

# Upper South Creek

## Advanced Water Recycling Centre and Pipelines

Heritage CEMP Sub-plan  
(Aboriginal, Non-Aboriginal, World and National Heritage)

Document No: USCP-JHG-MPL-ENV-0006

Revision: B



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## Recommend Documents to be Read in Conjunction

This management plan is to be read in conjunction with the Construction Environmental Management Plan (USCP-JHG-MPL-ENV-0008) and Construction Noise and Vibration CEMP Sub-plan (USCP-JHG-MPL-ENV-0007)

### Distribution

There are no restrictions on the distribution or circulation of this CEMP Sub-plan within John Holland.

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Authorised By:	Richard Ioffrida (Project Director)
Date:	

### Revisions

Draft issues of this document shall be identified as Revision 01, 02, 03 etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential lettering commencing at Revision A. Revision numbers shall commence at Rev. A, B etc.

Date	Rev	Details Of Change	Section	Prepared By	Reviewed & Approved By
26/01/2023	01	Initial draft for John Holland and Sydney Water review	All	SM / HT	AH
25/02/2023	02	Updated following John Holland and Sydney Water review	All	SM / WC	AH
03/03/2023	03	Updated following Sydney Water review	All	AH	AH
29/03/2023	04	Updated following ER review	All	MS	AH
28/04/2023	05	Updated following ER review and agency consultation	All	MS	AH
03/05/2023	06	Updated following ER review	All	MS	AH
19/06/2023	07	Updated following DPE comments	All	MS	AH
04/07/2023	08	Updated following DPE comments	All	MS	AH
14/07/2023	09	Update Appendix A A9 Consultation Summary Report	Appendix A	AH	AH
22/08/2023	A	Issued for construction	All	MS	DOB
18/08/2024	B	Annual review	All	RM	AH



20 September 2024

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**By Email:** cheryl.cahill@sydneywater.com.au

Dear Cheryl,

**Subject: Environmental Representative (ER) review and approval – Revised Heritage CEMP Sub-plan, Revision B**

**SSI-8609189 – Upper South Creek Advanced Water Recycling Centre**

Pursuant to SSI-8609189 Condition A28(j), I have reviewed the updated Heritage Construction Environmental Management Plan (CEMP) Sub-plan (HCSP) which has been updated to include the most recent layout map, inclusion of Modification 2 and a minor change to the unexpected finds procedure (Appendix C).

Complete details of the reviewed document as follows:

- Upper South Creek Advanced Water Recycling Centre and Pipelines – Heritage CEMP Sub-plan Document No: USCP-JHG-MPL-ENV-0006, Revision B, dated 18/08/2024.

As the approved Environmental Representative (ER) for the Upper South Creek Advanced Recycling Centre Project, I am satisfied the amendments are administrative in nature and are consistent with the terms of the Project Approval (SSI-8609189) and the CEMP, CEMP Sub-plans and monitoring programs approved by the Planning Secretary. I therefore approve the minor amendments to the above listed documentation.

Please feel free to contact me if you require anything further or would like to discuss.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Ben Bracken', written over a light blue circular stamp.

**Ben Bracken**

Environmental Representative  
Upper South Creek Advanced Water Recycling Centre Project  
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## CONTENTS

1	GLOSSARY & ABBREVIATIONS .....	6
2	PROJECT BACKGROUND .....	8
	2.1 Context .....	8
	2.2 Project Description and Background .....	8
	2.3 Purpose .....	9
3	OBJECTIVES, TARGETS AND PERFORMANCE CRITERIA .....	13
	3.1 Objectives .....	13
	3.2 Targets .....	13
	3.3 Performance Criteria .....	14
4	LEGISLATIVE AND GUIDANCE REQUIREMENTS .....	15
	4.1 Minister's Conditions of Approval .....	16
	4.2 Updated Management Measures .....	20
	4.3 Commonwealth Controlled Activity Approval Conditions .....	23
	4.4 Infrastructure Sustainability Council benchmarks .....	25
5	CONSULTATION .....	31
	5.1 HCSP consultation .....	31
	5.2 Endorsement and Approval .....	31
	5.3 Ongoing Consultation During Construction .....	32
6	EXISTING ENVIRONMENT .....	33
	6.1 Aboriginal Heritage .....	33
	6.1.1 Ethnohistorical Context .....	33
	6.1.2 Landscape Context .....	33
	6.1.3 Archaeological Context .....	33
	6.2 Non-Aboriginal Heritage .....	34
	6.2.1 Listed non-Aboriginal Heritage Items .....	34
	6.2.2 Potential Non-Aboriginal Heritage Items .....	35
	6.2.3 Listed Non-Aboriginal Heritage Items in the Vicinity of the Impact Assessment Area .....	35
	6.2.4 Potential Archaeological Sites in the Impact Assessment Area .....	36
	6.3 World and National Heritage .....	37
7	HERITAGE AND CONSTRUCTION IMPACTS .....	38
	7.1 Construction Activities .....	38
	7.2 Impacts .....	38
	7.2.1 Aboriginal Heritage .....	38
	7.2.2 Non-Aboriginal Heritage .....	38
8	MANAGEMENT OF HERITAGE .....	39
	8.1 Aboriginal Heritage .....	39
	8.1.1 Archaeological Salvage .....	40
	8.1.2 Design Refinements .....	40
	8.1.3 Fencing and Signage .....	40
	8.1.4 Aboriginal Heritage Impact Permit .....	41
	8.1.5 Project Approval .....	41
	8.2 Non-Aboriginal Heritage .....	41
	8.2.1 Archival Photographic Recording .....	41
	8.2.2 Upper Canal and Liverpool Offtake Reservoir .....	41
	8.2.3 Fleurs Radio Telescope .....	41
	8.2.4 Potential Archaeological Sites .....	42
	8.3 Heritage Interpretation Framework .....	42
	8.4 World and National Heritage .....	43
	8.5 Unexpected Heritage Finds and Human Remains Procedure .....	43
	8.6 Safe Working Distances .....	43
	8.7 At-Property Treatment .....	43
	8.8 Pre- and Post-Construction Surveys .....	43
	8.9 Heritage Management Measures .....	44
9	COMPLIANCE, REVIEW AND CONTINUOUS IMPROVEMENT .....	53
	9.1 Resources .....	53
	9.2 Training and Awareness .....	53
	9.3 Monitoring and Inspections .....	53
	9.4 Incident Management .....	53

9.5 Auditing and Reporting.....	53
9.6 Continuous Improvement .....	54
9.7 HCSP Update and Change Management.....	54
APPENDIX A – COA A9 CONSULTATION SUMMARY .....	55
APPENDIX B – HERITAGE MAPPING .....	56
APPENDIX C – UNEXPECTED HERITAGE FINDS AND HUMAN REMAINS PROCEDURE.....	57
APPENDIX D – SALVAGE METHODOLOGY (ABORIGINAL) .....	58
APPENDIX E – ARCHAEOLOGICAL RESEARCH DESIGN AND EXCAVATION METHODOLOGY (ARDEM) .....	59
APPENDIX F - ABORIGINAL HERITAGE IMPACT PERMIT .....	60

## 1 Glossary & Abbreviations

Abbreviations	Meaning
ACHAR	Aboriginal Cultural Heritage Assessment Report
ADWF	Average Dry Weather Flow
ARDEM	Archaeological Research Design and Excavation Methodology
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
Amendment Report	Upper South Creek Advanced Water Recycling Centre Amendment Report (March 2022)
Amendment RtS	Upper South Creek Advanced Water Recycling Centre Submissions Report – project amendments (April 2022)
AWRC	Advanced Water Recycling Centre
CAA	Controlled Activity Approval (issued by the Commonwealth Minister)
CEMP	Construction Environmental Management Plan
CoA	NSW Minister's Conditions of Approval
Controlled Area	Outside of catchment of Special Areas, Upper Canal is within a controlled area
CSEP	Community & Stakeholder Engagement Plan (project-specific compliance tool to address the requirements of CoA B1 and B2)
CSSI	Critical State Significant Infrastructure
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPI	Department of Primary Industries
DPHI	NSW Department of Planning, Housing and Infrastructure
EHG	DPE (Environment and Heritage Group)
EIS	Upper South Creek Advanced Water Recycling Centre Environmental Impact Statement (September 2021)
EIS RtS	Upper South Creek Advanced Water Recycling Centre Submissions Report (March 2022)
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection Licence
EWMS	Environmental Work Method Statements
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
HCSP	Heritage CEMP Sub-plan (this Plan)
Heritage item	A place, building, work, relic, archaeological site, tree, movable object or precinct of heritage significance, that is listed under one or more of the following registers: the State Heritage Register under the <i>Heritage Act 1977</i> (NSW), a state agency heritage and conservation register under section 170 of the <i>Heritage Act 1977</i> (NSW), a Local Environmental Plan under the EP&A Act, the World, National or Commonwealth Heritage lists under the <i>Environment Protection and</i>

Abbreviations	Meaning
ACHAR	Aboriginal Cultural Heritage Assessment Report
ADWF	Average Dry Weather Flow
ARDEM	Archaeological Research Design and Excavation Methodology
	<i>Biodiversity Conservation Act 1999</i> (Cth), and an "Aboriginal object" or "Aboriginal place" as defined in section 5 of the <i>National Parks and Wildlife Act 1974</i> (NSW).
Heritage NSW	Heritage NSW of Environment and Heritage Group of the Department of Planning and Environment
JH	John Holland (the Principal Contractor)
LALC	Local Aboriginal Land Council
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPWS	National Parks and Wildlife Service
OEH	NSW Office of Environment and Heritage (former government division, now Heritage NSW)
PAD	Potential Archaeological Deposit
PAS	Potential Archaeological Site
PPW	Project Pack Web
Project, the	Upper South Creek – Advanced Water Recycling Centre and Pipelines Project
RAPs	Registered Aboriginal Parties
SMART principles	Specific, Measurable, Achievable, Realistic and Timely principles
SOHI	Statement of Heritage Impact
SWC	Sydney Water Corporation (the client and Proponent)
TW	Treated Water
UMM	Updated Management Measures
USC	Upper South Creek
WHMP	World Heritage Monitoring Program

## 2 Project Background

### 2.1 Context

This Heritage CEMP Sub-plan (HCSP) for Aboriginal, non-Aboriginal, World and National heritage forms part of the Construction Environmental Management Plan (CEMP) for Upper South Creek Advanced Water Recycling Centre (AWRC) and Pipelines Project (refer to herein as the Project).

This HCSP has been prepared to address the requirements of:

- Minister's Conditions of Approval (CoA) (SSI 8609189);
- Upper South Creek Advanced Water Recycling Centre Environmental Impact Statement (EIS) (September 2021);
- Upper South Creek Advanced Water Recycling Centre Submission Report (March 2022);
- Upper South Creek Advanced Water Recycling Centre Amendment Report (March 2022);
- Upper South Creek Advanced Water Recycling Centre Submissions Report – Project Amendments (April 2022);
- Response to DPHI RFI 1, regarding responses to advice received on the Response to Submissions Report (dated 01 June 2022, 01 July 2022 and 11 July 2022);
- Response to DPHI RFI 2, regarding additional information on Flood Impact Assessment (dated 11 July 2022);
- Infrastructure Sustainability Council technical manual version 2.1 (ISC 2.1);
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Approval 2020/8816 (EPBC 2020/8816);
- Aboriginal Heritage Impact Permit (AHIP) number C0005620 (AHIMS Permit ID: 4577);
- Modification of Infrastructure Approval CSSI 8609789, 26 May 2023 (herein referred to Mod 1);
- Modification of Infrastructure Approval CSSI 8609189, 10 October 2023 (herein referred to as Mod-2);
- Environmental Protection License (EPL 21800) including approved variations on 24/11/2023 and 11/04/2024; and
- All applicable legislation.

