HERITAGE IMPACT ASSESSMENT AND ARCHAEOLOGICAL MANAGEMENT PLAN FOR THE INSTALLATION OF A PEDESTRIAN/CYCLIST BRIDGE NEAR THE CAUSEWAY BRIDGES, EAST PERTH WA

May 2021

For Main Roads Western Australia

archae-aus

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Front Cover (Left): Stereograph of the second Causeway Bridge, Perth (1867) [image cropped].

Front Cover (Right): Swan River from Fraser's Point (1827), held in the State Art Collection, Art Gallery of Western Australia. Accession Number: 1957/00W2. [enhanced image of original pictured below, obtained from https://twitter.com/historyofperth/status/475837837623848960/photo/1].

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Disclaimer

The authors are not accountable for omissions and inconsistencies that may result from information which may come to light in the future but was not forthcoming at the time of this research.

Spatial Information

All spatial information contained in this report uses the Geocentric Datum of Australia 1994 (GDA94), Zone 50 unless otherwise specified.

Historical plans have been georeferenced using the georeferencing plugin and QGIS 3.10. While all attempts are made to georeferenced plans as accurately as possible, historical plans can have inaccuracies and there may be an unknown margin of error within purported locations of historical and archaeological features.

Authorship

This report was written by Lucy Sinclair (BA Hons Arch, UWA) and edited by Monica Jimenez-Lozano (BA Hons Arch, UWA). Maps were drawn by Nigel Bruer (BArchaeology, GradDiplCultHerMgmt, Flinders University).

Report Format

This report is divided into six main sections, including Appendix Section.

SECTION ONE – INTRODUCTION – Includes a list of assessment objectives, report use and limitations, details of the Investigation Area, key legislation and guiding documents, along with the relevant State and Local Heritage listings for the Investigation Area.

SECTION TWO – HISTORICAL BACKGROUND & CONTEXT – Includes an historical timeline for the Investigation Area and key historical phases.

SECTION THREE – FIELD ASSESSMENT– Includes a summary of the methods and results of the site visit to the Investigation Area.

SECTION FOUR – ARCHAEOLOGY OF THE PLACE – Includes a summary of the archaeological context, including historical work on similar landforms in the Perth region, an outline of the archaeological significance process used, and an explanation of archaeological values used to assess the existing heritage places and potential archaeology within the Investigation Area, and an evaluation of the archaeological potential.

SECTION FIVE – IMPACT ASSESSMENT AND RECOMMENDATIONS – Includes a summary of the principles used to guide the assessment, and heritage impact assessment, including risk assessment.

SECTION SIX – ARCHAEOLOGICAL MANAGEMENT PLAN – Includes the proposed heritage impact management strategies as part of the Archaeological Management Plan.

APPENDIX SECTION

APPENDIX ONE – ARCHAEOLOGICAL MONITORING PROCEDURE

APPENDIX TWO – ARCHAEOLOGY DISCOVERY PROCEDURE

APPENDIX THREE – SIGNIFICANCE ASSESSMENT PROCESS

APPENDIX FOUR – FIND RECORDING AND COLLECTION PROCEDURES

APPENDIX FIVE – CONTRACTOR PROCEDURE HANDOUT

APPENDIX SIX – HERITAGE REGISTER SEARCHES

APPENDIX SEVEN – HERITAGE PLACES IMPACT STATEMENTS

TERMS AND ABBREVIATIONS

Term / Abbreviation	Meaning / Interpretation
ACMC	The body established-under the *Aboriginal Heritage Act* 1972 to represent Aboriginal people on heritage matters. Responsible for evaluating sites and advising the Minister regarding applications under section 18 of the Act (among other duties).
AHA	*Aboriginal Heritage Act 1972* (WA)
AMP	Archaeological Management Plan
Archaeologist	See Project Archaeologist.
Archaeological site	Is a place (or group of physical sites) in which evidence of human past activity is preserved (either prehistoric or historic or contemporary), and which has been, or may be, investigated using the discipline of archaeology and represents a part of the archaeological record.
Artefact	Any object (article, building, container, device, dwelling, ornament, pottery, tool, weapon, work of art etc.) made, affected, used, or modified in some way by humans.
Assessment	Professional opinion based on information that was forthcoming at the time of consideration
BP	Years Before Present, for example, 50,000 BP
Cultural material / archaeological material	Any object (article, building, container, device, dwelling, ornament, pottery, tool, weapon, work of art etc.) made, affected, used, or modified in some way by humans.
DPLH	Department of Planning, Lands and Heritage. Comprises the former WA State government bodies of the State Heritage Office and the Department of Aboriginal Affairs.
Excavation	The systematic and scientific recovery of cultural, material remains of people as a means of obtaining data about past human activity. Excavation is digging or related types of salvage work, scientifically controlled, so as to yield the maximum amount of data.
Feature	A non-moveable/non-portable element of an archaeological site. It is any separate archaeological unit that is not recorded as a structure, a layer, or an isolated artefact; a wall, hearth, are examples of features. A feature carries evidence of human activity and it is any constituent of an archaeological site which is not classed as a find, layer, or structure
Find	Individual movable artefacts that are in original depositional context with each other. Also known as 'loose find'
Ground Disturbing Works	These are defined as any activity that disturbs the ground below 100 mm. It can include activities such as topsoil clearing, grubbing, geotechnical testing, grading, cutting, trenching, potholing pits (excluding vacuum potholing), deep excavation and directional drilling (launch and retrieval pits)
HA	Heritage Act 2018 (WA)
Heritage site	See 'Archaeological site' and 'Ethnographic site'
Historical heritage	The study of historical heritage relates to the nature of life in post-contact Australia (1600s onwards). Western Australia's heritage places consist of buildings, landscapes, monuments and other structures or sites that are culturally significant either at a local, State, national or international level.
LCC	Local City Council
LGA	Local Government Area
Loose Find	See 'Find'.

Term / Abbreviation	Meaning / Interpretation
MAA	*Maritime Archaeology Act 1973* (WA)
Maritime Heritage	Includes physical resources such as historic shipwrecks and prehistoric archaeological sites, but also archival documents and oral history. Maritime heritage can also include the stories of indigenous cultures that have lived and used the oceans for thousands of years[1]
Monitoring	Monitoring, more often known as a watching brief, is where an archaeologist watches ground disturbance activity in areas where prior evaluation has shown there to be low potential, or the impact of the development has been assessed and cultural material is expected to occur.
Project Archaeologist	The archaeological consultants appointed by the developer to manage the archaeological and heritage concerns of the project. In this case, the Project Archaeologist will be a Maritime Archaeologist.
Investigation Area	Causeway Bridges, Heirisson Island, Point Fraser, and McCallum Park.
Salvage	Process of the retrieval of as much information as possible about the archaeological sites before it is damaged or destroyed by development.
SHO	State Heritage Office, now amalgamated into the DPLH
Scope	The nature of the work undertaken as requested by the client/developer.

[1] https://oceanservice.noaa.gov/facts/marheritage.html

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SECTION ONE – INTRODUCTION

Main Roads Western Australia (Main Roads) have commissioned Archae-aus Pty Ltd to conduct a Heritage Impact Assessment (HIA) for the proposed new freestanding pedestrian and cyclist bridge near the existing *Causeway Bridges (Nos 914 & 932)* in East Perth[2] (the Investigation Area).

Assessment Objectives

Main Roads require Archae-aus to provide a Heritage Impact Statement (HIA) and Archaeological Management Plan (AMP) for historic heritage within the Investigation Area. This document fulfills both requirements.

This document will address the following:

- Undertake a thorough desktop assessment of all historic heritage places in the Investigation Area, identifying all known places and their significance and values.
- Liaise with relevant stakeholders including local shires and the DPLH regarding relevant information related to the listed heritage places.
- Conduct a field inspection to determine the locations of all listed heritage places and assess how they will be impacted by the works.
- Develop a report advising of Main Road's legislative obligations in relation to the historic heritage in the Investigation Area and providing recommendations for their future management and conservation.

Specifically, Archae-aus will provide the following information:

- A detailed evaluation of the potential archaeology within the Investigation Area.
- Recommendations for any consultation, permits and permissions, pertaining to the heritage and archaeology of the Investigation Area required prior to development.
- Mitigation strategies to manage potential heritage and archaeological impacts, including a procedure for finds identification/discovery, documentation, management of archaeological materials, and assessment.

Main Roads have identified sections of Point Fraser, Heirisson Island and McCallum Park as key areas of focus (The Project Area, see Figure 1); however, the Investigation Area is much larger, as shown in Map 2.

[2] Main Roads Consultant Brief for the Historic Impact Assessment / Archaeological Management Plan – Causeway Pedestrian & Cyclist Bridge.

Figure 1. General location of proposed pedestrian bridge Project Area (image obtained from Main Roads Consultant Brief)

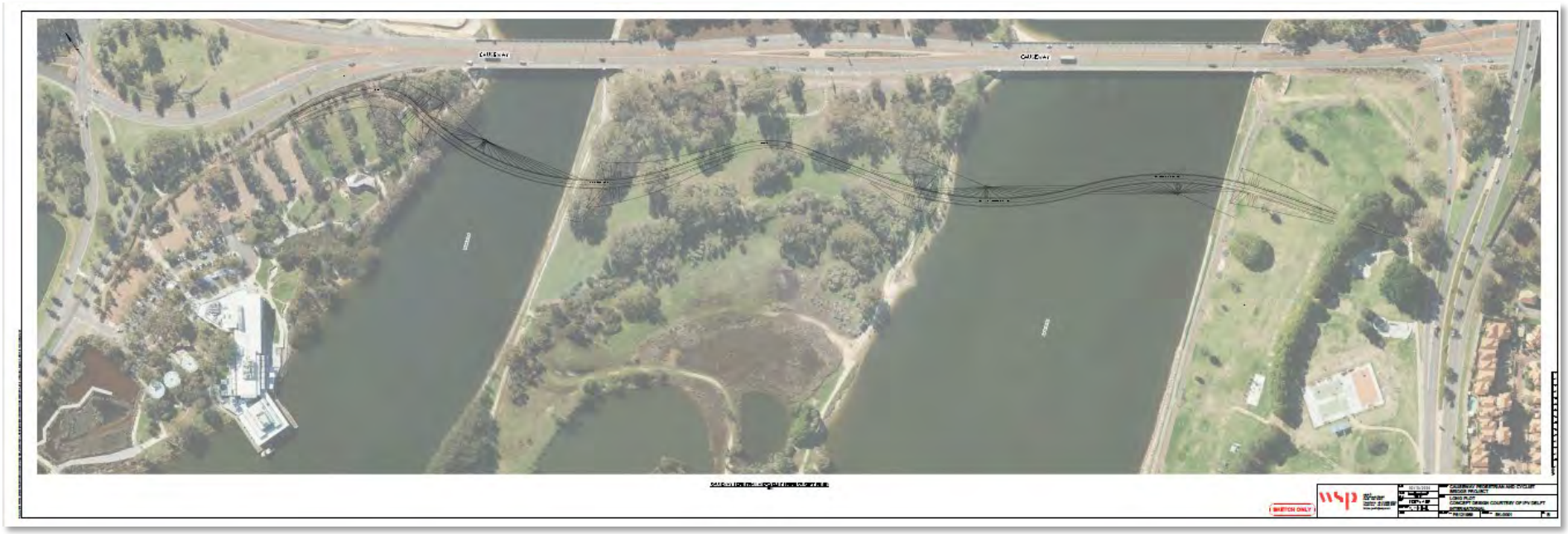


Figure 2. General location of proposed pedestrian bridge (image obtained from Main Roads)

Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

archae-aus

Map 1. Overview of Causeway Bridge Investigation Area

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.

Use and Limitations

The HIA is intended to be used to assist Main Roads and its contractors by providing a detailed overview of heritage and archaeological concerns within the Investigation Area. It details the statutory (and non-statutory) places within the Investigation Area, as well as potential archaeology. By providing an explanation of the heritage and archaeology, this document can assist with 'forward planning' during proposed upgrades and developments and assist Main Roads and its contractors to minimise adverse heritage risks and associated project delays.

This HIA for this Investigation Area **includes**

- A background of the Investigation Area and its location.
- A review of relevant heritage legislation and guiding documents.
- A summary of statutory and non-statutory heritage listings.
- An historical background that includes a timeline and relevant historical plans.
- A discussion of known and potential archaeology of the area, previous archaeological investigations, the significance of known and potential archaeology, and research questions that may be answered by potential finds.
- Summary of the results of "ground-truthing" of surface archaeological features.
- Recommendations and conclusions of the HIA.

The HIA **does not** include

- Consultation with relevant Aboriginal groups or representatives concerning the Investigation Area or proposed works, it is understood that this has been previously undertaken by Main Roads.
- Impact Mitigation Strategy for Archaeological Sites (IMAS).
- Archaeological investigation (sub-surface) of potential features detailed within this HIA.

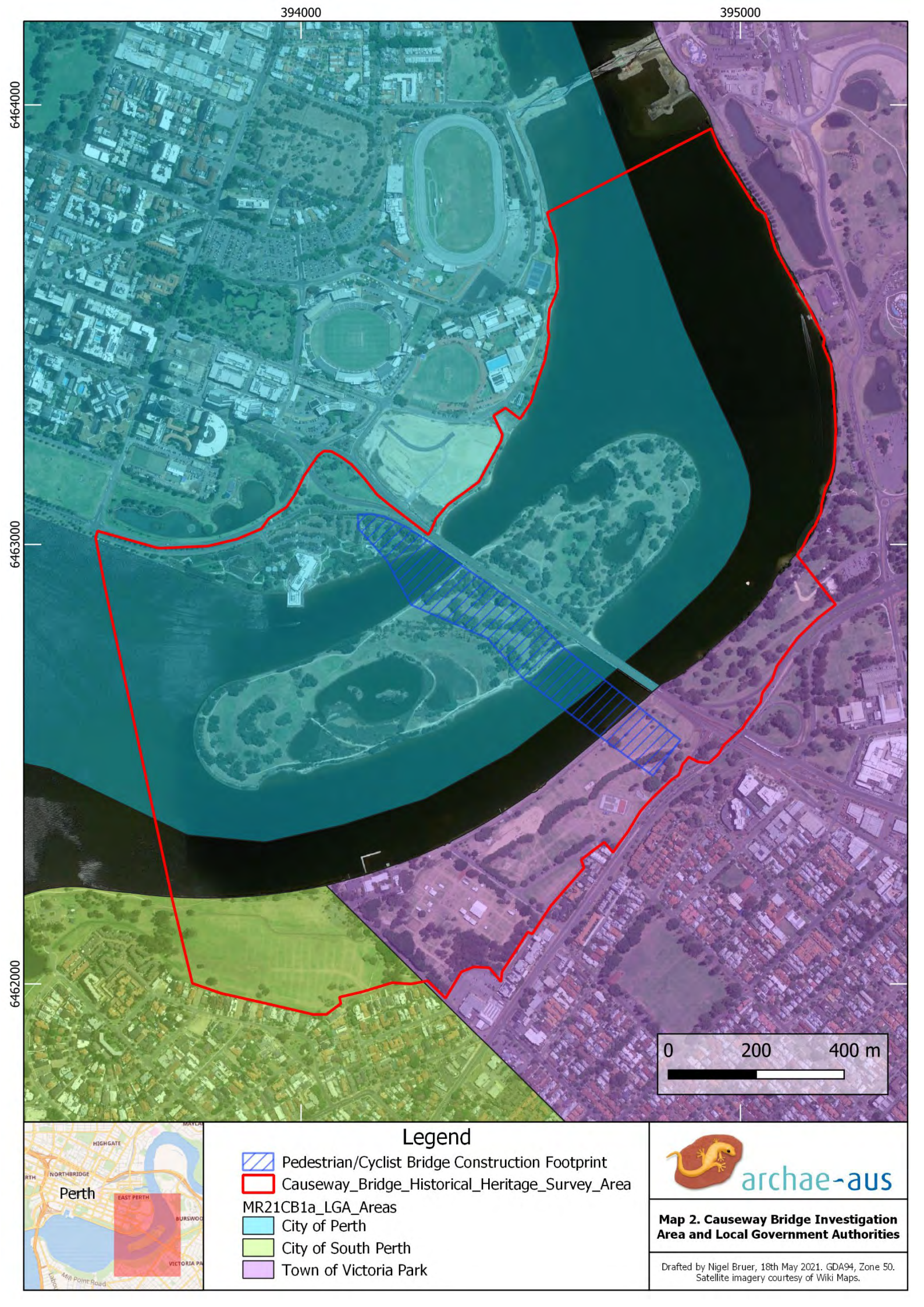
Investigation Area

The Investigation Area relevant to this HIA covers several different landforms and municipal jurisdictions (Map 2). For the purposes of this assessment, the Investigation Area is divided into the key areas detailed in Table 3.

Table 3. Key landforms examined within the Investigation Area.

Landform	Municipality	Description
Heirisson Island	City of Perth	Heirisson Island is a single oblong-shaped island in the Swan River, between the East Perth and Victoria Park foreshores. It originally consisted of six main islands that were joined or removed entirely during the reclamation works that took place over several stages between the 1900s and 1940s. The Island is largely a parkland reserve with no major constructions aside from the Causeway Bridge, carpark, and toilet facilities. The Island perimeter mostly comprises narrow sandy beaches.
Swan River	City of Perth (Eastern Section)	The River is the dominant landform within the Investigation Area. The sections of particular interest are where it meets the foreshores of East Perth, South Perth, Burswood, Victoria Park and Heirisson Island, with a focus on the Causeway Bridge. Much of this section of the River has been dredged and its shape has been dramatically changed due to land reclamation along its banks. The sections adjacent Heirisson Island and around the Causeway Bridges were once shallow mudflats with natural oyster shell deposits.
Point Fraser	City of Perth	This area is the southernmost point on the East Perth foreshore that was once a small peninsular and island that have since been subsumed by reclaimed land. The reclamation works on the western side of the Point took place over several stages between the 1870s and 1930s when Langley Park was constructed. Today, it is covered by a mixture of swamp, parkland, carparks, pedestrian and cycle paths, beach, recreation facilities, and restaurants.
East Perth Foreshore	City of Perth	This section of the Investigation Area, which is largely adjacent to Trinity College, mostly comprises a narrow sandy beach covered in oyster shell and limestone rocks, and grassy banks. Much of this section is reclaimed or modified land that was created between the 1930s and 1970s. There are at least two boat ramps and two storm drains.
Burswood Foreshore	Town of Victoria Park	The majority of the Burswood section of this Foreshore is land that was reclaimed between the 1900s and 1970s. There are very narrow stretches of beach in the northern section with grassy banks. Much of the infrastructure in this area is modern and related to recreational activities such as bike paths, boat shed, and grassland.
McCallum Park and other infrastructure	Town of Victoria Park	The Investigation Area extends across McCallum Park and Charles Paterson Park. It also encompasses major roads that are linked to the Causeway (Shepperton Road, Canning Highway, Albany Highway and Great Eastern Highway). Aside from roads, bike paths and several recreational facilities, most of this southern section largely comprises grass-covered parkland with planted trees. Limestone boulders and a narrow sandy beach mostly form the river's edge, along with a section of limestone walling.

Landform	Municipality	Description
South Perth Foreshore	City of South Perth	Sir James Mitchell Park is the main park within the South Perth section of the Investigation Area. It is mostly covered by grassland with two bike paths and a carpark. A limestone wall forms the river's edge.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Perth
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NORTHBRIDGE
EAST PERTH
VICTORIA PA
Mill Point Road
Legend
Pedestrian/Cyclist Bridge Construction Footprint
Causeway_Bridge_Historical_Heritage_Survey_Area
MR21CB1a_LGA_Areas
City of Perth
City of South Perth
Town of Victoria Park
archae-aus
Map 2. Causeway Bridge Investigation Area and Local Government Authorities
Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Wiki Maps.

Legislation and Guiding Documents

The Burra Charter

The Burra Charter (Australia ICOMOS Charter for Places of Cultural Significance) is the foundation document for conserving Australia's cultural heritage. The Charter encapsulates two important aspects in conserving heritage places. First, it establishes the best practice principles and processes for understanding and assessing a place's significance, as well as developing and implementing a conservation plan. Second, the Charter defines and explains the four primary cultural values that may be ascribed to any place: aesthetic, historic, social or spiritual and scientific. These values are essential as they delineate the types and quality of information needed to accurately determine a heritage place's significance[3].

The Heritage of Western Australia Act 1990 (repealed)

Under the *Heritage of Western Australia Act 1990* (the *HWAA)*, local governments were required to compile and maintain an inventory of places with cultural heritage significance. This predominantly includes historic heritage; however, some places may also have Aboriginal heritage values and thus fall under the auspices of the *AHA* as well. Whilst the *HWAA* was repealed by the *Heritage Act 2018*, these municipal heritage inventories are still a maintained repository of information for local governments and communities, and are called Local Heritage Surveys.

Any heritage agreements entered into under Section 29 of the *HWAA* that were in effect on the commencement day of the *Heritage Act 2018* continue to have effect as if it were certified under the new legislation.

Heritage Act 2018

The purpose of the Heritage Act 2018 (*HA*) is to recognise and promote WA cultural heritage by defining principles for conservation, use, development or adaptation for heritage places. In repealing the *HWAA*, the *HA* serves are the main legislative framework for historical heritage, sometimes referred to as European heritage, in the State and the main purpose of this Act is to identify, conserve and enhance places which are of cultural heritage significance.

The Act sets out processes for the management of the State Register of Heritage Places, including the establishment of a Heritage Council. The purposes of this Council include assessment places of significance, advising the Minister for Heritage, guiding public authorities on best practice, promoting public awareness and administration of the register of places. The Heritage Council of Western Australia is Western Australia's advisory body on heritage matters and focuses on places, buildings and archaeological sites, with a mission to provide for and encourage the conservation of places significant to the cultural heritage of WA under the jurisdiction of the *HA*.

The *HA* requires the keeping of a Register of Heritage Places for places that are protected by the provisions of the Act. Heritage places generally gain registration under the *HA* by being shown to be of cultural heritage significance or possessing special interest relating to or associated with cultural heritage. Section 38 outlines relevant factors in determining the significance of heritage places. This section uses definitions and values like those of the Burra Charter (see above): The Council are to consider values such as aesthetic, historical, scientific, social or spiritual, and characteristics such as fabric, setting, associations, use and meaning.

[3] https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf

Part 5 outlines the responsibilities of public authorities to consider heritage matters within development planning. Under Section 73 of the *HA*, public authorities must refer a development proposal to the Council when the proposed works have potential to impact a registered place. The advice provided by the Council in response to a referred proposal may consider the restoration, maintenance and interpretation of the heritage place in question.

Part 11 outlines the definitions and penalties for offences and contraventions of the Act. Under section 129 of the *HA,* unauthorised impact to registered heritage places is subject to penalty. Section 129 defines damage as including altering, demolishing, removing or despoiling any part of, or thing in, a registered place. The penalties for contravention of the Act are severe, including a $1 million fine, imprisonment for one year and a daily penalty of $50,000. Applications to develop, disturb or alter any place entered on the Register can be made under Part 5 Division 2 of the *HA*. The *HA* is currently administered by the Department of Planning Lands and Heritage in Perth.

The Planning and Development Act 2005

The purposes of the *Planning and Development Act* 2005 (the *PDA*) are to consolidate the provisions of the Acts repealed by the *Planning and Development (Consequential and Transitional Provisions) Act* 2005 (i.e. the *Metropolitan Region Town Planning Scheme Act* 1959, the *Town Planning and Development Act* 1928 and the *Western Australian Planning Commission Act* 1985). The *PDA* is intended to provide for an efficient and effective land use planning system in the State, as well as promoting the sustainable use and development of land in the State.

The *PDA* requires that the advice of the Heritage Council (within the Department of Planning, Lands and Heritage) be sought in cases relating to places listed on the State Register of Heritage Places or on any inventory maintained under sections 45 or 46 of the *HWAA* (i.e., a Local Government Inventory). In such instances the local government in preparing or amending a local planning scheme is to refer the proposed scheme or amendment to the Heritage Council for advice and is not to proceed without the consent of the Minister for Heritage.

City of Perth Planning Scheme No. 2

The City of Perth's Local Planning Scheme is designed to promote and safeguard the cultural heritage of the local government by:

(i) identifying, conserving and enhancing those places which are of significance to Perth's cultural heritage;
(ii) (ii) encouraging development that is in harmony with the cultural heritage value of an area; and
(iii) (iii) promoting public awareness of cultural heritage generally

The Scheme itself relates to heritage in terms of Plot ratios, transfers, and the development of conservation plans. The City Planning Scheme No. 2 Planning Policy Manual – Part 1, Section 4.1 – City Development Design Guidelines contains requirements which may relate to the Project Area, including:

3.0 General Provisions

The local government, in dealing with an application within the policy area, may relax specific provisions of these guidelines where it is of the opinion that the proposed development fulfils the objectives of the policy, conserves a place of cultural heritage significance and/or does not adversely affect the amenity of the area. The local government actively encourages innovative and interesting design for iconic developments, and this policy aims to ensure the integration of urban design principles into such designs.

4.0 Objectives

To conserve and enhance Perth's architectural heritage and historic character and promote adaptability through development that can respond to changing social, technological and economic conditions.

5.0 Principles & Guidelines

5.1 Built Form

5.1.1 Principles

Buildings of heritage and streetscape significance are conserved and enhanced through the sensitive design of new developments.

(g) Heritage and Streetscape New development should conserve and enhance the heritage of the city and maintain/foster areas of individual and interesting character. New development should respect the setting of any surrounding properties of identified heritage and/or streetscape value in terms of building design and form.

5.5 Environment and Microclimate

(e) The restoration or reinstatement of pedestrian shelter on buildings of cultural heritage significance is encouraged where appropriate, as long as they comply with the construction norms of this section. The principles of the Burra Charter can be used as guidance.

City of South Perth Town Planning Scheme 6

The City of South Perth Town Planning Scheme 6 divides the district of the City of South Perth into zones to identify areas for particular uses and identifies land reserved for public purpose and also contains particular controls for heritage sites, in order to recognise and preserve areas, buildings and sites of heritage value, including:

3.3 Land Use Controls within Zones

(4) Notwithstanding that a Use may be permitted under the Scheme, a place included in Management Category A or B of the Heritage List, shall not be developed for any such Use unless the local government is satisfied that the proposed development will not:

(a) involve the demolition of the building or cause a detrimental change to the character or external appearance of the building; or

(b) cause a detrimental change to the character of the place.

Schedule A Supplemental Provisions to the Deemed Provisions

Part 3 Heritage Protection Clause 7A. Objectives of heritage protection:

7A. (1) The objectives of the provisions relating to heritage protection are:

(a) to facilitate the conservation of places of cultural heritage significance nominated on the City of South Perth Heritage List; and

(b) to ensure as far as possible that development occurs with due regard to cultural heritage significance.

(2) The local government may, in considering any application that may affect a place in Management Category A or B of the Heritage List, solicit the views of the Heritage Council of Western Australia

and any other relevant bodies, and shall take those views into account when determining the application.

(3) Development involving demolition or significant alteration to a place in Management Category A or B of the Heritage List or entered in the Register of Places under the Heritage of Western Australia Act 1990, shall not be permitted. Where development is proposed on a Category C place, such development shall not be permitted unless a heritage assessment is first carried out and the assessment determines that the place is not of such cultural heritage significance as to warrant retention.

Part 3 Heritage Protection Clause 12. Variations to local scheme provisions for heritage purposes

12. (4) The local government shall not grant any variation to a site or development requirement for the purpose of facilitating the conservation or enhancement of a place on the Heritage List or entered in the Register of Places under the Heritage of Western Australia Act 1990, unless:

(a) the local government is satisfied that the proposed development adequately safeguards the heritage integrity of that place;

(b) an assessment has been undertaken to determine the extent of restoration work required with respect to the listed place;

(c) where restoration work is required, the development approval is conditional upon that work being undertaken by the owner who would benefit from such variation; and

(d) the proposal has been advertised in accordance with Deemed Provisions clause 64 and the local government is satisfied that the variation will not adversely affect the amenity of the locality.

Town of Victoria Park Local Planning Scheme No 1

The Council has prepared the Scheme or the purpose of controlling and guiding development and growth in a responsible manner and which can initiate, accommodate and respond to change:

(h) to promote and safeguard the cultural heritage of the Town by –

(i) identifying, conserving and enhancing those places which are of significance to the Town's cultural heritage;

(ii) encouraging development that is in harmony with the cultural heritage value of an area; and

(iii) promoting public awareness of cultural heritage generally

Schedule A: Supplemental Provisions to the Deemed Provisions

8. Heritage list

(1) The local government must establish and maintain a heritage list to identify places within the Scheme area that are of cultural heritage significance and worthy of built heritage conservation.

(2) A heritage list established under subclause

(1) must set out a description of each place and the reason for its entry on the heritage list.

(2A) The local government must ensure that an up-to-date copy of the heritage list is published in accordance with clause 87.

(2B) Subclause (2A) is an ongoing publication requirement for the purposes of clause 87(5)(a).

