicate the State Government's offer of settlement and extinguishment of Native Title claims in the South West. The Nyoongar Tent Embassy is established on Heirisson Island
2013	An amended Masterplan for the future of Heirisson Island as a Sculpture Park and cultural hub is prepared
2015-present	South West Native Title Settlement agreement
2016	Federal Court findings affirm the City of Perth ban on the Aboriginal camp on Heirisson Island, saying native title right claims over the land should now be considered "wholly extinguished".
2020	Perth City Deal announced providing the funding required to progress the design and construction of the new Causeway pedestrian and cycle bridge
2021-present	Proponent teams shortlisted to deliver the new Causeway pedestrian and cycle bridge

³ Seddon p.177

4. Description of the Place

4.1 Description of the Causeway Bridge

The *Causeway Bridges* was built in 1952 and is the third bridge over this crossing. It is located at the eastern periphery of the Perth CBD and is the only vehicular entry into the City of Perth from the Town of Victoria Park, crossing the north-eastern portion of Heirisson Island.

The *Causeway Bridges* comprises two bridging structures with two asset designations by Main Roads WA. The eastern bridge is referred to as Bridge 932 and the western bridge is referred to as Bridge 914. Bridge 932 is 221m long and consists of eleven 18.6m spans and a relieving span of 8.2m at each end. Bridge 914 is 114.5m long, has five 18.9 m spans and relieving spans of 10m at each end.⁴

Causeway Bridges is a six lane vehicular crossing, with 3 lanes totalling 8.2m wide in each direction and pedestrian footways on each side. Services such as water and gas mains are located under the deck. The piers are reinforced concrete supported on timber piles and the abutments are reinforced concrete supported on reinforced concrete piles. The bridges have a composite steel plate girder/ reinforced concrete superstructure. There are nine simply supported 1.22m deep plate girders in each span.

The bridge has limited ornamentation typical of the 'modern' period in which it was built. The most prominent feature is the balustrading and the large abutment piers at the end of each bridge. The balustrading is in panels, each supported on pilasters 4.7m apart connecting to the concrete deck. The top of the balustrading is 1.07m above the top of the kerb with each panel consisting of 10 openings of 0.9m wide between solid pieces 0.13m in width. Street lighting standards are erected on every fourth balustrading pilaster.⁵

4.2 Description of the Archaeology Associated with the Causeway Bridge

Heirisson Island and the surrounding foreshores have been substantially modified and disturbed over time. The current day island and the area to be disturbed by the construction of the new Pedestrian and Cycle Bridge is largely reclaimed fill over the alluvial mud flats with the deeper sections of the river having been dredged to each side of the island. The Archaeological Management Plan (Archae-aus, 2021) states that:

The Archaeological field work to date has confirmed a mixture of older hand-made and machine-made bricks, along with other debris, were found to be eroding out of the banks behind Causeway Bridge II on Heirisson Island. As this section of the Island was partially reclaimed, they may be related to the filling episodes of the Island. Further investigation would be required to fully understand the nature of this deposit.

The only archaeological features visible from the surface are the jetty piles and support beams or possible footings that are remnants of the Causeway Bridge II (Figure 1) These features are likely the remnants of the footbridge, pipe trestles and the main traffic bridge, which were all demolished by 1953.

The Archae-aus report concludes that there are areas of potential archaeological significance or values (see Figure 2) within the project area to be disturbed by the construction of the new Pedestrian and Cycle Bridge. Additionally, the remnant timber piles and structures relating to Causeway Bridge II also have high archaeological value and their locations recorded by Archae-Aus.

⁴ Causeway Bridge Conservation Plan for Main Roads, G.B. Hill Consulting Engineers., 1997 p. 9.

⁵ Register Entry, Causeway Bridges (Ref 3631), Heritage Council of Western Australia, 1998, p. 10.

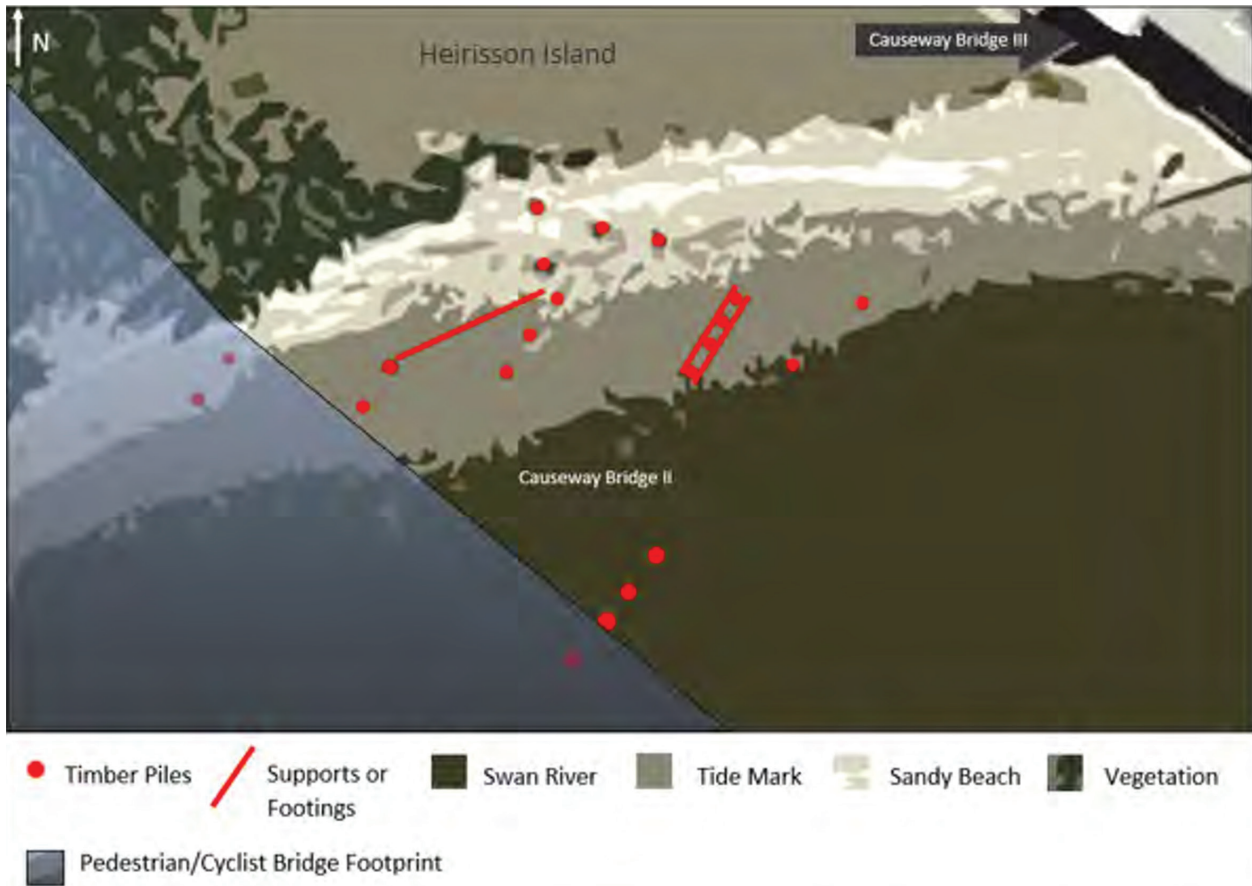


Figure 2. Site plan of remnant timber piles, support beams and footings associated with Causeway Bridge II, immediately west of the existing Causeway Bridge III (Source: Archae-aus, 2021)



Figure 3. Plan showing Areas of Archaeological Potential in relation to the project area. (Source: Archae-aus, 2021)



5. Proposal

5.1 Discussion of the Proposal

The proposal is for a landmark piece of pedestrian and cycling infrastructure linking East Perth to Victoria Park replacing the existing narrow and 'substandard' walking and cycling connection on the Causeway Bridge. In addition to providing an important connection between the Perth CBD and Victoria Park, this route forms a key component of the Perth Water loop, linking the two recreational shared paths (RSPs) located on the Swan River's southern and northern foreshores. The need to improve this connection has been discussed for several decades. The 2015 WA Auditor General's Report, *Safe and Viable Cycling in the Perth Metropolitan Area*, identified the Causeway as the seventh-most-reported location for cyclist safety concerns.