The Project will be built in stages in accordance with the Staging Report.

#### Stage 1

- Building and operating the AWRC to treat a daily wastewater flow, known as the average dry weather flow (ADWF), of up to 50 megalitres per day (ML/day); and
- Building the treated water and brine pipelines to cater for up to 100 ML/day flow coming through the AWRC (but only operating them to transport and release volumes produced by Stage 1).

#### Future Stages

It is expected that the AWRC will ultimately require expansion to treat wastewater flows up to 100 ML/day. Sydney Water will remain flexible on the size and timing of these future upgrades to accommodate changes in population projections over time. Future stages will be subject to further environmental assessment.

Further detail on project staging is provided in the EIS. This HCSP applies to Stage 1 detailed design, construction and commissioning only. John Holland (JH) has been appointed by Sydney Water (SWC) to deliver the USC project works, including detailed design and construction for treating an operational daily wastewater flow of up to 35ML/day. Greater flow capacities (including up to 50ML/day and 100ML/day), as explored in the EIS, are not covered in this HCSP.

### 2.2 Project Description and Background

A comprehensive project description, including staging of the project, is outlined in Sections 1.1 to 1.3 of the CEMP. Figure 2-1 includes an overview of the Project site and associated pipelines. Figure 2-2 includes an overview of the AWRC site.

As part of the EIS development, a number of detailed assessments were developed to identify the key issues related to heritage matters, including:

- Aboriginal heritage (Section 10.1 of the EIS and Appendix O Aboriginal Cultural Heritage Assessment of the EIS);
- Non-Aboriginal heritage (Section 10.2 of the EIS and Appendix P Statement of Heritage Impact); and
- World and National heritage (Section 10.3 of the EIS and Appendix Q Specialist Report (EMM Consulting, September 2021)).

Additional information regarding heritage impacts were incorporated in the Amendment Report, and accompanying technical notes (Amendment Report, Appendix C Aboriginal Heritage Technical Note (Redacted)).

## 2.3 Purpose

The purpose of this HCSP is to describe how construction impacts on items of Aboriginal, non-Aboriginal, World and National Heritage significance will be minimised and managed in accordance with Specific, Measurable, Achievable, Realistic and Timely (**SMART**) principles, including:

- **Specific** – heritage mitigation and management measures explored in Section 8 of this Plan specifically speak to JH's approach to managing heritage impacts during construction
- **Measurable** – Inspection and monitoring requirements detailed in Section 3.2 and Section 9 of this Plan include specific measures or indicators for which inspection and monitoring requirements will be triggered
- **Achievable** – Ongoing compliance with relevant CoAs, UMM and Commonwealth approval requirements (Tables 4-1, 4-2 and 4-3, respectively), is achievable throughout the delivery of the USC construction work and represents the minimum requirements to be implemented by JH
- **Relevant** - The management measures outlined in Section 8 of this Plan represent JH's approach to monitoring and tracking against the objectives, targets and environmental performance outcomes (which are identified in Section 3 of this Plan)
- **Time-bound** – On a broader scale, the management measures set out within Section 8 of this Plan are required to be implemented for the duration of construction, setting a clear and defined time frame and includes reference to other temporal applications, including during *detailed design*, *pre-construction*, *post-construction* and/or *operation*.

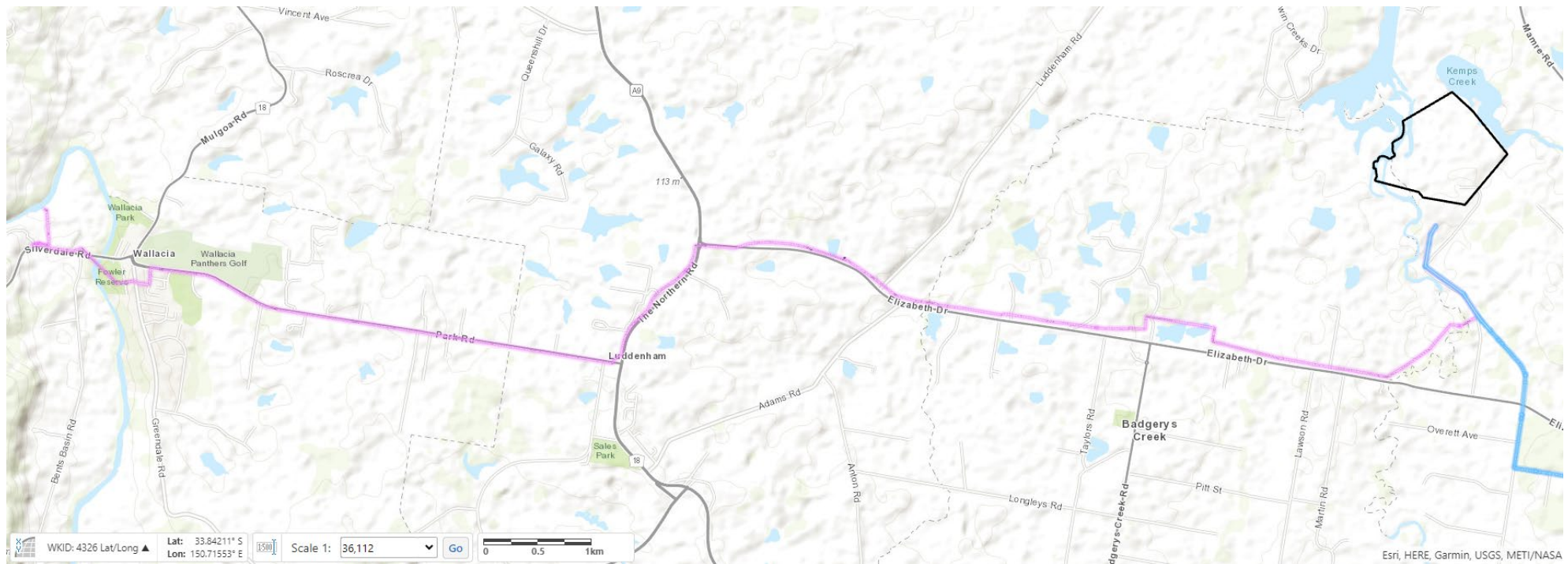


Figure 2-1a Indicative overview of the project site (AWRC) and treated water pipeline



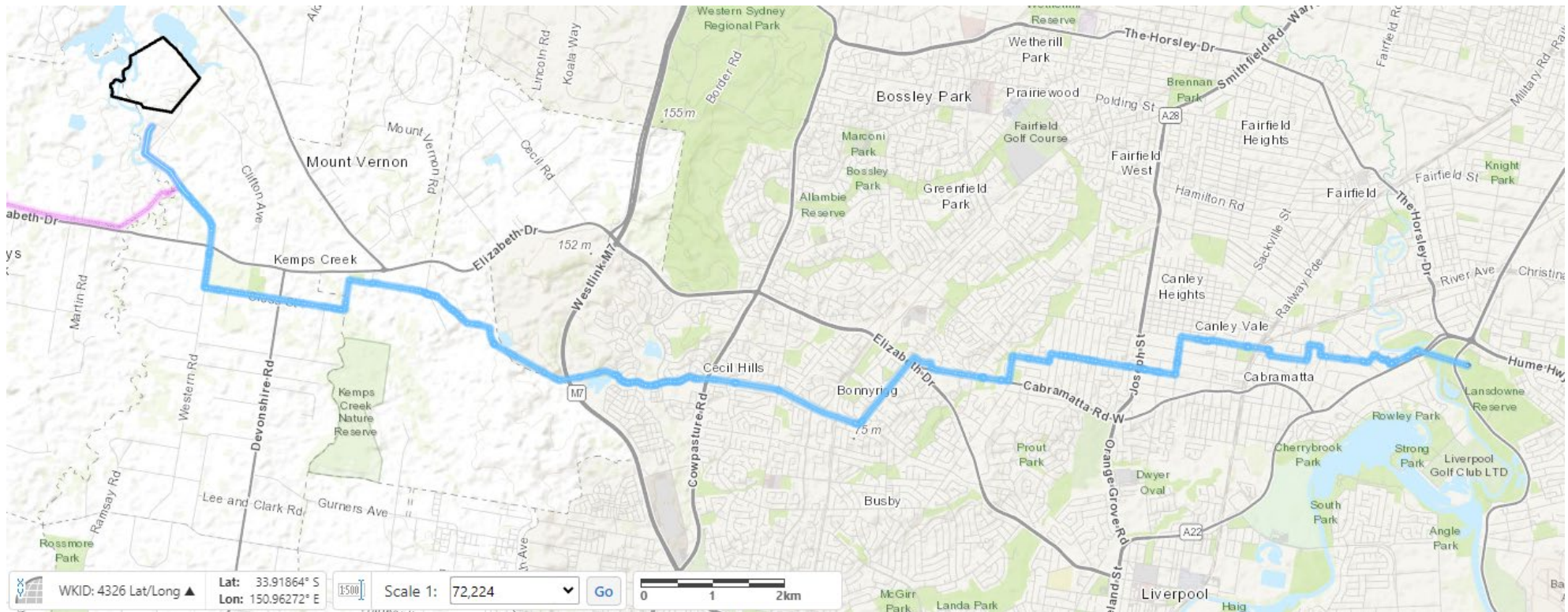


Figure 2-1b Indicative overview of the project site (AWRC) and brine pipeline



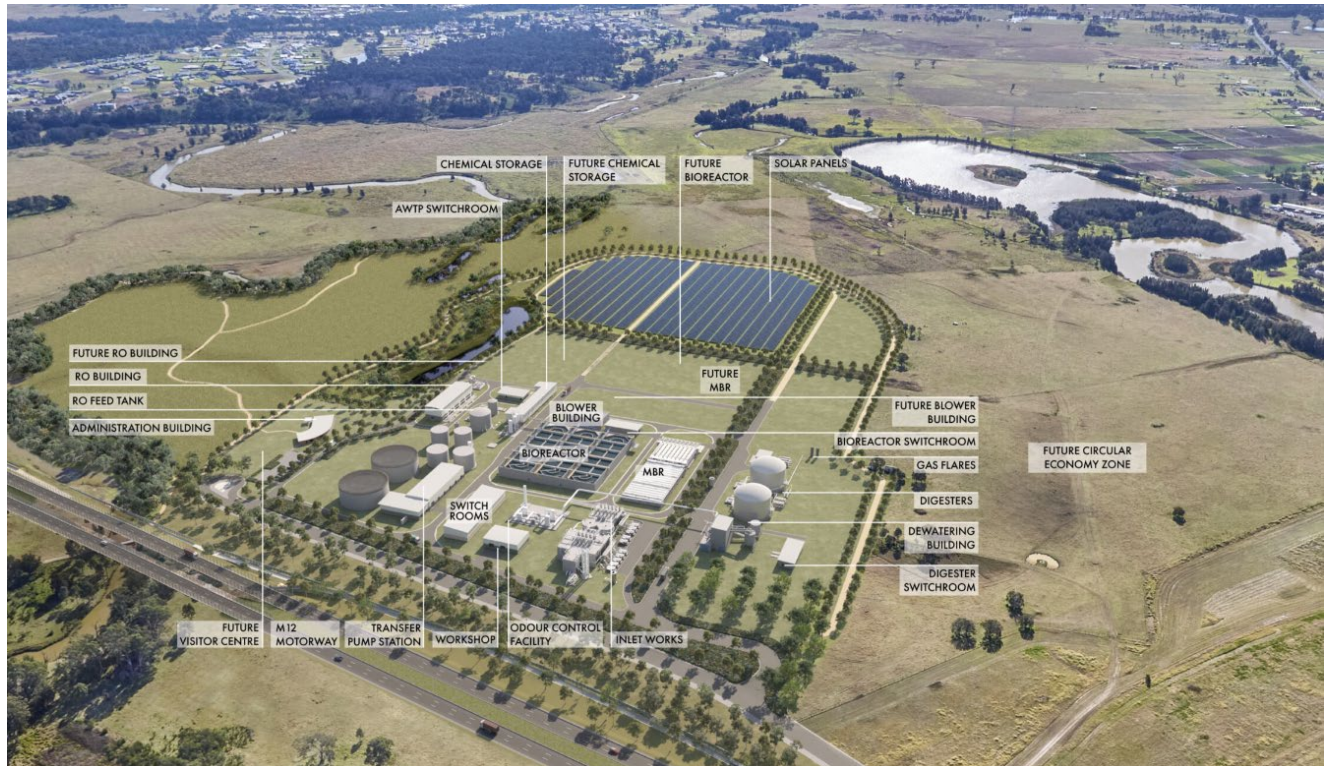


Figure 2-2 Indicative AWRC site arrangement (indicative and pending detailed design)

### 3 Objectives, Targets and Performance Criteria

The objectives, targets and performance criteria identified in this HCSP are applicable to all construction works associated with the USC Project (John Holland and its subcontractors).