(3) The local government must not enter a place in, or remove a place from, the heritage list or modify the entry of a place in the heritage list unless the local government —

(a) notifies in writing each owner and occupier of the place and provides each of them with a description of the place and the reasons for the proposed entry; and

(b) invites each owner and occupier to make submissions on the proposal within a period specified in the notice; and

(c) carries out any other consultation the local government considers appropriate; and

(d) following any consultation and consideration of the submissions made on the proposal, resolves that the place be entered in the heritage list with or without modification, or that the place be removed from the heritage list.

(3A) The period for making submissions specified in a notice under subclause

(3)(b) must not be less than the period of 21 days after the day on which the notice is given under subclause (3)(a).

(4) If the local government enters a place in the heritage list or modifies an entry of a place in the heritage list the local government must give notice of the entry or modification to —

(a) the Heritage Council of Western Australia; and

(b) each owner and occupier of the place. [Clause 8 amended: SL 2020/252 r. 49.]

Underwater Cultural Heritage

Underwater Cultural Heritage constitutes a non-renewable part of Western Australia's cultural heritage that is particularly vulnerable to coastal and estuarine infrastructure development projects. There is low potential for maritime sites and objects to be encountered in the Investigation Area; however, if in the event a maritime find or feature is encountered, Archae-aus have included guidance on maritime legislation and the UNESCO Convention on the Protection of Underwater Cultural Heritage.

The following summaries of relevant legislation pertaining to maritime archaeological sites and objects are based on summaries from the websites of the Australian Government's Department of Agriculture, Water and the Environment[4], the Western Australian Museum[5] (WAM) and the Australasian Institute for Maritime Archaeology[6] (AIMA). AIMA is an incorporated, not-for-profit organisation that is dedicated to the preservation of underwater cultural heritage and works closely with, and provides advice to, State, Territory and Australian Federal Government on policy pertaining to maritime cultural heritage. The WAM's Department of Maritime Archaeology based at the Shipwreck Galleries in Fremantle is an AIMA affiliated organisation.

The Underwater Cultural Heritage Act 2018

The Commonwealth *Underwater Cultural Heritage Act* 2018 (the *UCHA*) Act provides for the protection of Australia's underwater cultural heritage. The *UCHA* protects shipwrecks, sunken aircraft and their associated

[4] https://www.environment.gov.au/heritage/underwater-heritage/underwater-cultural-heritage-act
[5] http://museum.wa.gov.au/research/departments/maritime-archaeology/legislation-commonwealth-historic-shipwrecks-act-1976
[6] http://www.aima-underwater.org.au/laws-and-ethics/

artefacts, that occurred 75 or more years ago, regardless of whether their location is known. Other types of underwater heritage, and more recent shipwrecks or aircraft, may be protected through a declaration under the *UCHA*, and some underwater heritage sites may also have a protected zone around them. Australian Commonwealth waters where the *UCHA* applies extend from the seaward limits of a State to the outer limit of Australia's Continental Shelf. Other kinds of articles of underwater cultural heritage can be protected if the Minister is satisfied that they are of heritage significance. Such articles may be in Commonwealth waters, Australian waters or in waters beyond Australian waters, depending on the kind of article concerned. Some articles are, or can be, protected even if they have already been removed from those waters. In all cases, if an article is removed from waters after it becomes protected, the protection continues to apply to it. Inspectors have powers to ensure people are complying with the *UCHA*, to investigate non-compliance and to enforce the *UCHA*. Enforcement mechanisms include infringement notices, enforceable undertakings and injunctions. The Minister maintains a register in relation to underwater cultural heritage. The register includes information relating to the location of known remains of vessels and other articles in waters, declarations that have been made and permits that have been granted, as well as other information.

The Maritime Archaeology Act 1973

The WAM is the regulator for the State *Maritime Archaeology Act 1973*, which protects pre-1900 maritime archaeological sites on State lands and in State waters, including protected bays, harbours, estuaries, rivers and creeks. Section 4 of the *Maritime Archaeology Act 1973* defines what constitutes a maritime archaeological site which may be located below the low water mark, between the tide marks or on land. Maritime archaeological site types include shipwrecks and relics associated with historic ships, early maritime infrastructure and shipwreck survivor camps. This Act defines a 'historic ship' as any ship that before the year 1900 was lost, wrecked, abandoned or stranded on or off the coast of Western Australia. The term 'relic' pertains to anything of historic interest that appears to have formed part of, or to have been carried by, derived from or been associated with a historic ship. It is a legal requirement to report any site believed to be, or possible be, underwater cultural heritage to the WAM.

2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage

Adopted in 2001, the UNESCO Convention on the Protection of the Underwater Cultural Heritage was created to enable UNESCO member State Parties (nations) to better protect their underwater cultural heritage. Underwater cultural heritage is defined by UNESCO as: 'all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as:

- sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context.
- vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context.
- objects of prehistoric character.

The UNESCO Convention:

- sets out basic principles for the protection of underwater cultural heritage.
- provides a detailed State Party cooperation system.

- provides widely recognized practical Rules for the treatment and research of underwater cultural heritage.

It consists of a text and an Annex which sets out the '*Rules for activities directed at underwater cultural heritage*'.

The main principles of the Convention are:

- **Obligation to Preserve Underwater Cultural Heritage** - States parties should preserve underwater cultural heritage and take action accordingly. The Convention encourages scientific research and public access.
- **Preservation as first option** - The preservation of underwater cultural heritage in situ (i.e. in its original location) should be considered as the first option before allowing or engaging in any activities. The recovery of objects may however be authorised for the purpose of making a significant contribution to the protection of, or knowledge about, underwater cultural heritage.
- **No Commercial Exploitation** - The 2001 Convention stipulates that underwater cultural heritage should not be commercially exploited for trade or speculation, and that it should not be irretrievably dispersed. This regulation is in conformity with the moral principles that already apply to cultural heritage on land. It is not to be understood as preventing archaeological research or tourist access.
- **Training and Information Sharing** - Many State Parties do not yet have sufficiently trained underwater archaeologists. The Convention therefore encourages training in underwater archaeology, the transfer of technologies and the sharing of information.

The UNESCO Convention on the Protection of the Underwater Cultural Heritage has not yet been ratified by the Australian Government, but the Annex has been formally adopted as best practice for the management of underwater cultural heritage in Australia.

Heritage Listings

The following section summarises the relevant lists and registers that relate to cultural heritage places in Western Australia and details the places that are within the Investigation Area.

Aboriginal Heritage Listings

All important and significant Aboriginal heritage sites and objects are protected under the *Aboriginal Heritage Act 1972* (AHA). Aboriginal sites in Western Australia are listed on the Register of Aboriginal Sites which is managed by the Department of Planning, Lands and Heritage (DPLH). The Aboriginal Heritage Inquiry System (AHIS) is the portal through which the public can access information about Aboriginal heritage places and their legal status.

A search on AHIS shows that four Aboriginal sites intersect with the Investigation Area (DPLH 3536/*Swan River*, DPLH 3589 *Heirisson Island*, DPLH 21621/*Kilang Minangaldjkba* and DPLH 29278/*Midgegooroo's Execution and Burial*: see Table 4). Eight Aboriginal sites border the Investigation Area and include (DPLH 3694/*Claisebrook Camp*, DPLH 3701/*Burswood Island*, DPLH 3767/*East Perth Power Station*, DPLH 3789/*Perth Town Hall*, DPLH 3798/*Government House*, DPLH 3799/*Victoria Square*, DPLH 15915/*Burswood Island Camp*, and DPLH 17061/*Old Campsite 1*).

Table 4. Registered Sites that intersect or are adjacent to the Investigation Area

ID	Place Name	Site Type	Location	Status	Location	File Restricted?
3536	*Swan River*	Mythological	Within Investigation Area	Registered Site	Intersect Investigation Area	No
3589	*Heirisson Island*	Mythological, Camp, Hunting Place, Meeting Place, Plant Resource	Within Investigation Area	Registered Site	Intersect Investigation Area	No
21621	*Kilang Minangaldjkba*	Water Source	Within Investigation Area/Borders to the North	Registered Site	Intersect Investigation Area	No
29278	*Midgegooroo's Execution and Burial**	Historical, Skeletal Material / Burial	Within Investigation Area	Registered Site	Intersect Investigation Area	Male Access Only
3694	*Claisebrook Camp*	Camp, Water Source	Borders Investigation Area to the North	Registered Site	Adjacent to Investigation Area	No
3701	*Burswood Island*	Ceremonial	Borders Investigation Area to the North East	Registered Site	Adjacent to Investigation Area	No
3767	*East Perth Power Station*	Camp, Meeting Place	Borders Investigation Area to the North	Registered Site	Adjacent to Investigation Area	No

ID	Place Name	Site Type	Location	Status	Location	File Restricted?
3789	*Perth Town Hall*	Camp	Borders Investigation Area to the North West	Registered Site	Adjacent to Investigation Area	No
3798	*Government House*	Camp, Water Source	Borders Investigation Area to the North West	Registered Site	Adjacent to Investigation Area	No
3799	*Victoria Square*	Skeletal Material / Burial	Borders Investigation Area to the North West	Registered Site	Adjacent to Investigation Area	No
15915	*Burswood Island Camp*	Camp	Borders Investigation Area to the North	Registered Site	Adjacent to Investigation Area	No
17601	*Old Campsite 1*	Camp	Borders Investigation Area to the North East	Registered Site	Adjacent to Investigation Area	No

*A small section of *Midgegooroo's Execution and Burial* site intersects the Investigation Area.

The *Swan River* incorporates all of the river component of the Investigation Area, continuing to the north and south. The *Swan River*, or *Derbarl Yerrigan*, is a significant cultural site for Noongar people, connected to the mythological serpent *Waugal*. The river has been subject to multiple heritage assessments that all detail its cultural significance for Noongar people.

Heirisson Island is a place of mythological significance associated with the *Waugul*, as well as a place for camping, hunting, meeting, and collection of plant foods. It has been subject to several heritage assessments that all detail its cultural significance for Noongar people.

Kilang Minangaldjkba is a named freshwater spring, also known as turtle spring. It has been subject to several heritage assessments that all detail its cultural significance for Noongar people.

Midgegooroo's Execution and Burial is a restricted site, male access only, and is of significant historical and cultural significance.

Historical Heritage Listings

There are several registers and inventories for historical heritage places in Western Australia. InHerit is an online database for information about heritage places and listings in Western Australia, containing detailed information about cultural heritage places entered in the State Register of Heritage Places, local government inventories and other lists, the Australian Government's heritage list, and other non-government lists and surveys[7].

Maritime Shipwrecks Database

A search of the Shipwrecks Database[8] was conducted for the Investigation Area. No places of maritime archaeological significance were identified.

[7] https://www.dplh.wa.gov.au/about-inherit
[8] https://museum.wa.gov.au/maritime-archaeology-db/wrecks

National and Commonwealth Heritage List

No places associated with the EPBC Act were identified.

State Heritage Register

The Department of Planning, Lands and Heritage maintains the State Register of Heritage Places. Planning, building, demolition and other applications affecting a place in the State Register are referred by the relevant decision-making authority (usually a Local Government) to the Heritage Council for advice.

A search of the DPLH InHerit database returned results of two places listed on the State Register of Heritage places that intersect the Investigation Area. An application to disturb these sites must be submitted to the Department of Planning, Lands and Heritage prior to works commencing. These places are summarised in Table 5.

Table 5. Places on the State Heritage Register intersecting the Investigation Area

Register Number	Place Name	Status	Location
03346	*Langley Park**	State Register Place	Lot 565 Riverside Dr, Perth
03631	*Causeway Bridges*	State Register Place	Lot 914 and 932, Adelaide Terrace

*A very small section of Langley Park intersects the Investigation Area (0.4 m²) and so has not been included in the impact assessment as it will be avoided by the proposed works.

Local Government Inventory and WA Heritage Council Heritage List

A local government inventory is essentially a survey of heritage places in the local district and is used as the basis of informed local conservation strategies. The purposes of an inventory are to provide a cultural and historic record of the local district; to determine local government conservation policies; and to provide information about local heritage that may be required under a local planning scheme for that district.

Please be aware; however, that a number of these sites are also listed in the State Register and National Heritage Listings. Additionally, places which have been included on local government heritage lists (i.e., places with statutory protection) are generally found on the Municipal Inventory.

Three different inventories apply to the Investigation Area: The Town of Victoria Park, The City of South Perth, and the City of Perth.

The Town of Victoria Park's Municipal Inventory, now known as the Local Heritage Survey, is a guiding document outlining the heritage value of historical places in the Town, providing a thematic framework that has identified places of historical and cultural significance. A total of 84 places were identified on the Local Heritage Survey, 58 within the Victoria Park locality. Of these places only *McCallum Park* (VP17) falls within the Investigation Area.

Table 6. Places on the Town of Victoria Park Municipal Inventory intersected by the Investigation Area

Register Number	Place Name	Status	Location
03915/VP17	*McCallum Park*	Municipal Inventory Place, Category B	Canning Hwy, Vic Park

The City of South Perth Municipal Inventory, now knowns as the Local Heritage Survey, contains information on a variety of places of local heritage significance, that demonstrate the history of development of the City of South Perth and stories of its community. A total of 79 places were identified on the Local Heritage Survey including *Sir James Mitchell Park* (#62), which is the only place on the list which falls within the Investigation Area.

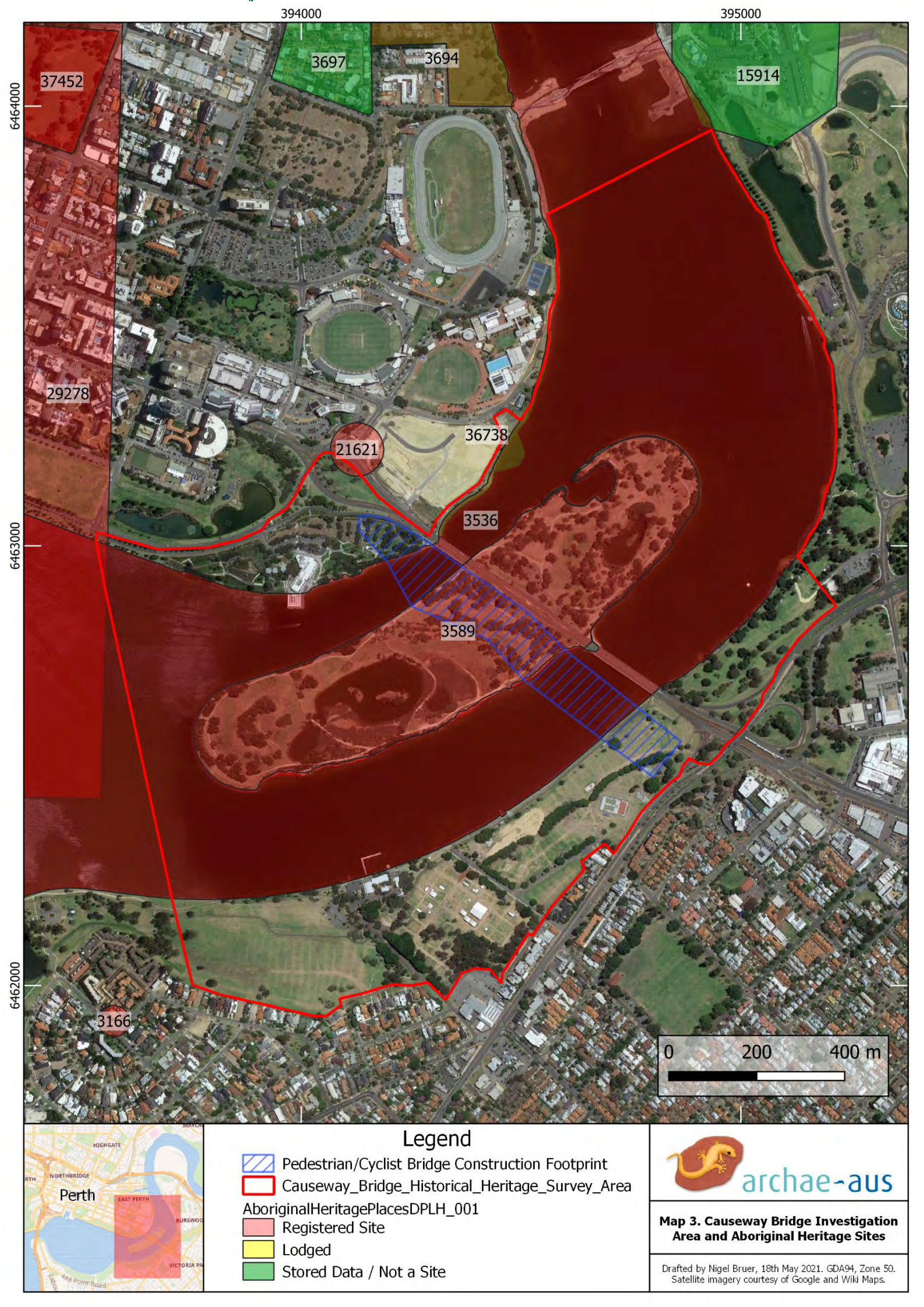
Table 7. Places on the City of South Perth Municipal Inventory intersected by the Investigation Area

Register Number	Place Name	Status	Location
04806/62	*Sir James Mitchell Park*	Municipal Inventory Place; Heritage List	Cnr Mill Point Rd & Coode St, South Perth

The City of Perth Municipal List is extensive, and currently under review. One place has been identified within the Investigation Area - *Yagan's Statue* (11472). This place is classified as Category 1, being essential to the heritage of the locality, and a rare or outstanding example.

Table 8. Places on the City of Perth Municipal Inventory intersected by the Investigation Area

Register Number	Place Name	Status	Location
11472	*Yagan's Statue*	Municipal Inventory Place, Category 1; Heritage List	Heirisson Island, Adelaide Terrace, East Perth



Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

AboriginalHeritagePlacesDPLH_001

- Registered Site
- Lodged
- Stored Data / Not a Site

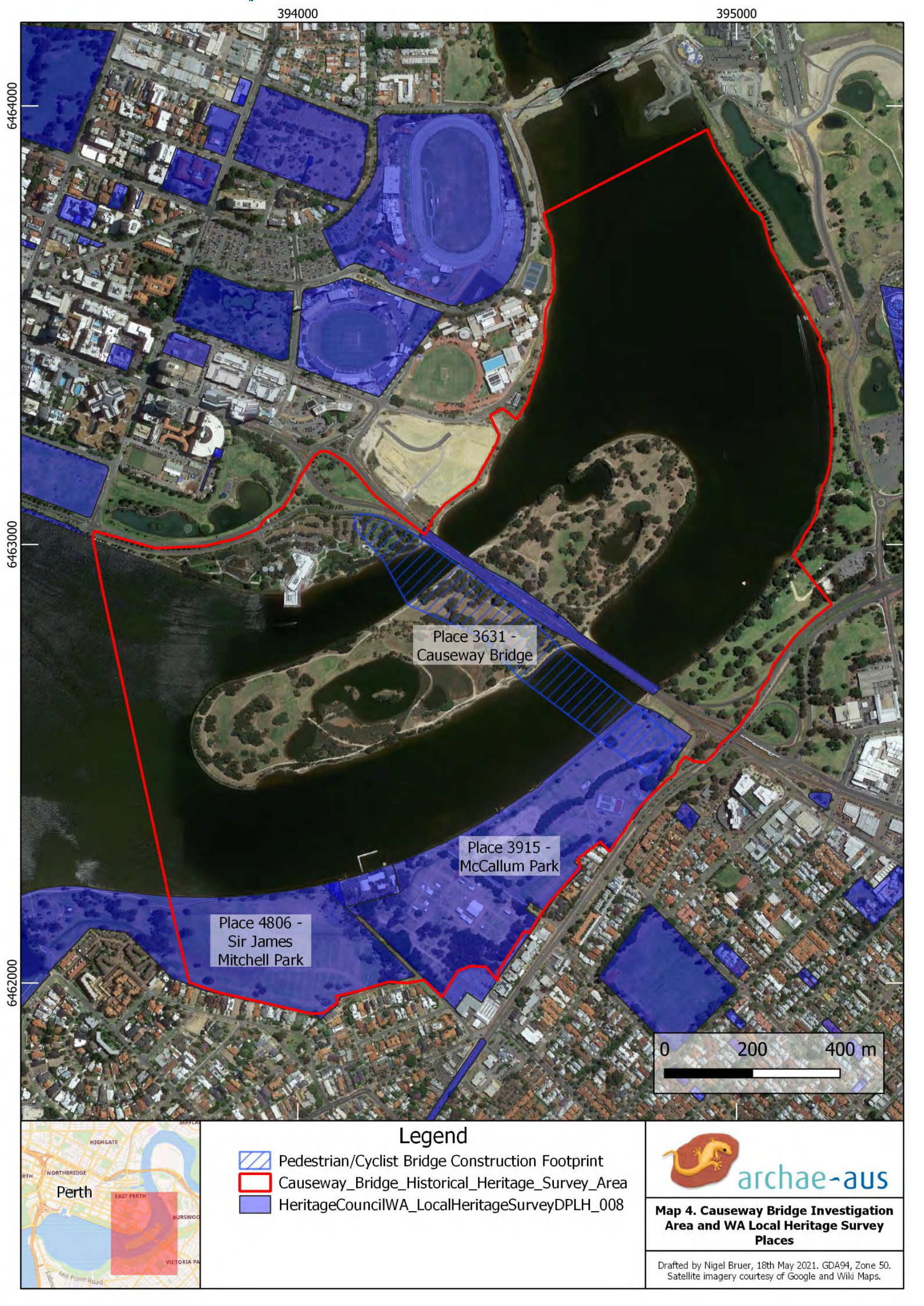
archae-aus

Map 3. Causeway Bridge Investigation Area and Aboriginal Heritage Sites

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.

Map 4. Causeway Bridge Investigation Area and WA State Heritage Places

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.



Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area
- HeritageCouncilWA_LocalHeritageSurveyDPLH_008

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Map 4. Causeway Bridge Investigation Area and WA Local Heritage Survey Places

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.

SECTION TWO – HISTORICAL BACKGROUND & CONTEXT

Historical Timeline of the Investigation Area

The Assessment Documentation for the *Causeway Bridges* contains a very detailed history of the construction of each of the different bridges that were built across Heirisson Island and the Perth 'flats' (Heritage Council of Western Australia, 1998).[9]

This detailed history is not reproduced below and instead, the timeline below focuses on the events, images and historical map overlays that may help to construct an understanding of site formation processes, archaeological potential, and the types of historical objects and features that may be encountered through ground disturbance.

The timeline is broken down into four key historical phases:

1) Crossing the Swan River
2) Land Reclamation
3) Establishing Parkland along the Swan River Foreshores
4) Recognition of Whadjuk Noongar Connections to the Area

CROSSING THE SWAN RIVER

<1829

Pre-colonisation

Archaeological evidence from several sites recorded along the west coast shows that the Aboriginal people first occupied the south-west of Western Australia by about 50,000 years ago (Balme, 2014; Monks *et al.*, 2016; Dortch and Dortch, 2019)[10].

The Swan Coastal Plain was occupied by a number of different groups with defined territories or 'estates'. At the time of European arrival in 1829, the northern side of the Investigation Area was within the estate of Yellagonga[11], with the estate of Beeloo on the southern side.

The Swan and Canning Rivers and their tributaries, as well as the numerous springs, lakes, and wetlands throughout the Perth area, rich economic and spiritual base for Aboriginal people. The Swan River, like other wetlands, ponds and lakes would have been a place where men speared fish and women collected turtles, reeds, and other foods.

The area in and around Heirisson Island was once a shallow section of the Swan River called *Matta Gerup*[12], later known as 'the flats'. *Matta Gerup* is associated with the original islands of *Goonagar*, *Kakaroomup* and *Yoondoorup*. Not only are these locations a part of the *Waugyl* creation journey, they were used by Whadjuk Noongar people as the only major crossing point (Hallam, 1991: 38). Hallam observed that

> … 'The Causeway', which crosses the Swan via Heirisson Island at what used to be 'the flats'. Not only was this crossing important in the Aboriginal

[9] http://inherit.stateheritage.wa.gov.au/Admin/api/file/76fdca66-4acd-8d35-cb7d-6226e3b95274

[10] This section is very brief as the focus of this report is the post-1829 history of the Investigation Area; however, it is important to note the continuing historical connections that Noongar people have to this area and the deep history and continual use of this location as a major crossing point over Swan River.

[11] Also spelt 'Yellowgonga' or 'Yalagonga'

[12] https://www.museumofperth.com.au/matta-gerup

communications system, it has remained so in the European system, right up to the present, when it carries the Great Eastern Highway with traffic to the airport and to the eastern states'.

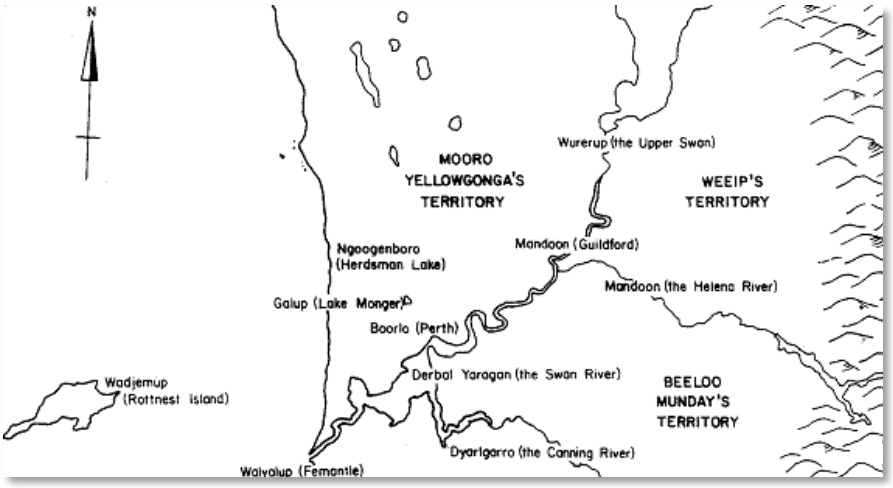

Figure 3. 1832 map identifying place names and territories described by Yagan to Robert Lyon in 1832 (image cropped)

1801-1829

Exploration

The French were the first Europeans to visit and chart the Swan River. An expedition aboard a longboat of the *Naturaliste*, was led by Francois-Antoine Boniface Heirisson, the creator of the chart seen in Figure 4. Heirisson Island was named after this explorer (although its traditional name is *Matagarup*) (State Library of Western Australia, 2021).

Captain Stirling first visited the Swan River in 1827, spending 9 days exploring and charting its length. Abundant freshwater was observed near the Investigation Area (possibly at Claisbrook/*Goongoongup*) (Figure 6). A detailed report of the river, including Heirisson Island, was made by Captain Montagu of the Crocodile[13], who revisited the area in 1829 with Captain Stirling to confirm the suitability of the area for settlement[14]:

> Here the river widens, and forms a basin two miles and a half wide [Perth Water] : a little above this the river is blocked up by shoals and islets (Heirisson Isles) between which the depth is not more than one-third of a mile wide, and then continued in a serpentine course…

Based on Stirling and Montagu's favourable portrayals of the Swan River region, British settlement of the Swan River Colony began in 1829.