Like the *Causeway Bridges*, the proposal is for two separate bridges which 'touch down' on Heirisson Island. These will be suspension bridges using cables and pylons with a 6m wide deck, enabling the separation of pedestrians and cyclists. Importantly, the two bridges have been designed with navigational envelopes that are significantly wider and taller than the current Causeway Bridge. By increasing clearance heights, the proposed design will enable larger watercraft (including ferries) to navigate the upper reaches of the Swan River should the existing traffic bridges ever be raised or replaced to accommodate future increased water traffic.

In addition to this area being a crossing point for the Whadjuk people and their visitors for thousands of years, the proposed bridge will be the fourth to be built over this portion of the river and the first since 1952. Its function and design represent the evolving nature of sustainable transport and pedestrian amenity in Western Australia. The design of the proposed bridge contrasts with the existing Causeway Bridge and, with the visible timber archaeology, highlights the changing technologies in bridge construction that have occurred in WA over time.

Recognising the importance of this ancient crossing, referred to as Matagarup by the Whadjuk-Nyoongar, a Matagarup Elders Group (MEG) has been involved in the project since early feasibility and will remain involved up to and including construction. Following initial engagement with the MEG the alignment was chosen to minimise impact on the river bed and involves an iconic design that responds appropriately to the area's natural and cultural heritage values.

Acknowledgement of the significance of the site to the Whadjuk people is based on discussions with the MEG. The final concept has sought to acknowledge two Whadjuk people closely associated with the area:

- Yagan, a warrior and young leader of the Whadjuk Nyoongar at the time of colonisation (represented by a single boomerang-inspired pier on the western bridge).
- Balbuk, a Whadjuk Nyoongar woman who resisted the over-development of the Swan Coastal Plain in the early years of the colony (represented by two digging stick-inspired piers on the eastern bridge).

The design for the new bridges is inherently seeking to contribute positively to the sense of place through careful consideration and satisfaction of the following ten project objectives⁶:

1. **Site responsiveness** – the design will integrate with existing and proposed built form, landscaping and urban design, including the area's existing pedestrian and cyclist pathways.
2. **Valuing heritage** – the design will respond to the history of the site, including recognising and interpreting both continuing Nyoongar and post-colonial use and significance.
3. **Engaging** – the river crossing will adopt an innovative design that is of landmark quality, which is enjoyable and stimulating to use, attracting both tourists and locals.
4. **Functional** – the design should be fit for purpose, efficiently designed, well-planned, and constructed with appropriate materials and technology.
5. **Safe** – the design should provide an environment that feels comfortable, welcoming, and provides high levels of user safety (including minimising pedestrian/cyclist conflict).

6 Causeway Pedestrian And Cycling Link Pre-Feasibility Study On Innovative And Cost-Effective Designs, WSP For Main Roads WA, 2021

6. **Accessible** – the design will provide universal accessibility.
7. **Robust** – the design will seek to utilise high quality materials and detailing to achieve durability, ease of maintenance and whole-of-life value for money.
8. **Innovative** – the design will demonstrate the engagement of design skills in a unique and integrated way.
9. **Cost effective** – the design will seek to achieve good value-for-money, including over the life-cycle of the project.
10. **Constructability** – the design will seek to maximise the use of WA-sourced content (materials and labour).

5.2 Proposed Works

5.2.1 Bridge Design

The new bridges are to be entirely located outside of the registered curtilage for the *Causeway Bridges*. Due to its proximity, the scale of the new design is explored in this HIS in relation to the existing 1952 bridges.

Primarily, the new bridges are cable-stay bridges supported by pylons which land in the river at three points and launch from an embankments located on Heirisson island. This is required to raise the deck a minimum of 5100m above water level sufficient to allow watercraft to pass beneath while allowing a safe and complaint gradient of the deck for cyclists and pedestrians.

The design of the new bridge appears light and elegant in its form when viewed from all angles. For instance, the ribbing under the deck provides a sense of visual and aesthetic rhythm. As can be seen from the architectural perspectives there is sufficient separation between the existing Causeway Bridge and the proposed structures.

The proposed materiality of the bridge is a weathering steel, which references Western Australian red earth of Nyoongar Boodja intending to further enhance the bridge's organic aesthetic and allow it to immediately settle into the landscape. Included in the design of the bridge will be signage and cultural imagery reflecting the Aboriginal and historic significance of this place.

The concrete abutment walls from which the bridges launch over the water are a critical part of structure and the pedestrian experience and are to be used as an opportunity for public art and interpretive opportunities.



Figure 4. Architectural Perspective looking south east of the proposed bridge from Point Fraser to Heirisson Island. Showing proximity to existing Causeway Bridge (Source: Hassell)

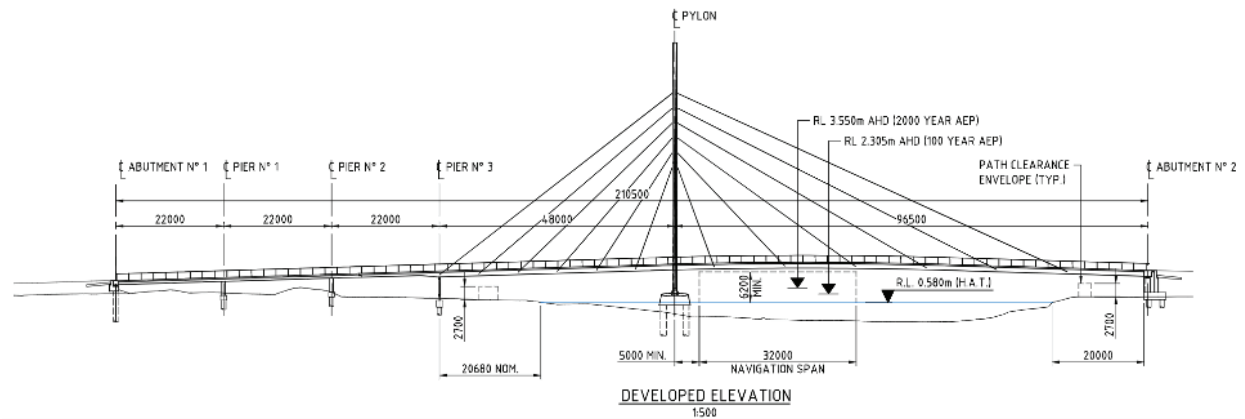


Figure 5. Elevation of the proposed bridge connecting Point Fraser to Heirrisson island (Source: WSP)

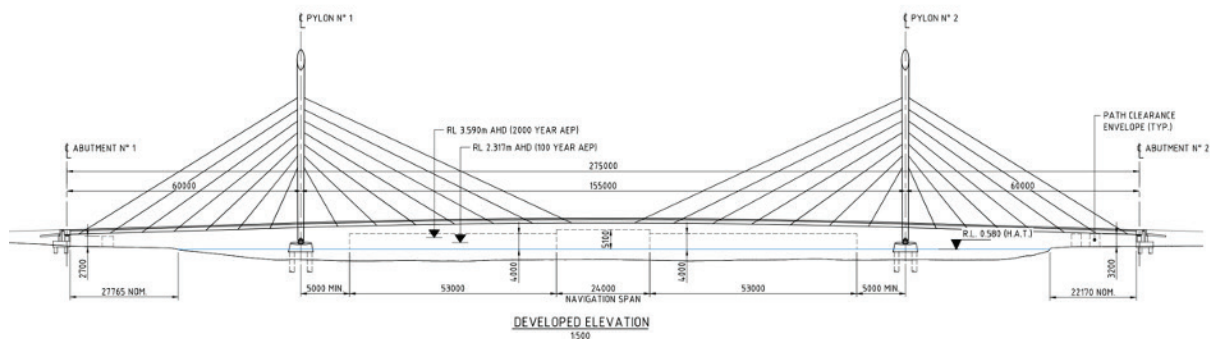


Figure 6. Elevation of the proposed bridge connecting Heirrisson island to McCallum Park (Source: WSP)

5.2.2 Potential Archaeological Disturbance

To construct the bridge, there will be some inevitable disturbance to the infill, mudflats and river bed, which is explored as part of the Archaeological Management Plan (AMP) (Archae-aus , 2021). The AMP sets out the following risk assessment matrix to evaluate the risks of development works in the Project Area on known archaeological features. It is important to note that this table was prepared prior to detailed design and construction methodology having been defined. Discussion of how the bridge design and scope of work responds to these risks is included following the table below.