#### 3.1 Objectives

The key objective of this Plan is to ensure the management measures and controls listed in the following documents, where they include items applicable to the protection and/ or avoidance of items of Aboriginal, non-Aboriginal, World and National heritage, are described, scheduled and assigned responsibility:

- The Environmental Impact Statement (EIS) prepared for Upper South Creek Advanced Water Recycling Centre Project
- The Response to Submissions (RtS) Report prepared for the Upper South Creek Advanced Water Recycling Centre Project
- The Amendment Report prepared for the Upper South Creek Advanced Water Recycling Centre Project
- Updated Management Measures (UMMs) (Appendix B of the RtS Report)
- The relevant Minister's Conditions of Approval (SSI 8609189)
- The relevant Commonwealth Controlled Activity Approval (EPBC 2020/8816)
- Infrastructure Sustainability Council Technical Manual version 2.1 (ISC 2.1) requirements
- Environmental Protection License (EPL 21800)
- Sydney Water Management Specification
- Relevant legislation and other requirements described in Section 4 of this Plan.

#### 3.2 Targets

The following targets related to heritage matters have been identified for implementation during the construction phase of the project:

- Ensure full compliance with the relevant legislative requirements, CoA, UMMs and Commonwealth approval conditions
- Manage all heritage impacts in accordance with the HCSP during construction
- No disturbance or adverse impact to Aboriginal, non-Aboriginal, World and National Heritage items outside the project boundary
- Follow correct procedures for monitoring construction areas in proximity to heritage features, fabric, material etc., and communicate and implement (where required) the project-specific unexpected heritage finds and human remains procedure
- Ensure training is provided in the form of inductions and toolboxes to all Project personnel on heritage matters, including their identification, context and location, heritage management measures, unexpected finds procedures and obligations under the *Heritage Act 1977* before they begin work on site
- Compliance with John Holland Global Mandatory Requirements.

### 3.3 Performance Criteria

Environmental performance outcomes have been developed that are consistent with various project approval documents. Only the environmental performance outcomes specific to this HCSP have been presented in Table 3-1.

*Table 3-1 Environmental performance outcomes relevant to the HCSP*

Desired Performance Outcome	How Performance Outcomes would be Achieved	Measurement Tool
<p><b>Heritage</b></p> <p>The design and construction of the project facilitates, to the greatest extent possible, the long-term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places.</p> <p>The design and construction of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places</p>	<p>Minimise impacts on heritage items during construction</p> <p>Minimise damage to features of heritage conservation significance from vibration</p> <p>Compliance with the requirements in the HCSP</p>	<p>Construction activities will be managed in accordance with the HCSP to meet the project's heritage performance outcomes.</p>

## 4 Legislative and Guidance Requirements

All relevant legislation and associated requirements, including approvals, licences and permits are tabulated and discussed in Appendix A3 of the CEMP.

The primary guidelines, specifications and other reference documents relevant to this plan include:

### Reference Documents

- The Environmental Impact Statement (EIS) prepared for the Upper South Creek Advanced Water Recycling Centre (USC AWRC) Project; September 2021
- The Response to Submissions (RtS) Report prepared for the USC AWRC Project; March 2022
- The Amendment Report prepared for the USC AWRC Project; March 2022
- USC AWRC Greater Blue Mountains World Heritage Area Heritage Impact Assessment (WHIA); September 2021
- USC AWRC Aboriginal Cultural Heritage Assessment Report (ACHAR); June 2021
- USC AWRC Statement of Heritage Impact (SOHI); June 2021
- USC Construction Environmental Management Plan
- USC Construction Noise and Vibration CEMP Sub-plan
- Sydney Water Management Specification
- Aboriginal Heritage Impact Permit (AHIP) number C0005620 (AHIMS Permit ID: 4577).

### Guidelines and Codes – Aboriginal Heritage

- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010)
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010)
- Due Diligence Code of practice for protection of Aboriginal objects in NSW (DECCW 2010)
- The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia International Council of Monuments and Sites (ICOMOS) 1999)
- Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the *Heritage Act 1977* (NSW Heritage Office 1998)
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997).
- Guide to Investigation, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011)
- Ask First: A guide to respecting Indigenous heritage places and values (Australian Heritage Commission 2002)
- Engage Early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

### Guidelines and Codes – Non-Aboriginal Heritage

- NSW Heritage Manual (Heritage Office 1996)
- Assessing Significance for Historical Archaeological Sites and Relics (Heritage Office 2009)
- Assessing Heritage Significance Guidelines (Heritage Council of NSW 2001)
- Statement of Heritage Impact Guidelines (Heritage Council of NSW 2002)
- Archaeological Assessments: Archaeological Assessment Guidelines (Heritage Office 1996)
- How to Prepare Archival Records of Heritage Items (Heritage Office 1998)
- Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Office 2006).

### Guidelines and Codes – World Heritage

- Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (Department of the Environment, 2013)
- Guidance on Heritage Impact Assessment for Cultural World Heritage Places (ICOMOS 2001).

## 4.1 Minister's Conditions of Approval

Table 4-1 below provides a summary of the CoA relevant to heritage and how and where these items are addressed in this plan.

*Table 4-1 Minister's Conditions of Approval*

CoA Reference	Condition Requirement	HCSP Reference
A9	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertaken must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include: <ul style="list-style-type: none"> <li>a. documentation of the engagement with the party identified in the CoA that has occurred before submitting the document for approval;</li> <li>b. a log of the dates of engagement or attempted engagement with the identified party;</li> <li>c. documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;</li> <li>d. outline of the issues raised by the identified party and how they have been addressed; and</li> <li>e. a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.</li> </ul>	Section 5  Appendix A  Section 2 of the CEMP
C3	The CEMP (and relevant CEMP Sub-plans) must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one month before the commencement of construction, or where construction is staged, no later than one month before the commencement of each stage.	Section 5.2  Section 2 of the CEMP
C4	The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A9. <ul style="list-style-type: none"> <li>a. Heritage (Aboriginal, non-Aboriginal, World and National heritage, in consultation with Heritage NSW, EHG, WaterNSW and relevant council(s))</li> </ul> <p><i>Note: CEMP Sub-plan(s) may reflect the construction of the project through geographical activities, temporal activities or activity-based staging.</i></p>	This HCSP
C5	The CEMP Sub-plans must state how:	
	a. the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;	Section 8
	b. the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 4.2 Section 8
	c. the relevant terms of this approval will be complied with; and	Section 4
	d. issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles	Section 2.3
C11	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary.	Section 5.2
C12	The CEMP and CEMP Sub-plans as approved, including any minor amendments approved by the ER, must be implemented for the duration of construction of Stage 1 of the CSSI.	Section 5.2
E29	All reasonable steps must be taken so as not to harm, modify or otherwise impact Aboriginal objects or places of cultural significance except as authorised by this approval.	Section 8
E30	The Registered Aboriginal Parties (RAPs) must be kept regularly informed about Stage 1 of the CSSI. The RAPs must continue to be provided with the opportunity to be consulted about the Aboriginal cultural heritage management requirements of Stage 1 of the CSSI.  <i>Note: Details regarding ongoing engagement with RAP's must be provided in the Communication Strategy required under Condition B1.</i>	Table 5-1



CoA Reference	Condition Requirement	HCSP Reference
E31	<p>At the completion of Aboriginal cultural heritage test and salvage excavations, an Aboriginal Cultural Heritage Excavation Report(s) must be prepared by a suitably qualified person. The Aboriginal Cultural Heritage Excavation Report(s), must:</p> <ul style="list-style-type: none"> <li>a. be prepared in accordance with the Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW, OEH 2011 and the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, DECCW 2010; and</li> <li>b. document the results of the archaeological test excavations and any subsequent salvage excavations (with artefact analysis and identification of a final repository for finds).</li> </ul> <p>The RAPs must be given a minimum of 28 days to consider the report and provide comments before the report is finalised.</p> <p>The final report must be provided to the Planning Secretary, Heritage NSW, the relevant council(s), LALC, the RAPs and local libraries within 24 months of the completion of the Aboriginal archaeological excavations (both test and salvage).</p>	Section 9.5
E32	<p>Where previously unidentified Aboriginal objects or places of cultural significance are discovered, all work must immediately stop in the vicinity of the affected area. Works potentially affecting the previously unidentified objects and places must not recommence until Heritage NSW has been informed. The measures to consider and manage this process must be specified in the Unexpected Heritage Finds and Human Remains Procedure required by Condition E37 and include registration in the Aboriginal Heritage Information Management System (AHIMS).</p>	Section 5.3, Section 8 and Section 8.5 Appendix C
E33	<p>Archival photographic digital recording must be undertaken for all listed heritage items and sites assessed to have heritage significance which will be affected by Stage 1 of the CSSI. The recording must be undertaken prior to the commencement of Work which may impact the items and sites. The Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with <i>NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998)</i> and <i>Photographic Recording of Heritage Items Using Film or Digital Capture (2006)</i>. A copy must be provided to Heritage NSW and the relevant council(s) and submitted as part of the Heritage Report required by Condition E35.</p>	Section 8.2.1  Section 8.9
E34	<p>Prior to commencement of archaeological excavation, the Proponent must nominate a suitably qualified Excavation Director who complies with Heritage NSW's Criteria for Assessment of Excavation Directors (September 2019) to oversee and advise on matters associated with historical archaeology. The Excavation Director must be present to oversee excavation, advise on archaeological issues, advise on the duration and extent of oversight required during archaeological excavations consistent with the Archaeological Research Design and Excavation Methodology included as part of the Environmental Impact Statement listed in Condition A1.</p>	Section 8.2.4  Section 8.9  Appendix E
E35	<p>Following completion of archaeological excavation program a Heritage Report must be prepared that includes</p> <ul style="list-style-type: none"> <li>a. the details of any archival recording,</li> <li>b. further historical research undertaken</li> <li>c. results of archaeological excavations (including artefact analysis and identification of a final repository for finds); and</li> <li>d. details of any significant artefacts recovered, where they were located, and details of their ongoing conservation and protection in perpetuity.</li> </ul> <p>The report must be prepared in accordance with guidelines and standards required by Heritage NSW.</p>	Section 9.5  Section 8.9
E36	<p>The Heritage Report must be submitted to the Planning Secretary, Heritage NSW, the relevant council(s), relevant local libraries and relevant local historical societies no later than 12 months after the completion of archaeological excavation programs.</p>	Section 9.5 Section 8.9
E37	<p>An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by Heritage NSW and the Heritage Council of NSW. The Unexpected Heritage Finds and Remains Procedure must be submitted to the Planning Secretary for information at least one month before the commencement of Work. The procedure must be included in the Heritage CEMP Plan required by Condition C4.</p>	Appendix C