[13] 1829 'New Australian Settlement, SWAN RIVER.', Colonial Times (Hobart, Tas. : 1828 - 1857), 20 February, p. 4. , viewed 16 May 2021, http://nla.gov.au/nla.news-article8644123

[14] 1829 'SWAN RIVER.', The Sydney Gazette and New South Wales Advertiser (NSW : 1803 - 1842), 10 January, p. 3. , viewed 16 May 2021, http://nla.gov.au/nla.news-article2191607

Figure 4. 1801 Chart of the Swan River, showing the original islands and Point Fraser, by Francois-Antoine Boniface Heirisson (image cropped showing Investigation Area)[15]

Figure 5. 1811 Chart of the Swan River based on the 1801-1803 expeditions by Freycinet and Heirisson (image cropped showing Investigation Area) [16]

[15] (1801). Freycinet collection, 1801-2003. https://purl.slwa.wa.gov.au/slwa_b2112066_030

[16] Freycinet, Louis Claude Desaulses de & Heirisson, Francois & Freycinet, Louis Claude Desaulses de. 1811, Plan des Iles Louis-Napoleon et de la Riviere des Cygnes (Terres de Leuwin et d'Edels) Imprime par Langlois, [Paris viewed 16 May 2021 http://nla.gov.au/nla.obj-230972651

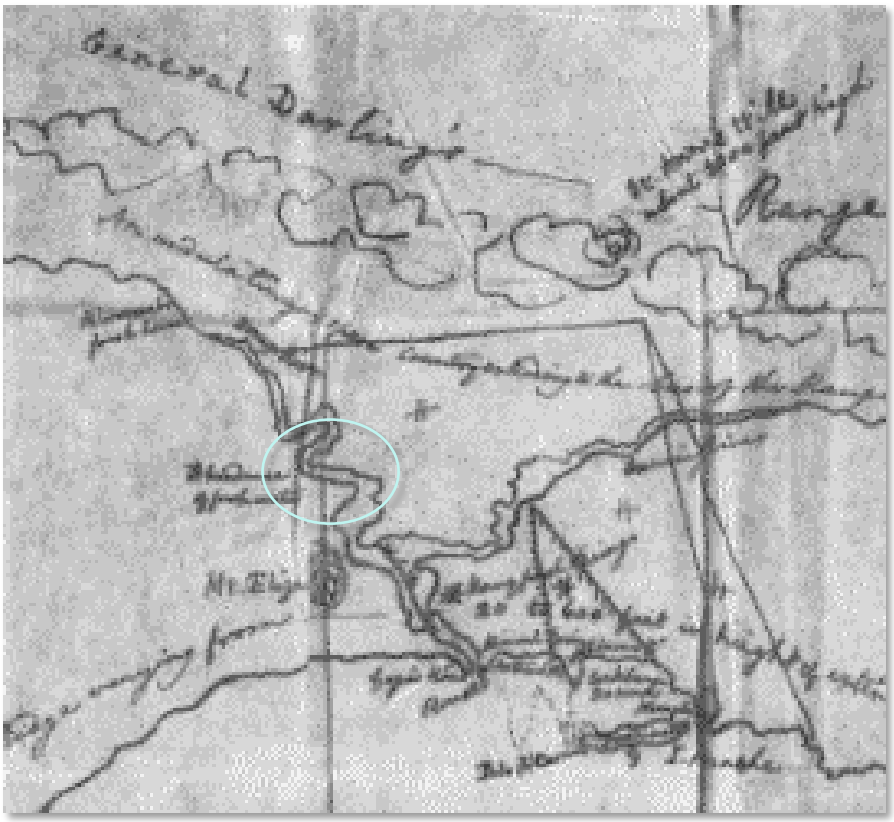

Figure 6. 1827 Chart of the Swan River by Capt. James Stirling, west at top of page (image cropped, with Investigation Area circled)[17]

1833-1842

Perth Mudflat Crossings

The flats were described as shoals in the river 'over which a loaded [b]oat would have difficulty to pass except at high water'.[18] A newspaper article in June 1833 suggested that the construction of:

> … a causeway across the [r]iver flats, a short distance above Perth, with a bridge over the deep water, thus a line would be formed from the sea Port, Fremantle, through the towns of Perth and Guildford to the very head of the river, a proposal of infinite advantage to the Colony…[19]

A committee report appointed by the Agricultural Society of Western Australia made some recommendations for improving 'the flats' to improve navigation across them. It was suggested that the spade channel (Canal) be 'cleared out to its original depth' and a series of banks be created between the islands. This canal is depicted on sketches of the Perth flats and islands as early as 1835 near present-day Crown Perth, Burswood (Figure 7).

Figure 7 shows a series of linear connections between the original islands that now form Heirisson Island. These may be the series of 'banks' that were recommended by the Agricultural Society. It is likely that the canal and banks were constructed in 1834, with a newspaper article from February that year indicating that the channel would be constructed within the month; however, they suggest that:

[17] https://nla.gov.au/nla.obj-1005800417/view

[18] 1833 'COLONEL HANSONS PAMPHLET', The Perth Gazette and Western Australian Journal (WA : 1833 - 1847), 12 January, p. 7. , viewed 16 May 2021, http://nla.gov.au/nla.news-article642267

[19] 1833 'THE WESTERN AUSTRALIAN JOURNAL', The Perth Gazette and Western Australian Journal (WA : 1833 - 1847), 1 June, p. 86. , viewed 16 May 2021, http://nla.gov.au/nla.news-article642052

> The projected plan of forming a causeway connected by bridges, which it is estimated would cost about £1600 to £2,000, being still in agitation, we believe is the occasion of the Government withholding up to this time any temporary outlay.[20]

In 1835, an advertisement made by the Commissioners of Roads, Bridges, &c. called for tenders for '[i]mprovements and deepening of Canal and Spade Channel above Perth, [r]epairs to Dike, &c'.[21] It is assumed that the dike/dyke is the banks or dams that were created between the islands[22]. The Agricultural Society suggested that these be constructed using a wattled fence, mud, rushes and aquatic plants.

A newspaper article written in 1948 recalls a scene that took place in 1838 where the Advocate-General and Surveyor-General:

> …spent one whole day examining the flats about Perth, wading about in their shirt-tails, prodding here and there with sticks, testing the river bed with a view to the erection of the Causeway (Figure 8).

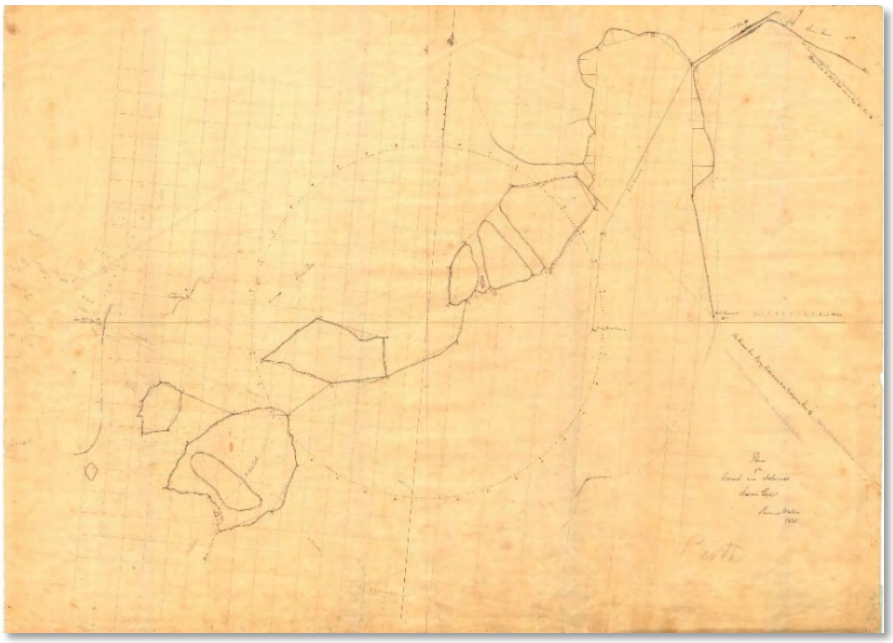

Figure 7. 1835 Sketch of Heirisson Islands and the spade canal (SRO 3844-025)

[20] 1834 'THE WESTERN AUSTRALIAN JOURNAL.', The Perth Gazette and Western Australian Journal (WA : 1833 - 1847), 8 February, p. 230. , viewed 16 May 2021, http://nla.gov.au/nla.news-article641655

[21] 1835 'Classified Advertising', The Perth Gazette and Western Australian Journal (WA : 1833 - 1847), 2 May, p. 485. , viewed 16 May 2021, http://nla.gov.au/nla.news-article640960

[22] 1933 'THE CAUSEWAY.', Western Mail (Perth, WA : 1885 - 1954), 26 January, p. 9. , viewed 16 May 2021, http://nla.gov.au/nla.news-article37695751

Figure 8. 1838 (illustrated in 1948) Advocate-General Mr G.F. Moore and Surveyor General Mr J.S. Roe examining the flats with a view to creating a causeway[23]

1843-1862

First Causeway Bridge (I)

It was not until 1843, 14 years after the establishment of the Colony, that a substantial river crossing was officially opened – the first Causeway Bridge (Causeway Bridge I). A letter to the editor of the Inquirer in 1843 was critical of this new causeway:

> "Perth is at one side of the river, and the colony at the other." Was the grand reason for erecting this glorious monument of ill-digested and hasty zeal? But, after thousands have been spent, will the warmest upholder of that work say that it has been placed in the best place, done in the best manner, and at the least cost? Certainly not… the causeway stands where it is, useful to a few, and costly to us all.[24]

This letter also suggested that 'uncountable loads' were sunk and are 'sinking in the muddy hole'.

In 1848 there were calls for the creation of a deeper channel through the Perth flats as despite the Canal, the process of getting boats through this passage was inefficient as the area north of the Causeway was too shallow.[25] The Central Board of Works suggested that a deep and permanent passage over the flats/shoals be created.

In 1849, tolls were put in place for crossing the Causeway Bridge on and after the 17th of February that year.[26] This included tolls for transporting stock and vehicles over the bridge.

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[23] 1948 'The Old Causeway', *The West Australian (Perth, WA : 1879 - 1954)*, 17 January, p. 3. , viewed 16 May 2021, http://nla.gov.au/nla.news-article46884276

[24] 1843 'To the Editor of the " Inquirer."', Inquirer (Perth, WA : 1840 - 1855), 4 October, p. 5. , viewed 16 May 2021, http://nla.gov.au/nla.news-article65583586

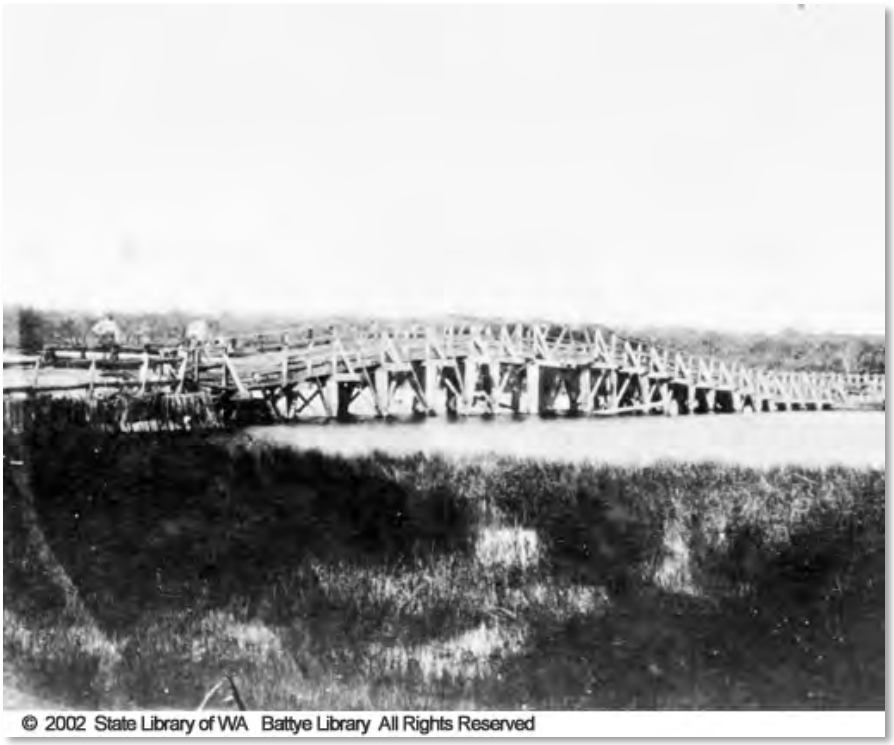
[25] 1848 'THE INQUIRER. Occulta vitia inquirere. WEDNESDAY, FEBRUARY 9, 1848.', Inquirer (Perth, WA : 1840 - 1855), 9 February, p. 2. , viewed 16 May 2021, http://nla.gov.au/nla.news-article65770702

[26] 1849 'The Government Gazette.', The Perth Gazette and Independent Journal of Politics and News (WA : 1848 - 1864), 27 January, p. 4. , viewed 17 May 2021, http://nla.gov.au/nla.news-article3170423

It is documented that from the 1850s, a Noongar camp was established near the present-day Causeway. This location continued to be used in the 1930s and 1940s (Hughes-Hallett, 2010). It is unclear exactly where the camp was but is likely on the original main island that the causeway crosses over (*Kakaroomup*).[27]

In 1862, a 25-year-old man was swept off the causeway while riding his horse during a flood event.[28] His horse managed to swim back to shore but unfortunately the man was drowned.

Figure 9. 1860 image of Causeway Bridge I prior to its partial destruction during the floods of 1862 (SLWA 009286d)



[27] Kakaroomup, Museum of Perth information page: https://www.museumofperth.com.au/kakaroomup
[28] 1862 'Local and Domestic Intelligence.', The Inquirer and Commercial News (Perth, WA : 1855 - 1901), 9 July, p. 2. , viewed 17 May 2021, http://nla.gov.au/nla.news-article69136695

Figure 10. 1862 flooding at the flats (East Perth) (slwa b4167640_2)

1862-1953

Second Causeway Bridge (II)

As the 1862 flood had caused extensive damage to the bridge, it was reconditioned and raised in height.[29] Later in September 1862, a party of convicts were sent to work on the flood damage on the causeway.[30] It is unclear if Causeway Bridge I was demolished or whether some of the timbers were repurposed for Causeway Bridge 2. Figure 12 below, for example, shows little sign of the earlier bridge. Causeway Bridge II is likely to have been built over the original alignment of Causeway Bridge I.

By 1864, it was observed that some of the piles along the causeway had sunk and the bridge was considered to be in a dangerous state.[31] A series of bore holes were carried out at the site of the new Causeway Bridge (Causeway Bridge II) and revealed that the soil at 40 feet deep was the same as the present bed of the river, containing 'fluviatile shells'. It was observed that this shell species was different from any other fresh-water shell species that was known but is 'exactly similar to a common shell now found on the sea coast' (*Hyotissa*). [32]

In 1867, the Causeway Bridge II was officially opened by Governor John Stephen Hampton on the 12th of November.

According to the Museum of Perth:

> The second Causeway [consisting of three bridges] was structurally weak for its time due to budget constraints and required numerous upgrades throughout the years. The bridges were strengthened and their width increased on three

[29] 1948 'The Old Causeway', The West Australian (Perth, WA : 1879 - 1954), 17 January, p. 3. , viewed 17 May 2021, http://nla.gov.au/nla.news-article46884276

[30] 1862 'The Inquirer & Commercial News. Quid verum atque decens, curo et rogo, et omnis in hoc sum. WEDNESDAY, SEPTEMBER 24, 1862.', The Inquirer and Commercial News (Perth, WA : 1855 - 1901), 24 September, p. 2. , viewed 17 May 2021, http://nla.gov.au/nla.news-article69135223

[31] 1864 'West Australian Times.', The West Australian Times (Perth, WA : 1863 - 1864), 11 February, p. 2. , viewed 17 May 2021, http://nla.gov.au/nla.news-article3367262

[32] 1864 'GENERAL INTELLIGENCE.', The Perth Gazette and Independent Journal of Politics and News (WA : 1848 - 1864), 20 May, p. 2. , viewed 17 May 2021, http://nla.gov.au/nla.news-article2935086

separate occasions in 1899, 1904, and 1932 respectively, culminating in a total width of 11 metres.[33]

Figure 19 shows trams were in service over the Causeway by at least 1906. According to the Perth Electric Tramway Society, the tramline over the Causeway was servicing Victoria Park by 1913, with an additional service added between 1913 and 1930 for the South Perth Zoo.[34] The 'Causeway Lines' that serviced Welshpool, Victoria Park, South Perth and Como were eventually closed in 1950.

During the widening of the Causeway in 1932, the original piles of Causeway Bridge I were observed 'a few feet to the west of the present structure, [and were] still sound below the water line, although the top sections of the remaining stumps are rotted'.[35]

The Second Causeway Bridge was eventually demolished in 1953 after the current and third Causeway Bridge (III) was opened in 1952.

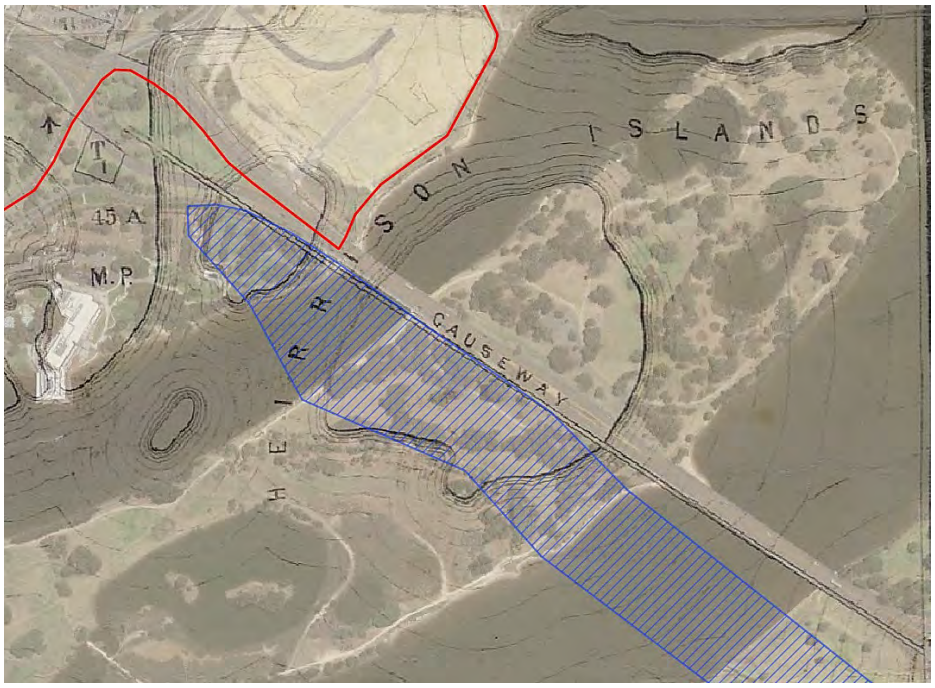


Figure 11. Overlay of Causeway Bridge II, existing Causeway Bridge III and the Pedestrian/Cyclist bridge construction footprint[36] (cropped selection of 1877 map: slwa b1807449_2)

[33] https://www.museumofperth.com.au/new-page-3

[34] Perth Electric Tramway Society - https://www.pets.org.au/pets10p.html

[35] 1933 'CAUSEWAY WIDENING.', The West Australian (Perth, WA : 1879 - 1954), 14 January, p. 16. , viewed 20 May 2021, http://nla.gov.au/nla.news-article32583680

[36] Please note that the historical maps aren't overly accurate and the footprint of Causeway Bridge II was much wider

Figure 12. c.1865 North side of Causeway Bridge II (slwa_b3981178_1)

Figure 13. 1867 completed Causeway Bridge II with ceremonial arch at far right to welcome Prince Alfred (slwa_b3983581_1)

Figure 14. 1890s view of Causeway Bridge II and the mudflats (slwa 230443PD)

State Library of Western Australia

Figure 15. 1890s view of Causeway Bridge II and the mudflats (slwa 230444PD)

State Library of Western Australia

Figure 16. 1890s view of Causeway Bridge II and the mudflats (slwa 230445PD)

State Library of Western Australia

Figure 17. 1900s camp along the foreshore near the Causeway Bridge II (slwa 230401PD)

State Library of Western Australia

Figure 18. 1900s camp along the foreshore with Causeway Bridge II in the background (slwa 230402PD)

State Library of Western Australia

Figure 19. 1906 view of Causeway Bridge II from Ozone Hotel in East Perth, showing tram approaching the bridge (slwa 318070PD)

State Library of Western Australia

Figure 20. 1906-1907 pipes over the Causeway, with buildings present on Point Fraser in mid-ground (slwa_b2948373_21)

Figure 21. 1906-1907 Burswood overlooking the Swan River (slwa_b2948371_4)

Figure 22. 1932 diagram of proposed Causeway widening[37]

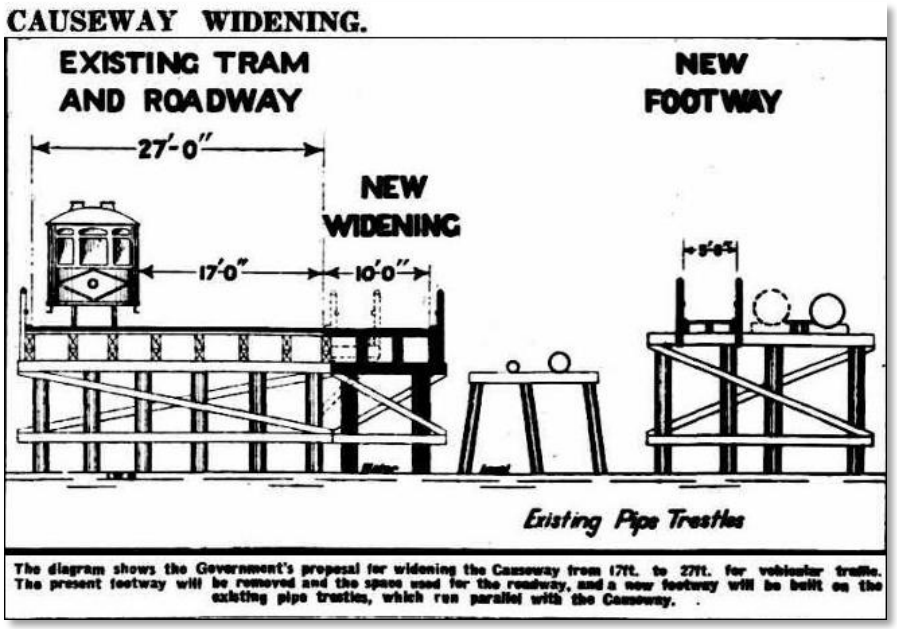


Figure 23. 1932 new pathway completed over the existing pipe trestles[38]

[37] 1932 'CAUSEWAY WIDENING.', *The West Australian (Perth, WA : 1879 - 1954)*, 23 August, p. 10. , viewed 17 May 2021, http://nla.gov.au/nla.news-article32545823

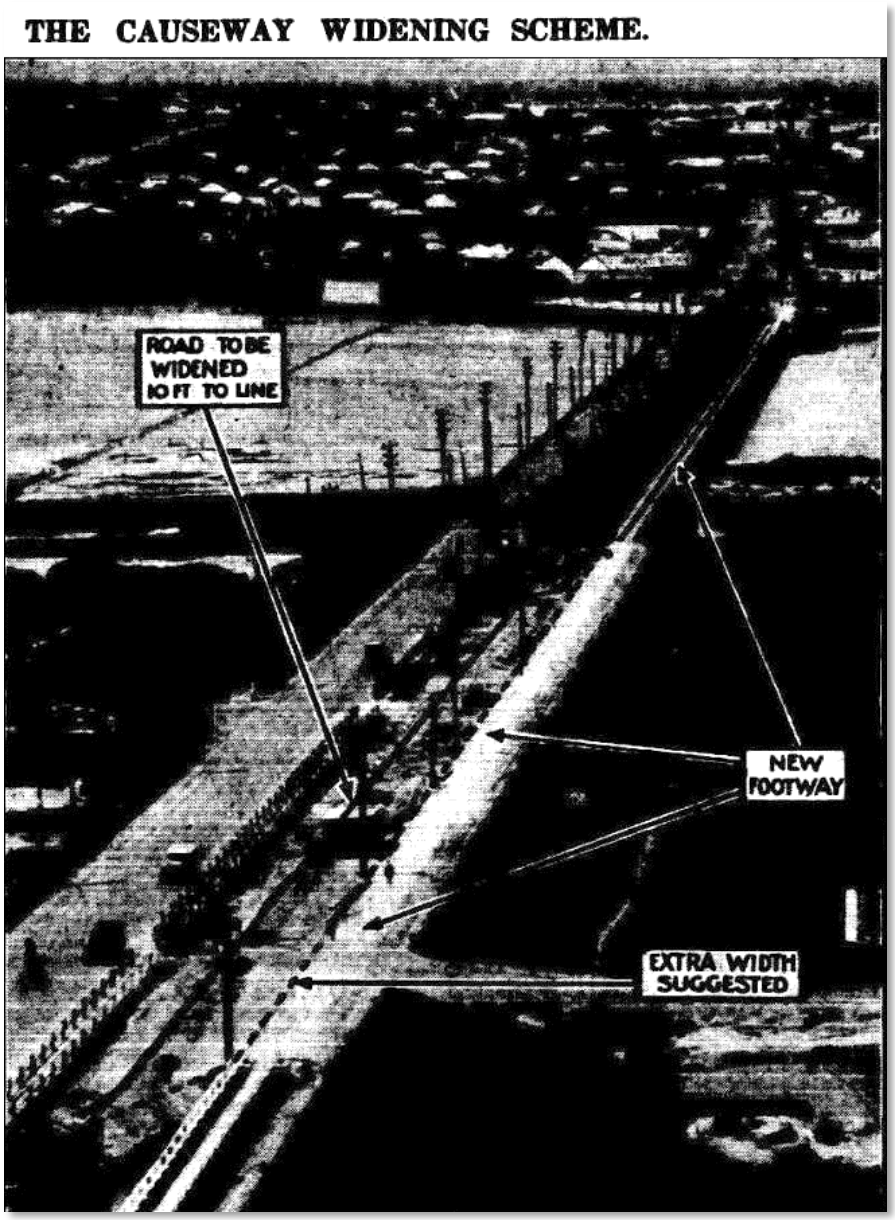
[38] 1932 'CAUSEWAY IMPROVEMENT.', *The West Australian (Perth, WA : 1879 - 1954)*, 30 August, p. 10. , viewed 17 May 2021, http://nla.gov.au/nla.news-article32539002

Figure 24. 1932 Scrap heaps containing old tyres, broken bottles, and hoop iron near Causeway, possibly from a wheel wright's shop that was once near this location[39][40]

[39] 1932 'SCRAP HEAPS NEAR THE CAUSEWAY.', *The West Australian (Perth, WA : 1879 - 1954)*, 8 September, p. 16. , viewed 17 May 2021, http://nla.gov.au/nla.news-article32541152

[40] 1925 'PERTH'S TRAFFIC PROBLEMS', *Sunday Times (Perth, WA : 1902 - 1954)*, 22 February, p. 21. , viewed 17 May 2021, http://nla.gov.au/nla.news-article58263285

Figure 25. 1932 plan showing existing causeway and proposed widening on the Victoria Park side of Heirisson Island[41]



[41] 1932 'THE CAUSEWAY WIDENING SCHEME.', *The West Australian (Perth, WA : 1879 - 1954)*, 3 November, p. 20. , viewed 17 May 2021, http://nla.gov.au/nla.news-article32583317

Figure 26. 1932 Causeway Bridge II widening works underway[42]

Figure 27. 1939 aerial view north of the Causeway and Heirisson Island (slwa_b6333109_3)

[42] 1932 'WIDENING THE PERTH CAUSEWAY.', *The West Australian (Perth, WA : 1879 - 1954)*, 20 December, p. 18. , viewed 17 May 2021, http://nla.gov.au/nla.news-article32565886

Figure 28. 1950s Causeway Bridge II still in use while Causeway Bridge III is under construction, showing broken railing (slwa_b6058475_1)

Figure 29. 1950s water pipeline beside the Causeway Bridge II (slwa_b6058474_1)

1949-Present

Causeway Bridge III

Construction of the third Causeway Bridge (III) was commenced in 1949, and the bridge was officially opened in 1952 (Heritage Council of Western Australia, 1998). It was constructed adjacent to the northern side of Causeway Bridge II. It was mostly made of concrete and steel; however, a news report indicates that old timber from the Fremantle traffic bridge was used in its construction; however, it isn't clear what this timber was used for exactly.[43]

Figure 30. 1951 Causeway Bridge III under construction (slwa 235,184PD)

State Library of Western Australia

[43] 1947 'Old Bridge Timber For New Causeway', The Daily News (Perth, WA : 1882 - 1950), 26 September, p. 6. (CITY FINAL), viewed 20 May 2021, http://nla.gov.au/nla.news-article84013484

Figure 31. 1951 concrete piles for Causeway Bridge III (slwa 235,185PD)

State Library of Western Australia

Figure 32. 1951 view of construction in progress for Causeway Bridge III (slwa 235,186PD)

State Library of Western Australia

Figure 33. 1953[44] Causeway Bridge III with Causeway Bridge II on the left being demolished (slwa_b3416445_1)

Figure 34. 1953 Roundabout at Victoria Park end of the Causeway (slwa_b3416445_2)

[44] Original photo caption says 1955; however, Causeway Bridge II had been demolished in 1953 and would not be visible in this photo if it were taken in 1955.

LAND RECLAMATION

1870s-1970s

A Century of Reclamation

The Investigation Area has been substantially modified through reclamation and dredging of the Swan River from the 1870s onwards. The main periods of reclamation occurred in the 1870s, 1900s, 1920s-1937, 1955-1959 and 1967 (Seddon and Ravine, 1986). It is clear however, that reclamation works were still occurring within the Investigation Area during the 1940s.[45] Based on the historical sources used, the exact timelines for the reclamation works within the Investigation Area are unclear; however, the estimated broad timeframes for each of the key areas is summarised as follows:

- 1870s-1930s – Point Fraser and area to the west towards Langley Park
- 1900s-1940s – Heirisson Island
- 1930s-1970s - East Perth Foreshore, east and north of Point Fraser
- 1930s-1970s – Burswood Peninsula
- c.1940-1970s – McCallum Park

The Historical Maps provided in the section below starting at page 59, provide a visual timeline of the changing shorelines and island formation.