Table 1: Risk Assessment extracted from Archaeological Management Plan (Archae-aus , 2021).

Feature	Location	Risk	Explanation
Remnant timber piles from Causeway Bridge II (1862-1953)	On southern side of High Causeway Bridge (downstream) on eastern bank of Heirrisson Island.	High	High risk of direct impact if the Pedestrian/ Cyclist footings are placed in areas where the timber piles are located and where there is potential for subsurface remnants of Causeway Bridge II (parallel and adjacent to the southern side of Causeway Bridge III on Heirrisson Island).
Historical archaeological fill deposits in reclaimed areas of land (1870s-1970s)	Along the original High alignment of Causeway Bride II on Heirrisson Island.	High	High risk of direct impact as historical cultural materials observed eroding out of the banks in this area.
Historical archaeological fill deposits in reclaimed areas of land (1870s-1970s)	Along the East Perth (City of Perth) foreshore, West of Point Fraser and reclaimed areas of Heirrisson Island and McCallum Park.	Moderate	Moderate risk of impact as archaeological deposits related to fill episodes and rubbish pits are likely to be encountered throughout the areas that have been previously reclaimed. These types of archaeological features will be difficult to avoid as the exact location, number and potential size of these deposits is currently unknown.

Feature	Location	Risk	Explanation
Remnant timber piles from Causeway Bridge II (1862-1953)	On southern side of Low Causeway Bridge (downstream) on eastern bank of Heirisson Island.	Low	If the Pedestrian/Cyclist Bridge footings and bridge construction works avoid the timber piles.
Remnant historical camps on Heirisson Island (>1829)	Across Heirisson Low Island, with the earliest camps within the boundary of the original island formations	Low	Low risk of direct impact of the earliest camps on the Island; the Pedestrian/Cyclist Bridge will mostly impact reclaimed parts of the Island rather than the locations of the original island formations where people would have camped in the 19 th Century.

Archeological Disturbance: The project area includes areas of known archaeology as identified in the AMP. Following the preparation of the Archaeological Management Plan, the proposed bridge design and construction methodology has been developed to mitigate impact on this known area of archaeology due to pylon footings being located some distance away from this area. The suspended nature of the bridge and the construction methodology means that the timber piles will not be disturbed as the bridge passes overhead.

Ground works: Heirisson Island will have a new embankment for the bridges landing and meeting. This will entail some excavation but primarily the addition of new soil to raise the ground level to accommodate the compliant bridge gradient. Ground Disturbance is defined in the AMP as:

any activity that disturbs the ground below 100 mm from the pre-development level. Such disturbance can include activities such as topsoil clearing, grubbing, grading, cutting, trenching, digging of postholes and deep excavation.

It is therefore likely that activities associated with the construction of the proposed bridge have some potential to disrupt the potential area of High Archeological potential identified in the AMP. To mitigate the risk of archaeological impact a six stage process has been proposed by Archae-aus (AMP p. 82). These are set out below with how they are being addressed in the project delivery.

Recommended Stage	Proposed action to mitigate impact
Stage 1 – Desktop assessment and Archaeological Management Plan and procedure development.	Undertaken as part of the preparation of the AMP.
Stage 2 – Heritage referrals, approvals and advice from relevant government bodies.	This Heritage Impact Statement forms part of the development application and referral process.
Stage 3 – Heritage Impact management including the monitoring of ground disturbance works, assessment of any unexpected finds and recording of archaeological finds and features.	It is proposed that over the proposed investigation period, the Aboriginal Land Services excavation team will excavate a ground surface area of up to 45.75m ² within Heirisson Island and Swan River, with a minimum excavation footprint of 2.75m ² following the conclusion of the proposed Stage 1 shovel test pitting. This will allow for up to nine shovel test pits, approximately 50cm x 50cm in size, to be excavated across the site, with additional square meterage to allow the excavation team to expand the units up to 2m x 2m if required and appropriate (see locations in figure 6). This maximum potential area proposed for excavation is anticipated to be sufficient to address and fulfil the research framework established for the site, while also leaving as much of the site as undisturbed as possible.
Stage 4 – Assessment of all features and finds identified.	The construction management plan for the delivery of the project will include the following in conjunction with Aboriginal Land Services providing ongoing archaeological advice during construction: <ul style="list-style-type: none"> • Having training on archaeological finds procedures for all contractors working on the site. • Following an archaeological finds procedure as included in the AMP • Having an archaeological watching brief when excavating area of high archaeological potential
Stage 5 – Reporting of all heritage assessment work completed during the development.	Aboriginal Land Services will identify and report on and manage the archaeological investigation process prior to and during construction. Stage 1 of that has already occurred as part of the Section 16 approval. (Refer to Appendix 1)
Stage 6 – Interpretation.	Refer to Section 5.2.3 Heritage Interpretation below. In addition, any finds that may be uncovered will be assessed and considered for display and/or interpretation elsewhere.



Figure 7. Site Plan showing extent of new embankment (blue outline with yellow hatch) and locations of nine proposed archaeological excavations (Source: Aboriginal Land Services)

5.2.3 Heritage Interpretation

A detailed Causeway Pedestrian and Cycle Bridge Interpretation Plan has been prepared to draft and should be referred to for understanding of the extent of proposed interpretation. In addition to the bridge design itself, reflection points and signage will be located around the pylons to tell the Whadjuk stories and the cultural values of the area. Combined with embedded interpretive design throughout the landscape architecture, the subtle and overt messaging of the area's history and significance will be imbued thoughtfully in all aspects of the new design. For detail on the proposed interpretation refer to the draft Interpretation Plan, **element**, 2021.

The Interpretation Plan when finalised will quantify each of the proposed locations for the interpretive strategies including public art, landscape design, signage, lighting, and event spaces. The implementation of this plan is pending detailed design, however the CLA has made a commitment to delivering the intent of the Interpretation.



6. Heritage Impact Assessment

This section addresses the potential impact of the proposal on the State heritage listed *Causeway Bridges*. This includes an assessment against the following questions, which have been addressed separately in the following table within this section:

- How will the proposed works affect the heritage significance of the place?
- What measures (if any) are proposed to ameliorate any adverse impacts?
- Will the proposal result in any heritage conservation benefits that may offset any adverse impacts?

To assist in assessing the impact of the proposal the following seven tier system for assessing and evaluating impact has been adopted from the 'Guidance on Heritage Impact Assessments for Cultural World Heritage Properties' (ICOMOS, 2011) and the Heritage Council of Western Australia's 'Impact Matrix' (2009).