CoA Reference	Condition Requirement	HCSP Reference
E38	<p>The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of Work.</p> <p>Where archaeological investigations have been undertaken as a result of Unexpected Finds notifications then a Final Archaeological Report must be provided in accordance with Heritage Council guidance and standard requirements for final reporting under Excavation Permits.</p> <p>Note: Human remains that are found unexpectedly during the carrying out of work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.</p>	<p>Section 8.5</p> <p>Section 8.9</p> <p>Appendix C</p>
E51	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the construction methodology must be reviewed and, if necessary, additional mitigation measures implemented.	Section 8.6
E52	<p>Advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.</p> <p><i>Note: The installation of noise and vibration equipment must not impact on heritage values of the Heritage items.</i></p>	<p>Section 8.6</p> <p>Section 8.9</p>
E53	Before conducting at-property treatment at any heritage item identified in the documents listed in Condition A1, the advice of a suitably qualified and experienced built heritage expert must be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.	<p>Section 8.7</p> <p>Section 8.9</p>
E63	An Urban Design and Landscape Plan (UDLP) must be prepared for the AWRC site to document and illustrate the permanent built works and landscape design of Stage 1 of the CSSI and how these works are to be maintained. [...]	<p>An UDLP specific to the AWRC site will be developed and include relevant heritage requirements. The Plan will be developed, approved and implemented in accordance with the requirements of CoA E63 – E65.</p>
E64	<p>The UDLP must document how the following matters have been considered in the design and landscaping of the project: ...</p> <ol style="list-style-type: none"> <li>integrating heritage character of the site with treatment and finishes of the new design; and</li> <li>inputs from relevant experts in architecture, landscape architecture, bushfire management, heritage, revegetation, ecology, wildlife hazard management and flooding.</li> </ol>	
E69	The Proponent must offer pre-construction surveys to the owners of surface and sub-surface structures and other relevant assets identified at risk from vibration, including all listed heritage items and buildings / structures of heritage significance as identified in the documents listed in Condition A1. Where the offer is accepted, the survey must be undertaken by a suitably qualified and experienced engineer and/or building surveyor prior to the commencement of vibration generating Works that could impact on the structure/asset. The results of each survey must be documented in a Pre-construction Condition Survey Report and the report must be provided to the owner of the item(s) surveyed no later than one month before the commencement of all other potentially impacting Works.	<p>Table 8.3</p> <p>Section 8.8</p>
E70	Where pre-construction surveys have been undertaken in accordance with Condition E69, subsequent post-construction surveys of the structure / asset must be undertaken by a suitably qualified and experienced engineer and/or building surveyor to assess damage that may have resulted from the vibration-generating Works. The results of the post-construction surveys must be documented in a Post-Construction Condition Survey Report for each item surveyed. The Post-construction Condition Survey Reports must be provided to the owner of the structures/assets surveyed, and no later than four months following the completion of construction activities that have the potential to impact on the structure / asset.	<p>Section 8.8</p> <p>Section 8.9</p>

CoA Reference	Condition Requirement	HCSP Reference
E132	<p>The Proponent must prepare a World Heritage Monitoring Program (WHMP) to verify whether potential impacts on the Greater Blue Mountains Area World Heritage property and National Heritage place during Stage 1 of the CSSI are in accordance with impacts assessed in the documents listed in Condition A1. The WHMP must be prepared in consultation with EHG and submitted to the Planning Secretary and EHG for information prior to the commencement of operation of Stage 1 of the CSSI. The WHMP must include, but not necessarily limited to:</p> <ul style="list-style-type: none"> <li>a. baseline and post-commissioning monitoring of representative attributes that: <ul style="list-style-type: none"> <li>i. contribute to the Outstanding Universal Value (OUV) of the Greater Blue Mountains Area; and</li> <li>ii. are identified in the documents listed in Condition A1 as potentially impacted during Stage 1 of the CSSI;</li> </ul> </li> <li>b. relevant water quality monitoring data; and</li> <li>c. photos at each monitoring point.</li> </ul>	Section 8.4
E133	<p>Within twelve months after the commencement of operation of Stage 1 of the CSSI, and every year thereafter, unless otherwise agreed by the Planning Secretary, the Proponent must prepare an annual World Heritage monitoring report. The World Heritage monitoring report must include, but not necessarily limited to:</p> <ul style="list-style-type: none"> <li>a. analysis of results from the WHMP under Condition E132, including verifying whether potential impacts are as predicted in the documents listed in Condition A1;</li> <li>b. mitigation measures proposed, where the WHMP under Condition E132 identifies an impact on the Blue Mountains World Heritage Property and National Heritage place, that is attributable to the project and exceeds the impacts described in the documents listed in Condition A1;</li> <li>c. effectiveness of mitigation measures implemented, and any necessary additional mitigation measures; and</li> <li>d. (d) any corrective actions that may be required and/or have been employed.</li> </ul>	<p>Section 8.4.</p> <p>All operational requirements will be addressed post-construction in operational management plans.</p>
E134	<p>No Work within Blue Mountains National Park (part of the Greater Blue Mountains Area) is to occur as part of Stage 1 of the CSSI (such as for investigations, monitoring or temporary construction compounds), unless authorisation is granted by the NSW National Parks and Wildlife Service under the <i>National Parks and Wildlife Act 1974 (NPW Act)</i> or the <i>National Parks and Wildlife Regulation 2019</i>.</p>	<p>Section 5</p> <p>Section 8</p>



## 4.2 Updated Management Measures

Table 4-2 below provides a summary of the UMMs relevant to heritage and how and where these items are addressed in this plan.

*Table 4-2 Updated Management Measures*

UMM Reference	Management Measure Requirement	HCSP Reference
<b>Aboriginal Heritage</b>		
AH01	Impact to Aboriginal sites / Potential Archaeological Deposits (PADs) Explore opportunities to avoid or further reduce the identified potential impacts to Aboriginal items where practical.	Section 8
AH02	Impacts to Aboriginal heritage, including unexpected finds Develop and implement a Heritage Management Plan as part of the CEMP. This will include: <ul style="list-style-type: none"> <li>• roles and responsibilities</li> <li>• construction phase Aboriginal heritage and non- Aboriginal heritage measures from this table</li> <li>• an unexpected finds procedure for managing any items of potential Aboriginal archaeological, cultural heritage, or non-Aboriginal heritage significance identified during construction</li> <li>• inducting all construction site staff (before they start work) on known Aboriginal and non-Aboriginal heritage items in the impact area and measures to be implemented during construction to avoid impacts. Inductions will include: <ul style="list-style-type: none"> <li>○ briefing on the heritage sensitivity of the site</li> <li>○ management measures</li> <li>○ guidance on identifying unexpected finds</li> <li>○ obligations under the <i>Heritage Act 1977</i></li> </ul> </li> </ul>	This HCSP Section 9.1 Section 8.1.1 Section 8.9 Appendix C Section 9.2
AH03	Impact to Aboriginal sites / PADs of moderate Aboriginal heritage significance Undertake archaeological salvage in accordance with an approved Salvage Excavation Methodology, where ground disturbance is proposed within the following sites: <ul style="list-style-type: none"> <li>• Baines Creek Wallacia PAD 1</li> <li>• Bents Basin Road Wallacia PAD 1</li> <li>• Wallacia Weir PAD 1</li> <li>• Oaky Creek Elizabeth Drive PAD 1</li> <li>• Elizabeth Drive/Adams Road AFT 1</li> <li>• TNR AFT 15</li> <li>• Elizabeth Drive AFT 1</li> <li>• Elizabeth Drive AFT 3</li> <li>• Elizabeth Precinct PAD 03</li> <li>• Fleurs1 Fleurs Radio Telescope (including duplicate recordings M12 A4 and South Creek East (SCE))</li> <li>• P-CP7</li> <li>• P-CP12</li> <li>• PAD-OS-5</li> </ul> Coordinate this program with non-Aboriginal heritage salvage excavation, in locations where salvage is required for both.	Section 8.1.1 Section 8.9 Appendix B
AH04	Impacts to sites with existing AHIPs Construction activities undertaken in the following sites will be in accordance with the existing AHIP (C0005620) conditions: <ul style="list-style-type: none"> <li>• GLC1 (including Artefact Scatter PAD 2023-846)</li> <li>• IFSC 7 Cecil Park.</li> </ul>	Section 8.1 Section 8.3 Section 8.9

UMM Reference	Management Measure Requirement	HCSP Reference
AH05	<p>Unexpected finds – Human skeletal remains</p> <p>In the event that construction activity reveals possible human skeletal material (remains) an unexpected find human skeletal remains procedure will be implemented in accordance with the Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the <i>Heritage Act 1977</i> (NSW Heritage Office 1998) and the Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997).</p>	<p>Section 8.5 Appendix C</p>
AH06	<p>Impacts to sites in impact area</p> <p>Implement management measures in Table 6 and section 11 of the Aboriginal Cultural Heritage Assessment Report in Appendix O of the EIS.</p>	<p>Section 2.2 Section 8.1 Section 9.5 Section 9.7</p>
<b>Non-Aboriginal Heritage</b>		
NAH02	<p>Impacts to built heritage - Upper Canal and Liverpool Offtake Reservoir</p> <p>Construction activities in proximity to the Upper Canal and Warragamba Pipelines will be undertaken in accordance with WaterNSW 'Guideline for Development Adjacent to the Upper Canal and Warragamba Pipelines'. This will include:</p> <ul style="list-style-type: none"> <li>dilapidation survey prior to any construction work commencing</li> <li>monitoring of vibration and ground movement during tunnelling construction.</li> </ul>	<p>Section 8.2.2 Section 8.6 Section 8.9</p>
NAH03	<p>Impacts to built heritage – Fleurs Radio Telescope Site</p> <p>Prior to the removal of identified historic elements related to the Fleurs Radio Telescope site, photographic archival recording will be undertaken by an experienced heritage consultant and in accordance with the Photographic Recording of Heritage Items using Film or Digital Capture, NSW Heritage Office, 2006.</p>	<p>Section 8.2.3 Section 8.9</p>
NAH04	<p>Impacts to built heritage at AWRC site</p> <p>Prepare a Heritage Interpretation Framework for the project, incorporating the retention of Aboriginal and non-Aboriginal heritage features at the AWRC site where practical. The framework will include consideration of:</p> <ul style="list-style-type: none"> <li>incorporating historic features into the AWRC design</li> <li>interpretive public art and soundscapes</li> <li>retention and interpretive use of the two parabolic antennas</li> <li>creation of a heritage display of historic material in the AWRC</li> <li>preparation of digital interpretive resources related to the history of the site</li> <li>preparation of an oral history of the Fleurs Field Station.</li> </ul>	<p>Section 8.3 Section 8.9</p>
NAH05	<p>Impacts to Potential Archaeological Sites (PAS) of moderate to high significance</p> <p>Manage ground disturbance (excavation) in the following PAS areas of moderate to high significance by:</p> <ul style="list-style-type: none"> <li>avoiding disturbance where practical</li> <li>where disturbance cannot be avoided, complete archaeological testing in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) in Appendix P</li> <li>complete archaeological salvage and archival recording where this is recommended in archaeological testing.</li> </ul> <p>The sites of moderate to high significance are:</p> <ul style="list-style-type: none"> <li>Blaxland's Farm</li> <li>Blaxland's Gardens</li> <li>Blaxland's Crossing</li> <li>McMaster Field Station</li> <li>Upper Canal</li> <li>Lennox Reserve</li> <li>Lansvale Park</li> </ul> <p>Coordinate this program with Aboriginal heritage salvage excavation, in locations where salvage is required for both.</p>	<p>Section 8.2.4 Section 8.9</p>

UMM Reference	Management Measure Requirement	HCSP Reference
NAH06	Impacts to PAS of low significance Manage disturbance in the following PAS areas of low significance through an unexpected finds procedure: <ul style="list-style-type: none"><li>• McGarvie-Smith Farm</li><li>• Exeter House and Farm</li><li>• Fleurs Radiophysics Field Station.</li></ul>	Section 8.2.4 Section 8.9 Appendix C
NAH07	Accidental impact to non-Aboriginal heritage item Any accidental damage to heritage items is to be treated as an incident, with appropriate recording and notification.	Section 9.4
NAH08	WaterNSW not informed of unexpected finds Advise WaterNSW of any unexpected heritage items found on WaterNSW land.	Section 5 Section 8.9 Appendix C

### 4.3 Commonwealth Controlled Activity Approval Conditions

Table 4-3 below provides a summary of the Commonwealth Controlled Activity Approval (CAA) conditions relevant to heritage and how and where these items are addressed in this plan.