Based on newspaper articles from the 1910s and 1930s, it appears a range of materials were used as fill. This mainly included the mud and shell dredged up from the riverbed; however, domestic and commercial rubbish, and building materials were also dumped in this area. In one case, the rubbish dumped by Perth City Council self-combusted causing a subterranean fire that burnt out of control for at least eight years.[46] The smell and unsightliness was often the cause of complaint for many residents living near the reclamation areas over the decades.[47]

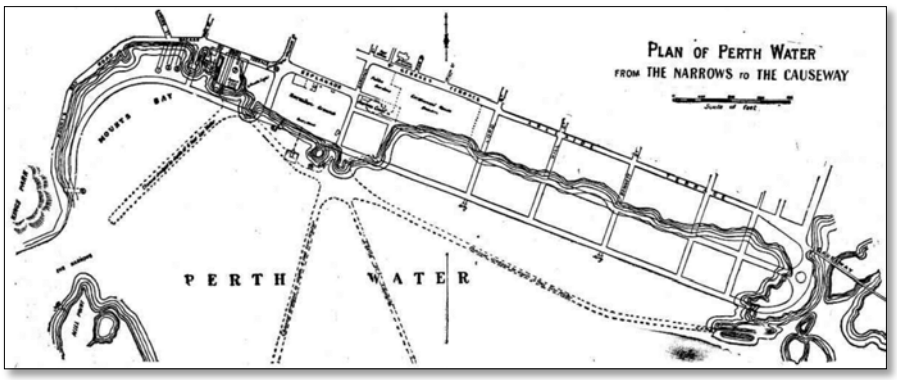


Figure 35. 1903 plan of Perth Water from the Narrows to the Causeway, with a close up of the Investigation Area below [48]

[45] 1933 'THE CAUSEWAY RECLAMATION', The Daily News (Perth, WA : 1882 - 1950), 5 June, p. 6. (HOME EDITION), viewed 20 May 2021, http://nla.gov.au/nla.news-article83232784

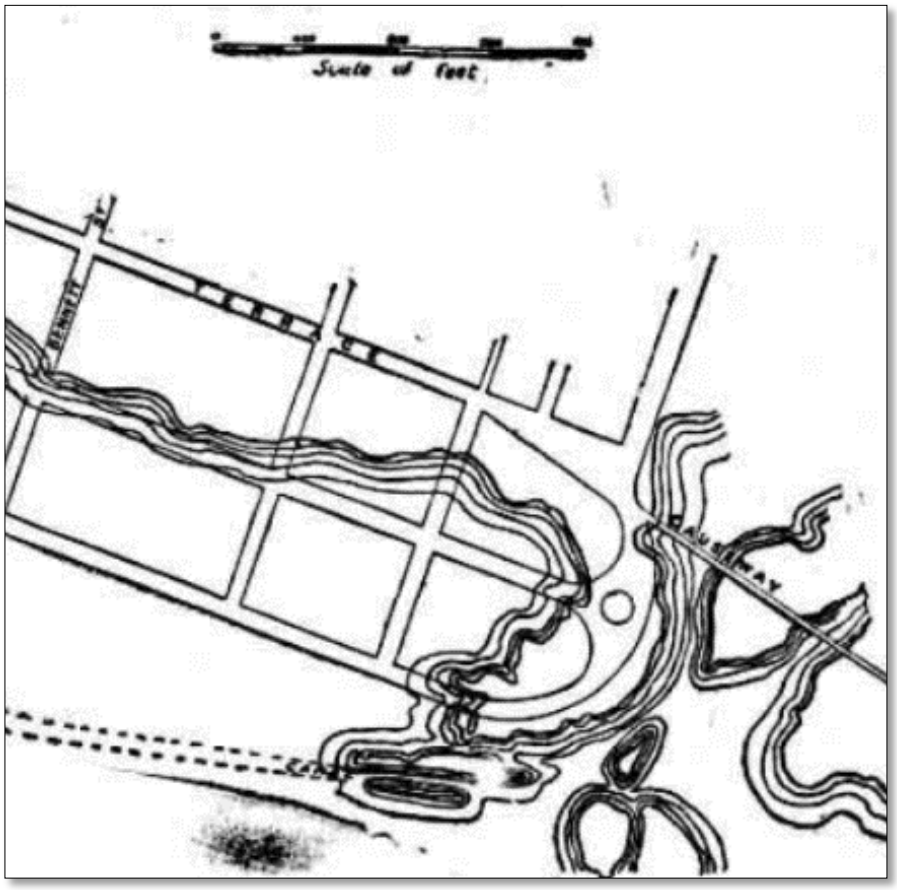
[46] 1938 'SUBTERRANEAN FIRE.', The West Australian (Perth, WA : 1879 - 1954), 12 July, p. 16. , viewed 20 May 2021, http://nla.gov.au/nla.news-article42095247

[47] 1911 'EAST PERTH RECLAMATION WORKS.', The West Australian (Perth, WA : 1879 - 1954), 11 March, p. 7. , viewed 20 May 2021, http://nla.gov.au/nla.news-article26305373

1930 'SEAGULLS AND SMALL BOYS PROFIT BY THE CAUSEWAY RECLAMATION WORK.', The West Australian (Perth, WA : 1879 - 1954), 1 February, p. 7. , viewed 20 May 2021, http://nla.gov.au/nla.news-article31064019

1933 'CAUSEWAY RECLAMATION WORK.', The West Australian (Perth, WA : 1879 - 1954), 1 August, p. 12. , viewed 20 May 2021, http://nla.gov.au/nla.news-article33326903

[48] 1903 'PLAN OF PERTH WATER FROM THE NARROWS TO THE CAUSEWAY', The West Australian (Perth, WA : 1879 - 1954), 18 July, p. 11. , viewed 20 May 2021, http://nla.gov.au/nla.news-article24828937



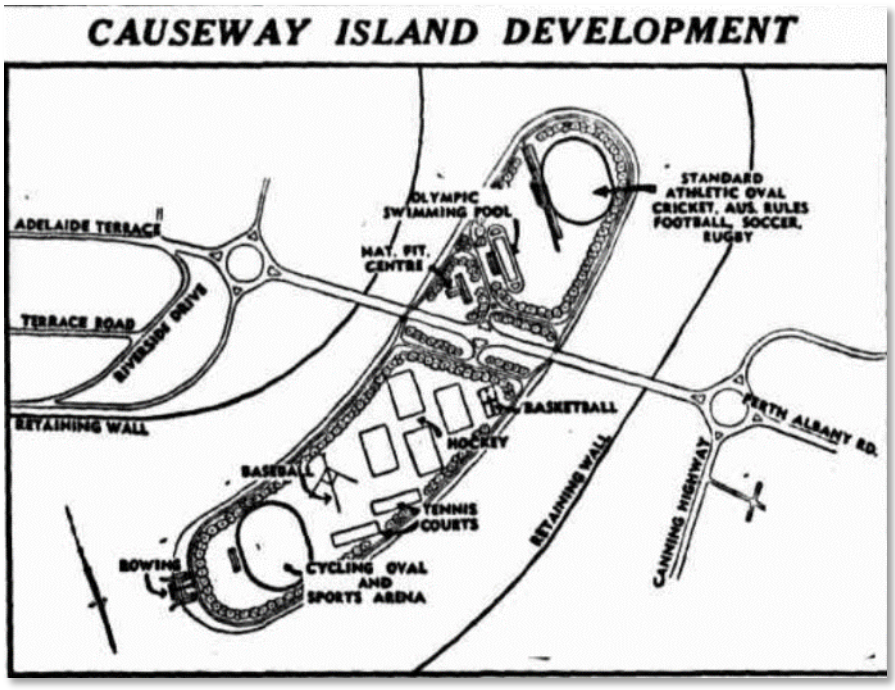


Figure 36. 1947 proposed plan for Heirisson Island which did not eventuate[49]

[49] 1950, The West Australian (Perth, WA : 1879 - 1954), 18 February, p. 2. , viewed 20 May 2021, http://nla.gov.au/nla.news-page3856273

ESTABLISHING PARKLAND ALONG THE SWAN RIVER FORESHORES

1920-Present

McCallum Park

According to the Heritage Council's historical background for McCallum Park, it was constructed from 1920 and officially named in 1940 after the 'Honourable Alexander McCallum, a Member of State Parliament who was responsible for the river reclamation works in the 1920s. The park has been used predominantly for recreational activities and has notably been a key venue for the Circus in the past, as well as the finishing line for marathons. The park has excellent views of the Swan River and Perth. In the 1970s, the section of the park along the river was reclaimed to straighten the edge, with a river wall constructed along its length.

1950-Present

Sir James Mitchell Park

Sir James Mitchell Park was officially named in 1950; however, the history of this location extends back to the 1850s when part of it formed the vineyard of the Tondut family and used by Chinese market gardeners from the 1920s to 1952 when they were evicted to make room for development. The section of Sir James Mitchell Park within the Investigation Area was mostly swamp until it was reclaimed between the 1940s and 1970s.

RECOGNITION OF WHADJUK NOONGAR CONNECTIONS TO THE AREA

1984

Yagan's Statue

While not of archaeological value, Yagan's statue on Heirisson Island is a place of local heritage significance and reflects the important connections that Whadjuk Noongar people have to this area.

Figure 37. 2016 Photo of Yagan's statue on Heirisson Island (source Monument Australia, photo taken by Father Ted Doncaster)[50]

[50] https://www.monumentaustralia.org.au/themes/people/indigenous/display/61054-yagan

Key Historical Phases

The following key historical phases have been identified, these will be used to broadly underpin the main historical themes and archaeological phases for the Investigation Area.

Crossing the Swan River >50,000 BP to Present

Land Reclamation 1870s to 1970s

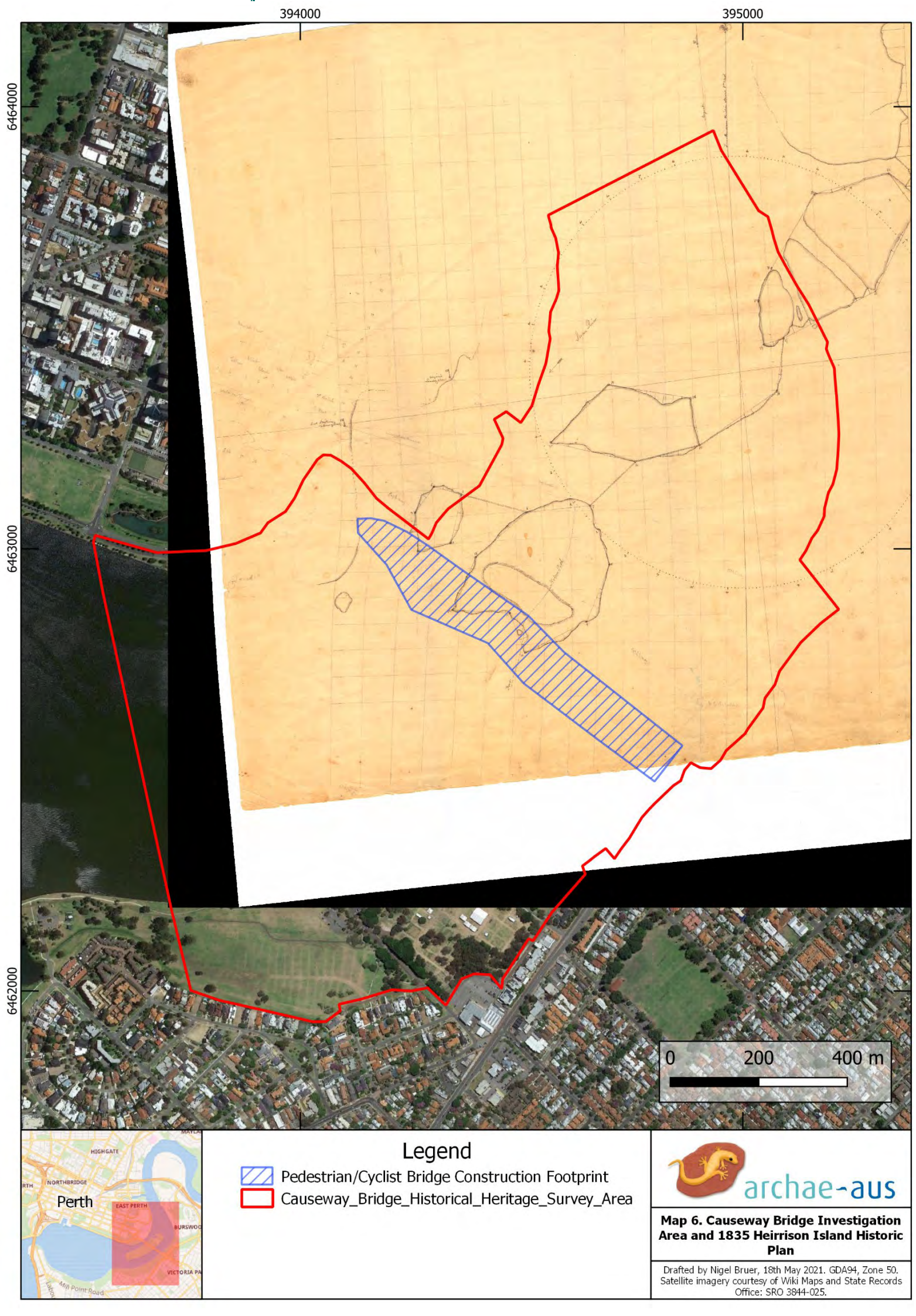
Establishing Parkland along the Swan River Foreshores 1920s-1950s[51]

Recognition of Whadjuk Connections to the Area 1984 to Present

[51] *Prior to the creation of parklands along the southern foreshore of the Swan River, much of this area was swamp or undeveloped land. Substantial reclamation and landscaping occurred in these areas of the Investigation Area from 1940 onwards.

Historical Maps

The following section is a compilation of the most relevant historical maps overlaid with the current Investigation Area.



Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

archae-aus

Map 6. Causeway Bridge Investigation Area and 1835 Heirrison Island Historic Plan

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50. Satellite imagery courtesy of Wiki Maps and State Records Office: SRO 3844-025.

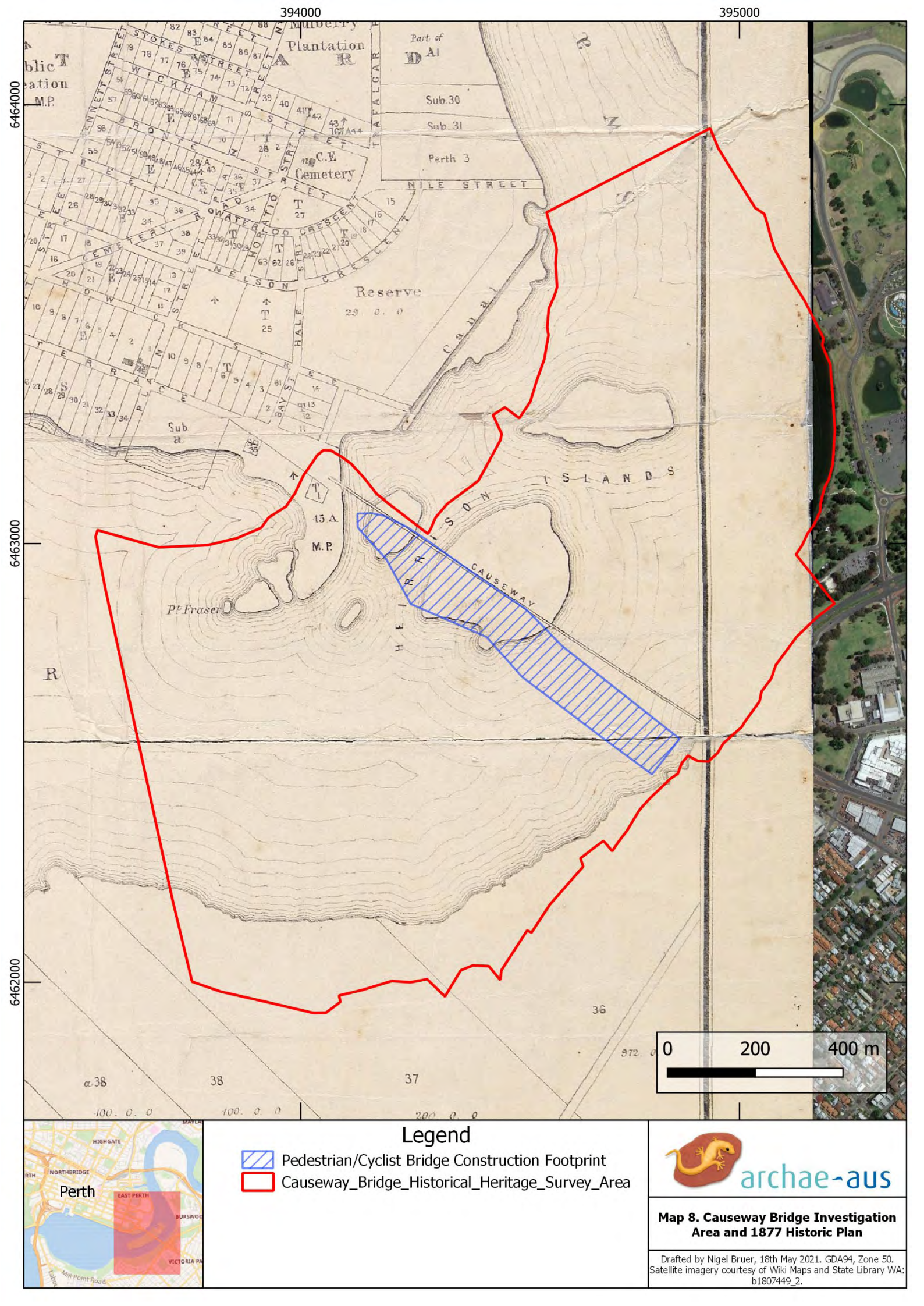
Legend

- Pedestrian/Cyclist Bridge Construction
- Causeway_Bridge_Historical_Heritage_Survey_Area

archae-aus

Map 7. Causeway Bridge Investigation Area and 1838 Historic Plan

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50. Satellite imagery courtesy of Wiki Maps and State Records Office: cons_3868_item_288.



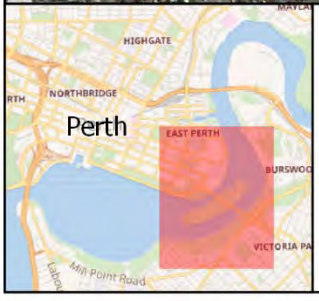
Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

archae-aus

Map 8. Causeway Bridge Investigation Area and 1877 Historic Plan

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50. Satellite imagery courtesy of Wiki Maps and State Library WA: b1807449_2.



Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

archae-aus

Map 9. Causeway Bridge Investigation Area and 1925 Historic Plan

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50. Satellite imagery courtesy of Wiki Maps and State Library WA: b1959717_2.

SECTION THREE – FIELD ASSESSMENT

A field assessment of the Investigation Area was undertaken over one day (3 May 2021). Historical archaeologists Stuart Rapley and Lucy Sinclair carried out the assessment.

Methods

A search of the known heritage places was conducted over the Investigation Area, using the spatial information provided by Main Roads. This resulted in the identification of one State Heritage and three local heritage listings. The listing details for these places was compiled and is presented in Section One - Introduction.

Historically trained archaeologists then undertook a site inspection of the Investigation Area, recording any remnant historical features related to the *Causeway Bridges* place and other features of interest. Photographs were taken and maps drawn. This information has been detailed in Appendix One.

Results

The site inspection revealed that much of the area has been previously disturbed or substantially modified during the reclamation works that took place on Heirisson Island and the surrounding foreshores.

Causeway Bridge II Remnants

The only archaeological features visible from the surface are the jetty piles (round red circles) and support beams or possible footings (red lines) that are remnants of the Causeway Bridge II (see Figure 38, Figure 39, and Plate 1 to Plate 4). These features are likely the remnants of the footbridge, pipe trestles and the main traffic bridge, which were all demolished by 1953.

Plate 1. View East of timber piles and present Causeway Bridge (III)

Plate 2. View southeast with large remnant timber piles in river and poorly preserved piles in foreground

Plate 3. View south of the remnants of Causeway Bridge II

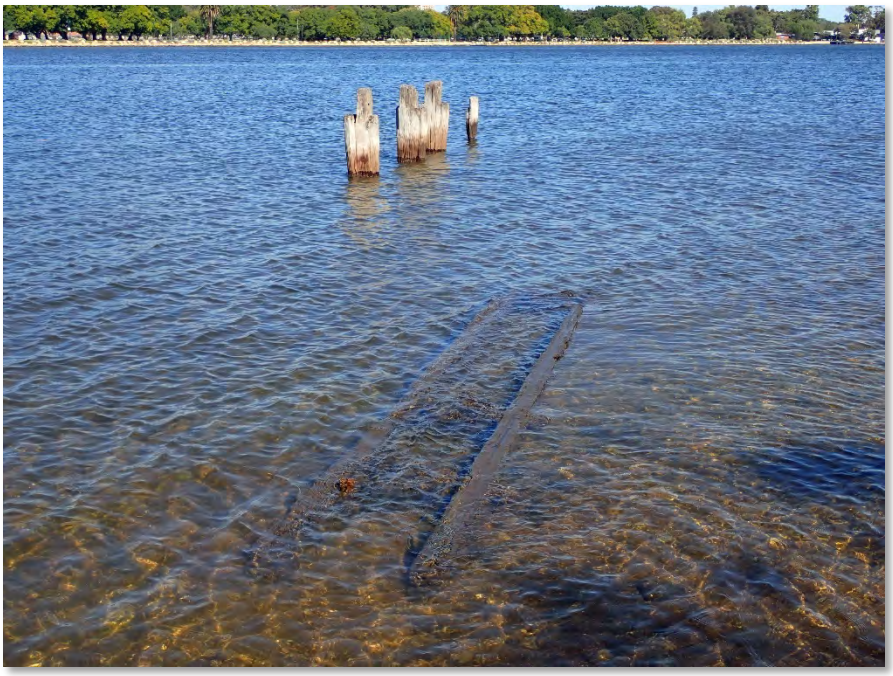


Plate 4. View southwest with pylon footings in foreground and timber piles in background

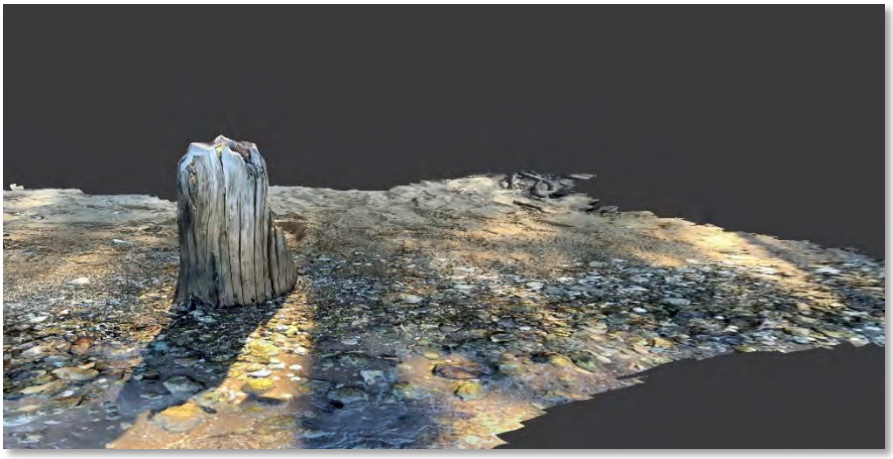


Figure 38. 3D Scan of one of the timber piles from Causeway Bridge II, surrounded by a dense layer of oyster shell

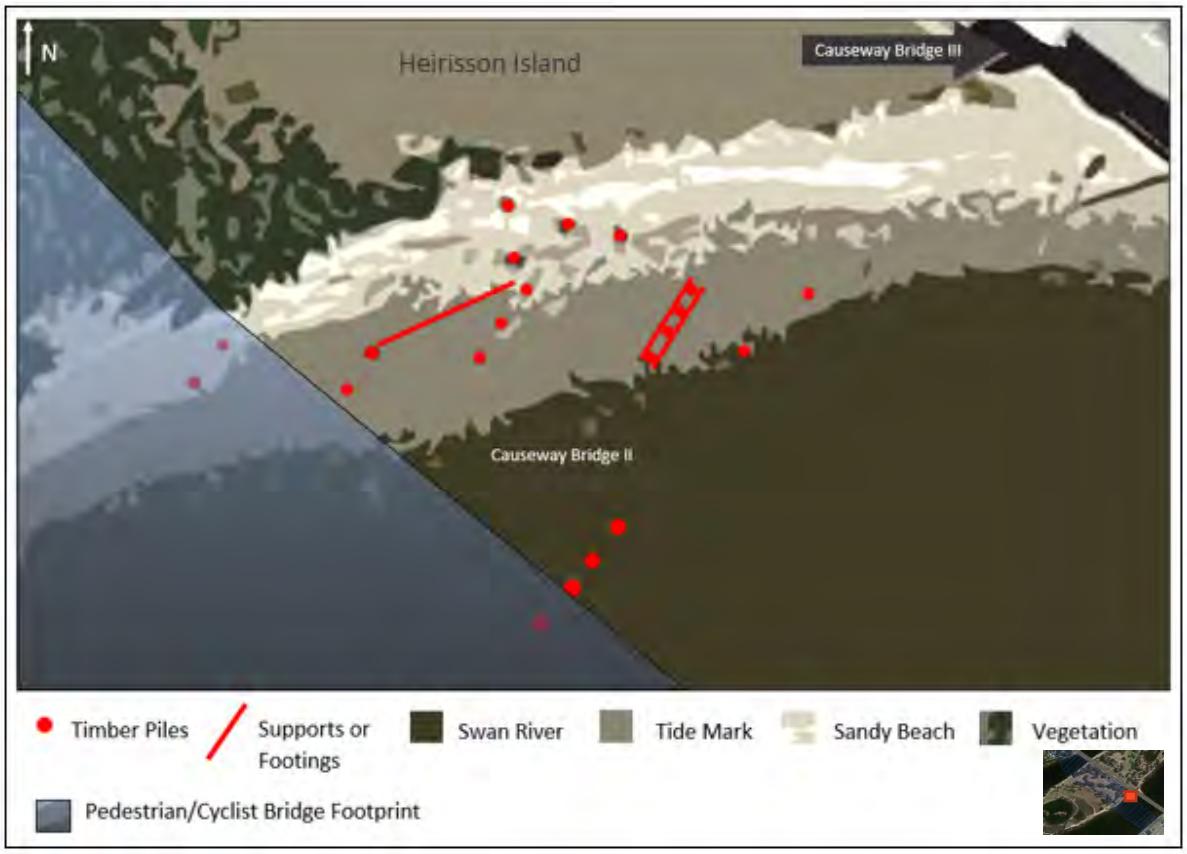


Figure 39. Site plan of remnant timber piles, support beams and footings associated with Causeway Bridge II, immediately west of the existing Causeway Bridge III

The western most pile is at a coordinate of 394595 mE and 6462763 mN.

Historical Fill Deposits and/or Rubbish Dumps

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.

Rubble with hand-made and machine-made bricks, along with a rubber tyre, concrete and scrap metal, was located at 0394580 mE, 6463574 mN on the river edge in East Perth, near Trinity College. It is unclear if this is largely related to an historical or recent dumping of rubbish. This pile of rubble was found adjacent a drain or sewage outlet of unknown age.

No other archaeological features were identified within the Investigation Area.

Plate 5. View north of southern bank of Heirisson Island behind remnants of Causeway Bridge II, showing rubble eroding out of bank

Plate 6. View of hand-made early colonial brick that has eroded out of the southern bank of Heirisson Island near the remnants of Causeway Bridge II

Plate 7. View northeast of mixed rubble pile on East Perth foreshore near Trinity College, next to drain or sewage outlet

Plate 8. View east of modern brick and concrete structure with drain pipe extending into the Swan River

SECTION FOUR – ARCHAEOLOGY OF THE PLACE

Archaeological Context

The Investigation Area intersects one permanent place on the Western Australian State Heritage Register (Place 03631) – *Causeway Bridges*. This place is afforded statutory protection under the Western Australian *Heritage Act 2018*.

Entries on the State Heritage Register are accompanied by two documents related to their listing: A Register Entry, which lists details about the place along with a statement of significance, and an Assessment Documentation, which provides further information about the place and gives explanation of the values of the place and why it is of importance to the State. Archaeology is typically discussed under the Scientific Values section of the Assessment Documentation.

The Assessment Documentation for *Causeway Bridges* does not discuss archaeological scientific values (Heritage Council of Western Australia, 1998) (see Appendix Three, page 101).

Past Archaeological Work

Similar Contexts

Based on the publicly available information there have not been any investigations, management plans or other desktop-based assessments detailing the existing and potential historical archaeology within the Project Area. However, other areas along the Perth foreshore have been the subject of recent archaeological investigations.

While these previous archaeological studies took place outside of the Investigation Area, they are pertinent to this study as they were conducted in a similar context; on land that had been reclaimed from the Swan River between the 1870s and 1930s. The details of relevant investigations and their results have been summarised below.

Supreme Court Gardens

1985 – McIlroy and Morse

In 1985 site works associated with building the library extension to the Supreme Court occurred which were the subject of emergency archaeological investigations by Rory McIlroy and Kate Morse (McIlroy and Morse, 1985). These investigations were not part of the development and were undertaken by the consultants in between the breaks in the demolition and construction program. Substantial limestone wall footings, a brick-lined well and timber features were uncovered during the earthmoving works. Thirteen bottles dating between 1870 and 1910 were also recovered. These finds and structures occurred within what is now the site of the current Supreme Court Library.