Rating	Impact Definition
Major Impact	<p>The proposed action would involve permanent changes to, or destruction of an element of significant fabric or values</p> <p>There would be a substantial or long-term adverse effect on the heritage value or integrity of the place.</p> <p>There would be a major reduction in the understanding of the heritage value of the place.</p> <p>The impact of the action could be reduced through appropriate mitigation measures but cannot be fully ameliorated.</p>
Moderate Impact	<p>The proposed action would involve permanent changes to, or destruction of an element of significant fabric or values.</p> <p>There would be a moderate reduction in the understanding of the heritage value of the place.</p> <p>The impact of the action could be reduced through appropriate mitigation measures.</p>
Minor Impact	<p>The proposal would have a temporary effect on and/or involve minor damage or changes to element of significant fabric or values</p> <p>There would be a minor or temporary reduction in the understanding of the item or place.</p>
Negligible or No impact	<p>The proposed action respects the heritage value and integrity of the items.</p> <p>There is no change or impact as a result of the proposed action.</p>
Minor Beneficial	<p>The proposed action would have a minor temporary benefit on the heritage value or integrity of the item or place through conservation of its significant fabric or values</p> <p>There would be a minor or temporary improvement in understanding the heritage value of the item or place.</p>
Moderate Beneficial	<p>The proposed action would benefit the heritage value or integrity of the item or place through conservation of its significant fabric or values</p> <p>There would be an improvement in understanding the heritage value of the item or place.</p>
Major Beneficial	<p>The proposed action would substantially enhance the heritage value or integrity of the item by improved conservation of its important fabric or values</p> <p>There would be a major long term improvement in understanding the heritage value of the item or place.</p>

6.1 Heritage Impact Assessment against the Cultural Heritage Significance

Causeway Bridges	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
Statement of Significance			
<i>the place consists of the first bridges in Western Australia constructed of steel and reinforced concrete materials using advanced principles of structural analysis to produce efficient structures of lasting durability;</i>	<p>Negligible impact</p> <p>The proposal does not seek to remove any of the existing bridge and has no impact on its fabric.</p>	NA	NA
<i>the place is representative of the bridge building technology of the period during which they were constructed, with its structural, balustrading and bridge pier treatment design. The 1952 bridges were also innovative in lighting design;</i>	<p>Minor impact</p> <p>The proposal is within proximity of the Causeway Bridges and will be of a greater scale and height. This is proposed to allow boats to pass freely below and to accommodate the required gradient for safe cycling.</p>	The activation of the surrounding landscape on Heirisson island, and the new bridge itself, will allow people to observe the appreciate the design of the existing bridge from new and varied perspectives.	Increased opportunities for commuters to cycle and non-car usage may have some positive affect on traffic calming on the bridge, offsetting damage caused by daily vehicular usage.
<i>the place represents almost 120 years of continuous bridge building endeavour up to the completion of construction in 1952;</i>	<p>Minor impact/Moderate Beneficial</p> <p>The proposal is the latest in a long history of bridges crossing this portion of the river. The archaeology associated with the Causeway Bridge II (1862-1947) will remain visible in the river. The new footings will not land in these areas and the new bridge will pass over the archaeological site. However there remains some potential to impact archaeology associated with that period during ground disturbance works. Despite this potential impact, the history of the historic crossing will be better understood because of the interpretation and any archaeology discovered will further our understanding.</p>	<p>Implementation of the archaeological management plan recommendations prior to construction will mitigate the impacts by:</p> <ul style="list-style-type: none"> • Having training on archaeological finds procedures for all contractors working on the site. • Following an archaeological finds procedure. • Having an archaeological watching brief when excavating area of high archaeological potential. 	Future interpretation will allow people to view the timber archaeology in the river with some literal explanation of the history of the bridge crossings.
<i>the place is important as the river flats presented a navigation barrier to early explorers and settlers, and from the establishment of the settlement of Perth, work was carried out at the site to improve river navigation and provide a river crossing;</i>	<p>Major Beneficial</p> <p>The proposal will create a place for learning about the history of crossing the Swan River</p>	N/A	Increased opportunities for the community to appreciate the history of river crossings that pre-dated the bridge construction and the historical bridges.

Causeway Bridges	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
Statement of Significance			
<p><i>the place has associations with E W C Godfrey, who designed and supervised its construction, and with the Department of Public Works and the Main Roads Department. The place also has historical associations with Surveyor General J S Roe, Superintendent of Works Henry Trigg and Major F C Irwin, who designed and modified the first Causeway opened in 1843, and with Richard Roach Jewell, who designed the second Causeway that was built by convicts and opened in 1865:</i></p>	<p>Negligible-Minor impact</p> <p>There is no proposed physical impact on the remaining timber archaeology relating to Causeway Bridge II. Some known historic timber piles fall within the project area and therefore some potential for disruption exists.</p>	<p>The six stages set out in the Archaeological Management Plan (Archae-aus, 2021) will be followed before and during construction. Specifically:</p> <ul style="list-style-type: none"> • Having training on archaeological finds procedures for all contractors working on the site. • Following an archaeological finds procedure. • Having an archaeological watching brief when excavating area of high archaeological potential. <p>These actions are in conjunction to archaeological excavation and monitoring being undertaken by Aboriginal Land Services prior to and during construction.</p>	<p>The interpretation plan and proposed landscaping includes areas in proximity to the archaeology to observe the visible archaeology and allows for signs and other artwork to tell the stories relating to the archaeology and the historic timber bridges that once existed here.</p>
<p><i>the place represents a continuous point of crossing between the eastern and western shores of the Swan River, traditionally for Aboriginal people and then for European settlers; and,</i></p>	<p>Major beneficial</p> <p>The proposal introduces a new crossing point across the Swan River and has been designed in close consultation with present day Whadjuk Elders to ensure that the story of the ancient crossing is told in the design.</p>	<p>N/A</p>	<p>Increased opportunities for the community to appreciate the history of the design and construction of timber bridges.</p>
<p><i>the place is part of an important road link in the history of Western Australia connecting Perth with the southern suburbs and providing access to inland areas. The place is highly valued by the community in providing a link over the river for pedestrians, cyclists and vehicle transport and access to the adjacent landscaped recreational areas.</i></p>	<p>Major beneficial</p> <p>The proposal substantially enhances this area as a node in the pedestrian and cycle network. The new landscaping will actively enhance this value by encouraging people to spend time in the area and engage with the cultural value of the place.</p>	<p>N/A</p>	<p>Activation of the new landscaping around the bridges will enhance this value as it will provide greater access to Heirisson Island and the surrounding landscape for pedestrians and cyclists of all abilities. While enjoying the landscape there will be opportunities presented for that audience to appreciate the interpretation subliminally through bridge design and with literal interpretations signs.</p>



7. Conclusion

The place has been a crossing point over the Derbal Yerrigan (Swan River) for thousands of years. . This project creates a new opportunity to connect people to Country and cultural stories associated with this ancient crossing point.

Since the establishment of the Swan River Colony, there have been four bridges built over the Swan River at this location. The proposed new bridge will establish a dedicated pedestrian and cycling infrastructure while generating amenity on Heirisson island (Matagarup) and the broader context of the locality. Usage of this new precinct will offer considerable opportunity for users to engage with the heritage interpretation designed for various levels; from fleeting glimpses in the design, embedded imagery and messaging, through to more prolonged engagement with signage.

The fluid form and apparent lightness of scale proposed in the new structure juxtaposes with the low solidity of the existing *Causeway Bridges*. This is consistent with Article 22 of the Burra Charter which establishes that new work should not 'distort or obscure the cultural significance of the place or detract from its interpretation and appreciation'.

The success of the design of the proposed bridge is the quality and sensitivity of the design response. It shows respect for the cultural context of the site and the strength and character of the existing bridge. While higher, its separation and refined design does not overpower the existing *Causeway Bridges*. Due to this design response combined with the embedded interpretation, the proposed new bridge will have a positive role in the interpretation of the cultural heritage significance of the *Causeway Bridges*.

In addition, the project is an opportunity to promote reconciliation with Aboriginal communities through the interpretation of themes and stories inspired by extensive consultation with Traditional Owners and Knowledge Holders. The project promotes recognition of the underlying design approach to heal country and nurture through design, the creation of an overall precinct with places for spiritual, psychological and physical healing. (For interpretation outcomes, please see the draft Interpretation Plan, prepared by **element** 8 September 2022).

This Heritage Impact Statement concludes that the proposal will have minor impact on the cultural heritage significance of the *Causeway Bridges*, which relate to the archaeology of the previous bridges potentially being disrupted and the scale of the new bridge contrasting with the existing road bridge. These minor impacts will be ameliorated through implementation of the archaeological management plan and interpretation plan. The benefits arise largely from the integration of interpretive opportunities into the design process. These will enable the community to appreciate the history and heritage of this important crossing point on the Derbal Yerrigan (Swan River).