Table 4-3 Relevant Commonwealth Controlled Activity Approval conditions

CAA Reference	Condition Requirement	HCSP Reference
3	To mitigate impacts on protected matters the approval holder must implement conditions C4, C5, C9, C11, C12, E23, E119, E120, E132, E133, E134, C-B1 and C-B7 of the State Infrastructure Approval, in so far as they relate to monitoring, mitigating, and avoiding impacts to protected matters.	Table 4-1 identifies where heritage related CoA (E132, E133, E134) are addressed within this HCSP.
6	The approval holder must ensure, prior to submitting them for approval by the Planning Secretary, that the Construction Environmental Management Plan (CEMP) and sub-plans required for Biodiversity (sub-plan C4 (d)) and Heritage (sub-plan C4 (g)) required under conditions C4, C5 and C9 of the State Infrastructure Approval: <ul style="list-style-type: none"> <li>a. are consistent with statutory documents for protected matters, including for the listings and management of the Greater Blue Mountains Area World Heritage property and the National Heritage place,</li> <li>b. demonstrate how the approval holder will protect, minimise and mitigate impacts to protected matters, and</li> <li>c. state how the relevant terms of the State Infrastructure Approval for protected matters will be complied with.</li> </ul>	<ul style="list-style-type: none"> <li>a) Table 4-1 identifies where heritage related CoA (C4(g)) are addressed within this HCSP.</li> <li>b) This HCSP</li> <li>c) Table 4-1 and Table 4-2</li> </ul>
7	The approval holder must not commence the Action unless the Minister has approved all of the CEMP, Biodiversity and Heritage sub-plans, required by condition C4 of the State Infrastructure Approval, in writing.	Table 4-1 identifies where heritage related CoA (C4(g)) are addressed within this HCSP. Section 5.2 of the HCSP Section 6.1 of the CEMP
8	The approval holder must not commence the Operation unless the Minister has approved the World Heritage Monitoring Program (WHMP) and Water Quality Monitoring Program (WQMP) required by conditions E132 and E119 of the State Infrastructure Approval, in writing.	Section 8.4 of the HCSP identifies requirements for the WHMP
9	The approval holder must implement the CEMP, Biodiversity and Heritage sub-plans, WHMP and WQMP approved by the Minister until, at least, the end date of this approval, unless otherwise agreed to by the Minister in writing.	Section 1.6 of the CEMP and specifically WHMP Section 8.4
10	Each World Heritage monitoring report required by Condition E133 of the State Infrastructure Approval must be provided to the department for information within one month of submission of each annual report required by the State Infrastructure Approval.	Section 8.4
11	The approval holder may, at any time, apply to the Minister for a variation to an action management plan approved by the Minister or as subsequently revised in accordance with these conditions, by submitting an application in accordance with the requirements of section 143A of the EPBC Act. If the Minister approves a Revised Action Management Plan (RAMP) then, from the date specified, the approval holder must implement the RAMP in place of the previous action management plan.	Section 3.12.3 of the CEMP
12	The approval holder may choose to revise an action management plan approved by the Minister under conditions 7-8, or as subsequently revised in accordance with these conditions, without submitting it for approval under section 143A of the EPBC Act, if the taking of the Action in accordance with the RAMP would not be likely to have a new or increased impact.	Section 3.12.3 of the CEMP
13	If the approval holder makes the choice under condition 12 to revise an action management plan without submitting it for approval, the approval holder must: <ul style="list-style-type: none"> <li>a. Notify the department electronically that the approved action management plan has been revised and provide the department with: <ul style="list-style-type: none"> <li>i. An electronic copy of the RAMP.</li> <li>ii. An electronic copy of the RAMP marked up with track changes to show the differences between the approved action management plan and the RAMP.</li> </ul> </li> </ul>	Section 3.12.3 of the CEMP

CAA Reference	Condition Requirement	HCSP Reference
	<ul style="list-style-type: none"> <li>iii. An explanation of the differences between the approved action management plan and the RAMP.</li> <li>iv. The reasons the approval holder considers that taking the Action in accordance with the RAMP would not be likely to have a new or increased impact.</li> <li>v. Written notice of the date on which the approval holder will implement the RAMP (RAMP implementation date), being at least 20 business days after the date of providing notice of the revision of the action management plan, or a date agreed to in writing with the department.</li> <li>b. Subject to condition 15, implement the RAMP from the RAMP implementation date.</li> <li>c. Document changes to approved action management plans in the compliance report, as per condition 29.</li> </ul>	
17	The approval holder must submit all plans required by these conditions electronically to the department.	<p>Section 5.1</p> <p>Section 2 of the CEMP</p>
18	<p>Unless otherwise agreed to in writing by the Minister, the approval holder must publish each plan on the website within 15 business days of the date:</p> <ul style="list-style-type: none"> <li>a. of this approval, if the version of the plan to be implemented is specified in these conditions; or</li> <li>b. the plan is approved by the Minister in writing, if the plan requires the approval of the Minister; or</li> <li>c. the plan is submitted to the department in accordance with a requirement of these conditions, if the plan does not require the approval of the Minister; or the plan is approved by a state/territory government official/the NSW Planning Secretary as required under a state/territory government condition which must be complied with in accordance with these EPBC Act conditions.</li> </ul>	Section 2 of the CEMP

#### 4.4 Infrastructure Sustainability Council benchmarks

The Project is aiming to achieve the Level 3 benchmarks for Heritage Protection and Enhancement in Infrastructure Sustainability (IS) v2.1 Technical Manual Design and As Built Rating (ISC Benchmarks), herein referred to as ISC v2.1. The relevant benchmarks are listed in Table 4-4 and includes references to the benchmarks, the requirements for achieving the benchmark, the necessary evidence and references to documents and/or sections of this HCSP where the evidence is presented.

Table 4-4 ISC requirements relevant to this HCSP

Level	Benchmark	Management Measure	Evidence Required	Where addressed
<b>HER-1 Design</b>				
1	DL1.1 An assessment of heritage value has been undertaken (or reviewed) and includes community and key stakeholder values.	MS1.1a: A heritage assessment must be conducted in accordance with the latest version of the Australian Burra Charter practice notes or the ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value and include heritage precincts, and heritage items and places in the vicinity that may be adversely impacted by proximity to the infrastructure project or asset.	A heritage assessment, and documentation of suitably qualified professional.  Evidence of the integration of community and stakeholder values, into the heritage assessment, including the values of Indigenous People of the Land connected to the location of the project.	Section 10.1, 10.2 and 10.3 and Appendix O, P, Q within the EIS  Specialist Report (EMM consulting, September 2021)  Amendment Report, Appendix C
		MS1.1b: The heritage assessment must be completed by a suitably qualified professional and include: <ul style="list-style-type: none"> <li>The identification of community and key stakeholder values</li> <li>The identification of statutory and non-statutory heritage listings</li> <li>Baseline surveys of existing heritage, including assessment of the potential presence of archaeological remains based on historical records and modelling.</li> <li>Predictions for heritage impacts during construction and operation of the infrastructure, and measures to mitigate.</li> <li>The identification of existing built, natural, tangible and intangible heritage assets (for example, the way the site is used, its cultural values, the important activities, festivals and ceremonies).</li> </ul>		Section 10.1, 10.2 and 10.3 and Appendix O, P, Q within the EIS  Specialist Report (EMM consulting, September 2021)  Amendment Report, Appendix C
		MS1.1c: If major scope or alignment changes have occurred which have a reasonable potential to affect heritage assets and values, then the Planning phase heritage assessment must be reviewed and amended by a suitably qualified professional.		N/A
		MS1.1d: Community and key stakeholders' values, including those of Indigenous People of the Land connected to the project location, must be identified and integrated into the heritage assessment.		Section 5.2 (This Plan)  CSEP  Section 10.1, 10.2 and 10.3

Level	Benchmark	Management Measure	Evidence Required	Where addressed
		<p>Identification of community and key stakeholder values may be done through:</p> <ul style="list-style-type: none"> <li>A community reference group composed of stakeholders from different groups, to voice public concerns and aspirations throughout the project phases</li> <li>A review of the heritage assessment as an opportunity to provide input</li> <li>Community participation in site visits</li> <li>Consultation meetings to discuss issues</li> <li>Inclusion of local heritage experts in the consultation processes.</li> </ul>		<p>and Appendix O, P, Q within the EIS</p> <p>Specialist Report (EMM consulting, September 2021)</p> <p>Amendment Report, Appendix C</p>
		<p><i>MS1.1e: If major scope or alignment changes which have a reasonable potential to affect heritage assets and values have occurred since the Planning rating, community and key stakeholder engagement must be undertaken again and integrated.</i></p>		N/A
	DL1.2 The community has been informed of assessment results and provided with an appropriate feedback mechanism.	<p><i>MS1.2a: The community and key stakeholders must be informed of the results of the heritage assessment undertaken under DL1.1.</i></p>	<p>Sharing results of the heritage assessment with the community and key stakeholders e.g. fact sheets, online portals and / or information sessions</p> <p>Feedback mechanism to capture comments or concerns related to heritage matters and manage responses.</p>	<p>CSEP</p> <p>Section 10.1, 10.2 and 10.3 and Appendix O, P, Q within the EIS</p> <p>Submissions Report, 2022</p> <p>Amendment Report, Appendix C</p>
		<p><i>MS1.2b A feedback mechanism (process or system) must be implemented to enable the community and key stakeholders to express comments and concerns about heritage matters with the project team.</i></p>		<p>Section 5.2 (This Plan)</p> <p>CSEP</p>
	DL1.3 A heritage monitoring system has been developed for unforeseen circumstances, unidentified sites, unexpected finds and previously unknown sensitive	<p><i>MS1.3a: A heritage monitoring system for identification of unforeseen circumstances, unidentified sites and unexpected finds must be prepared for design and construction phases of the infrastructure life cycle (or updated if one was verified in the Planning phase). The monitoring system must include:</i></p> <ul style="list-style-type: none"> <li>A procedure for responding to unforeseen circumstances, unidentified sites, unexpected finds and previously unknown sensitive heritage values, including assessing their significance and taking appropriate management action (and evidence of implementation for early works / construction if completed in the design phase)</li> <li>A monitoring program that determines appropriate ways of mitigating, controlling or eliminating heritage risks.</li> </ul>	A heritage monitoring system, as specified above	Appendix C, D and E (This Plan)