1998 - Gaye Nayton Archaeological Investigations and Conservation Management Plan

An archaeological investigation of the Supreme Court and Gardens was undertaken in 1998 by Gaye Nayton as part of the Conservation Management Plan (Heritage and Conservation Professionals, 1998). The aim of the inspection was to determine the locations of any remnant features such as historical structures or garden layouts as well as to assess areas which may contain archaeological deposits relating to the current use of the area for public buildings and its previous use. In addition to a pedestrian survey of the gardens and grounds around the Supreme Court, a metal detector survey was used to indicate the locations of artefacts within the top 25 cm of the soil profile. It was

concluded that the archaeological potential of the place yields information about structures which were originally located on the site but are no longer extant. These include the first major police complex in Perth and the Commissariat Store, as well as the physical layout of the first Port of Perth and the stone Pier Street jetty.

2007 - Gaye Nayton Conservation Management Plan

In 2007 archaeologist Gaye Nayton updated the 1998 Conservation Management Plan, developing zones of archaeological significance for the Supreme Court Gardens (Heritage and Conservation Professionals, 2007). In total 11 areas of archaeological evidence were identified. These zones related to deposits and features such as the original Swan River foreshore, areas associated with the Governor's / Pier Street Jetty and the use of the 1831-1887 Port of Perth, and areas associated with high signals returned from metal detecting surveys (undertaken in 1998).

2016 – Archae-aus Archaeological Investigations

In 2016 Archae-aus undertook archaeological investigations ahead of the City of Perth's upgrades to the Supreme Court Gardens (Archae-aus, 2016). This comprised of five mechanically excavated evaluation trenches and four hand-excavated test pits. Under the current garden surface, some of the trenches identified mixed deposits determined to be associated with the reclamation process. Numerous finds were recovered for the archaeological investigations. These included brick and brick fragments (including early dated examples), transfer-printed stoneware, 'black' glass and other glass fragments, clay tobacco pipe fragments, and oyster shell deposits likely associated with Swan River dredge spoil used as part of the reclamation fill.

Even though no *in situ* archaeological structures, surfaces or features were identified during the investigations, the evaluations demonstrated that the Supreme Court Gardens' soil profile comprises numerous mixed and truncated fill deposits. These were determined to be the legacy of a multi-phase history of land reclamation and successive episodes of building and demolition, dating back to the early days of the Swan River Colony. Despite the mixed nature of these fill deposits, a considerable and diverse assemblage of material culture was retrieved from the evaluation trenches and test pits, including artefacts dating to the early Colonial period.

2017 – Archae-aus Archaeological Monitoring

Archae-aus was engaged by the City of Perth and BCL Pty Ltd to undertake the archaeological monitoring during the upgrade works of the Supreme Court Gardens (Archae-aus, 2017).

While onsite, several *in situ* archaeological features and hundreds of archaeological finds were identified. *In situ* features identified included the remnants of the Governor's / Pier Street Jetty, one of the oldest surviving civil infrastructure structures in Perth. While having been historically impact by services such as water, electricity and gas, the portion of the jetty excavated appeared to be in a relatively good condition, with its construction being of rough-hewn limestone walls with compacted crushed limestone infill. Another *in situ* features included building footing in the gardened area adjacent to the toilet block in the northwest of the Gardens. This footing was believed to related to an administration building associated with the original Supreme Court building. Also identified is what was interpreted to be a section of the original limestone roads or pathways that serviced the Gardens.

Loose archaeological finds included dozens of intact and fragmented bottles, transfer-printed stoneware of various colours, clay smoking pipe stem and bowl fragments, and large volumes of

corroded metal items, brick (and brick fragments) and other building rubble. Also identified within the loose finds were two Aboriginal stone tools. Based on the context in which these were found, they were not in their primary context (relating to the original Swan River foreshore) and instead were believed to have been part of fill brought into the site during the reclamation process.

Elizabeth Quay/Esplanade Reserve

2010 – AHMS Monitoring

Archaeologists from Archaeological & Heritage Management Solutions (AHMS) undertook archaeological monitoring of geo-technical core drilling by Golder Associates in September to November 2010, on behalf of Hocking Heritage Studios. Artefacts from the 19th and 20th century were identified from depths up to 2 m. These artefacts were recovered from a stratigraphy of 3 m of fill deposited on sand and clay. No *in situ* structural material was observed and no Aboriginal material was identified. Possible evidence of historical use of the area was uncovered, such as a gravel layer that was uncovered in a number of boreholes. Overall, the materials recovered and observed during the drilling indicated that the area on the western side of the Esplanade Reserve had remained primarily undisturbed since its deposition between 1873 and 1882 (Australian Heritage Managment Solutions, 2010).

2010 – AHMS Desktop Archaeological assessment

In 2010, during a desktop study, AHMS identified three key zones of archaeological potential within the Esplanade Reserve (Archaeological & Heritage Management Solutions, 2010). These are:

- The area along the eastern side of the Esplanade, near the location of the original Barrack Street Jetty (1830's to 1903)
- The area along the northern side of the Esplanade with possible remains of sporting facilities, the 1881 International Exhibition Hall and the original Swan River foreshore. This area was also thought to have the potential for Aboriginal artefacts from the Indigenous occupation of the foreshore.
- The area along the southern edge of the Esplanade Reserve, which is the original limit of the reclaimed area and may contain remains of "sheds, jetties, sea walls and other structures".

2011 – AHMS Monitoring

Archaeological monitoring of within the Esplanade Reserve geo-technical core drilling took place in April 2011 by AHMS, on behalf of Hocking Heritage Studios. AHMS undertook the monitoring of 12 boreholes, which were drilled to 4 m depths. Two boreholes were adjacent to the Esplanade, with ten boreholes along the foreshore south of Riverside Drive, near the Swan Bells. Artefacts recovered were interpreted as part of the infill, and as they were out of context were considered to be of no archaeological significance.

Further AHMS archaeological monitoring of geo-technical core drilling took place in September to October 2011 on behalf of Hocking Heritage Studios. AHMS monitored the drilling of ten drill holes across the Esplanade Reserve, along the Water Corporation's main water line. No *in situ* structures or Aboriginal artefacts were identified. All historical artefacts recovered, including tinted glass, brick fragment and cut timber, were considered to be part of backfill from the trench associated with the water line, which has been in the area for 20 years (Archaeological & Heritage Management Solutions, 2012a).

2012 – AHMS Archaeological Investigations

AHMS undertook test excavations within the Esplanade Reserve in April and May 2012. The aims were to identify sub-surface archaeological remains, to determine if any further excavation was required to address research questions. Further aims included a better understanding of the "historic evolution of the Esplanade Reserve" and to use the recovered information as comparison material for similar areas in Perth. The excavation areas were selected using the results of desktop studies, previous archaeological monitoring and excavations (Archaeological & Heritage Management Solutions, 2012a).

Based on their Excavation Report, AHMS excavated a series of trenches across the Esplanade (Archaeological & Heritage Management Solutions, 2012b). One of the trenches (TP 7) overlaps the central western portion Lot 2. The trench was placed "at the approximate site of the Royal Perth Yacht Club" (Archaeological & Heritage Management Solutions 2012: 81).[52]

Owing to the presence of fibre optic communication cables, TP 7 was excavated in two halves. The eastern half of TP 7 was excavated to a depth of 4 m until the ingress of water, liquefaction of the sandy deposit and collapsing baulks made the excavation unsafe to continue. Even at 4 metres, AHMS's report states that natural riverbed deposits were not reached. The western portion of the trench was abandoned at approximately 2 m depth due to a significant amount of broken slab concrete.

AHMS did not find any archaeological finds or features within TP 7 except for large amounts of broken concrete slab. AHMS's assessment of TP 7 was that the fill layers identified within the stratigraphic sequence "were all associated with the road works of an earlier alignment of Riverside Drive".

[52] It should be noted that the AHMS report has several inconsistencies. Firstly, the coordinates provided for the trench is limited to the western portion of the trench only, with no coordinates provided for the eastern portion. Based on the coordinates provided, the western portion of trench measures 30 m long by 2 m wide, however the text states that the "western portion of TP7 measured 11.5 m long, by 11 m wide at ground level, and 7.8 m wide at the base" (Archaeological & Heritage Management Solutions 2012: 81 - 83). It is therefore difficult to ascertain whether the coordinates provided for the western portion of TP 7 were the planned location or the actual location of the trench. Further, given the vast disparity between the stated trench dimensions and those shown by the provided coordinate, in is not known whether the coordinates show the location of just the western portion of the trench (as stated) or also the eastern portion.

If the coordinates provided are for both the eastern and western portions of the trench, then based on several georeferenced historic plans (including those from 1894, 1895 and 1925) it seems that the AHMS trench location was not placed in a position that would intersect the former Royal Perth Yacht Club.

Plate 9. 2012, view east of the eastern half of TP 7 (Archaeological & Heritage Management Solutions 2012: 85)

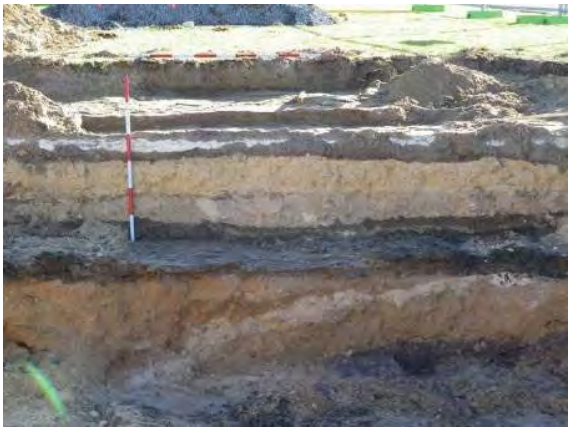


Plate 10. 2012, South facing section, eastern end of TP 7 (Archaeological & Heritage Management Solutions 2012: 86)

2012 – 2016 – AHMS Elizabeth Quay Monitoring and Archae-aus Reporting

During the Elizabeth Quay development, AMHS was engaged by the MRA to undertake the archaeological monitoring and recording as per the recommendations of the Archaeological Management Plan.

Later in 2016, Archae-aus was engaged by the MRA to undertake the close-out Report for the project. This report was a synthesis of all of the available information including reports, advice and communication between AHMS, the on-site contractors, the MRA and the State Heritage Office (now DPLH), as well as Archae-aus' analysis of the recovered finds. Unfortunately, much of the information from AHMS' archaeological assessments, including most of the spatial data and all other information obtained during the monitoring of the Elizabeth Quay development was not provided to Archae-aus by the MRA. A cursory plan, which came with the body of information from the MRA with no further information attached shows archaeological features along the western edge of Lots 2 and 3. The plan indicates that timber piles, which AHMS associated with the William Street Wharf, were identified along the southwest edge of Lot 3, while the plan indicates an area of "River Timbers/Probable Jetty" immediately west of the northwest corner of Lot 2. Based on the location, these "River Timbers" may be associated with the Perth Flying Squadron.

2016 – Lots 9 and 10 Elizabeth Quay Archae-aus Archaeological Investigations

In 2016, Archae-aus was engaged by Probuild on behalf of Far East Consortium to undertake the archaeological excavation as part of the Ritz Carlton and Towers development at Lots 9 and 10 Elizabeth Quay. The excavations were undertaken in line with the management plan (Extent, 2016). As a result of these excavations large sections of the Barrack Street Jetty were identified and recorded (see Plate 11 and Plate 12). The Barrack Street Jetty was mostly extant, albeit with some sections suffering from impact from services, both modern and historic. The Jetty was constructed of limestone (crushed and rubble) with dressed limestone walls on either side. The surface of the jetty varied across the length exposed with some areas having evidence of wheel ruts, re-surfacing, and repair.

Over 6,000 historical finds were identified during the excavation, including a complete and extremely rare wooden barge rudder. The rudder was constructed from Western Australian jarrah and thought to be one of the only surviving examples of a locally constructed barge rudder. The enormous number of finds mostly relate to the period of reclamation where Perth's residents were

encouraged to bring down their rubbish to assist in the reclamation works. As such, these finds represent a virtual snapshot of the daily lives of Perth's residents between the early 1870s and 1880s.

As the development required the construction of an extensive subsurface parking basement, *in situ* preservation was not possible and after approvals were secured, large sections of the Jetty walls were salvaged. These dressed limestone blacks are being conserved for interpretive display for the project. While this project is ongoing, the results from these excavations have allowed Archae-aus to plot the predicted alignment of the jetty.

Plate 11. Exposed section of Barrack Street Jetty and River Wall from Perth Bell Tower

Plate 12. A section of dressed limestone wall of the Barrack Street Jetty

Types of Archaeological Evidence

It is likely that similar types of artefacts, as recovered from previous investigations along the foreshore (especially in reclaimed areas), may be encountered in the Investigation Area. Objects manufactured from materials such as brick, limestone, timber, ceramics, glass, stone and metal preserve fairly well in this environment. Appendix Four provides examples of the types of archaeological finds that may be expected in areas of high and moderate potential (see Zones of Archaeological Potential below).

Historical and Recent Impacts to Archaeology

The Investigation Area has been impacted by the installation of services such as roads, water, sewage, electricity, gas, and communications. Excavations at Elizabeth Quay in similar reclaimed contexts have shown that both historic and recent impacts have damaged the sub-surface archaeology; however, the impact was often partial and along narrow corridors associated with the relevant service. The excavations showed that the remaining features having a good degree of archaeological integrity.

Archaeological Significance

Archaeological Values

The Statement of Significance in the Assessment Documentation for *Causeway Bridges* does not include archaeological significance or values (see Appendix Three, page 101). Further, there are no other places of assessed archaeological significance previously identified elsewhere in the Investigation Area. Despite this, clearly there are remnant structures relating to Causeway Bridge II

(1862-1953) which has high archaeological value, as recorded during the site visit (see Section Three). Archaeological objects, such as historical hand-made bricks, were identified during the site visit; however, the full extent and nature of any associated archaeological features within the area of high archaeological potential (HAP) cannot be determined at this stage and as such any areas that are to be subjected to ground disturbance within the HAP would require archaeological monitoring.

Zones of Archaeological Potential

Based on the understanding of the changing historical use of the Project Area and previous archaeological excavations along the Perth Foreshore (see above), there are three ranked 'Zones of Archaeological Potential' (Map 10). These areas have been established based on the likelihood of containing significant features and finds. For instance, the Zone of High Archaeological Potential has a high likelihood of containing significant features and finds, while the Zone of Low Archaeological Potential has a low likelihood of containing features and finds of significance.

These Areas of Archaeological Potential follow the *Zones of Archaeological Potential* established by the WA Heritage Council, the Government of Western Australia agency created under the *Heritage Act* 2018 (and the now superseded *Heritage Act* 1990) to identify, conserve and promote places of cultural heritage significance in the state. The zones established reflect historic plans, archaeological reports and other documentary evidence.

High Archaeological Potential

High archaeological potential has been identified adjacent to both sides of Causeway Bridge III and on Heirisson Island. There is a greater area of high potential on the western side of the current bridge where timber piles were observed and where cultural materials appear to be eroding out of the banks (see Section Three).

Moderate Archaeological Potential

Moderate archaeological potential has been identified around Point Fraser, which may contain sub-surface historical fill dating between the 1870s and 1930s on the western side. In addition, historical images of Point Fraser suggest that there were early buildings on the Point. It is unclear when these were demolished or where they were exactly as they do not appear on any maps; however, they appear to have been along the eastern foreshore of the Point.

Moderate archaeological potential has been identified for Heirisson Island (outside of the high potential zone) as it relates to reclamation between the 1900s and 1940s and was used for camping by both Whadjuk Noongar people and Europeans during the historical period during and after settlement. *Matagarup* (Heirisson Islands), was the birthplace of well-known Whadjuk historical figure Fanny Balbuk, for example, who was born there in 1840. As Section Two discusses, there are reports a Noongar camp was established in the 1850s as well, indicating that there may be historical artefacts in this area that were once used by Whadjuk people living at *Matagarup*. Historical images show that Europeans also camped in this area and may have left behind traces of their activities.

Moderate archaeological potential has been identified for the East Perth Foreshore as this may contain historical fill dating from the 1930s. A row of piles was reported to have been driven in by convicts in 1855 along the old canal from the trotting complex to the Causeway, to keep the lighters

off the shallow water when the wind blew hard from the east. Five of these piles were reported as still standing in 1937.[53]

Moderate archaeological potential has been identified for reclamation areas along the Town of Victoria Park and South Perth Foreshores, dating from the 1940s.

Low Archaeological Potential

Low archaeological potential has been identified for the remainder of the Investigation Area due to the level of modern disturbance and

[53] 1937 'SEVENTY YEARS AGO.', *The West Australian (Perth, WA : 1879 - 1954)*, 12 January, p. 12. , viewed 16 May 2021, http://nla.gov.au/nla.news-article41267403

Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

MR21CB1a_ArchPotential

- High
- Moderate
- Low

archae-aus

Map 10. Causeway Bridge Investigation Area and Areas of Archaeological Potential

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.

SECTION FIVE – IMPACT ASSESSMENT AND RECOMMENDATIONS

Introduction

Heritage landscapes constitute a non-renewable part of Western Australia's cultural heritage that are vulnerable to direct and indirect impact during ground disturbing and infrastructure upgrade activities. Assessments and advice are provided to Main Roads through the following subsections:

Guiding Principles – An outline of the main principles that should be applied to the management of heritage in the Investigation Area.

Heritage Impact Assessment – Based on the desktop research and field visits, the potential impact to heritage places is addressed.

Impact Management Strategies – Pre-construction heritage referrals, approvals and advice from relevant government bodies.

Heritage Recommendations – Heritage Impact Assessment and recommendations.

Guiding Principles

Relevant sections from the Burra Charter (2013) have been used to assist in the assessment of risk and in the construction of heritage management recommendations in the Investigation Area, including the following articles:

Article 2. Conservation and management

2.1 Places of cultural significance should be conserved.

2.2 The aim of conservation is to retain the cultural significance of a place.

2.3 Conservation is an integral part of good management of places of cultural significance.

2.4 Places of cultural significance should be safeguarded and not put at risk or left in a vulnerable state.

Article 3. Cautious approach

3.1 Conservation is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible.

3.2 Changes to a place should not distort the physical or other evidence it provides, nor be based on conjecture.

Article 7. Use

7.1 Where the use of a place is of cultural significance it should be retained.

7.2 A place should have a compatible use.

Article 8. Setting

Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.

Article 9. Location

9.1 The physical location of a place is part of its cultural significance. A building, work or other element of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.

9.2 Some buildings, works or other elements of places were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other elements do not have significant links with their present location, removal may be appropriate.

9.3 If any building, work or other element is moved, it should be moved to an appropriate location and given an appropriate use. Such action should not be to the detriment of any place of cultural significance.

Heritage Impact Assessment

Risk Assessment

Direct Impacts

While there are no direct impacts to *Causeway Bridges* (ID 03631), a portion of local heritage survey place *McCallum Park* (ID 03915) will be directly impacted. In addition, there are timber piles of archaeological value that are associated with Causeway Bridge II within the Pedestrian/Cyclist Bridge construction footprint (Figure 39). There may be direct impacts to potential archaeological features and objects that are part of the reclamation works on Heirisson Island and the East Perth and Victoria Park Foreshore that are within the construction footprint.

Indirect Impacts

Indirect impacts to heritage listed properties may include :

- Vibrations from the bridgeworks that may affect the foundations and structural integrity of nearby infrastructure, including but not limited to residential and commercial buildings close to the Investigation Area.
- The visual impact of a new style bridge. The project will change the built landscape aesthetic.
- Noise pollution during the construction works could affect the wellbeing of residents within the Investigation Area.
- Any temporary or permanent change in the flow of the river as a result of the bridgeworks could affect erosion levels in certain parts of the river.

Table 9. Archaeological Heritage Direct Impact Risk Summary

Feature	Location	Risk	Explanation
Remnant timber piles from Causeway Bridge II (1862-1953)	On southern side of Causeway Bridge (downstream) on eastern bank of Heirisson 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 Heirisson Island).
Historical archaeological fill deposits in reclaimed areas of land (1870s-1970s)	Along the original alignment of Causeway Bridge II on Heirisson 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 Heirisson 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.
Remnant timber piles from Causeway Bridge II (1862-1953)	On southern side of 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 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 19th Century.

SECTION SIX – ARCHAEOLOGICAL MANAGEMENT PLAN

Heritage Impact Management Strategies

Introduction

The Investigation Area has the potential values of importance and significance that constitute a non-renewable part of Perth and Western Australia's cultural heritage. To limit damage to potential heritage values during these activities, the following stages of work are proposed:

Stage 1 – Desktop assessment and Archaeological Management Plan and procedure development (this document).

Stage 2 – Heritage referrals, approvals and advice from relevant government bodies.

Stage 3 – Heritage Impact management including the monitoring of ground disturbance works, assessment of any unexpected finds and recording of archaeological finds and features.

Stage 4 – Assessment of all features and finds identified.

Stage 5 – Reporting of all heritage assessment work completed during the development.

Stage 6 – Interpretation.

The following section will discuss these stages and the important guiding principles used in the construction of these recommendations.

Stage 1 – Desktop Assessment and AMP

This document fulfils Stage 1 of the management strategy.

Section Four details the results of the desktop assessment of heritage values within the Project Area.

Section Six (this section) and Appendices One to Five detail the management plan for dealing with the potential impacts to the heritage values.

Stage 2 – Pre-Commencement Approvals

The Investigation Area are subject to the requirements of the *Heritage Act 2018*. The *HA* requires that development proposals with the potential to impact registered heritage places, or places subject to a Heritage Agreement, are referred to the Heritage Council for advice. The conditions attached to the Investigation Area approval include that a historical archaeologist is to be consulted regarding the impact on potential archaeological evidence, and measures are implemented to mitigate this impact. This Archaeological Management Plan achieves this. Any further proposed archaeological investigations or conservation works should be reviewed by the Heritage Council.

Based on the relevant legislation and that the Project Area will intersect State Registered Place *Causeway Bridges* (03631).

Table 10. Historical Places Requiring Action

Register Number	Place Name	Status	Relevant Authority
03631	*Causeway Bridges*	State Registered Place	DPLH

The relevant authorities should be contacted prior to the commencements of work:

State Registered Places

For State Registered Place *Causeway Bridges* (03631), Main Roads will need to contact the Department of Planning Lands and Heritage. The Department will notify and submit a development referral as required by the *Heritage Act* 2018. This application must occur prior to any works commencing.

Local Heritage Survey Places

Approvals are only required if there is planned development and / or demolition of a building/structure for places listed on the Local Heritage Survey (former Municipal Inventory) (Heritage List under a Council's Town Planning Scheme). Based on the provisional Project Area map provided by Main Roads in the Consultant Brief (not the entire Investigation Area), the only place on the Local Heritage Survey list likely to be directly impacted by the works is Place *McCallum Park* (03915).

This place is listed as Category B on the Town of Victoria Park Local Heritage Survey. As this type of place is considered 'worthy of high level protection', any redevelopment or demolition requires consultation with the local government authority (Town of Victoria Park).[54]

Stage 3 – Heritage Impact Management and Procedures

Ground Disturbance

Ground Disturbance is defined 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. Therefore, the nature of proposed activities and the nature of the environment to be disturbed are both factors in managing impacts to heritage.

Based around Archae-aus' experience and the Aboriginal Heritage Due Diligence Guidelines published by the Department of Planning, Lands and Heritage[55], a risk assessment matrix has been constructed to evaluate the risks of development works in the Project Area.

[54] Inherit definition of a Category B place: Worthy of high level of protection: to be retained and conserved where possible; provide maximum encouragement to the owner under the Town of Victoria Park Planning Scheme to conserve the significance of the place. A more detailed Heritage Assessment/impact Statement* to be undertaken before approval given for any major redevelopment. Incentives to promote conservation should be considered.

[55] https://www.dplh.wa.gov.au/getmedia/74896bd3-4be3-49ed-be75-38ba72f10d72/AH-Due-diligence-guidelines

Table 11. Cultural heritage impact risk assessment matrix

Activity	Task	Potential Impacts	Risk
Landscaping	Clearing	Mechanical or manual disturbance of topsoil, removal of trees	High
	Soil ripping / scalping / Auguring	Disturbance to top 0.3 - 0.5m	High
	Geotechnical Testing – boreholes and CPT	Disturbance of topsoil, impact to archaeological features and deposits.	High
	Geotechnical Testing in Riverbed	Disturbance of riverbed, impact to underwater archaeological features	High
	Mature tree planting	Substantial localised ground disturbance or soil removal for tree planting	High
	Low Groundcover Planting - Deep planting method	Deep but localised removal or disturbance of soil	High
	Low Groundcover Planting - Hand auguring	Hand auguring – soil loosened (not necessarily excavated) to depth of 0.6m	High
	Turfing	Soil loosening and aeration of topsoil	High
	Direct seeding	Broadcasting or non-invasive distribution (no-till)	Low
	Weed removal - hand weeding	Shallow disturbance associated with uprooting of small plants	Low
Infrastructure	Access roads	Some earth working to level base prior to installation.	High
	Pathways	Levelling / clearing / earthworks to prep ground	High
	Carparks	Clearing / earthworks to prep ground	High
		Soil disturbance to lay irrigation infrastructure	High
		Minor localised soil disturbance for sign-post installation	High

Based on this risk assessment, mitigative actions are needed to minimise damage to potential surface and subsurface archaeological deposits. Archaeological values identified in Section Four are shown in Map 11 as Zones of Archaeological Significance. Heritage impact management actions will be discussed in terms of archaeological potential and activity risk assessment.

Heritage Impact Management

During initial ground disturbance works and excavation activities, Main Road's contractors must engage a suitably qualified and experienced Western Australian-based archaeologist to provide advice, monitor works areas and be on-call to assess any unexpected finds and undertake archaeological excavations (if necessary).

All contractor site supervisors should undergo specific archaeological heritage training to effectively manage unexpected heritage finds.

All contractors working on site should undergo an archaeological heritage induction to introduce them to the heritage values within the Project Area. A specific contactor handout for inclusion in contractors' scopes of work can be found in in Appendix Five. The handout summarises the management strategies in this section and clearly articulates the roles and responsibilities of those involved.

The following actions are recommended to manage potential impact to heritage within the Project Area:

1) All site supervisors, including those working for contractors/sub-contractors, will need to undergo specific heritage training to effectively manage unexpected heritage finds.
2) Where an archaeologist is not onsite for monitoring, the contractors working on site should undergo an archaeological heritage induction to introduce them to the heritage values. A specific contactor procedure for inclusion in contractors' Scopes of Work is in Appendix Six.
3) Any activity classed as **High Risk that occurs within the Project Area** (Table 11) should be subject to archaeological monitoring as detailed in Appendix One. This means that:
    a) Main Roads should engage a suitably qualified and experienced archaeologist to provide advice and monitor works to assess any unexpected finds.
    b) The continued monitoring of the works will occur solely at the discretion of the project archaeologist. The archaeologist may decide that their on-site attendance is not required. In such instances:
        i. A heritage-inducted Site Supervisor will monitor the works for archaeological finds and features.
        ii. If archaeological finds or features are identified during the works then the Archaeological Discovery Procedure (see Appendix Two) should be followed.
        iii. The project archaeologist will undertake spot inspection of the works to ensure that Heritage Management Strategies outlined in this AMP are being met.
        iv. The project archaeologist should be notified when Main Roads (or their contractors) plan to commence new instances of ground disturbance, e.g., opening new trenches or pits.
4) If archaeological finds or features are identified during the works then the Archaeological Discovery Procedure (see Appendix Two) should be followed.
5) The works programme shall be sufficiently flexible to allow for additional recording of any archaeologically significant deposits or features uncovered during the disturbance. Such recording may include archaeological excavation and salvage. The procedure for the archaeological excavation is detailed in the *Procedure for the Discovery of Historical Finds and Features* in Appendix Two.
6) Any fabric or artefacts uncovered should be assessed for significance by the archaeologist using the Significance Assessment Process (see Appendix Three) and the Finds Recording and Collection Procedures (see Appendix Four).
7) For any activity classed as **Low and Moderate Risk activities anywhere in the Project Area**:
    a) Any contractors or personnel undertaking the activities should undergo an archaeological heritage induction and be familiar with the nature of the archaeology that they may encounter.
    b) If archaeological finds or features are identified during the works, the Project Archaeologist should be contacted immediately, and the Archaeological Discovery Procedure (see Appendix Two) should be followed.
    c) The works programme shall be sufficiently flexible to allow for additional recording of any archaeologically significant deposits or features uncovered during the disturbance. Such recording may include archaeological excavation.

Table 12. Appendices for Management Procedures

Stage 4 – Finds and Feature Assessment

Stage 4 of the Archaeological Management Plan includes the assessment of the finds and features identified during the archaeological excavations and archaeological monitoring during the redevelopment project.

Features and finds should be assessed by the Project Archaeologist to industry-standard using the Significance Assessment Process outlined in Appendix Three.

Stage 5 – Reporting

Stage 5 of the Archaeological Management Plan is the reporting of results for any heritage assessment (survey, excavation or monitoring) that has taken place. The project archaeologist will provide Main Roads WA with a report that they should then submit to the Heritage Council and the DPLH. The final reports should have the following components:

1) Background archaeology and history of the site and surrounding area
2) Methods
3) Personnel and qualifications
4) Excavation results including feature and finds catalogues
5) Monitoring results including feature and finds catalogues
6) Significance assessments
7) Detailed site plans, section diagrams and photographs of work and features/finds
8) Conclusions and discussion of the identified archaeological material in terms of the research questions
9) Guidance for the interpretation of the results and any display or safe keeping of the archaeological material recovered during the development.