Appendix 1: Section 16 project plan

Causeway Pedestrian and Cyclist Bridge Project: Section 16 project plan for proposed archaeological investigations within Heirisson Island (DPLH ID:3589) and Swan River (DPLH ID: 3536), on Whadjuk Nyungar Country by Aboriginal Land Services, September 2022



element.



ABORIGINAL
LAND SERVICES

Causeway Pedestrian and Cyclist Bridge Project

Section 16 project plan for proposed archaeological investigations within Heirisson Island (DPLH ID:3589) and Swan River (DPLH ID: 3536), on Whadjuk Nyungar Country

September 2022

Acknowledgement of Country

ALS acknowledges the Whadjuk Nyungar people, who are the Traditional Custodians of the Country described in this document and the Traditional Custodians of the Country in which ALS's office is situated.

We pay our respects to their Elders past, present, and emerging, and to their continuing cultural and spiritual connections to their lands.

<https://www.reconciliation.org.au>



ALS ref

ALS2207

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PURPOSE OF THE EXCAVATION

In October 2021, Main Roads Western Australia (Main Roads) commissioned Aboriginal Land Services Pty Ltd (ALS) to undertake an ethnographic and archaeological site identification heritage survey over areas planned to be part of the Causeway Pedestrian and Cyclist Bridge (CPCB) Project footprint (Taylor & Montero-Lopez 2021). This project is being developed within an individual Indigenous Land Use Agreement (ILUA) under the South West Native Title Settlement (the Settlement).

The Main Roads proposed project area is located over Derbal Yerrigan (the Swan River), linking the Town of Victoria Park and City of Perth Local Government Areas (LGAs). The proposed CPCB sits 0.4 km south of the Western Australian Cricket Ground, 0.6 km east of Langley Park, and 0.96 km southwest of the Crown Casino. It will traverse Matagarup (Heirisson Island), situated 3.5 km east of Mooro Katta or Kaarta Gar-up (Kings Park).



Right: Location of the study area for the proposed Main Roads Causeway Pedestrian and Cyclist Bridge within Whadjuk Nyungar Country.



During the 2021 survey and consultation it was established that the proposed development is likely to impact the cultural values of DPLH ID 3589: Heirisson Island and DPLH ID 3536: Swan River. As a result, it was recommended by the Whadjuk Traditional Owners that an archaeological investigation is conducted before construction works commence, and as such a section 16 (s16) permit should be obtained to enable this (Taylor & Montero-Lopez 2021).

“When you break ground, you need an investigation before that”.

- Kay Walley, 28 October 2021.

This document outlines a proposed project plan for the recommended archaeological investigation recommended by the Whadjuk Traditional Owners. ALS have been endorsed by the Matagarup Elders Group (MEG) to undertake these investigations, which are proposed to occur within the registered boundaries of DPLH ID 3589: Heirisson Island and DPLH ID 3536: Swan River.

The aim of such investigations is to identify whether any subsurface Aboriginal cultural heritage values exist within the study area (see map below), focussing on areas of proposed ground disturbance on Matagarup / Heirisson Island and Point Fraser. It is recognised that much of Matagarup / Heirisson Island is reclaimed with historic infilled deposits dating between the 1870s and 1970s, including dredged mud deposits from the Derbal Yerrigan / Swan River riverbed (c. 1900s – 1940s; Archae-aus 2021). As such, the purpose of these shovel test pits is to establish whether the fill in these areas was sourced from sediments that once contained Aboriginal cultural heritage objects.

To address this, ALS intends to undertake initial archaeological shovel test pitting at 11 locations within the study area (see map below), as well as targeted test pitting of a shell midden feature identified during the 2021 heritage survey..

Map 1: Heritage survey overview map provided by Main Roads



PARTICIPATION OF TRADITIONAL OWNERS

Whadjuk Nyungar Traditional Owners and the MEG request and endorse section 16 archaeological excavations within DPLH ID 3589: Heirisson Island and DPLH ID 3536: Swan River, to be undertaken by ALS as part of the CPCB Project (see appendix C, below).

If the section 16 request is approved, Whadjuk Nyungar representatives nominated by SWALSC and/or the MEG will participate in the investigations within the study area and provide ALS' consultants with guidance on how to apply the archaeological methods detailed below in the most culturally appropriate way. ALS will collaboratively work with and proactively consult with the Whadjuk Nyungar representatives and the MEG to ensure that they are:

- Afforded the time on site to undertake any cultural protocols required;
- Clearly and regularly informed of any additions and/or changes to the proposed method, and excavation outcomes;
- Provided with the opportunity and space to provide feedback or queries; and
- Provided with the opportunity and space to participate in the excavation process.

PROPOSED HERITAGE PLACES FOR INVESTIGATION

DPLH ID 3536 – Swan River

Up to five shovel test pits are proposed within DPLH ID 3536 – Swan River. These locations will be determined on the ground in conjunction with the Whadjuk Noongar representatives and placed within area 1 in the map below. This includes potential expansion to 2m x 2m archaeological test pits within the extent of the bridge footings should the shovel test pits indicate the presence of artefacts and stratigraphic integrity (see methods below).

The importance of the Derbal Yerrigan to the Whadjuk People is well documented and forms an integral part of their spiritual and cultural identity.

The entire Derbal Yerrigan (Swan River) is a mythological site of central heritage significance to the Whadjuk People. This mythological site is permanently registered on the DPLH register and its site file contains a substantial amount of ethnographic information as well as associated historical references.

This site includes the entire course of the Swan River, with particular named locations being of greater importance and significance, arising from actions of the Waugal. The river is believed to be the track and the resting place of the Waugal, who not only created it but remains ever present within it as evidenced by the water flow.

The Waugal created the Swan River by making its way down the river, creating the bends at Belmont and Maylands before emerging through the Narrows into the Perth waterfront to create the large expanse of downstream water. The Waugal is also believed to have created permanent freshwater sources at places where it rested, and a number of these locations subsequently became important to Aboriginal people as centres for both secular and ritual trade and exchange. The Swan River and its surrounding freshwater swamps and wetlands were important sources of both plant and animal food. Campsites are known to have been located near these seasonal food sources and along trade routes, law, and corroboree grounds.

DPLH ID 3589: Heirisson Island / Matagarup

Up to six shovel test pit locations are proposed within the CPCB project footprint within DPLH ID 3589: Heirisson Island / Matagarup. This includes potential expansion to archaeological excavation

should the shovel test pits indicate the presence of artefacts and stratigraphic integrity (see methods below). In addition to these, a 1m x 1m test pit excavation of an identified shell midden deposit within Matagarup (see map 2) is proposed as part of the investigation. An extension of this test pit to a 2m x 2m square may be utilised to investigate intact features, or radial shovel test pits will be utilised to test the extent of the shell midden if sub-surface context is encountered.

Matagarup includes the area around the Causeway, Perth Bridge, the Flats, and Fords. It is not only a mythological place, but also a camping, hunting, and meeting place that includes plant resources of ongoing cultural value to Nyungar people.

Prior to European settlement, the Heirisson Island / Matagarup area was a series of small islands and mudflats that formed a natural fording location for crossing the Swan River. The island's current form was created by progressive dredging and sediment deposition works through to the mid-1900's, which fused the small islands and mudflats into a single land mass. Furthermore, major landscaping works were undertaken on the island following the construction of the Causeway Bridge, creating open grassed spaces, stands of native trees, reed beds, beaches, and inlets (City of Perth Master Plan Report, 2008).

The island's mythological importance is reported to be associated with the Waugal story through the island's location within the Derbal Yerrigan / Swan River. Lore relating to the site describes how the Waugal can be angered by the disturbance of the banks and beds of the river and by its pollution, resulting in catastrophic repercussions on those who hold responsibility for the safeguarding of the island and its associated sites. It has been noted that activities (both historic and ongoing) such as dredging, pylon driving, embankment excavations, and directional drilling are resisted by the Nyungar community.