Level	Benchmark	Management Measure	Evidence Required	Where addressed
	DL1.4 Project or site inductions and training cover heritage assets and values.	MS1.4a: Project or site inductions provided to employees must include information on: <ul style="list-style-type: none"> <li>The site heritage values and their significance</li> <li>Relevant conditions of consent and protection matters</li> <li>How to manage unexpected findings</li> <li>Any regulatory obligations relating to cultural heritage</li> </ul>	Project and site induction content, as specified  Heritage awareness training content, as specified  Evidence of frequency of induction, heritage awareness training and employee participation e.g. induction and training records	Section 9.2 (This Plan)
		MS1.4b: Project employees must also undertake training on heritage awareness and values relevant to the project location and the significance of Indigenous areas and values to the local community.	Indigenous People of the Land engagement in development or delivery of heritage training.	Section 9.2 (This Plan)
		MS1.4c: Indigenous People of the Land connected to the project location must be involved in the development or delivery of the heritage awareness training on Indigenous heritage and the significance of Indigenous areas and values.		Section 5.2 (This Plan)  CSEP
	DL1.5 The design maintains tangible and intangible heritage assets and values.	MS1.5a: The design must outline proposed initiatives or approaches to maintain the tangible and intangible heritage assets or values as identified in the heritage assessment undertaken for DL1.1.	Assessment of Design Response to heritage assets and value, as specified  Documentation for suitably qualified professional e.g. CV, Linked In profile.	Detailed Design  Section 8.2.4 (This Plan)  UDLP
		MS1.5b: An assessment of the design response must be undertaken by a suitably qualified professional relevant to the heritage aspects present (e.g. archaeology, architecture, geotechnology, history, indigenous values) to confirm that identified tangible and intangible heritage assets and values have been maintained - taking account of characteristics of the place and respecting the place's significance. For example, a heritage building may have been incorporated into the design of a train station, maintaining the building within a larger structure.		Detailed Design  Section 8.2.4 (This Plan)  UDLP
2	DL2.1 The design enhances heritage assets or values	MS2.1a: The design must outline proposed initiatives and approaches to enhance the tangible and intangible heritage assets or values as identified in the heritage assessment undertaken for DL1.1.	Details of design enhancement to heritage assets and values (at least one) e.g. design drawings, proposal	Detailed Design  UDLP  Section 8.2.4 (This Plan)
		MS2.1b: The enhancement/s proposed must be reviewed by a suitably qualified professional(s) relevant to the heritage aspects present (e.g. archaeology, architecture, geotechnology, history, indigenous values) to confirm that heritage assets or values have been enhanced compared to the pre-project baseline.	Confirmation by a suitably qualified professional(s) that design initiatives enhance heritage assets or values e.g. brief assessment report, letter / email confirmation  Documentation for relevant suitably qualified professional(s) e.g. CV, LinkedIn profile	Section 10.1, 10.2 and 10.3 and Appendix O, P, Q within the EIS



Level	Benchmark	Management Measure	Evidence Required	Where addressed
	DL2.2 A system for community and stakeholder collaboration has been implemented.	<p>MS2.2a: A system or process to involve key community representatives and stakeholders, including Indigenous People of the Land connected to the project, in participatory decision making during the design, construction and (if relevant to the asset type) operation phases of the heritage assets must be established and implemented.</p> <p>The system may include:</p> <ul style="list-style-type: none"> <li>An ongoing heritage advisory board</li> <li>Periodic community engagement workshops</li> <li>A reference group organised at project inception and engaged throughout the project phases</li> </ul>	<p>Implementation of community and stakeholder collaboration system related to heritage values and assets</p> <p>Results of participatory decision making from the collaboration e.g. design drawing showing adjustment made as a result of stakeholder input, change in construction methodology or timing.</p>	<p>Section 5.2 (This Plan)</p> <p>CSEP</p> <p>UDLP</p>
3	DL3.1 Interpretation strategy has been developed and incorporated into the design	<p>MS3.1a: An interpretation strategy for heritage assets and values must be developed to enrich understanding of the place and guide development that will build on the unique characteristics of the area, and include:</p> <ul style="list-style-type: none"> <li>Summary of the thematic history of the area</li> <li>The location and extent of historic and cultural heritage sites</li> <li>The objectives of interpretation</li> <li>Interpretation approach and proposed methods</li> </ul> <p>MS3.1b: The proposed interpretation methods must be incorporated into the design.</p>	Documentation of the project's interpretation strategy and incorporation into design e.g. in design reports, heritage management plan, standalone strategy or within other relevant strategy.	<p>Detailed Design</p> <p>UDLP</p> <p>Section 8.2.4 (This Plan)</p>
	DL3.2 The community and stakeholders are satisfied with the heritage enhancements and interpretation methods proposed in the design.	<p>MS3.2a: Evidence must show that key community representatives and stakeholders identified in DL1.1, including Indigenous People of the Land connected to the project, are satisfied with the proposed approach and methods for heritage enhancement and interpretation of heritage values as relevant to them.</p>		
			Feedback from identified stakeholders and community representatives confirming satisfaction e.g. email / letter correspondence, advisory group minutes / report, video.	<p>Section 5.2 (This Plan)</p> <p>CSEP</p>
Her-1 As-Built				
1	ABL1.1 Heritage maintenance and enhancements outlined in the design have been built.	MS1.1a: All heritage maintenance or enhancement strategies identified in the final design must be built.	As Built details showing heritage maintenance and enhancement, as identified in design e.g.	UDLP
		MS1.1b: If changes to design were made during construction that impact on heritage outcomes, justification must be provided, and alternative approaches to achieve equivalent outcomes adopted.	drawings, photos, reports Justification of any changes from design, along with alternatives.	Table 8.3 (This Plan) Section 9.6 and 9.7. (This Plan)
	ABL1.2 A heritage monitoring system has been implemented for unforeseen circumstances, unidentified sites and unexpected finds.	<p>MS1.2a: During construction, the heritage monitoring system for the identification of unforeseen circumstances, unidentified sites and unexpected finds prepared in design must be implemented.</p> <p>MS1.2b: Monitoring must be undertaken, reviewed or audited by a suitably qualified professional.</p>	Implementation of the monitoring system as specified above e.g. completed forms, monitoring records, handover documentation	Section 8.4, Appendix C, D and E (This Plan)

Level	Benchmark	Management Measure	Evidence Required	Where addressed
		MS1.2c: The monitoring system must be updated to include risks to possible and unexpected cultural heritage finds in operation and included in the asset's handover documentation.	Documentation for suitably qualified professional e.g. CV, LinkedIn profile  Asset's handover documentation related to heritage monitoring system.	
	ABL1.3 Project employees have been inducted on site-specific heritage values and undertaken heritage awareness training.	MS1.3a: Project and site inductions provided to employees must include information on: <ul style="list-style-type: none"> <li>The site heritage values and their significance</li> <li>Relevant conditions of consent and protection matters</li> <li>How to manage unexpected finds</li> <li>Any regulatory obligations relating to cultural heritage</li> </ul>	Project and site induction content, as specified Heritage awareness training content, as specified Evidence of frequency of induction, heritage awareness training and employee participation e.g. induction and training records Indigenous People of the Land engagement in development or delivery of heritage training.	Section 9.2 (This Plan)
		MS1.3b: Project employees must also undertake training on heritage awareness and the significance of Indigenous areas and values to the local community.		Section 9.2 (This Plan)
		MS1.3c: Indigenous People of the Land connected to the project location must be involved in the development or delivery of the heritage awareness training on Indigenous heritage and the significance of Indigenous areas and values.		Section 9.2 (This Plan)  CSEP
2	ABL2.1 A heritage audit or review has confirmed that mitigation or enhancement activities are successful.	MS2.1a: An audit or review must be completed to confirm that mitigation or enhancement actions implemented result in the heritage outcomes identified in design.	Audit or review documentation as specified above and, where relevant, evidence of corrective action  Implementation  Documentation for suitably qualified professional e.g. CV, LinkedIn profile.	Section 9.4 (This Plan)  CSEP
		MS2.1b: The audit or review must be undertaken by a suitably qualified professional relevant to the heritage aspects present e.g. archaeology, architecture, geotechnology, history, indigenous values.		
		MS2.1c: Evidence must be provided to demonstrate that any corrective actions raised in the audit or review have been addressed.		
	ABL2.2 A system for community and stakeholder collaboration has been implemented.	MS2.2a: A system or process to involve key community representatives and stakeholders, including Indigenous People of the Land connected to the project, in participatory decision-making related to construction and (unless irrelevant to asset type) operational aspects of heritage management must be implemented.	Implementation of the community and stakeholder collaboration system related to heritage values and asset (for construction and operation)  Results of participatory decision making from the collaboration e.g. As Built drawings showing adjustment made as a result of stakeholder input; decisions related to conservation management or interpretation.	Section 5.2 (This Plan)  CSEP  UDLP
	ABL2.3 A conservation management plan (or equivalent) has been	MS2.3a: A conservation management plan (or equivalent), which sets out management actions to guide the maintenance of the heritage assets and values, must be prepared in accordance with the Australia ICOMOS Burra Charter	A conservation management plan, as specified	Section 8.2.4 (This Plan)  UDLP

Level	Benchmark	Management Measure	Evidence Required	Where addressed
	prepared for asset operations.	(ICOMOS, 2013) or ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value (2010) by a suitably qualified professional, and form part of the handover documentation to the owner or asset manager	Evidence of handover of plan to the owner or asset manager  Documentation for suitably qualified professional e.g. CV, LinkedIn profile	
3	<b>ABL3.1</b> Interpretation strategy has been realised in the final asset.	<b>MS3.1a:</b> The interpretation approach and methods that promote heritage values developed in the Design phase (DL3.1) must be built or implemented during construction and reflected in the final As Built drawings and other relevant documentation.	Documentation of implementation e.g. As Built drawings, photos or videos of implementation, event documentation	Section 8.2.4 (This Plan)  UDLP  Detailed Design
	<b>ABL3.2</b> The community and stakeholders are satisfied that heritage enhancements and interpretation have been effectively implemented.	<b>MS3.2a:</b> Evidence must be provided to show that key community representatives and stakeholders, including Indigenous People of the Land connected to the project, are satisfied with the implementation of heritage enhancement and interpretation of heritage values relevant to them.	Feedback from identified stakeholders and community representatives confirming satisfaction e.g. email / letter correspondence, advisory group minutes / report, video	Section 5.2 (This Plan)  CSEP

## 5 Consultation

### 5.1 HCSP consultation

Consultation requirements raised in the Infrastructure Approval are explored in detail in Section 2 of the CEMP. Specifically, the HCSP has been provided to the following agencies in accordance with CoA C4:

- Heritage NSW
- Department of Environment & Planning, Environment and Heritage Group (EHG)
- Water NSW
- Relevant Councils, including:
  - Wollondilly Shire Council
  - Penrith City Council
  - Liverpool City Council
  - Fairfield City Council
  - Canterbury-Bankstown Council.

Comments received from the consultation process have been incorporated in relevant sections of this Plan. In accordance with CoA A9, a Consultation Summary Report has been developed and appended to this Plan (Appendix A) to document and provide evidence of consultation undertaken in accordance with the Infrastructure Approval.