Stage 6 – Interpretation

The final stage of works that will complete the archaeological management is providing information for any interpretation of the identified archaeology and heritage value for the wider public.

This may include but is not limited to text for hard and digital media, curated archaeological objects for display and interpretation in art works.

The final archaeological report should provide guidance on potential options for interpretation.

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APPENDIX ONE – ARCHAEOLOGICAL MONITORING PROCEDURE

During archaeological monitoring, the following should be undertaken:

1) The monitoring archaeologist is provided with sufficient scope to closely monitor works.
2) It is the responsibility of the developer / contractor to ensure that the archaeologist is briefed and ready to deploy.
3) The developer / contractor is required to provide the archaeologist with at least two (2) days' notice of any proposed works.
4) The developer / contractor is required to provide the archaeologist with accurate location information as to the areas of proposed ground disturbance in the form of maps and GIS spatial information (in DXF or SHP format using MGA 94 or PCG 94 grid).
5) The project archaeologist is on site during all ground disturbing works in Zones of High Archaeological Significance.
6) The continued monitoring of the works will occur at the discretion of the project archaeologist. The archaeologist may decide that their on-site attendance is not required. In such instances:
    a) A heritage-inducted Site Supervisor will monitor the works for archaeological finds and features.
    b) If archaeological finds or features are identified during the works then the Archaeological Discovery Procedure (see Appendix Two) should be followed.
    c) The project archaeologist will undertake spot inspection of the works to ensure that Heritage Management Strategies outlined in this AMP are being met.
    d) The project archaeologist should be notified when the developer / contractor plans to commence new instances of ground disturbance, e.g., opening new trenches or pits.
7) The monitoring archaeologist has the right to stop works to sufficiently analyse any identified archaeology as per the Archaeological Discovery Procedure in Appendix Two.
8) The archaeologist should be contacted immediately in the event of archaeological finds or features, and works should cease as per the Archaeological Discovery Procedure in Appendix Two.
9) That once all ground disturbing works are completed that a detailed report is produced and submitted to the DPLH.

APPENDIX TWO – ARCHAEOLOGY DISCOVERY PROCEDURE

1) The developer /contractor should familiarise themselves with this Archaeological Management Plan and any specific conditions of approval that relate to the archaeological potential of the site.
2) The relevant Local City Council (LCC) is the primary custodian of any historical archaeological finds and features; however, it should be noted that the DPLH may expect the LCC to gift back to the State certain objects once salvaged.
3) The contactor's works programme shall be sufficiently flexible to allow for the implementation of the following Archaeological Discovery Procedure within the designated areas of archaeological potential.
4) A variety of archaeological material may be encountered during ground disturbing works, including but not limited to:
    a) Wooden piles and beams (Plate 25 and Plate 26)
    b) Flaked and ground Aboriginal stone artefacts (Plate 13 and Plate 14)
    c) Skeletal materials
    d) Historical footings, stones, bricks (Plate 18 to Plate 24)
    e) Historical artefacts such as glass bottles, clay pipes, metal, timber and ceramics (Plate 15 to Plate 20)

Plate 13. Aboriginal flaked artefact (quartz)

Plate 14. Aboriginal ground axe (dolerite)

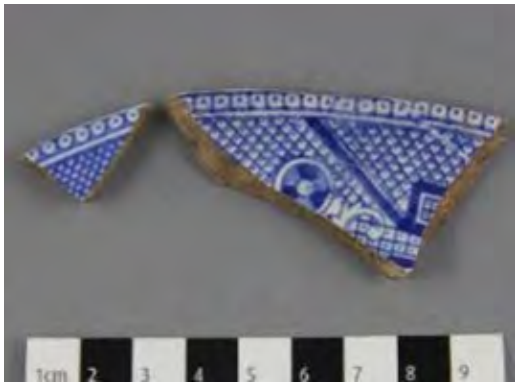


Plate 15. 19th Century ceramic fragments

Plate 16. Clay pipe fragments

Plate 17. Mineral water bottle fragment

Plate 18. Historical brick

Plate 19. Hand forged nails

Plate 20. Buttons

Plate 21. 19th Century limestone foundations

Plate 22. 19th Century brick feature and limestone foundations

Plate 23. 19th Century well and drain

Plate 24. 19th Century brick floor feature

Plate 25. Jarrah timber piles found within reclaimed section of Perth Foreshore

Plate 26. Jarrah timber in macadamised surface of jetty

Plate 27. Existing timber piles from Causeway Bridge II with Causeway Bridge III in the background

There are existing wooden piles and support beams from Causeway Bridge II, south of the existing Causeway Bridge III and on the eastern foreshore of Heirisson Island. More timber and associated materials from Causeway Bridge II may be uncovered during the course of the works if impacts occur within the original alignment of this earlier bridge.

Procedure for the Discovery of Aboriginal Artefacts

Items of cultural significance may be identified during the works, which may include isolated and collections of Aboriginal artefacts such as stone, or less commonly, wooden or bone tools.

Surface Finds

Should surface Aboriginal artefacts or cultural material be found during works, the following procedures should be implemented:

1) All works in the immediate vicinity of the find must cease and the project archaeologist should be notified immediately (if not on site);
2) The artefact should not be removed or disturbed further, and barriers or temporary fences may be erected around the area if required;
3) The archaeologist will create accurate records, including GPS coordinates and photographs of the archaeological material, including an *in-situ* evaluation of the find;
4) Work may be permitted to continue at an agreed upon distance from the find;
5) A written statement of the archaeologist's assessment and recommendations will be provided to the DPLH for their consideration; and
6) Based on the recommendations of the archaeologist, decisions regarding the treatment of the find shall be made in consultation with the archaeologist, the Traditional Owners and the DPLH.

Sub-Surface Material / Sites

In the event that Aboriginal archaeological material or site in a sub-surface context is identified, the following should occur:

1) All works in the immediate vicinity of the find must cease and the project archaeologist should be notified immediately (if not on site);
2) The artefact should not be removed or disturbed further, and barriers or temporary fences may be erected around the area if required;
3) The archaeologist and monitor/s should determine a boundary using a series of shovel test pits extending out from the identified artefact concentration. The boundary should be established either where the artefact assemblage terminates or falls into background scatter density. This boundary should be demarcated with heritage pink and black-flagging tape and the GPS coordinates recorded.
    a) Shovel test pits will be placed on a staggered grid system as determined by the archaeologist;
    b) Each test pit will be excavated with shovels;
    c) Any artefacts or charcoal fragments found in situ will be bagged and labelled, and the depths of the finds noted;
    d) All excavated material will be passed through a 3 mm sieve; and
    e) Any artefact found in the sieve will be bagged and labelled.
4) If the archaeologist and monitor/s determine the location to be a site, the site should be recorded, including:
    a) The type of site and detailed notes regarding the nature of the assemblage;
    b) A sample of artefacts will be recorded in detail (artefact type, lithology, size, retouch/utilisation);

c) If organic material is associated with the cultural material this will be collected for future dating;
d) Photographs will be taken of the types of artefacts as well as the general location of the place;
e) A description of the assemblage will be written and comments from Traditional Owners pertaining to the site and the surroundings will be noted; and
f) The artefacts will then be bagged, labelled and salvaged.

5) Once the site recording and salvage of the artefacts is complete, works may continue. The archaeologist and monitors should alert the LCC and its contractors as soon as work can recommence.
6) The following chain of responsibility is recommended for finds management:
   a) At the end of each day of recording / monitoring, any artefacts found during that day should be appropriate bagged, labelled and logged;
   b) These artefacts should be kept together in a safe place, along with any other finds from the project, until all archaeological works are completed;
   c) Once all works are completed, the permanent storage place for these artefacts should be discussed with SWALSC and the Whadjuk Working Group.

Procedure for the Discovery of Historical Features/Finds

If historical features/finds are encountered during the works, the cultural material should not be moved, and works should be halted immediately in the immediate vicinity of the find and the Project Archaeologist notified.

1) If the Project Archaeologist is not present, they should be informed at once. Depending on the nature of the find and discussion with the Project Archaeologist, work may be permitted to continue at an agreed upon distance from the find.
2) Once the archaeologist is present, they may decide to undertake further hand excavation / cleaning around the cultural material to assess its size / extent and determine its provenance and potential cultural significance.
3) At this stage, if considered necessary, the archaeologist will inform the LCC and the Department of Planning, Lands and Heritage (DPLH) of the cultural material.
4) If the cultural material is assessed by the archaeologist as not in its primary context at the discretion of the archaeologist, works may proceed with caution and with direction from the archaeologist after the cultural material has been recorded, bagged and removed from the work area.
5) In the unlikely event that the historical cultural material is assessed by the project archaeologist as a significant historical in-situ feature, in consultation with the LCC and the DPLH, options for the recording, preservation or salvage of the feature will be determined. This may involve further archaeological excavation to determine the precise nature and extent of the feature.
6) After recording, all salvaged finds will be recovered by the archaeologist, bagged and removed from work area.
7) The Archae-aus Finds Management Process should be followed for appropriate storage or use of these finds.

Procedure for the Discovery of Human Remains

1) It is possible that human remains could be found during the project works.
2) Should human remains be found during works, the following legislation becomes applicable:
    a) *Coroners Act* 1996 – all human remains;
    b) *Aboriginal Heritage Act* 1972 – Aboriginal remains; and
    c) *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act* 1984 - Aboriginal remains.
3) Should human remains be found during works, the following procedures should be implemented:
    a) all works must cease immediately, and personnel must comply with the instructions of the project archaeologist. The remains should not be removed or disturbed further, and barriers or temporary fences may be erected around the area if required;
    b) the LCC should be notified immediately;
    c) under section 17 of the *Coroners Act 1996* the local police and Coroner's office must be notified;
    d) if the human remains are thought to be Aboriginal then the Registrar of Aboriginal Sites at the DLPH in Perth must be informed. The Registrar of Aboriginal Sites will inform the Federal Minister for Aboriginal Affairs; and
    e) in consultation with the police, Coroner and DLPH, steps to identify the remains must be taken. This may necessitate engaging a physical anthropologist to complete this task on site.
4) If the human remains are determined to be of Aboriginal (or undetermined) origin:
    a) Traditional Owners should be consulted as to the management of the remains;
    b) no further work at the location should be undertaken until all parties have been consulted and an agreement has been reached. Once an agreement has been reached, works may continue at an agreed distance away from the human remains; and
    c) if left *in situ*, the location of the remains should be recorded in sufficient detail for their future protection.
5) If the human remains are determined to be of Aboriginal (or undetermined) origin, and *in situ* preservation is not a practical solution, provided all parties agree to the relocation of the remains:
    a) approval to disturb the remains under section 18 of the *Aboriginal Heritage Act* (*AHA*), and/or a permit to excavate the remains for archaeological purposes under section 16 of the *AHA* should be sought;
    b) an archaeological excavation plan should be developed and implemented in consultation with the Traditional Owners and the DLPH; and
    c) provision be made for the return of the remains to the Traditional Owners for their repatriation at a safe location.
6) If the human remains are non-Aboriginal and are of a historical nature and cannot be avoided:
    a) The Heritage Council of Western Australia and the Western Australian Museum will be consulted regarding the proposed disturbance.

b) A data recovery programme, planned in consultation with the Heritage Council of Western Australia / Western Australian Museum and a historical archaeologist and osteoarchaeologist, may be developed and implemented by the LCC.
c) The curation / collection of any excavated remains will be discussed between the LCC and the Heritage Council of Western Australia and / or the Western Australian Museum.

Procedure for the Management of Salvaged Finds

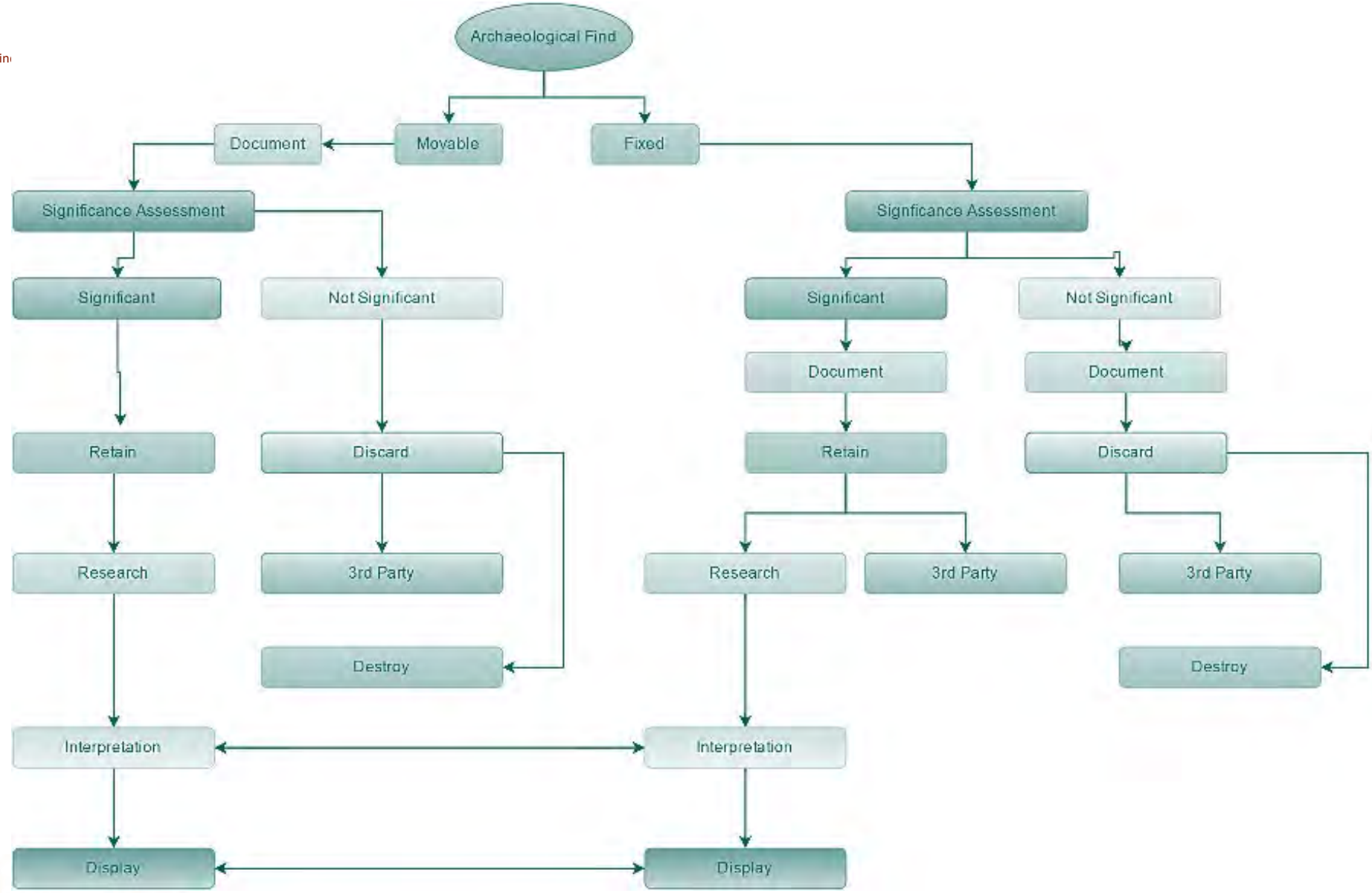
Please note: Identified Aboriginal finds and Sites may require assessment by the ACMC and require the approval under section 18 of the *Aboriginal Heritage Act 1972* before such items/sites can be salvaged.

1) Archaeological find is located
    i) Identified as a Loose Find
        (a) Person who located the find notifies the onsite archaeologist
        (b) Archaeologist assesses the find
        (c) Find is collected
        (d) Find is assessed for archaeological significance by an archaeologist with additional input from the DPLH
            1. Find is assessed as significant
                i. Recorded in detail including notes taken regarding suitability for interpretation
                ii. Data is entered into the find database
                iii. Conserved using best practise methods
                iv. Bagged, tagged and boxed
                v. Stored in a stable environment
            2. Find is assessed as not significant
                i. Recoded in basic detail
                ii. Data is entered into the find database
                iii. If Aboriginal material, offered to SWALSC
                iv. Discard options for historical material:
                    1) Offered to a 3rd Party in the following order – Main Roads, Western Australian Museum, LCC, other government organisations, UWA, Archae-aus Education, artists
                    2) Destroyed
    ii) Identified as a Feature
        (a) Work is halted around feature
        (b) Area is bunted off to protect the feature
        (c) Person who located the find notifies the Project Archaeologist
        (d) Archaeologist assesses the feature

(e) Assessed for archaeological significance (see Significance Assessment Criteria) with additional input from the DPLH

1. Feature is assessed as significant
    i. Feature is recorded *in situ* and in detail by archaeologists.
    ii. Notes taken regarding suitability for interpretation
    iii. Data is entered into the database
    iv. Selected elements are retained for interpretation if suitable
    v. Conserved using best practice methods
    vi. Bagged, tagged and boxed
    vii. Stored in stable environment
    i. Offered to a 3rd Party in the following order – Western Australian Museum, LCC, other government organisations, UWA, Archae-aus Education
2. Feature is assessed as not significant
    i. Recorded in basic detail
    ii. Data is entered into the database
    iii. If an Aboriginal feature, offered to SWALSC
    iv. Discard options
        1) Offered to a 3rd Party in the following order – Main Roads, Western Australian Museum, LCC, other government organisations, UWA, Archae-aus Education
        2) Destroyed

Figure 40. Fin



APPENDIX THREE – SIGNIFICANCE ASSESSMENT PROCESS

Causeway Bridges (03631)

Significance Assessment Themes and Values

The Burra Charter (Australia ICOMOS Charter for Places of Cultural Significance) is the cornerstone document for conserving Australia's cultural heritage. The Charter encapsulates two important aspects in conserving heritage places. First, it establishes the best practice principles and processes for understanding and assessing a place's significance, as well as developing and implementing a conservation plan. Second, the Charter defines and explains the four primary cultural values that may be ascribed to any place: aesthetic, historic, social or spiritual and scientific. These values are essential because they delineate the types and quality of information needed to accurately determine a heritage place's significance.

The following section examines the current Assessment Documentation for *Causeway Bridges* (03631) and considers how the archaeological potential associated with this Place may contribute to the assessed themes and values (Heritage Council of Western Australia, 1998).

Aesthetic, Historic, Social or Spiritual Value

The Charter identifies four cultural values - aesthetic, historic, social or spiritual and scientific. Aesthetic value concerns the sensory and perceptual experience associated with a place. Historic values pertain to any element of the place's history. The remaining two values are particularly relevant to the Aboriginal heritage significance process and are discussed at some length.

Aesthetic or Technical Value

As stated in the Burra Charter:

> *Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use.*

The State Register of Heritage Places Assessment Documentation for *Causeway Bridges* includes the following aesthetic value statement:

> *Causeway Bridges* has aesthetic value in the balanced proportions and sizes of the elements of the piers, steel beams, concrete deck, concrete abutments, balustrading, pilasters and original lighting standards. (Criterion 1.2).
>
> *Causeway Bridges* over the Swan River is a landmark providing an entry statement to the City of Perth from the eastern approaches. (Criterion 1.3).

Aside from the assessed aesthetic values, any potential archaeology related to the earlier bridge constructions or associated use of any of the Causeway bridges, may also contribute to the aesthetic value of this place.

Historic Value

The State Register for *Causeway Bridges* includes historic values within the significance statement:

Causeway Bridges is of historical significance as the bridges assisted in the evolution of road transportation and personal mobility in the State; allowed residential settlement south of the Swan River to move away from the river; and connected the City of Perth with the Albany, Great Eastern, Great Northern, South Western and Canning Highways. (Criterion 2.1).

Completion of construction of the *Causeway Bridges* in 1952 concluded over 120 years of continuous endeavour to successfully bridge the river with a permanent structure. (Criterion 2.2).

Causeway Bridges 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. (Criterion 2.3).

The concrete and steel structural design was innovative. The 1952 *Causeway Bridges* were the first in Western Australia to be lit with vertically mounted fluorescent tube street lighting and the first to employ PVC underground cables for street lighting. (Criterion 2.4).

Any archaeological finds and features related to this place will contribute to the historic narrative and may provide more information about the place that is not apparent in the documented record.

Archaeological Value

As discussed in Section Three, archaeological values are not included in the Assessment Documentation for *Causeway Bridges* where they have not been used to assess significance under scientific or other values. It is in the authors' opinion that there is high archaeological potential in sections of the Investigation Area based on the extensive history of use of the area, the visible remnants of Causeway Bridge II, and the findings of other archaeological investigations in reclamation areas along the Perth Foreshore.

The following criteria has been used to determine the potential archaeological significance within the Investigation Area. These criteria include the Federal Principal Australian Historic Themes and the Heritage Council of Western Australia Heritage Themes (Australian Heritage Commission, 2001; WA Heritage Council, 2012).

Table 13. Identified key cultural heritage values of the Investigation Area

State and Commonwealth Heritage Themes	Subthemes
1. Demographic settlement and mobility	102 Aboriginal occupation
	103 Racial contact and interaction
	104 Land allocation and subdivision

State and Commonwealth Heritage Themes	Subthemes
	105 Exploration and surveying
	106 Workers (including Aboriginal, convict)
	107 Settlements
	108 Government Policy
	109 Environmental change
	110 Resource exploitation and depletion
	111 Depression and boom
	112 Technology and technological change
	113 Natural disasters
2. Transport and Communications	201 River and sea transport
	202 Rail and light rail transport
	203 Road transport
	209 Technology and technological change
3. Occupations	301 Grazing, pastoralism and dairying
	302 Rural industry and market gardening
	304 Timber industry
	305 Fishing and other maritime industry
	306 Domestic activities
	311 Hospitality industry and tourism
4. Social and Civic activities	405 Sport, recreation and entertainment
	407 Cultural activities
	409 Environmental awareness
5. Outside influences	503 Natural disasters
	504 Depression and boom

State and Commonwealth Heritage Themes	Subthemes
6. People	506 Tourism
	507 Water, power, major transport routes
	601 Aboriginal people
	602 Early settlers
	604 Innovators
	605 Famous and infamous people
1. Tracing the evolution of the Australian environment	1.1 Tracing climatic and topographical change
	1.2 Tracing the emergence of Australian plants and animals
	1.4 Appreciating the natural wonders of Australia
2. Peopling Australia	2.1 Living as Australia's earliest inhabitants
	2.2 Adapting to diverse environments
	2.3 Coming to Australia as punishment
	2.4 Migrating
	2.4.4 Migrating through organised colonialism
	2.5 Promoting settlment
	2.6 Fighting for land
	2.6.1 Resisting the advent of Europeans and their animals
	2.6.2 Displacing Indigenous people
3. Developing local, regional and national economies	3.1 Exploring the coastline
	3.2 Constructing capital city economies
	3.3 Surveying the continent
	3.3.1 Looking for inland seas and waterways

State and Commonwealth Heritage Themes	Subthemes
	3.3.2 Looking for overland stock routes
	3.3.3 Prospecting for precious metals
	3.3.4 Looking for land with agricultural potential
	3.3.5 Laying out boundaries
	3.4 Utilising natural resources
	3.4.2 Fishing and whaling
	3.8 Moving goods and people
	3.8.4 Making economic use of inland waterways
	3.8.6 Building and maintaining railways
	3.8.7 Building and maintaining roads
	3.11 Altering the environment
	3.11.1 Regulating waterways
	3.11.2 Reclaiming land
	3.11.4 Clearing vegetation
	3.11.5 Establishing water supplies
	3.14 Developing an Australian engineering and construction industry
	3.14.1 Building to suit Australian conditions
	3.14.2 Using Australian materials in construction
	3.16 Struggling with remoteness, hardship and failure
	3.16.1 Dealing with hazards and disasters
	3.23 Catering for tourists
	4.1 Planning urban settlements

State and Commonwealth Heritage Themes	Subthemes
4. Building Settlements, towns and cities	*4.1.1 Selecting township sites*
	4.1.2 Making suburbs
	4.1.4 Creating capital cities
	4.1.5 Developing city centres
	4.2 Supplying urban services (power, transport, fire prevention, roads, water, light and sewerage)
	4.4 Living with slums, outcasts and homelessness
	4.6 Remembering significant phases in the development of settlements, towns and cities
5. Working	5.1 Working in harsh conditions
	5.1.2 Coping with dangerous jobs and workplaces
	5.2 Organising workers and work places
	5.6 Trying to make crime pay
8. Developing Australia's cultural life	8.1 Organising recreation
	8.1.1 Playing and watching organised sports
	8.1.3 Developing public parks and gardens
	8.1.4 Enjoying the natural environment
	8.7 Honouring achievement
	8.9 Commemorating significant events
	8.9.1 Remembering disasters
	8.9.2 Remembering public spectacles
	8.10 Pursuing excellence in the arts and sciences
	8.10.4 Designing and building fine buildings
	8.13 Living in cities and suburbs

State and Commonwealth Heritage Themes	Subthemes
	8.15 Being homeless

Social or Spiritual Value

Social and spiritual values originate within the community for which a place has meaning. Social value relates to a community's identity and may be marked at or sustained by a particular location. Community activities are important to group maintenance and the place where they are or have been conducted may sustain group cohesion. A place's spiritual values arise from strong emotional feelings and associated ritual practices. The place, thereby, acts to sustain group belief systems and wellbeing. Traditional art or human-made structures may also be present at the place.

Causeway Bridges has enormous social value as an example of the State's European history and development of the City of Perth. This place, including Heirisson Island and the connecting foreshores, form part of a major crossing point used over a very long period of time, not only for Europeans but for Whadjuk Noongar people.

Scientific/Research Value

The Significance Statement for *Causeway Bridges* in relation to the scientific/research value focusses on the engineering of the existing structure (Causeway Bridge III):

> The geotechnical assessment of the bridge foundations to establish the bridge pier design parameters was significant research. (Criterion 3.1).
>
> The composite steel beam and concrete deck design of *Causeway Bridges* is technically innovative and is the first example of a concrete deck being cast in situ over the steel beams, a process pioneered and developed by Alan W Knight. (Criterion 3.3)

Archaeological scientific values have not been included for this place. Archaeology can yield information about the lifeways of past communities through the cultural materials that were left behind at these places. Further investigation of the archaeological potential surrounding the *Causeway Bridges*, including through excavation and detailed recording, has the potential to answer a broad suite of research questions. These specifically relate to the themes that are outlined in the section above, and include, but are not limited to:

- Demographic settlement and mobility – the Causeway's role in the growth of Perth and surrounding regions.
- Transport and communications – the area's associations with river transport, and light rail (tramway).
- Occupations – the use of human labour (including convict labour) on the construction and maintenance of the three Causeway Bridges, as well as associations with engineers, town planners and government leaders.
- Recreational activities – including activities that revolved around the bridges and parks such as fishing, swimming, water sports, tennis, and other activities.

- Outside influences – including major flood events and World Wars affecting the timing of development of the Causeway Bridges.
- People – including connections to Whadjuk Noongar people, early settlers, historical figures, innovators/engineers, tourists and local residents of Western Australia.
- Land Reclamation – including an understanding of what types of materials were used as fill during the reclamation works and whether there were different methods used over the different phases. Can the historical fill, where it has been formed by domestic or commercial rubbish, provide an insight into the settlement and development of Perth?

Social Value

The Social Value for the Causeway Bridges is included in the Statement of Significance for the *Causeway Bridges*:

> *Causeway Bridges* 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. (Criterion 4.1).
>
> *Causeway Bridges* provides a sense of place of cultural significance as the eastern access to and from the City of Perth. It forms an eastern entry statement to the City of Perth. (Criterion 4.2).

Further investigation of the archaeological potential associated with the *Causeway Bridges* may contribute to the sense of place of cultural significance and may provide further insight into the community's links to this place through the objects they left behind in the past.

Comparative Criteria

Using the Primary Criteria listed in the Burra Charter, significance assessments are further enhanced using Comparative Criteria (Russell and Winkworth, 2009). These secondary criteria include rareness, representativeness, provenance, condition and interpretative capacity. These criteria will be applied to the archaeological material recovered, as a means of assessing its cultural significance.

Rarity or Representativeness

The ability of the place or object to demonstrate rare, uncommon or threatened aspects of the archaeological heritage of the State. This particularly relates to how uniquely the place / object demonstrates the characteristics of a class of archaeological site or artefact.

Rarity

The Statement of Significance addresses how rare the *Causeway Bridges* place is within Western Australia:

> *Causeway Bridges* is the first example of structural design based on composite steel beams and concrete decking used in Western Australia. The technique was developed by Alan Knight, who later became Commissioner of the Tasmanian Hydro-Electric Commission. It is distinctive in its design, including the river piers and concrete balustrading. (Criterion 5.2).

Representativeness

The Statement of Significance addresses how representative the *Causeway Bridges* place is compared to other bridges across Australia:

> The balustrading is representative of the type used on other bridges in Perth, Melbourne and Brisbane. (Criterion 6.1).