Most Nyungar groups agree that the cultural value held by Heirisson Island will not be adversely affected by development due to the substantial land reclamation and riverbank dredging undertaken since European settlement in the area. These modifications are believed to have occurred over several phases between ca. 1870s and 1970s, and included the dumping of domestic and commercial rubbish and building materials (Archae-aus 2021 after Seddon & Ravine 1986). Despite this, the Traditional Owners consulted during the 2021 ALS heritage survey held concerns that ground disturbing works will disturb any remnant Aboriginal cultural materials that may exist, as well as concerns regarding the potential spiritual consequences that may arise if sections of the riverbank are disturbed. Despite the existing disturbance, the riverbank is still of high cultural significance due to its direct association with Derbal Yerrigan.

Impact of the proposed works

It is proposed that over the investigation period, the excavation team will excavate a ground surface area of up to 45.75 m² within Heirisson Island and Swan River, with a minimum excavation footprint of 3.75 m² following the conclusion of the proposed Stage 1 shovel test pitting. This will allow for up to 11 shovel test pits, approximately 50 cm by 50 cm in size, to be excavated across the site, with additional square meterage to allow the excavation team to expand the units up to 2 m by 2 m if required and appropriate (see methods, below). As well as the excavation of the shell midden identified with Matagarup (DPLH ID: 3589). This maximum potential area proposed for excavation is anticipated to be sufficient to address and fulfil the research framework established for the site, while also leaving as much of the site as undisturbed as possible.

The excavation program will be restricted to the portion of the sites that are intended to be impacted by the proposed construction of the CPCB. At the conclusion of any archaeological excavation, it is anticipated that the excavated portion of the sites will be wholly disturbed as a standard and expected result of the archaeological excavation process.

ALS will endeavour to use existing tracks within the site boundaries and limit any ancillary activities to the areas detailed in above and in map 2.

PROPOSED INVESTIGATION METHOD

The proposed investigation will be undertaken in line with ALS' methods (below) and the wishes of the MEG and Whadjuk Nyungar Traditional Owners.

As described above, ALS will work collaboratively and proactively consult with the Whadjuk Nyungar representatives and the MEG to ensure that they are:

1. Afforded the time on site to undertake any cultural protocols required;
2. Clearly and regularly informed of any additions and/or changes to the proposed method, and excavation outcomes;
3. Provided with the opportunity and space to provide feedback or queries; and
4. Provided with the opportunity and space to participate in the excavation process.

Stage 1: Shovel Test Pitting

Aim

The aim of the shovel test pitting is to investigate the potential for sub-surface archaeological deposits to exist within the study area.

The Traditional Owners discussed how, although Matagarup is now largely comprised of reclaimed land through infilling, it is not known where that fill came from and whether it may contain artefacts or other culturally important material.

Proposed locations

Following the result of the 2021 heritage survey and consultation (Taylor & Montero-Lopez 2021), and discussions between ALS and Causeway Link Alliance, a minimum of 11 shovel test pits and a single 1m x 1m test pit are proposed for investigation within the intended works impact area, as shown in Map 2, below.

Five shovel test pits are proposed within DPLH ID 3536 – Swan River. These test pits are all associated with the proposed footing areas for the CPCB.

Six shovel test pits are proposed within DPLH ID 3589: Heirisson Island / Matagarup, which are all associated with the proposed footing areas for the CPCB.

One 1m x 1m test pit is proposed within DPLH ID 3597: Heirisson Island / Matagarup, coinciding with the presence of a shell midden feature and associated with the proposed footing area for the CPCB.

As all test pitting locations are situated within the footprint of the foundations of the CPCB , it is very likely that these areas will also intersect with areas containing historic / contact archaeological values associated with river dredging, prior bridge construction, and infill containing historic refuse (see also Archae-aus 2021). The proposed archaeological test pitting works will therefore also investigate any historic features identified within, and evaluate any historic objects recovered from the test pits.

Method

The first phase of the archaeological investigation will involve 11 shovel test pitting sites within the proposed investigation areas and a single 1m x 1m test pit excavation of a shell midden feature. The purpose of this approach will be to identify whether sub-surface cultural features exist in these areas, and to provide direction for the placement of test pits in any subsequent excavation program.

It is proposed that the locations of the shovel test pits, will be determined on the day of excavation by ALS archaeologists and Whadjuk Nyungar representatives.

The shovel test pit process will involve the following steps:

1. Refining the location for the shovel test pit within the proposed areas in consultation with the Whadjuk Nyungar representatives present, and recording its location using a Differential GPS unit (DGPS);
2. Use of a standard shovel to dig an approximately 50 cm x 50 cm hole, digging until:
 - a. a depth of approximately 50 cm is reached; or
 - b. when the first artefact is retrieved;
3. All soil removed is screened through 3 mm and 6 mm sieves to recover any heritage objects that may exist;
4. Description of the soil pH and colour, grain size, and consistency of the deposits using a Munsell® colour chart;
5. Documentation of the stratigraphy observed within the resulting test pit; and
6. Documentation and appropriate storage of any artefacts retrieved.

The shovel test pits will be considered likely to determine a potential test pit location if cultural material is identified, together with one or more of the following features:

1. Stratigraphy is identified;
2. Good deposit integrity (i.e. absence of observable bioturbation; absence of intermixed refuse); and
3. More than 50 cm separates the depth of the water table from the ground surface.

Shell Midden

The proposed methodology of the excavation of the 1m x 1m test pit within the shell midden feature within DPLH ID 3597: Heirison Island / Matagarup is detailed as per the excavation methodology in Stage 2 below. This area has already been selected by the Whadjuk Nyungar representatives and the MEG as an area requiring archaeological excavation and will form part of the Stage 1 investigations. If additional excavation is required to further define the sub-surface extent of this feature, it will be addressed during the Stage 2 investigations.

Radial Test pitting

If the shell midden feature is determined to represent an archaeological feature as a result of the initial 1m x 1m test pit, radial shovel test pits will be established in cardinal directions to map the extent of sub-surface material and inform potential areas for further investigation within stage 2.

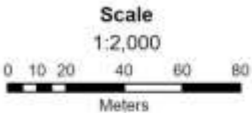
At the conclusion of Stage 1, the lead ALS consultant will facilitate a debrief with the Whadjuk Nyungar representatives to provide a summary of the excavation and discuss any recommendations and requirements for the subsequent works. Confirmation will be made regarding which excavated materials will be removed from site and transported to the ALS office in Fremantle, and whether the MEG require these to be escorted by a Whadjuk Nyungar representative, or whether the material will be processed on site at a facility to be established by the Main Roads.

Map 2: Proposed Stage 1 shovel test pit areas and midden excavation location.

Section 16 Application Area

Job No: ALS2207 Map No: 1 Coordinate System: GDA94 MGA Zone 50
Date: 14/09/2022 Author: Ariell

Disclaimer: The information in this map is accurate as of the date of issue. Spatial accuracy level of +/- 15m unless otherwise noted.



394000

Stage 2: Archaeological excavation

Aim

Dependent on the results of the shovel testing, an archaeological excavation may be recommended to investigate any areas of interest and potential. These recommendations will be made to the MEG, who will make the final decision on whether to proceed to Stage 2 for any of the shovel test pit locations and further investigation of the identified shell midden.

The aim of any archaeological excavation will be to investigate the sub-surface archaeological deposits identified to quantify the heritage objects contained within them. As much of Matagarup is comprised of reclaimed land through infilling, the Whadjuk Nyoongar wish to identify whether the substrate is of local origin or reclaimed land. If the latter, they wish to know whether this introduced infill material was obtained from areas also containing cultural deposits.

Proposed locations

Three areas have been defined for the Stage 2 archaeological excavation should the Stage 1 shovel test pit investigations and subsequent MEG approval indicate there being value to proceed (see Map 2, above). Within these three areas it is proposed that excavation units will be established adjacent to the relevant shovel test pit location.

Area 1 is located within DPLH ID 3536 – Swan River.

Area 2 is situated within DPLH ID 3589: Heirisson Island / Matagarup.

As all test pitting locations are situated within the footprint of the foundations of the CPCB, it is very likely that these areas will also intersect with areas containing historic / contact archaeological values associated with river dredging, prior bridge construction, and infill containing historic refuse (see also Archae-aus 2021). The proposed archaeological excavation works will therefore also investigate any historic features identified (such as historic bridge pylons), and evaluate any historic objects recovered from the units.