#### 5.1.1 Registered Aboriginal Parties (RAPs)

In accordance with CoA E30, The Registered Aboriginal Parties (RAPs) have been kept regularly informed about Stage 1 of the CSSI. A copy of the ER endorsed HCSP was provided to the RAPs for comment. The RAPs will continue to be provided with the opportunity to be consulted about the Aboriginal cultural heritage management requirements of Stage 1 of the CSSI. A summary of the engagement regarding the HCSP is provided in Appendix A of the plan.

Further, the project must allow the RAPs an opportunity to undertake cultural salvage at each Aboriginal archaeological site identified for salvage in the Aboriginal Cultural Heritage Assessment Report (ACHAR) (June 2021) listed in Condition A1.

RAPs that were identified in the EIS to undertake cultural salvage were again contacted by SWC for the purpose of participating in the salvage program during the post-approval stage. A total of 6 groups with 14 different site officers have participated in the salvage program thus far, and it is anticipated that more groups / site officers will participate in later stages of the work. Cultural sites where RAPs have undertaken salvage (and has been completed) thus far include Fleurs 1 Fleurs Radio Telescope, M12 A4 and South Creek East.

### 5.2 Endorsement and Approval

The initial draft of the HCSP was endorsed by the ER and then submitted to DPHI for approval no later than one month before the commencement of construction, or where construction is staged, no later than one month before the commencement of the stage. Construction did commence until the CEMP and all CEMP Sub-plans were approved by DPHI on 8<sup>th</sup> August 2023. The HCSP was also be submitted to the Commonwealth for approval prior to commencement of construction. This was received 23<sup>rd</sup> August 2023.

The HCSP will be implemented for the duration of construction of Stage 1 of the project. Any minor amendments to the CEMP and all CEMP Sub-plans must be approved by the ER and implemented for the duration of construction.

### 5.3 Ongoing Consultation During Construction

Consultation between John Holland, stakeholders, the community and relevant agencies will be undertaken during the construction of the Project as required. The process for the consultation will be documented in the Community and Stakeholder Engagement Plan (CSEP).

Ongoing consultation relevant for heritage is provided in Table 5-1.

*Table 5-1 Ongoing consultation relevant to heritage*

Consultation Aspect	Stakeholder	Timing	Requirement
Regularly informed about the Project and the Aboriginal cultural heritage management requirements	Registered Aboriginal Parties (RAPs)	Throughout construction	CoA E30
Aboriginal Cultural Heritage Excavation Report(s)	Registered Aboriginal Parties (RAPs)	Provided to the RAPs for a minimum of 28 days to consider the report and provide comments before the report is finalised	CoA E31
Indigenous People of the Land connected to the project location must be involved in the development or delivery of the heritage awareness training on Indigenous heritage and the significance of Indigenous areas and values.	Registered Aboriginal Parties (RAPs)	Throughout construction	ISC DL 1.5
Recommencement of works that potentially affect previously unidentified Aboriginal objects or places of cultural significance (that were identified through unexpected finds procedure).	Heritage NSW	Prior to recommencement of work that potentially affect the previously unidentified Aboriginal objects or places of cultural significance	CoA E32
Work within Blue Mountains National Park (part of the Greater Blue Mountains Area) (such as for investigations, monitoring or temporary construction compounds)	National Parks and Wildlife Service	Prior to works within Blue Mountains National Park (part of the Greater Blue Mountains Area)	CoA E134
Unexpected finds of non-Aboriginal heritage	WaterNSW	Advise WaterNSW of any unexpected heritage items found on WaterNSW land	UMM NAH08

## 6 Existing Environment

### 6.1 Aboriginal Heritage

#### 6.1.1 Ethnohistorical Context

Aboriginal people have a long history of inhabiting the greater Sydney region from the coastal areas in the east to the Blue Mountains in the west. Prior to the British invasion, Aboriginal people living in the region transferred knowledge of history and culture through oral and artistic means.

Individuals generally lived in groups of one or more extended families that were associated with particular areas. These groups were interconnected through marriage and large gatherings of several groups occurred for specific purposes such as communal participation in subsistence gathering activities, initiations, funerals and ritual combat. Aboriginal customary law and practices, while varying across Australia, included responsibilities of various kinds for land and for objects and ideas associated with land, complex structures of kinship and family groupings, patterns and rules of marriage and child care, and procedures for the conduct and resolution of disputes.

Aboriginal people living in the region during the late eighteenth and nineteenth centuries made a range of items including canoes, huts, containers, nets, spears, womera, clubs and shields. Most of the items made by Aboriginal people during the late eighteenth and nineteenth centuries were made from perishable materials and the small number that have survived are generally kept in museum collections. Ochres of red, yellow and white were used on items and as personal decoration while body piercings and scarification were also practiced. Rock art was created as pictographs (drawings) using ochres and charcoal or petroglyphs (rock engravings). Motifs (dendroglyphs) were also carved into the hardwood of trees of the south-western Cumberland plain as cultural markers.

Aboriginal people living inland in the Sydney region relied on small animals and plant foods in addition to seasonally available fish and eels. Animals such as kangaroos, possums and gliders were hunted and traps were built along waterways to catch birds and small animals. Wild yams and other roots were harvested in considerable quantities along the alluvial flats and terraces of the Nepean and Hawkesbury Rivers while berries, Banksia flowers and wild honey were also recorded as foods of the local inhabitants.

#### 6.1.2 Landscape Context

The project is in the catchment areas of the Nepean River and Wianamatta/South Creek in the west and Georges River in the east. The catchment areas are divided by two ridgelines that extend from the Woronora Plateau at Menangle Sugarloaf in the south and separate at Badgery Hill, with one ridgeline extending to the northeast towards Prospect Hill and the other to the northwest towards Luddenham. The project area contains a range of distinct landforms from the foothills of the Blue Mountains in the west, the terraces, paleochannels and active channel of the Nepean River, the undulating, low lying ridges and alluvial flats of the Wianamatta/South Creek catchment area and wide low-lying terraces and floodplains of the Georges River catchment area in the east.

The active floodplains of the major rivers and creeks contain alluvial South Creek soils while some adjacent areas of older Berkshire Park and Richmond alluvial soils occur on the terraces of the Nepean River and Georges River.

#### 6.1.3 Archaeological Context

The current scientific understanding of the human occupation of the Australian continent is that Aboriginal people have lived in Australia for at least the last 40,000-60,000 years. Archaeological evidence shows that the Sydney Region has been occupied since at least 18,000 years ago.

The most numerous artefacts at Aboriginal archaeological sites in the Sydney Region are made from stone and were discarded in either open landscape settings or within closed landscape settings, primarily rock shelters. The accumulation of stone artefacts in both contexts may have occurred over a long period of time and subject to a range of natural processes and human activities. Previous archaeological investigations of Aboriginal archaeology in the Sydney region have shown that significant changes have occurred within the types of artefacts used, artefact raw materials and the spatial distribution and density of Aboriginal archaeological sites while Aboriginal people adapted to an ever-changing landscape and environment.

## 6.2 Non-Aboriginal Heritage

The Hawkesbury Nepean River system and its many tributaries was a source of much interest for the early settlers and was frequently referred to in personal narratives of the day. The presence of these watercourses and the rich alluvial soils of the river floodplain were major factors in attracting permanent settlement to the area by the early settlers who were keen to make their fortune from agricultural and pastoral pursuits.

The historical content of a range of small settlements, such as Wallacia and Luddenham, is evident throughout the impact assessment area and associated with this early settlement and subsequent development of the available land resource predominately for agriculture. The eastern portion of the impact assessment area was equally associated with the early growth of agriculture west of Sydney, although these suburbs have since experienced more rapid urban development.

### 6.2.1 Listed non-Aboriginal Heritage Items

Table 6-1 identifies heritage items within the construction boundary listed on statutory World, National, Commonwealth, State heritage lists and local environmental plans (LEPs). Several items are captured in more than one list. A detailed description of each of the items is included in Appendix P of the EIS. Appendix B of the HCSP details the heritage mapping of the project.

*Table 6-1 Listed non-Aboriginal heritage items in the impact assessment area (EIS Chapter 10, Table 10-10)*

Item Name	Register/Listing	Item Number	Significance
Greater Blue Mountains	National Heritage List and World Heritage List	105999	World
Upper Canal System (Pheasants Nest Weir to Prospect Reservoir)	State Heritage Register	01373	State
Upper Canal System (Pheasants Nest Weir to Prospect Reservoir)	State Agency Heritage and Conservation Register (WaterNSW)	NA	State
Warragamba Supply System	State Agency Heritage and Conservation Register (WaterNSW)	-	State
McGarvie-Smith Farm	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	11	Local
The Fleurs Radio Telescope site	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	15	Local
Luddenham Road alignment	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	18	Local
Luddenham Showground	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	115	Local
Upper Canal System (Pheasants Nest Weir to Prospect Reservoir)	State Environmental Planning Policy (Western Sydney Parklands) 2009	7	State
Liverpool Offtake Reservoir	State Environmental Planning Policy (Western Sydney Parklands) 2009	12	Local
Bandstand in Cabravale Park	Fairfield LEP 2010	117	Local
Sydney Water Supply Upper Canal	Liverpool LEP 2008	15	State
Luddenham Road Alignment	Penrith LEP 2014	843	Local
The Fleurs Radio Telescope Site	Penrith LEP 2014	832	Local
McGarvie-Smith Farm	Penrith LEP 2014	857	Local
Luddenham Homestead Site	Penrith LEP 2014	A849	Local
Luddenham Showground	Penrith LEP 2014	679	Local
Blaxland's Farm	Wollondilly LEP 2011	1269	State
Blaxland's Crossing	Wollondilly LEP 2011	1289	Local
Warragamba Supply Scheme and Warragamba Emergency Scheme	Wollondilly LEP 2011	1270	State



## 6.2.2 Potential Non-Aboriginal Heritage Items

Table 6-2 lists the potential non-Aboriginal heritage items identified as part of the EIS assessment (from a field survey and review of previous reports). These items are not registered on statutory heritage lists but have been identified to have potential heritage significance. A detailed description of each of the items is included in Appendix P of the EIS.

*Table 6-2 Potential non-Aboriginal heritage items in the impact assessment area (EIS Chapter 10, Table 10-11)*

Item Name	Address	Potential Heritage Significance
Blaxland's Garden	2595 Silverdale Road, Wallacia	Local/ State
Exeter House	1669-1723 Elizabeth Drive, Badgerys Creek	State
Exeter Farm Archaeological Site	885A Mamre Road, Kemps Creek	State
Fleurs Aerodrome	949A Mamre Road, Kemps Creek	Local
McMaster Field Station	1853-2109 Elizabeth Drive, Badgerys Creek	Local
South, Kemps and Badgerys Creek Confluence Weirs Scenic Landscape	Badgerys Creek	Local
South Creek Bridge	885A Mamre Road, Kemps Creek	Local
Lennox Reserve	Hume Highway, Canley Vale	Local
Lansvale Park	Hume Highway, Lansvale	Local

## 6.2.3 Listed Non-Aboriginal Heritage Items in the Vicinity of the Impact Assessment Area

Table 6-3 lists non-Aboriginal heritage items on statutory heritage lists that have been identified close to, but not within the construction boundary. Appendix P includes a detailed description of each of the items.