Condition

To what degree the place has been impacted by natural and/or human events.

> *Causeway Bridges* is well maintained and is in very good condition. The balustrading is in good condition. There is visible surface cracking in the concrete abutments at the end of each bridge. This is possibly due to alkali reaction in the concrete, with the reaction estimated to be almost complete.
>
> *Causeway Bridges* is structurally sound and will remain so into the foreseeable future. In terms of archaeological deposits, the Investigation Area is likely to have low, moderate and high areas of subsurface integrity.

It is unclear at this stage whether there are intact subsurface archaeological deposits and features within the Investigation Area. Further archaeological investigation may provide a better understanding of this criterion.

Integrity

The Statement of Significance addresses the level of integrity of the *Causeway Bridges*:

> *Causeway Bridges* has high integrity. *Causeway Bridges* is compatible with its current use and has sufficient traffic capacity to match that of the connecting road system and will continue to remain viable well into the future.

In terms of archaeological integrity, there may be intact subsurface features or objects associated with the earlier Causeway Bridges (I & II).

Interpretive Capacity

When asking the question of whether a place allows for further interpretation in understanding the cultural history of the State, the *Causeway Bridges* and areas surrounding this place have the potential for subsurface archaeology and hence have the capacity for further interpretation of this place. Any resultant archaeological finds would be assessed based on their ability to be displayed.

Provenance

The chain of evidence that supports an historical association with an artefact is key. In archaeological contexts a provenanced item is likely to be more significant than an equivalent unprovenanced item.

Significance Assessment Process

1) Find / Feature Description
2) Significance Assessment check list and justification
    a. What are the finds / features specific aesthetic or technical value?
    b. What are the finds / features specific historic value?
    c. What are the finds / features specific social value?

d. How does it relate to the historical themes and what is the specific scientific/research value?

e. How rare is the find / feature?

f. How representative is the find and how does the find relate to the other significant finds in and around the Perth region in Western Australia?

g. What is its condition (poor, fair, excellent) and is it salvageable?

h. Does it have interpretative value?

   i. Can it be linked to people and culture?

   ii. Does it represent a significant connection to the State's European and maritime history and the identified Heritage Themes?

   iii. Can it be used for further research?

   iv. Can it help inform multi-audiences?

   v. Can it be easily displayed and how?

i. Does it have good provenance?

3) If assessed as significant:

   a. Can it be retained *in situ*?

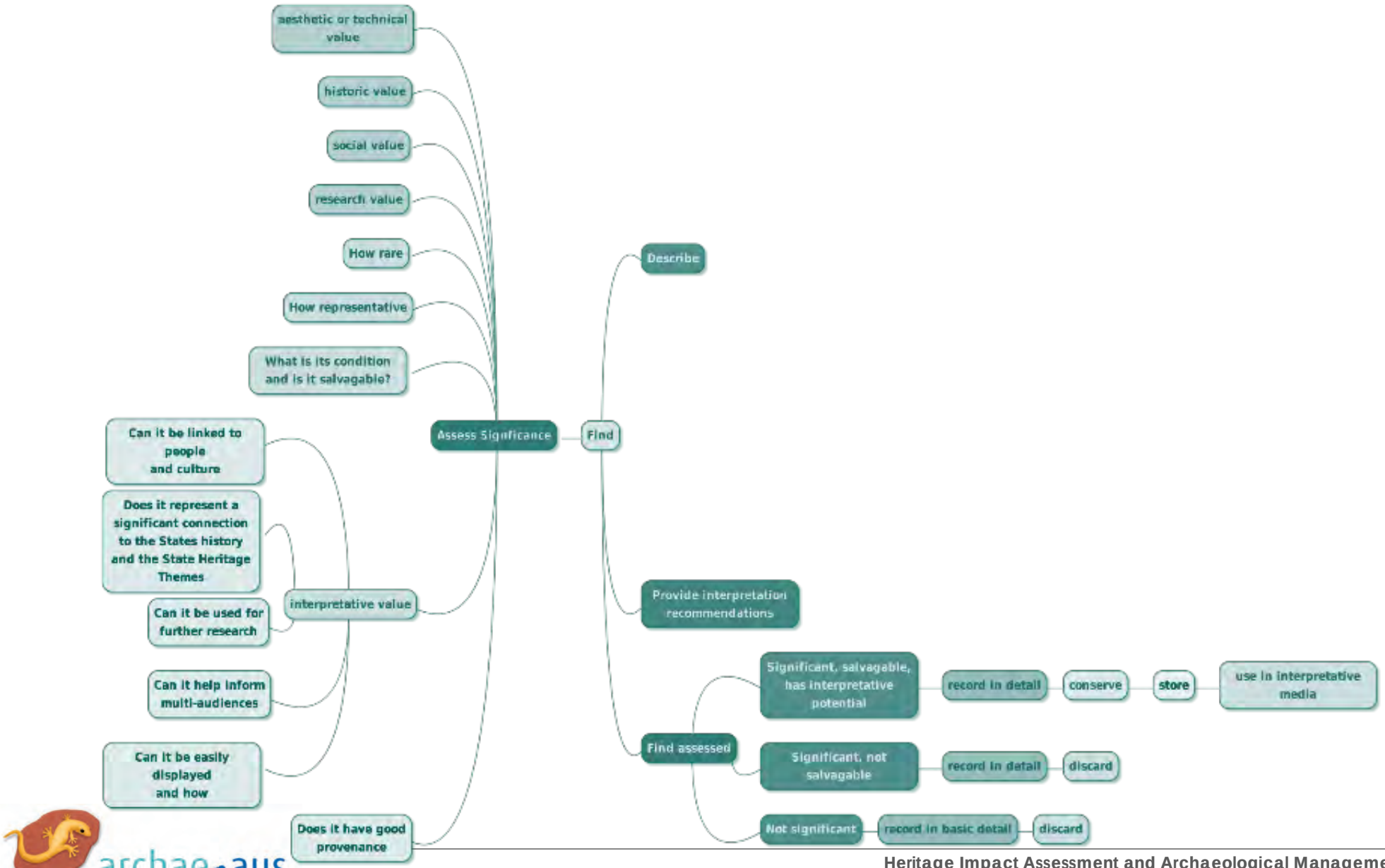
   b. Can it be relocated?

   c. If not is it salvageable and potentially useful for interpretation? If so, the find will be retained.

4) If assessed as significant but not salvageable, the find will be recorded in detail and discarded.

5) If assessed as not significant the find will be noted and discarded.

Figure 41. Finds Significance Assessment Process



APPENDIX FOUR – FIND RECORDING AND COLLECTION PROCEDURES

Loose Find Recording Process

1) Find is photographed *in situ* if possible
2) Location of find recorded on site plan
3) Loose Find recording form completed
4) Find placed into a storage bag using the correct conservation collection technique
5) Find labelled with find number, location, collectors name and date collected
6) Find stored in durable plastic tubs (Plate 28 and Plate 29)
7) Data entered into Database

Plate 28. Storage tubs

Plate 29. Storage tubs

Feature Recording Process

1) Feature is photographed
2) Location of feature recorded on site plan
3) Feature recording form completed
4) Data entered into Database
5) Depending on the type of feature, specific procedures will be required to either preserve *in situ* or remove and then conserve.

Collection Protocols

Careful collection of finds is required and if finds conservation is required, conservators at the Western Australian Museum need to be consulted immediately.

1) Finds recovered from waterlogged contexts need to be kept wet in the same water from which they were collected.
2) Organic finds should be wrapped and kept away from direct sunlight, then stored at between 4° – 5° C.
3) Glass, ceramics, brick and stone should be carefully collected and stored separately in labelled plastic bags.
4) Metal items recovered from wet environments need to be stored wet. Fresh water is preferable to salt water except for lead and lead alloys, such as pewter. Only store like metals in the same container. Retain any adherent concretions. Do not store metals in the same container as organic materials unless they are part of an inseparable, composite object.

Storage Process

Once any conservation procedures are complete, the finds will need to go into secure and appropriate storage. It is envisaged that with the guidance of heritage consultants, the relevant custodian will store the finds in suitable storage conditions until such a time as they are assessed.

Following analysis, interpretation and reporting, the collected historical materials can be used by Main Roads for display. If any Aboriginal artefacts are found, these materials will be given to the Native Title holders or traditional owners - consultation with the South West Land and Sea Council is necessary.

Those materials which will not be permanently retained will be offered to organisations in the following order:

1) Main Roads Western Australia
2) Western Australian Museum (WAM)
3) Relevant LCC
4) Archaeology Department, University of Western Australia
5) Archae-aus (for educational purposes)

If the material is not wanted by these organisations, the material will be disposed of after consultation with Main Roads and WAM.

APPENDIX FIVE – CONTRACTOR PROCEDURE HANDOUT

Procedure – Archaeological Finds Discovery

Archaeological potential occurs across most of the Project Area. However, the highest archaeological potential is in locations of past buildings and inside or at the edges of extant buildings. Please refer to Appendix Map 1 at the end of this document:

PLEASE NOTE:

ALL HIGH-RISK GROUND DISTURBANCE ACTIVITIES MUST BE MONITORED BY THE PROJECT ARCHAEOLOGIST.

High-Risk Activities include any activity that disturbs the ground below 100 mm. It can include activities such as topsoil clearing, ripping, grubbing, geotechnical testing, grading, cutting, trenching, potholing pits (including vacuum potholing), deep excavation and directional drilling (launch and retrieval pits), auguring (including hand auguring), mature tree planting and soil loosening.

During ground disturbing works the following must occur if objects, and deposits are found. These might include Aboriginal artefacts (such as flaked and ground stone tools, flaked glass, wooden objects), bottles, window glass, ceramics, animal bone, metal, bricks and building footings.

Action	Process	Personnel	When
1. Stop Work Immediately	The discoverer will notify machine operators working in the vicinity to stop work to avoid further disturbance of the structure or object. Do not move or touch the found item.	Discoverer	Immediately upon discovery of any object
2. Notify the Site Supervisor and the Managing Contractor	Discoverer informs the Site Supervisor. The Site Supervisor informs the Managing Contractor.	Discoverer, Site Supervisor	Immediately
3. Protect the Find	If possible, fence off the affected area with at least a 2 m buffer. Keep all work away from the area until it has been assessed by the Archaeologist.	Site Supervisor	ASAP
4. Document	Take at least two photographs (using mobile phones) of the find with something for scale (pens, hands, ruler, people)	Site Supervisor	ASAP

Action	Process	Personnel	When
5. Notify the Archaeologist	The Managing Contractor contacts the Archaeologist to advise of the find. The Managing Contractor emails the photographs to the Archaeologist and provides details of where the find is located (including depth, if possible).	Managing Contractor	ASAP
6. Initial Assessment of the Find	The Archaeologist views the photographs and advises the Managing Contractor on whether a site visit is required.	Project Archaeologist	ASAP but within 24 hours to minimise delays
7. On-Site Assessment of the Find	If a site visit is required, the Managing Contractor will notify the Site Owner. The Archaeologist assesses the find and in consultation with the Managing Contractor will arrange the recording of the objects and possible salvage.	Managing Contractor, Project Archaeologist	ASAP
8. Recording / Salvage	The Archaeologist to follow the Project Archaeological Management Plan.	Archaeologist	ASAP
9. Clearance	Once salvage is complete the Archaeologist informs the Managing Contractor that the area is clear. Archaeologist informs the Managing Contractor if additional conditions for continued work are required.	Archaeologist	Following assessment
10. Resume Work	Managing Contractor informs the Site Supervisor.	Managing Contractor	ASAP

Contact Numbers for Project

Role	Name	Contact Details
Project Coordinator		
Site Supervisor		
Project Archaeologist		

Legend

- Pedestrian/Cyclist Bridge Construction Footprint
- Causeway_Bridge_Historical_Heritage_Survey_Area

MR21CB1a_ArchPotential

- High
- Moderate
- Low

archae-aus

Appendix Map 1. Contractor Handout - Zones of Archaeological Significance

Drafted by Nigel Bruer, 18th May 2021. GDA94, Zone 50.
Satellite imagery courtesy of Google and Wiki Maps.

APPENDIX SIX – HERITAGE REGISTER SEARCHES

HERITAGE COUNCIL OF WESTERN AUSTRALIA

REGISTER OF HERITAGE PLACES - ASSESSMENT DOCUMENTATION

11. ASSESSMENT OF CULTURAL HERITAGE SIGNIFICANCE

The criteria adopted by the Heritage Council in November 1996 have been used to determine the cultural heritage significance of the place.

11. 1 AESTHETIC VALUE*

Causeway Bridges has aesthetic value in the balanced proportions and sizes of the elements of the piers, steel beams, concrete deck, concrete abutments, balustrading, pilasters and original lighting standards. (Criterion 1.2)

Causeway Bridges over the Swan River is a landmark providing an entry statement to the City of Perth from the eastern approaches. (Criterion 1.3)

11. 2. HISTORIC VALUE

Causeway Bridges is of historical significance as the bridges assisted in the evolution of road transportation and personal mobility in the State; allowed residential settlement south of the Swan River to move away from the river; and, connected the City of Perth with the Albany, Great Eastern, Great Northern, South Western and Canning Highways. (Criterion 2.1)

Completion of construction of the *Causeway Bridges* in 1952 concluded over 120 years of continuous endeavour to successfully bridge the river with a permanent structure. (Criterion 2.2)

Causeway Bridges 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. (Criterion 2.3)

The concrete and steel structural design was innovative. The 1952 *Causeway Bridges* were the first in Western Australia to be lit with vertically mounted fluorescent tube street lighting and the first to employ PVC underground cables for street lighting. (Criterion 2.4)

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* For consistency, all references to architectural style are taken from Apperly, Richard; Irving, Robert and Reynolds, Peter *A Pictorial Guide to Identifying Australian Architecture: Styles and Terms from 1788 to the Present*, Angus & Robertson, North Ryde, 1989.

11. 3. SCIENTIFIC VALUE

The geotechnical assessment of the bridge foundations to establish the bridge pier design parameters was significant research. (Criterion 3.1)

The composite steel beam and concrete deck design of *Causeway Bridges* is technically innovative and is the first example of a concrete deck being cast in situ over the steel beams, a process pioneered and developed by Alan W Knight. (Criterion 3.3)

11. 4. SOCIAL VALUE

Causeway Bridges 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. (Criterion 4.1)

Causeway Bridges provides a sense of place of cultural significance as the eastern access to and from the City of Perth. It forms an eastern entry statement to the City of Perth. (Criterion 4.2)

12. DEGREE OF SIGNIFICANCE

12. 1. RARITY

Causeway Bridges is the first example of structural design based on composite steel beams and concrete decking used in Western Australia. The technique was developed by Alan Knight, who later became Commissioner of the Tasmanian Hydro-Electric Commission. It is distinctive in its design, including the river piers and concrete balustrading. (Criterion 5.2)

12. 2 REPRESENTATIVENESS

The balustrading is representative of the type used on other bridges in Perth, Melbourne and Brisbane. (Criterion 6.1)

12. 3 CONDITION

Causeway Bridges is well maintained and is in very good condition. The balustrading is in good condition. There is visible surface cracking in the concrete abutments at the end of each bridge. This is possibly due to alkali reaction in the concrete, with the reaction estimated to be almost complete.

Causeway Bridges is structurally sound and will remain so into the foreseeable future.

12. 4 INTEGRITY

Causeway Bridges has high integrity. *Causeway Bridges* is compatible with its current use and has sufficient traffic capacity to match that of the connecting road system, and will continue to remain viable well into the future.

12. 5 AUTHENTICITY

Causeway Bridges has a high degree of authenticity with the fabric of the place in its original state. The removal of the original lighting standards has detracted from the authenticity of the place; however, the modified standards are still supported from the balustrading pilasters.

13. SUPPORTING EVIDENCE

The documentary and physical evidence has been compiled by J. L. Paton Consulting Engineer subsequent to the preparation of a Conservation Plan also by J. L. Paton. Additional information has been prepared by HCWA staff.

13. 1 DOCUMENTARY EVIDENCE

Causeway Bridges consists of two bridges spanning the channels of the Swan River to the east and west of Heirisson Island. These bridges, completed in 1952, are the third set of bridges on the site of a traditional crossing over the Swan River.

Prior to the arrival of Europeans in Western Australia, the relatively shallow waters and mud banks between what is now East Perth and Victoria Park provided a natural crossing for the Aboriginal groups that frequented the area. When William Vlamingh arrived in 1696, at which time he named the Swan River, the river flats presented an obstacle that prevented his progress upriver. Members of the French Scientific Expedition, which included Midshipman Francois Heirisson, in 1801, and Captain James Stirling in 1827, also encountered difficulties at this place during their explorations of the Swan River.

After settlement of the Swan River Colony in 1829, the shallow flats in the vicinity of Heirisson Island continued to impeded progress upriver and it was not long before a bridge was urged. Only flat-bottomed boats could make the transition to deeper water upstream and cargo had to be man-handled across the shallow and muddy flats.[1]. In an effort to facilitate transport on the Swan River, the *Burswood Canal* was constructed in 1831.[2] The canal helped alleviate the navigation problems, but as the colony matured, the need for a road link between Perth and the southern districts and Guildford became increasingly pressing. Bridging the Flats with a causeway was discussed, but lack of funds prohibited its construction for several years.

At a meeting of the Roads Board Trust on 28 February 1839, a motion was passed allowing for 'the erection of a Bridge and Causeway across the Flats at Perth, [which] is a very real utility, and would materially benefit the Settlers throughout the Colony.'[3] The first tenders were called on 12 February the following year and the work was spread over about three years and several contracts.[4] The design was prepared by J S Roe, Surveyor General, and modified by Henry Trigg, Superintendent of Works, together with Major F C Irwin. Consisting of two timber spans and associated roadway over the Heirisson Islands, the Causeway was officially opened on 24 May 1843. A toll was charged for almost all who crossed the Causeway, including pedestrians, each head of stock and vehicle. However, all officers and soldiers 'in

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1 J S Le Page, *Building a State: The Story of the Public Works Department of Western Australia 1829-1985*, Water Authority of Western Australia, Leederville, 1986, p. 38.

2 Fragments of the *Burswood Canal* are extant.

3 As quoted in Le Page, ibid.

4 Perth Gazette, 12 September 1840, p. 3; Le Page, op. cit., p. 39. A bridge across the Narrows had been considered, but the Causeway provided better access to the agricultural areas being opened up south of the river.

proper...uniform...and their horses...and all mail carriers...[were] exempted from any charge or toll whatsoever.'[5] *The Perth Gazette and Western Australian Journal* reported that 'this communication with the interior...presents one of the best public works constructed throughout the Colony.'[6]

Flooding in June 1862 overtopped the Causeway and necessitated rebuilding. The new bridge was designed and supervised by Richard Roach Jewell and the 'whole of the work [was] executed by convict labour, together with quarrying and boating the stone, and the manufacture of all the necessary ironwork.'[7] The new Causeway, built on the same alignment as the old, was raised by one metre in height and a third span was added. The bridges were connected by 'a raised causeway of earthwork, protected on the upper side with sheet piling and on the lower side with a stone wall, and approaches at either side by means of a railed embankment of similar construction'.[8]

The bridges were constructed of jarrah timber and material from the original was reused where possible. When the piles of the old bridge were drawn, they proved to be in extremely good condition, showing no signs of decay. Jewell reported that they 'were as sound as when first used, upwards of 25 to 30 years; showing the superiority of the Swan Jarrah for engineering purposes of this kind over other known timber.'[9] Some of the removed piles were shipped, on orders of Governor Hampton, to Sir William Denison, Governor of Madras, as an example of 'our invaluable jarrah timber, and its indestructibility'.[10] The new bridge opened for traffic in August 1865 and was officially opened by Governor Hampton on 12 November 1867:

> It is a work of general rather than local interest; for it [the Causeway] forms a main line of communication which connects the metropolis and the principal seaport with all the old established districts of the colony; and taken in conjunction with the noble Bridge which now spans the River at Fremantle, and with the viaduct recently erected at Guildford, renders complete the means of ready transport over an extent of country of which older settlements might feel proud.[11]

The gold discoveries of the 1890s and the associated increase in population led to the development of suburbs which radiated out from Perth. To accommodate the increased pedestrian and vehicular traffic passing over the Causeway between the city and Victoria Park, the Causeway was widened to provide a footpath in 1899. By 1902, it had became necessary to further increase the capacity of the Causeway to 'afford accommodation for proposed tramway communication with Victoria Park'.[12] This work, completed in 1904, involved strengthening and widening the Causeway for an average width of

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5 *Government Gazette*, 19 May 1843.
6 *Perth Gazette and Western Australian Journal*, 27 May 1843, p. 2.
7 Report by R R Jewell as quoted in Le Page, op. cit., p. 96.
8 Le Page, op. cit., p. 94.
9 Le Page, op. cit., p. 96.
10 *Perth Gazette and Western Australian Times*, 28 August 1865, p. 1.
11 The Chairman of the City Council of Perth's Address at the opening of the Causeway Bridge, as quoted in Le Page, op. cit., p. 96. The Helena Bridge at Guildford and the North Fremantle Bridge were under construction at the same time; the Helena Bridge was also opened by the Governor on 12 November 1867. North Fremantle Bridge was informally opened by Captain Manning on 28 November 1866.
12 Annual Report of the Public Works Department, Roads and Bridges Branch, for the year 1902.

2.85 metres (9' 6").[13] Service pipelines were installed on support structures adjacent to the bridge.[14]

The Main Roads Board was established in February 1926, with Edward Tindale as Chairman. The Board took over responsibility for the Perth-Fremantle Road and the Causeway and Fremantle Road bridges, as well as other metropolitan roads, from the Roads and Bridges Branch of the PWD. One of seven engineering appointments made the following March was E W Godfrey, Bridge Engineer, who became responsible for the design, construction and maintenance supervision of all road bridges in Western Australia.[15].

The Swan River Improvements Bill was passed in 1925 to 'authorise the reclamation of land along the shores of the Swan River' between South Perth and Maylands. The Act aimed in part to address problems in the vicinity of the Causeway:

> ...that part of the Swan River is anything but a beauty spot and algae is growing there to such an extent that instead of being...a natural feature...it is fast developing a nuisance..[and] gives off a most offensive odour...It is intended to reclaim both sides of the river and make an island in the centre near the Causeway...[16]

The *Stirling*, a suction dredging plant, was assembled in Fremantle and soon began work on the perimeter of Perth Water and around the Causeway. At the same time, construction of a new causeway was under consideration to meet the ever increasing demands of traffic. This did not eventuate and instead new piles were added downstream to widen the Causeway a further 11.3 metres (37 feet).[17]

Nevertheless, the Causeway continued to deteriorate. In June 1940, Godfrey reported that the existing structure was nearing the end of its life and that the provision of a new structure was becoming imperative. Godfrey recommended that the new Causeway be built immediately upstream of the existing timber bridge and forwarded a proposal to the Minister for Works in August of that year.[18] Three years later, Godfrey was instructed to prepare

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13 Annual Report of the Public Works Department, Roads and Bridges Branch, for the year 1904.

14 G B Hill, Consulting Engineers, 'Causeway Bridges Conservation Plan', July 1997, p. 6. Derived from photographic evidence.

15 Godfrey held this appointment until c. 1957. Aside from Causeway Bridges, Godfrey was also in charge of construction of the Stirling Highway (c. 1933) and the Eyre Highway, a major defence project (1941). The Main Roads Board was replaced by the Commissioner of Main Roads in 1930. Edward Tindale was appointed Commissioner and held that position until 1941, when he was replaced by Jim Young. The concept design of *Causeway Bridges* was formulated during Tindale's term and executed during Young's term

16 The Minister for Works, 1925, as quoted in Le Page, op. cit., p. 415.

17 As reported in *The West Australian*, 28 May 1945, p. 6.

18 W C Godfrey, Minute to the Secretary, Main Roads, 26 June 1940. MRD File 438/32 Now File 373/43 Folio 5. Godfrey had considered alternate river crossings, including a bridge over Perth Water from Hill Street to Berwick Street in South Perth and another to Mends Street. However, the site upstream and adjacent to the existing Causeway was chosen because of the existing roads - Great Eastern, Canning and Albany highways, Adelaide Terrace and Riverside Drive.

design specifications which were forwarded to the Commissioner of Main Roads and the Minister for Works in September 1944.[19]

The new Causeway was to be a broad roadway of six lanes, with tramtracks in the two central lanes to remove any risk of traffic congestion. The two new bridges were to be reinforced concrete structures, utilising composite steel beams and concrete decking on timber piles. The technique was relatively new and had been developed by Alan Knight, who later became Commissioner of the Tasmanian Hydro-Electric Commission.[20] Geotechnic assessment of the bridge foundations was undertaken to establish the pier design perimeters.[21] All services were to be carried in the footway and under the decking.

However, no immediate action was taken and, it being war time, work on the Causeway was restricted to repairs to ensure safety. In April 1945, the Minister for Works, A G R Hawke, released a press statement outlining the Government's lack of positive action:

> the proposed new Causeway could not be regarded as sufficiently urgent to justify construction during the war when men and material were required so desperately for the building of houses, the making of additions to hospitals and schools, and for water supply undertakings in drought stricken areas. [22]

Hawke released another press statement on 5 September 1946, announcing that land reclamation had commenced in preparation for the new Causeway to be built to the specifications forwarded in 1944.[23] Negotiations regarding land reclamation, land acquisition, cost sharing, landscaping and the maintenance of public reserves at either end were soon underway between the PWD, Perth City Council, the Police Department and the Western Australian Railways and Tramways Department.[24] Building the new bridge involved resumption of land at the Victoria Park end, widening and deepening other sections of the river and the reclamation of Heirisson Island.[25] It was expected that the Causeway would be completed in under three and a half years and the existing road surface and timber bridges were to be maintained until the new Causeway was completed.[26]

There was much comment in *The West Australian* during 1947 on the need to improve the aesthetics of the Causeway vicinity, as well as to improve worsening post war traffic conditions. In June, the paper reported:

> In 1947...it is imperative not only to meet the traffic requirements of the day and some part of the future, but also to give the Causeway the qualities it deserves as a

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19 E C Godfrey, Report to the Commissioner on the Condition of the Existing Bridge Structures and Proposals for the New Causeway, 27 September 1944. MRD File 373/43 Folio 53-60.

20 In a paper presented to the Australian Institution of Engineers in Perth 1949, Godfrey acknowledged the work of the Public Works Department of Tasmania and the Victorian Roads Board in the design for the Causeway Bridges.

21 ibid.

22 MRD File 373/43 Folio 77-78.

23 A G R Hawke, Press Statement, 5 September 1946. MRD File 373/43 Folio 139.

24 *The West Australian*, 5 September 1946, p. 6; G B Hill, op. cit., p. 11.

25 *The West Australian*, 28 May 1947, p. 6.

26 A G R Hawke, Press Statement, 5 September 1946.

> vital link in the communications of a modern city. Just as important too, is the need to give it full value as a key piece in a plan of river architecture.[27]

A letter to the Editor two days later supported this view:

> No spot in Perth lends itself better to artistic treatment than the adjuncts of the Causeway and it is hoped that the responsible authorities will seriously consider the advisability [of merging] the present unsightly conditions [dumping grounds for rubbish, dangerous neon signs, garages and minor shipbuilding yards] into what could be one of the most beautiful spots in Australia.[28]

One major concession to the new Causeway's aesthetics was Cabinet's decision not to allow trams to run over the new Causeway. While it was agreed that not having overhead wires would improve the look of the Causeway bridges, this decision was based on economic and planning concerns. Not only would no trams save the Government a considerable amount of money (about £30 - 40,000), the removal of the tramlines would ease traffic congestion along Albany Highway. The double decker buses which were to replace the trams could pull up to kerbs and allow other traffic to pass.[29] However, the provision for trams was retained in the structural design.[30]

Construction of the new Causeway was carried out by staff and employees of the Main Roads Department, under the supervision of Godfrey. The steel girders were fabricated in Perth by Forwood Down Ltd, using the new submerged welding process that was much speedier than hand welding.[31] Work proceeded slowly, hampered by a shortage of men and materials - the legacy of the 1930s Depression and World War Two. However, by November 1949, the new Causeway was beginning to take shape with fifty percent of the pier system of the longer bridge (225 metres/738 feet - Victoria Park end) and the driving piles of the shorter span (115 metres/382 feet) completed.[32] Long-awaited girders and steel rods for the eastern bridge arrived from Japan and the Eastern States in February 1950 and in May of that year, 30 newly arrived immigrants joined the labour force of 82 to provide much needed unskilled labour.[33]

By September 1952, the decision had been made to install fluorescent lighting on the new bridges, 'an innovation in Australia'.[34] Leading up to this, the Main Roads Department had conducted a series of practical tests using temporary standards to assess the capabilities of the new technology. The architectural division of the Public Works Department was called in to satisfy the aesthetic requirements of the design of the standards, which were then fabricated by the State Engineering Works.[35] The lighting standards were

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27 *The West Australian*, 4 June 1947, 6.
28 *The West Australian*, 6 June 1947, p. 12.
29 *The West Australian*, 19.11.1947, p. 11.
30 Archival drawings held by the Department of Main Roads.
31 *The West Australian*, 18 May 1950, p. 2.
32 *The West Australian*, 23 November 1949, p. 12.
33 *The West Australian*, 15 February 1950, p. 1; 18 May 1950, p. 2. The paper described the immigrants as 'Balts'.
34 *The West Australian*, 19 September 1952, p. 2.
35 Florescent lights were not yet common in Australia. Despite low running costs, the cost of fitting and installation was high. *The West Australian*, 19 September 1952, p. 2.

mounted on the bridge balustrading; the balustrading was designed to the Concrete Bridge Details of the United States Portland Cement Association.[36]

The Causeway was completed with circus or roundabout interchanges at each end to cope with the merging traffic. The new Causeway opened for traffic on 19 September 1952, although the western bridge was not yet completed. Traffic was diverted from the existing bridge at the western end over the new eastern bridge, while work at the Perth end continued. The old timber bridges were demolished. The construction of the new Causeway was regarded as 'the consummation of one of the State's major post-war public works...a monument to Western Australia's progress'.[37]

From the outset of planning, it was intended that the Causeway fulfil the traffic requirements of the connecting road system, and that any necessity for future bridge capacity over the Swan River would be met with the construction of bridges at other locations. The bridging of the Narrows in the late 1950s and the commencement of the Northern City Bypass (Polly Farmer Freeway) and a new bridge over the Swan River, upstream of the Causeway, in 1997, are evidence that this requirement has been fulfilled.