Method

If it is determined that an excavation will proceed, it is proposed that one test pit (units), each up to 2 m by 2 m in size, may be excavated within the proposed investigation areas adjacent to the Stage 1 shovel test pit being investigated further. This will allow the excavation team to expand the units if required and appropriate.

The selection of appropriate unit locations will be considered using the following:

- Input from the Whadjuk Nyungar Traditional Owner representatives;
- The nature of the location (location of exposed vs sheltered areas);
- The uniformity and general nature of the ground surface (disturbed, flat, level); and
- The planned location of ground disturbing works (i.e. abutments, bridge footings).

On revisiting a site for the purpose of excavation, a re-assessment will be made of the area that is currently deemed to have the best integrity of deposit, and the most practical areas to excavate. This assessment will also consider the potential to expand the unit in the event of finds or archaeological features uncovered during the excavation, or in the event that the unit reaches a depth that renders further digging unsafe. This safety assessment will be made at a depth of 1 m or when the heritage team deem the unit to have the potential to become unsafe. If safety concerns became apparent, the heritage team will examine options to increase on site safety, such as stepping out the unit or reinforcing the unit walls (if the heritage team assess the site as having further research potential than that documented to date).

Enough units will be placed within a site to define and record, as wholly as possible, the research values and the subsurface deposit present at the site.

The final location of any test pits or trenches and all completed drawings will be keyed into a site grid and TBM (temporary benchmark), as located with DGPS unit.

Stratigraphy

Each unit will be excavated with trowels and hand shovels in 10 cm spits with the excavated material sieved on site for finds and organics. Sieving will be undertaken by the heritage team in 3 mm and 5 mm sieves. Sediment will be discarded in the spoil heap for later backfilling, and the finds and organics kept for processing.

When a distinguishable change in context or an archaeological feature is discovered, excavation by arbitrary spit will cease and the context or feature will be excavated stratigraphically to determine its full extent and nature, and to ensure that any related finds or samples are linked with the stratigraphy.

Levels, back-sighted to the TBM, will be taken and recorded at the start and end of each spit. Scale plans will be drawn of any intact archaeological features found during the excavation, with levels taken and plans located on the site grid.

Finds

Any find identified, either Aboriginal or historic in origin, will be registered according to spit and stratigraphic unit or context. For any finds located in situ during the excavation ('finds in situ'), a three-dimensional location, as determined from the site grid and TBM, will be recorded. Following this the finds will be registered by location, spit, and context.

All finds collected during the excavations will be transported to the ALS offices in Fremantle for analysis in laboratory conditions. Following the completion of the final report, all finds collected during the excavations will be returned to Country and repatriated at a permanent keeping place, at a location to be determined by the MEG.

Details of all finds and recording methods for flaked stone and historic objects will be provided in the appendices and the method section of the final report.

Soils and sediments

All spits and stratigraphic contexts will be registered and recorded, and notes taken of sediment type, compaction, and colour (using a Munsell Chart). pH tests will be undertaken for all spits and contexts to determine the acidity of the sediments and the likelihood of preservation of bone, shell, or other organics.

Bulk soil samples will be collected for any deposits determined to be of cultural significance or associated directly with the anthropogenic occupation of the site; for example, the fill of hearth features. Bulk samples will be transported to the ALS office in Fremantle for further analysis under laboratory conditions if required, or at a site office established by Main Roads. All bulk samples will be returned to Heirisson Island or Swan River as part of the site's excavated assemblage repatriation.

Expanding units

Expansion of a unit beyond its original size 'in plan' will occur if / when:

- The heritage team encounters archaeological features that exist beyond the area of the original unit and it is perceived that the further excavation of these features will have

potential to further inform an understanding of the site. This will include Increasing the archaeological assemblage of the heritage place;

- The unit reaches a depth that renders further excavation impractical or unsafe;
- The above criteria prompts the heritage team to collectively consider the:
 - Practicality;
 - Safety; and
 - Potential archaeological benefit of any expansion of a unit.

The Whadjuk Nyungar representatives present will be consulted prior to any test pit expansion occurring.

Cessation of excavation and remediation

The salvage excavation of a site, subject to the conditions of the s16 permit, should only cease when all archaeological values contained within the unit have been mitigated and the conditions of the relevant s16 consent are met.

Excavation of an individual unit will cease when:

- The heritage team consider that any further excavation is likely to make the unit unsafe;
- Excavation uncovered inclusions which are large enough to provide an immovable impediment to further excavation within the location;
- Lack of intact stratigraphic contexts is noted;
- A minimum of 40 cm of sterile deposit is excavated; or
- Bedrock is reached.

The completed unit will be backfilled following the completion of the excavation, using the sieved spoils removed from the test pit during the excavation. This will ensure that as much of the excavated material as possible will be returned to its original location.

Questions considered prior to the cessation of a s16 excavation include:

- Have all areas with excavation potential been investigated within the site?

- Is there sufficient data from the excavated portion of the site to characterise unexcavated areas and therefore justify not excavating those areas?
- Have all potential features been investigated?

At the conclusion of Stage 2, the lead ALS consultant will facilitate a debrief with the Whadjuk Nyungar representatives to provide a summary of the excavation and discuss any recommendations and requirements for the subsequent works. Confirmation will be made regarding which excavated materials will be removed from site and transported to the ALS office in Fremantle, and whether the MEG require these to be escorted by a Whadjuk Nyungar representative.

Section drawing

Following the completion of each unit, the appropriate sections will be cleaned and drawn to scale if appropriate. This will provide a record of the stratigraphic and physical relationships of the excavated contexts and the locations of any archaeologically significant deposits. A context sheet will be completed for each unit.

Photographic record

A photographic record will be systematically captured of each step of the excavation. Photographs will be taken with varied exposures at the end of each stratigraphic unit, and both pre- and post-excavation of any archaeological features. To provide support for the section drawings, photographs will also be taken of the final, clean sections of all units and excavated trenches.

Datable samples

As much of Matagarup is comprised of reclaimed land through historic infilling, no sampling to establish temporal context is proposed due to the high likelihood for contamination and limited research value.

Organic remains

Once organic residues are sorted from the dry-sieving process, the remains will be catalogued, bagged by unit, spit, and strata, and sent back the ALS office or site office for further analysis. This analysis involves sorting a representative sample of organic residues, associated with cultural material, on a macroscopic level, splitting the fraction into types of materials, weighing them, and calculating the percentage of the spit that the materials comprised. Care will be taken to sort for bone and shell. All cultural finds will be recorded, analysed, and catalogued in line with the artefact analysis methodology outlined in the final report for this project.

Post-excavation analysis

Upon completion of excavation and the backfilling of the unit, any archaeological finds will be temporarily taken to the ALS office in Fremantle or the site office to be established by Main Roads for cleaning, accessioning, and analysis.

All artefacts retrieved from the surface and sub-surface strata of a unit will be subject to detailed archaeological cataloguing to create a complete assemblage dataset that can be used for statistical analysis.

To address the aims and research questions of the project, the excavated finds, returned dating results, and excavation data (Harris Matrix, soils, organic remains, etc) will be collated and analysed by ALS archaeologists following the completion of the excavation.

Storage of salvaged objects

All heritage objects recovered from archaeological investigations will be temporarily and securely stored at the ALS office in Fremantle or temporary storage facility established by Main Roads until such a time as they can be safely returned to Country.

As detailed above, all excavated materials and samples will be bagged on site by unit, spit, and stratigraphic unit or context. At the completion of the field excavation, these labelled bags will be placed in either a sturdy archive bag or container and labelled with the Maragarup / Heirisson Island or Derbal Yerrigan / Swan River site name and appropriate unit number. These will then be transported by vehicle to the ALS office in Fremantle, and may be accompanied by a Whadjuk Nyungar representative if required.

Once all excavated materials arrive at the ALS office, they will be placed together in a designated and secure storage container designated for the Heirisson Island and Swan River collection.