In 1998, the Causeway remains essentially as constructed with little change to the structures. The most significant changes have been the modification of the traffic interchanges, landscaping including cycle paths on the public areas of each end of the Causeway and on Heirisson Island, and modification of the type of street lighting. The decorative standards and florescent light fixtures have been replaced with electric lamps fitted to steel standards. The use of the inside traffic lands for a combination of cycle and vehicle use has not been continued, and cyclists and pedestrians now both utilise the bridge footway.

13. 2 PHYSICAL EVIDENCE

Causeway Bridges over the Swan River and Heirisson Island forms an eastern entry statement to the City of Perth.

The central features of the place are the two bridges, the eastern bridge (Bridge 932) being 224.72 metres in length and consisting of 11 separate spans between the river piers, and the western bridge (Bridge 914) consisting of 5 spans and being 114.6 metres in length. Although of dissimilar length, the two bridges are of similar construction.

The river piers are supported on deep piled foundations. and each of the structural spans supporting the roadway consists of reinforced concrete decking. Integrated steel beams act on end bearings at each of the river piers.

A feature of the two bridges is the balustrading and the large abutment piers at the end of each bridge. The balustrading is in panels, each supported on pilasters 4.7 metres apart connecting to the concrete deck. The top of the balustrading is 1.07 metres above the top of the kerb with each panel consisting of 10 openings of 0.9 metres (7.5 inches) wide between solid pieces

[36] Hill, op. cit., p. 17.
[37] *The West Australian*, 19 September 1952, p. 2.

0.13 metres (5 inches) in width. Street lighting standards are erected on every fourth balustrading pilaster.

The balustrading, although less ornate, reflects the type used for the Horseshoe Bridge and Barrack Street bridges and in Perth and for the Spencer Street and Princes Street bridges over the Yarra River in Melbourne. The William Jolly Bridge in Brisbane also displays similar handrailing.

On the downstream side of the bridges between the balustrading and kerb is a 2.44 metre wide foot and cycleway. Cable services run under the kerb and balustrading on the upstream side of the bridges. Steel water and sewer service pipes are supported between the steel beams beneath the concrete decking.

Causeway Bridges blends with the low level of the land at each end and on Heirisson Island and forms a low profile over the river. The balustrading and abutment piers define the bridges from both the roadway and river aspects.

The structures and surrounding areas are well maintained with the river piers, steel beams and reinforced concrete decking in good condition.

The exposed aggregate balustrading and pilasters is in good condition. The abutment piers requiring recoating once the alkali reaction, which has caused surface cracking, has been stabilised.

13. 3 REFERENCES

G. B. Hill Consulting Engineers, 'Causeway Bridges Conservative Plan' July 1997.

Microfilm of archival drawings, held by Main Roads of Western Australia.

Papers on early bridge development:

Paper by Alan W Knight and Prof. A Burn, 'Transactions of the Institution of Engineers', Australia, vol. 15, January 1934.

Paper by Prof. A Burn, *Journal of the Institution of Engineers*, Australia, vol. 7 no. 3, March 1935.

E W C Godfrey, 'The Causeway Bridges of Perth', presented to the National Engineering Conference of the Institution of Engineers, Perth, 1949.

13.4 FURTHER RESEARCH

Aboriginal associations.

Geotechnic studies.

The Department of Main Roads' Bridge Branch is able to provide further information on the condition of the bridges.

McCallum Park

AUTHOR **Town of Victoria Park** PLACE NUMBER **03915**

LOCATION

Canning Hwy Victoria Park

LOCATION DETAILS

LOCAL GOVERNMENT Victoria Park REGION Metropolitan

CONSTRUCTION DATE

Constructed from 1920

DEMOLITION YEAR N/A

Statutory Heritage Listings

TYPE	STATUS	DATE	DOCUMENTS
(no listings)			

Heritage Council Decisions and Deliberations

TYPE	STATUS	DATE	DOCUMENTS
(no listings)			

Other Heritage Listings and Surveys

TYPE	STATUS	DATE	GRADING/MANAGEMENT CATEGORY
Municipal Inventory	Adopted	14 Jul 1998	Category B

Statement of Significance

McCallum Park has strong aesthetic, social and historic significance. The park attracts not just local people, but people from throughout WA, who enjoy the feeling of space and superb views across the river to the city skyline. Historically, the park has connections to Alexander McCallum, who was the Minister responsible for much of the reclamation of the river foreshore during the 1920s.

Physical Description

McCallum Park is situated on the Swan River next to the Causeway. Manicured lawns are interspersed with a number of mature trees including pepper trees and Moreton Bay Figs. Next to the park is the McCallum Park Tennis Club which has eight lawn and four hard courts. Children's play equipment and BBQ facilities are supplied for family visits.

History

McCallum Park was named after the Honourable Alexander McCallum, Member of Parliament in 1921. Alexander McCallum was born on 28 October 1877 in Adelaide S A. He was apprenticed to a bookbinder at the age of 14. In 1898 McCallum left for Perth where he worked in the Government Printing Office. At the age of 28, after being a member of the Bookbinders and Paper Rulers' Industrial Union, he became President of the Coast Trades and Labour Council. His political career grew with an executive role in the Western Australian Branch of the Australian Labour Party which led to eight years on the Federal ALP Executive. In 1921 McCallum was elected to represent

South Fremantle as a Member of the Legislative Assembly. His 14 years in Parliament saw him become a Minister for Works, Water Supply, Sewerage and Drainage, and Labour and Training Concerns. Leadership roles included a five year stint as the Deputy Leader of the Labour Party from 1930 to 1935. McCallum Park is undoubtedly named to commemorate Alexander's vital contribution to the construction of Canning Dam and reclamation of the Swan River Foreshore during his time as Minister. McCallum left Parliament on his resignation in 1935. He died in July 1937 and was buried at the Fremantle Cemetery. McCallum Park has been a traditional venue for the Circus which has attracted many visitors to the park over the years. It is frequented by rollerbladers, joggers and bike riders, and has been the scene of the finishing line for a number of marathons.

Integrity/Authenticity

INTEGRITY: Sound

Condition

Sound

References

REF ID NO	REF NAME	REF SOURCE	REF DATE
	D Black & G Bolton; "Members of the Parliament of Western Australia". Vol 1 1870-1930.	WA	1990
	"Newspaper Article".	Western Australian.	20 April 1935.

Creation Date 27 Jul 1995 **Last Update** 01 Jan 2017 **Publish place record online (inHerit):** Approved

Disclaimer

This information is provided voluntarily as a public service. The information provided is made available in good faith and is derived from sources believed to be reliable and accurate. However, the information is provided solely on the basis that readers will be responsible for making their own assessment of the matters discussed herein and are advised to verify all relevant representations, statements and information.

Sir James Mitchell Park

AUTHOR City of South Perth **PLACE NUMBER** 04806

LOCATION
Cnr Mill Point Rd & Coode St South Perth

LOCATION DETAILS

OTHER NAME(S)
Chinese Gardens
Stirling Monument

LOCAL GOVERNMENT South Perth **REGION** Metropolitan

CONSTRUCTION DATE

DEMOLITION YEAR N/A

Statutory Heritage Listings

TYPE	STATUS	DATE	DOCUMENTS
(no listings)			

Heritage Council Decisions and Deliberations

TYPE	STATUS	DATE	DOCUMENTS
RHP - To be assessed	Current	30 May 2014	

Other Heritage Listings and Surveys

TYPE	STATUS	DATE	GRADING/MANAGEMENT CATEGORY
Municipal Inventory	Adopted	14 Nov 2000	Category B

Statement of Significance

Sir James Mitchell Park has aesthetic, historic and social cultural heritage significance. It is an important open space used not just by the local South Perth people but by many Western Australians. The open space has links as a historical site to the early rural days of South Perth, being the scene of dairy farming and market gardening.

Physical Description

Sir James Mitchell Park is a large open space on the foreshore of the Swan River. The area is mostly lawn with a few stands of trees close to the water. Along the edge of the park is the cycle and pedestrian way that is frequently in use.

History

The area of land along the South Perth Foreshore, now known as Sir James Mitchell Park (named after the Premier of WA from 1919-24, 1930-33), has been the subject of much debate over the last century. Part of the present parkland was once the vineyard of the Tondut family, the first to be issued with a licence to sell wine in the Swan River Colony in 1851. As early as the 1880s much of the foreshore area was occupied by Chinese Market Gardeners who grew fine fruit and vegetables, which they carted around for sale in South Perth. A group of Chinese gardeners cultivated an area of 11 acres on the foreshore, living in an old building, once part of the Mends country

estate. The gardeners kept to themselves and were hardworking and industrious. In the 1920s the number of gardeners had increased to approximately 11, living and working an area later called Clydesdale Park. There was concern among some elements of the population that the conditions in which the Chinese lived were unsavoury, and after a leprosy scare in 1888, the gardeners were subject to regular health inspections and licensing requirements. However, they continued to be renowned for the quality of their produce. In 1939, a 10.3 acre property adjoining Douglas Avenue and behind Jubilee Street, formerly owned by Arthur Douglas, was sold to the South Perth Council, which resolved at that time that the land was purchased 'for the purpose of a reserve'. (This was formalised in the Council's Town Planning Scheme No 1 as 'Special Zone A' in 1961. The zoning was continued in 1972 in the No 2 Town Planning Scheme, and in 1986 in the No 5 Town Planning Scheme, but was discontinued in the No 6 Town Planning Scheme in 2003 because no 'special' use had ever been identified for the land, and the Council has resolved never to build on it, having regard to neighbours' views of the river.) Around the time of WWII the Chinese gardeners were struggling to maintain an income. Many of them were aging or had died, and the White Australia policy of the day did not allow any new Chinese immigration. By the 1940s developers were eyeing the market gardening area for development, and the rise of xenophobia meant that the Chinese were not welcomed by those who spoke about the 'Yellow Peril'. Around 1950 the Road Board entered negotiations with some sporting clubs with a view to redeveloping the area, and by 1952 the Chinese gardeners had been served eviction notices - a move which was opposed by many who had welcomed their contribution to the area. Plans for the redevelopment of the foreshore area did not, however, materialise, and for the next 20 years the area reverted to swampland. In 1960, plans by Key West developers for a huge open air theatre and other developments on the foreshore were vehemently opposed by many residents who wanted the foreshore to be developed as public open space, with no buildings to obscure the views. After years of public debate, the Tooby report, entitled Site Planning and Landscape Design of Sir James Mitchell Park, commissioned by the South Perth City Council, was prepared in 1975. After some vocal opposition to certain aspects of the plan, the final plan in 1977 recommended that Sir James Mitchell Park should be predominantly for passive recreation, with no commercial buildings or structures for active sport, and simply a few public toilet blocks and some barbecue and shelter areas. The City of South Perth needed substantial funding to carry out the plans, but for some years no assistance was forthcoming from either the State or Federal Government. Finally, in 1985 firm undertakings for funding for park development were given by both State and Federal Governments, and the development and landscaping of the foreshore area began. Initially there was to be no commercial development, but more recently a restaurant and kiosk facility was approved, which have proved to be very popular. Upgrading of the facilities within the reserve continued through the years. In 2008, a series of headlands and small beaches along the foreshore, with appropriate planting in selected areas, were resculptured to improve access to the waterfront. The work was part of a 1.6 million joint project undertaken by the City of South Perth and the Swan River Trust. It involved an area 200 metres west of the Mends Street Jetty and another 400 metres in the vicinity of the Captain Stirling Memorial flag pole.

Integrity/Authenticity

Moderate

Condition

Very Good

References

REF ID NO	REF NAME	REF SOURCE	REF DATE
	Florey, Cecil. "Peninsular City: A Social History of the City of South Perth"	City of South Perth	1985

State Heritage Office library entries

LIBRARY ID	TITLE	MEDIUM	YEAR OF PUBLICATION
10235	Sir James Mitchell Park Foreshore Management Plan	Electronic	2001

Creation Date 07 Jan 1997 **Last Update** 01 Jan 2017 **Publish place record online (inHerit):** Approved

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Yagan's Statue

AUTHOR **Heritage Council** PLACE NUMBER **11472**

LOCATION

Heirisson Island, Adelaide Tce East Perth

LOCATION DETAILS

LOCAL GOVERNMENT Perth REGION Metropolitan

CONSTRUCTION DATE

Constructed from 1984

DEMOLITION YEAR N/A

Statutory Heritage Listings

TYPE	STATUS	DATE	DOCUMENTS
Heritage List	Adopted	19 Sep 2006	

Heritage Council Decisions and Deliberations

TYPE	STATUS	DATE	DOCUMENTS
RHP - To be assessed	Current	09 May 2003	

Other Heritage Listings and Surveys

TYPE	STATUS	DATE	GRADING/MANAGEMENT CATEGORY
Perth Draft Inventory 99-01	YES	31 Dec 1999	
Municipal Inventory	Adopted	13 Mar 2001	Category 1

Statement of Significance

• The place has aesthetic and historic significance as a powerful statue representing the history of the original inhabitants of the Swan River area. • The place has associations with Yagan, a tribal leader who defended his lands against the Europeans and was later captured and killed. • The place has associations with the campaign led by local Swan River Aboriginal groups for the return of Yagan's head from England. • The place has rarity value as a site recognising the life and battles of Yagan as well as the history of armed conflict between Aboriginal people and Europeans as a result of the displacement of Aboriginal people from their traditional lands.

Physical Description

A bronze statue of Aboriginal leader Yagan set on rough hewn stone. A plaque with an inscription describes commemorates the event of the statue's unveiling.

History

Yagan was the son of Midgegooroo, leader of the tribal group who occupied the land known as 'Beelier', which was to the south of the Swan and Canning Rivers. Yagan and a group of followers defended their tribal area from the Europeans up to 1932 at which time they were captured and imprisoned on Carnac Island. Yagan and another warrior later escaped from the Island. Yagan was shot in the back while sharring a meal with the Keats brothers, who were actually bounty hunters who lured the pair with offers of friendship. Yagan's head was removed and put

through a preservation process, eventually ending up in England were it was displayed for some time before going to the Liverpool Museum. In 1984, a bronze statue to commemorate the life of Yagan was unveiled on Heirisson Island. Since this time, the statue has been vandalised on at least two occasions by the removal or destruction of the head of the statue. At both times this was repaired. One of these times occurred at a time when an Aboriginal delegation was in England petitioning the Homes Office for the return of Yagan's head. This eventually occurred in 1997/1998 after a lengthy and emotional campaign. Heirisson Island – Reclamation works were carried out to the Heirisson Islands in 1903 by the PWD. At this time, the two islands were consolidated into one and two channels created on either side of the island; the south one being navigable. In the 1920s and 1930s, further work was done to the island in the form of reshaping and raising.

Creation Date 27 Nov 2001 **Last Update** 31 Mar 2017 **Publish place record online (inHerit):** Approved

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Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

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Search Criteria

4 Registered Aboriginal Sites in Shapefile - Causeway_Bridge_Historical_Heritage_Survey_Area

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

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South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Whadjuk People Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at https://www.wa.gov.au/organisation/department-of-the-premier-and-cabinet/south-west-native-title-settlement.

Further advice can also be sought from the Department of Planning, Lands and Heritage at AboriginalHeritage@dplh.wa.gov.au.

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Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

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Terminology (NB that some terminology has varied over the life of the legislation)

Place ID/Site ID: This a unique ID assigned by the Department of Planning, Lands and Heritage to the place

Status:

- **Registered Site**: The place has been assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Other Heritage Place which includes:**
  - **Stored Data / Not a Site:** The place has been assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972*.
  - **Lodged:** Information has been received in relation to the place, but an assessment has not been completed at this *stage* to determine if it meets Section 5 of the *Aboriginal Heritage Act 1972*.

Access and Restrictions:

- **File Restricted = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the place is not restricted in any way.
- **File Restricted = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the place is restricted if it is considered culturally sensitive. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the informants who provided the information. To request access please contact AboriginalHeritage@dplh.wa.gov.au.
- **Boundary Restricted = No:** Place location is shown as accurately as the information lodged with the Registrar allows.
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the place is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Restrictions:**
  - **No Restrictions:** *Anyone* can view the information.
  - **Male Access Only:** Only *males* can view restricted information.
  - **Female Access Only:** *Only* females can view restricted information.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.

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ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
3536	SWAN RIVER	No	No	No Gender Restrictions	Registered Site	Mythological	*Registered Knowledge Holder names available from DAA	395287mE 6456166mN Zone 50 [Reliable]	S02548
3589	HEIRISSON ISLAND.	No	No	No Gender Restrictions	Registered Site	Mythological, Camp, Hunting Place, Meeting Place, Plant Resource	*Registered Knowledge Holder names available from DAA	394357mE 6462806mN Zone 50 [Reliable]	S02415
21821	Kilang Minangaldjkba	No	No	No Gender Restrictions	Registered Site	Water Source	*Registered Knowledge Holder names available from DAA	394127mE 6463219mN Zone 50 [Reliable]	
29278	Midgegooroo's Execution and Burial	Yes	Yes	Male Access Only	Registered Site	Historical, Skeletal Material / Burial	*Registered Knowledge Holder names available from DAA	Not available when location is restricted	

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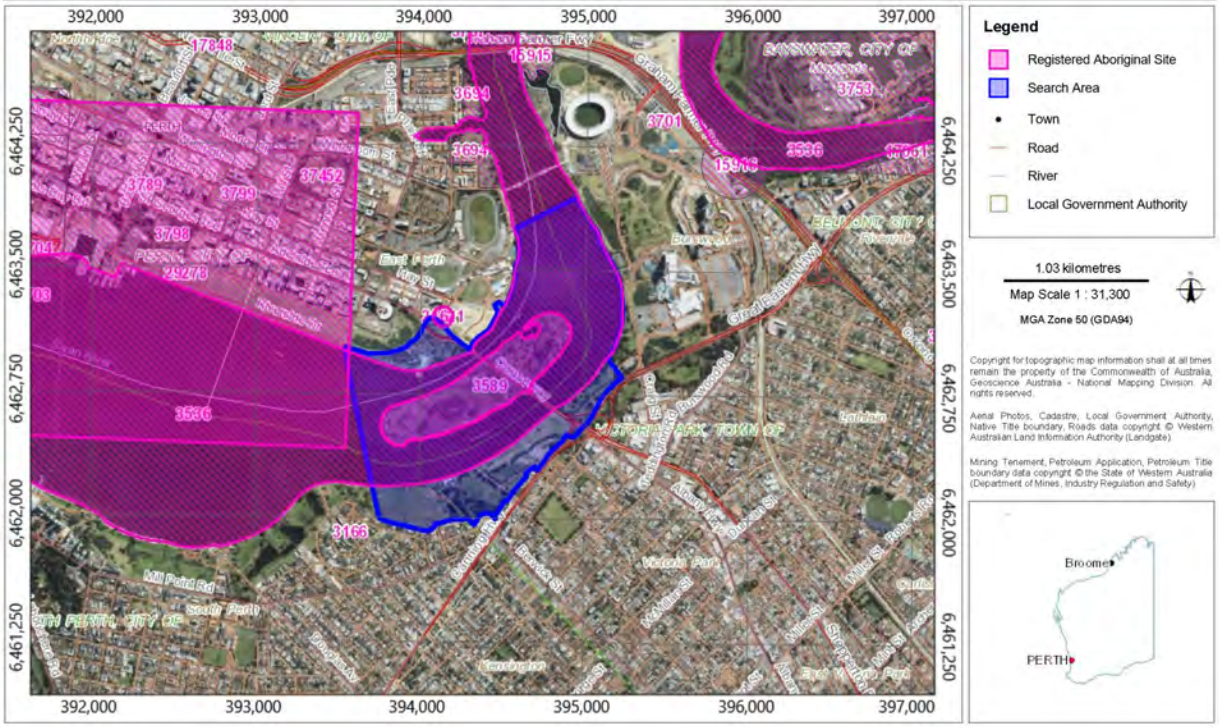

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APPENDIX SEVEN – HERITAGE PLACES IMPACT STATEMENTS

Place ID	03631
Place Name	Causeway Bridges
Registration Date	30 October 1998 (State Register)
Local Government	City of Perth
Location	Over Swan River and East Perth
Listing 1	Heritage List (adopted 09 January 2004)
Listing 2	State Register (registered 30 October 1998)
Listing 3	National Trust (classified 08 June 1998)
Listing 4	Art Deco Significant Bldg Survey (completed 30 June 1994)
Listing 5	Perth Draft Inventory 99-01 (confirmed 31 December 1999)
Listing 6	Local Heritage Survey (fmr Municipal Inventory 13 March 2001), Category 1[56]
Description	*Causeway Bridges* over the Swan River and Heirisson Island forms an eastern entry statement to the City of Perth. The central features of the place are the two bridges, the eastern bridge (Bridge 932) being 224.72 metres in length and consisting of 11 separate spans between the river piers, and the western bridge (Bridge 914) consisting of 5 spans and being 114.6 metres in length. Although of dissimilar length, the two bridges are of similar construction. The river piers are supported on deep piled foundations. and each of the structural spans supporting the roadway consists of reinforced concrete decking. Integrated steel beams act on end bearings at each of the river piers. A feature of the two bridges is the balustrading and the large abutment piers at the end of each bridge. The balustrading is in panels, each supported on pilasters 4.7 metres apart connecting to the concrete deck. The top of the balustrading is 1.07 metres above the top of the kerb with each panel consisting of 10 openings of 0.9 metres (7.5 inches) wide between solid pieces 0.13 metres (5 inches) in width. Street lighting standards are erected on every fourth balustrading pilaster. The balustrading, although less ornate, reflects the type used for the Horseshoe Bridge and Barrack Street bridges and in Perth and for the Spencer Street and Princes Street bridges over the Yarra River in Melbourne. The William Jolly Bridge in Brisbane also displays similar handrailing. On the downstream side of the bridges between the balustrading and kerb is a 2.44 metre wide foot and cycleway. Cable services run under the kerb and balustrading on the upstream side of the bridges. Steel water and sewer service pipes are supported between the steel beams beneath the concrete decking. *Causeway Bridges* blends with the low level of the land at each end and on Heirisson Island and forms a low profile over the river. The balustrading and abutment piers define the bridges from both the roadway and river aspects.

[56] Exceptional – Essential to the heritage of the locality. Rare or outstanding example.

Place ID	03631
	The structures and surrounding areas are well maintained with the river piers, steel beams and reinforced concrete decking in good condition. The exposed aggregate balustrading and pilasters is in good condition. The abutment piers requiring recoating once the alkali reaction, which has caused surface cracking, has been stabilised.
Significance	The Causeway Bridges has been assessed as a place of Aesthetic, Historic, Scientific and Social Value. The archaeological significance of this place was not been considered; however, it is clear that there are remnant archaeological features associated with the construction and use of the earlier Causeway Bridges – especially Causeway Bridge II. Further investigation is required to understand the full archaeological significance of this place.
References	Assessment Documentation for *Causeway Bridges* (Heritage Council of Western Australia, 1998)

Place ID	03915
Place Name	McCallum Park
Registration Date	14 July 1998
Local Government	Town of Victoria Park
Location	Canning Highway, Victoria Park
Listing 1	Local Heritage Survey (fmr Municipal Inventory), Category B[57]
Description	**Physical:** 'McCallum Park is situated on the Swan River next to the Causeway. Manicured lawns are interspersed with a number of mature trees including pepper trees and Moreton Bay Figs. Next to the park is the McCallum Park Tennis Club which has eight lawn and four hard courts. Children's play equipment and BBQ facilities are supplied for family visits'. The Park was officially named McCallum Park in 1940 after the reserve was upgraded the year before.[58]
Significance	'McCallum Park has strong aesthetic, social and historic significance. The Park attracts not just local people, but people from throughout WA, who enjoy the feeling of space and superb views across the river to the city skyline. Historically, the park has connections to Alexander McCallum, who was the Minister responsible for much of the reclamation of the river foreshore during the 1920s'. There is moderate potential for significant archaeological features related to archaeological fill deposits associated with land reclamation; however, there appears to have been limited use of the park in the 19th Century. Accordingly, the potential for archaeology is low outside of the reclamation areas.
References	InHerit Listing for McCallum Park (Town of Victoria Park, 1995)

Place ID	04806
Place Name	Sir James Mitchell Park (Chinese Gardens, Stirling Monument)
Registration Date	14 November 2000
Local Government	City of South Perth

[57] Worthy of high level of protection: to be retained and conserved where possible…a more detailed Heritage Assessment / impact statement to be undertaken before approval given for any major redevelopment. Incentives to promote conservation should be considered.
[58] 1940 'RIVER FORESHORE.', The West Australian (Perth, WA : 1879 - 1954), 5 January, p. 14. , viewed 20 May 2021, http://nla.gov.au/nla.news-article46347456

Place ID	04806
Location	Corner Mill Point Road and Coode Street, South Perth
Listing 1	Heritage List (RHP – to be assessed)
Description	**Physical[59]:** 'Sir James Mitchell Park and Clydesdale Reserve create a green edge to South Perth providing large open space of approximately 65 hectares on the foreshore of the Swan River. The area is mostly lawn with a few stands of trees scattered throughout the space. Two lakes in Clydesdale Reserve create a picturesque setting for events and recreation as well as enhancing the habitat for riverine fauna. The parks are predominantly used for sporting activities and recreation although more formal social events are also held there. Facilities includes dining opportunities, the jetties, sailing club, cycling and picnic areas as well as providing key views towards the City of Perth and Kings Park'.
Significance	'The parkland adjacent to the foreshore has aesthetic value as a large and well maintained area of open parkland located between the densely developed urban area of South Perth and the Swan River. The place has historic value for its association with the early settlement of South Perth by farmers, and the long association with Chinese Market Gardeners who worked the foreshore lands from the 1880s to the 1940s. The place has historic value for its association with horse racing and other sports which were organised on these flat lands in the late 19th century and first half of the 20th century. The place has historic value for its association with Sir James Mitchell, Premier and Governor of Western Australia. The place has social value for the many members of the community who have visited the place for passive recreation, organised sport, social events or enjoy the visual qualities of the park when viewed from the river or land'. In terms of archaeological significance, the section of *Sir James Mitchell Park* within the Investigation Area was largely undeveloped or used and was part of major reclamation phases from 1940 to the 1970s. Accordingly, there is moderate potential for significant archaeological features to be encountered in the reclaimed areas and low potential elsewhere.
References	InHerit Listing for Sir James Mitchell Park (City of South Perth, 1997)

Place ID	11472
Place Name	Yagan's Statue
Registration Date	19 September 2006
Local Government	City of Perth
Location	Heirisson Island, Adelaide Tce East Perth
Listing 1	Heritage List (adopted 19 September 2006; RHP to be assessed)
Listing 2	Perth Draft Inventory 99-01 (Yes 31 December 1999)
Listing 3	Municipal Inventory / Local Heritage Survey (13 March 2001)
Description	"A bronze statue of Aboriginal leader Yagan set on rough hewn stone. A plaque with an inscription describes commemorates the event of the statue's unveiling".
Significance	The Inherit listing contains a Statement of Significance for this Place:

[59] http://inherit.stateheritage.wa.gov.au/Public/Inventory/Details/f4916657-da8e-457c-ab0b-0cd0ffcc6649

	The place has aesthetic and historic significance as a powerful statue representing the history of the original inhabitants of the Swan River area. The place has associations with Yagan, a tribal leader who defended his lands against the Europeans and was later captured and killed. The place has associations with the campaign led by local Swan River Aboriginal groups for the return of Yagan's head from England. The place has rarity value as a site recognising the life and battles of Yagan as well as the history of armed conflict between Aboriginal people and Europeans as a result of the displacement of Aboriginal people from their traditional lands. In terms of archaeological significance, this place currently has no value as it is a relatively modern feature.
References	InHerit Listing for Yagan's Statue

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