Objects and samples will be removed as required for cleaning, recording, analysis, and sample processing, and returned to their designated labelled bags within the cabinet once these have been completed.

Following the completion of the final report, all finds collected during the CPCB excavations will be returned to Country and repatriated at a permanent keeping place, at a location to be determined by the MEG. If the MEG require it, all samples will be accompanied by a Whadjuk Nyungar representative on their return journey.

Reporting

A final close out report detailing the complete results of all heritage works carried out under the s16 permit will be provided within 3 months of the completion of the archaeological investigation (subject to any conditions placed on the s16 permit). This report will include:

- Summary of all archaeological investigation works undertaken;
- Detailed excavation method;
- Complete datasets for excavated finds and organics;
- Unit and spit data;
- Excavation analysis and discussion; and
- Details regarding the final repatriation of the excavated materials to site.

Alongside this report, ALS will also submit revised HISFs for DPLH ID 3589: Heirisson Island and DPLH ID 3536: Swan River to the DPLH if required, to include the excavation outcomes.

BIBLIOGRAPHY

Archae-aus 2021, *Heritage Impact Assessment and Archaeological Management Plan for the Installation of a Pedestrian/Cyclist Bridge near the Causeway Bridges, East Perth WA*, Unpublished report prepared for Main Roads Western Australia.

Taylor, N, and Montero-Lopez, C, 2021, *Causeway Pedestrian and Cyclist Bridge Project: Report for an archaeological and ethnographic site identification survey with the Whadjuk Nyungar Traditional Owners*, Unpublished report prepared for Main Roads Western Australia.

M P Rogers and Associates, n.d., *City of South Perth: South Perth foreshore management masterplan – Section 18 Notice*, DPLH Report ID 22089

DPLH Registered Aboriginal Site and OHP files

DPLH ID 3536 – Swan River

DPLH ID 3589 – Heirisson Island

APPENDICES

Appendix A – Project contacts

Appendix B – Acronyms and definitions

Appendix C – MEG letter of support

Appendix A – Project contacts

The contact details of the heritage project stakeholders are provided below. ALS thanks everyone involved with the project and its organisation.

Aboriginal Land Services Pty Ltd

Address	96 Marine Terrace, Fremantle, Western Australia 6160
Email	operations@aborignallandservices.com.au
Contacts	Nerilee Boshammer-Bennell and Megan Tehnas
Executive sign-off	Nerilee Boshammer-Bennell

Whadjuk Nyungar Traditional Owners

Contact	Matagarup Elders Group
Address	c/of Causeway Link Alliance
	or
	c/of SWALSC

Causeway Link Alliance

Contact	Peter Ricciardello, Alliance Director
Address	16 Nautical Drive, Henderson WA 6166
Email	Peter.Ricciardello@causewaylink.com.au

Appendix B – Acronyms and definitions

The following terms and acronyms are used in this report. Definitions are provided below for reference.

Term / abbreviation	Definition
ACHM	Australian Cultural Heritage Management
ACMC	Aboriginal Cultural Materials Committee
AHIS	Aboriginal Heritage Inquiry System
ALS	Aboriginal Land Services Pty Ltd
AIC	Archaeological Interaction Consultants
BFBTO	Bona Fide Bloodline Traditional Owners
CMWG	Combined Metropolitan Working Group
DPLH	Department of Planning, Lands and Heritage
Excavation team	Whadjuk Nyungar representatives, Aboriginal Land Services consultants, and other invited parties to the excavation (student researcher, Aboriginal Sites Work trainees, etc).
GIS	Geographic information system
GPS	Global positioning system
Heritage object	An object to which the Act applies under section 6
Heritage site / Heritage place	Any place which may meet the criteria of an Aboriginal site under s5 of the <i>Aboriginal Heritage Act 1972 (WA)</i> .
HISF	Heritage Information Submission Form
IAEG	Independent Aboriginal Environment Group
Isolated artefacts	Cultural material with insufficient density or context to constitute a site.
MEG	Matagarup Elders' Group
MGA	Map grid of Australia
Main Roads	Main Roads Western Australia
NCE	Nyungah Circle of Elders
NNTT	National Native Title Tribunal
Other Heritage Place	Other heritage places (OHPs) are heritage places classified by the DPLH as either: <ol style="list-style-type: none"> 1. A heritage place that has been reported to the DPLH but is pending assessment by the ACMC (status L – lodged); or 2. A heritage place that has been submitted to the DPLH and evaluated by the ACMC to not meet the criteria for inclusion on the Register of Sites (i.e. not a registered Aboriginal site) (status S – stored / not a site).
Registered Aboriginal site	A heritage place which has been determined as meeting criteria under section 5 of the <i>Aboriginal Heritage Act 1972 (WA)</i> , and has been registered by the Registrar of Aboriginal Sites (DPLH status R - registered).
SWALSC	South West Aboriginal Land and Sea Council
Traditional Owners	Whadjuk Nyungar native title claimants (NNTT no WC2011/009) and invited participants
The Act	<i>Aboriginal Heritage Act 1972 (WA)</i>

Appendix C – MEG Letter of Support

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23 August 2022

Department of Planning, Lands and Heritage
140 William Street
PERTH WA 6000

AboriginalHeritage@dplh.wa.gov.au
(08) 6551 8002

To whom it may concern,

RE: Matagarup Elders Group endorsement of the Section 16 Project Plan to advise the Causeway Pedestrian and Cyclist Bridge Project

We, the members of the Matagarup Elders Group (MEG), endorse the proposed plan to undertake archaeological excavations within Matagarup (DPLH ID:3589) and Derbal Yerrigan (DPLH ID: 3536) under section 16 of the Act, as detailed in the Project Plan developed by Aboriginal Land Services Pty Ltd (ALS) to advise the Causeway Pedestrian and Cyclist Bridge Project.

The Project Plan has been reviewed and discussed by the MEG on 23 August 2022 and we are satisfied with the proposed aims and methods described.

Please see the attached list of names and signatures of MEG members present for the discussion, who have endorsed this approach for and on behalf of the MEG.

Kind regards,

The Matagarup Elders Group

Name/s	Signature/s
Kevin FITZGERALD	
KAY WALTER	
KAREN JACOBS	

Aboriginal Land Services Pty Ltd

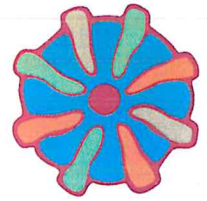
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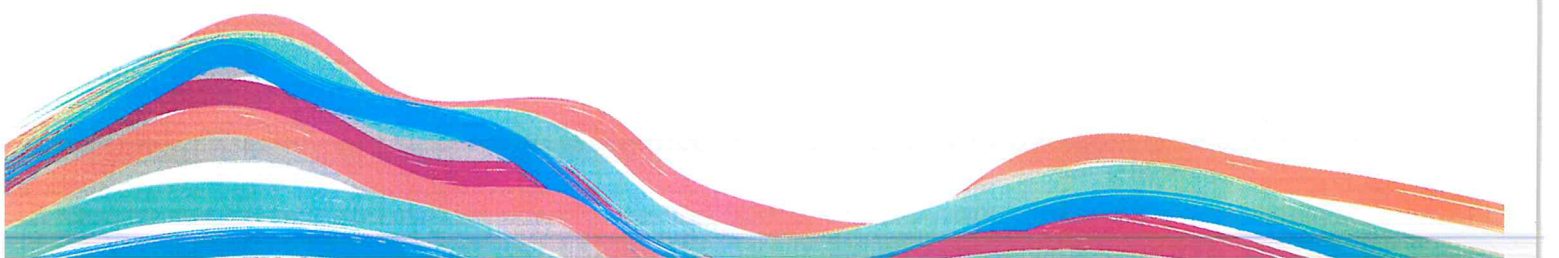
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Version Control

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0.1	03/08/2022	Document drafted	S. Wallace
0.2	05/08/2022	Additions and revision	M. Tehnas
0.3	11/08/2022	Review and edits	N. Boshammer-Bennell and B. Bennell
0.4	13/09/2022	Revised	A. Reynolds
1.0	14/09/2022	Final edit	B. Fordyce

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