*Table 6-3 non-Aboriginal heritage items in the vicinity of the project (EIS Chapter 10, Table 10-12)*

Item Name	Address	Significance	Item Number	Distance from project
Lansdowne Bridge	Hume Highway, Lansvale	State	01472 (State Heritage Register)	100 m
'House', Lansdowne	7 Henry Lawson Drive, Lansdown	Local	I27 (Bankstown LEP)	40 m
St. Andrews Anglican Church (Former)	25 Park Road, Wallacia	Local	326 (Penrith LEP)	10 m
'Bayly Park' – house	919-929 Mamre Road, Kemps Creek	Local	104 (Penrith LEP)	500 m
Park Road Conservation Area	Park Road, Wallacia	Local	HCA6 (Penrith LEP)	20 m
Blaxland Crossing	Nepean River, Wallacia	Local	I289 (Wollondilly LEP)	50 m
Wallacia Hotel	1590–1594 Mulgoa Road, Wallacia	Local	325 (Penrith LEP)	200 m
Wallacia Weir	Nepean River, Wallacia	-	No ID provided (Sydney Regional Environmental Plan No 20 – Hawkesbury- Nepean River (No 2- 1997)	100 m



## 6.2.4 Potential Archaeological Sites in the Impact Assessment Area

Table 6-4 lists the Potential Archaeological Sites (PAS) identified wholly or partially in the construction boundary. Appendix P of the EIS includes a detailed description of each of the PAS areas.

*Table 6-4 Potential areas of PAS (EIS Chapter 10, Table 10-13)*

PAS	Archaeological Potential
1 - Blaxland's Farm	The northern end of this site has moderate to moderate-high potential for historical archaeological evidence of state significance associated with John Blaxland's brewery complex on Nepean River established c.1830. The remainder of this site has low potential for historical archaeological evidence of local or state significance associated with Blaxland's gardens at Luddenham Estate.
2 - Blaxland's Gardens	This site has moderate potential for archaeological evidence of state significance associated with Blaxland's gardens at Luddenham Estate. The area along the western edge of this site, within the footprint of Bents Basin Road, has low historical archaeological potential.
3 - Blaxland's Crossing	This site has moderate potential for historical archaeological evidence of local significance in one localised area in its northwest corner in proximity to the historical bridge crossing location. The remainder of the site has low potential for archaeological evidence and is unlikely to meet the threshold for local significance.
4 - McMaster Field Station	This site has low to low-moderate potential for disturbed and limited, ephemeral evidence associated with animal grazing. This archaeological resource has low heritage significance and is unlikely to meet the threshold for local significance.
5 - McGarvie-Smith Farm	This site has low potential for disturbed and truncated historical archaeological evidence associated with agricultural activities on the periphery of both the McGarvie-Smith Farm and estate of William Johnson. The anticipated archaeological resource has low heritage significance, being unlikely to meet the threshold for local significance.
6 - Exeter House and Farm	This site has low potential for historical archaeological evidence of local significance associated with James Badgery's c.1812 Exeter Farm.
7 - Fleurs Radiophysics Field Station	This site has low potential for disturbed ephemeral archaeological evidence associated with Fleurs Estate unlikely to meet the threshold for local significance. It has high potential for evidence of Fleurs Radiophysics Field Station which is similarly unlikely to meet the threshold for local significance on the basis of extensive disturbance and removal of key elements.  This site has high potential for the remains of two timber bridges on South Creek which would be of local or state significance, depending on the phase during which they were constructed.
8 - Upper Canal and Liverpool Offtake Reservoir	This site has low-moderate potential for archaeological evidence of state significance associated with the establishment and early operations of the Upper Canal. It also has low-moderate potential for archaeological evidence of local significance associated with upgrades to the Upper Canal and Liverpool Dam, with one localised area of high potential for evidence of a structure associated with operation of the Upper Canal.
9 - Lennox Reserve	Most of this site has low potential for archaeological evidence of local significance associated with agricultural use. A localised area within PAS 9 has high potential for archaeological evidence of local significance associated with a mid to late-nineteenth cottage or substantial outbuilding.
10 - Lansvale Park	This site has moderate to high potential for archaeological evidence of local significance associated with Knight's Butcher Shop and a small cottage or large outbuilding constructed in the late nineteenth century. The remaining areas have low potential for ephemeral archaeological evidence associated with agricultural activities.

### 6.3 World and National Heritage

Table 6-5 outlines the nearest World and National heritage-listed items to the project. The project does not have any infrastructure located within, or with direct impacts to, any World and National heritage-listed items.

*Table 6-5 World and National Heritage items near the project (EIS Chapter 10, Table 10-22)*

Item Name	List	Distance from Project
The Greater Blue Mountains Area	World Heritage List National Heritage List	About 1.5 km downstream of the treated water release structure to Nepean River.
Australian Convict Sites (Old North Road)	World Heritage List	About 55 km downstream of the treated water release structure. The curtilage of the World Heritage - listed portion of the Old North Road does not intersect with Nepean or Hawkesbury Rivers. The project will therefore have no direct or indirect impacts on the Old North Road.

The Greater Blue Mountains World Heritage Area (GBMWA) comprises 10,000 square kilometres (km<sup>2</sup>) of bushland, covering seven National Parks (Wollemi, Yengo, Gardens of Stone, Blue Mountains, Kanangra-Boyd, Nattai and Thirlmere Lakes) and the Jenolan Karst Conservation Reserve. The project's potential indirect impacts are limited to the Blue Mountains National Park.

Although the project has no direct impacts on GBMWA, it is considered given the potential for indirect impacts from the release of treated water at the Nepean River during the operation phase of the project.

## 7 Heritage and Construction Impacts

### 7.1 Construction Activities

Key construction activities that have the potential to affect and/ or impact items or sites of heritage significance include:

- Vegetation clearing
- Topsoil stripping
- Earthworks
- Stockpiling and laydown
- Light and heavy vehicle movements
- Dewatering.

### 7.2 Construction Impacts

#### 7.2.1 Aboriginal Heritage

Archaeological assessment undertaken for the project during development of the EIS identified 15 Aboriginal archaeological sites and one area of potential archaeological deposit to be either disturbed, impacted or partially impacted within the construction boundary. The assessment determined the archaeological character of the impact assessment area by incorporating the results of extensive previous archaeological investigations with the environmental context and verifying the previous results with an archaeological field survey. A detailed list of these items and the associated management actions is included in Section 8.1. During construction, the main potential project impacts include damage to items through ground disturbance during excavation outside the approved project boundary.

#### 7.2.2 Non-Aboriginal Heritage

The main potential project impacts during construction include damage to items through ground disturbance during excavation, vibration from activities such as tunnelling, and the building of new infrastructure in scenic landscapes. A detailed list of heritage items and PAS in the construction boundary are identified in Section 6.2 and the impact level of these items vary from negligible, minor, minor to moderate, moderate and major.

## 8 Management of Heritage

Management actions prescribed by this HCSP aim to minimise heritage impacts and are summarised below. The location of heritage sites outlined in this section are included in heritage mapping within Appendix B.

### 8.1 Aboriginal Heritage

Aboriginal heritage sites within the construction boundary will be managed as summarised in Table 8-1 and further detailed in the following sections.

*Table 8-1 Mitigation measures for impacted Aboriginal sites within the construction boundary (EIS Appendix O ACHAR, Table 6)*

Name	AHIMS ID	Degree of ham	Significance of harm	Management Actions			
				Fencing	Archaeological Salvage	Project Approval	AHIP
Badgerys Creek West B (BWB)	45-5-5298	Partial	Low	X		X	
Baines Creek Wallacia AFT 1	TBC	Partial	Moderate	X	X	X	
Bents Basin Road Wallacia AFT 1	TBC	Partial	Moderate	X	X	X	
Elizabeth Drive/Adams Road AFT 1	45-5-5105	Partial	Moderate	X	X	X	
Elizabeth Drive AFT 1 (including Elizabeth Precinct PAD 01, Elizabeth Precinct PAD 03, Elizabeth Precinct Isolated Find 04 and Elizabeth Precinct Isolated Find 05)	45-5-5259 (including 45-5-5234, 45-5-5236, 45-5-5330 and 45-5-5331)	Partial	Moderate	X	X	X	
Fleurs1 Fleurs Radio Telescope (including M12 A4 and South Creek East (SCE))	45-5-0496 (including 45-5-4749 and 45-5-5306)	Partial	Moderate	X	X	X	
GLC1 (including Artefact Scatter PAD 2023-846)	45-5-2561 (including 45-5-4022)	None	None				X
IFSC 7 Cecil Park	45-5-2430	None	None				X
P-CP7	45-5-2306	Partial	Low	X		X	
P-CP12	45-5-2378	Partial	Moderate	X	X	X	
PAD-OS-5	45-5-2723	Partial	Moderate	X	X	X	
PP-F3	45-5-3298	Partial	Low	X		X	
TNR AFT 15	45-5-4788	Partial	Moderate	X	X	X	
Wallacia Weir AFT 1	TBC	Partial	Moderate	X	X	X	

### 8.1.1 Archaeological Salvage

Archaeological salvage will be undertaken in areas identified as Aboriginal sites / PADs of moderate Aboriginal heritage significance as outlined in Table 8-1 and shown in Appendix B.

Archaeological salvage in these areas will be undertaken prior to construction activities that have the potential to affect and/or impact on these Aboriginal sites / PADs. Archaeological salvage works will be completed before construction commences and the approval of the CEMP and sub-plans.

Archaeological salvage will also be undertaken on the impacted portions of the Aboriginal sites / PADs and portions that are not proposed to be impacted will be protected and retained (refer to Section 8.1.2).

Archaeological salvage will be undertaken in accordance with the Salvage Excavation Methodology as detailed in Appendix D. Once completed, heritage clearance will be given to the construction team to confirm that archaeological salvage works have been completed. Should suspected heritage finds be identified following salvage activities, this will be managed through the USC Unexpected Heritage Finds and Human Remains Procedure (Appendix C).

Section 11 in Appendix O of the EIS describes conservation of salvaged Aboriginal objects that will be managed and coordinated by Sydney Water. DPE as the approval authority, will be consulted. Coordination of these requirements by Sydney Water will include the following:

- Aboriginal objects will be transferred to the Australian Museum in accordance with legislative requirements.
- If the Australian Museum is unable to accept the objects, it will be transferred in accordance with a Care Agreement or similar agreement to an Aboriginal community.
- If neither the Australian Museum nor Aboriginal community are able to accept the archaeological objects, the Aboriginal heritage specialists will seek a Care Agreement or a similar agreement to curate the objects.

### 8.1.2 Design Refinements

Key locations along the pipeline have been subject to design refinements to address potential impacts to heritage that require protection during construction. For example, State Heritage Listed Structures such as the Upper Canal has been considered during design development to ensure that the construction method selected for this location appropriately considers any potential impact to the heritage structure.

The construction method selected is a trenchless method of under-boring via Horizontal Directional Drilling (HDD). No work will occur in, on or over the structure. In addition to the selection of the HDD methodology, the depth of under-boring will occur at 18m. At this depth, the impacts are out of the controlled area and will not pose a risk to Upper Canal. The project will also establish launch and retrieval pits required for HDD works outside of the designated no-go zones, as discussed in Section 8.1.3 below.

### 8.1.3 Fencing and Signage

Barrier fencing will be erected for retained Aboriginal heritage sites and the non-impacted portions of partially disturbed sites as outlined in Table 8-1 and shown in Appendix B. Fencing will be erected on the project approval boundary for the extent of the site to ensure that no construction impact extends into the portion of the site outside the impact area. The Site Environmental Plan (SEP) will detail locations where fencing is required and other environmental controls. As SEPs are a working, live element of the CEMP, they will be regularly reviewed throughout construction to reflect true ground conditions and identify new items / areas as required. SEPs will include reference to this section (8.1.3) of the HCSP to ensure that requirements around fencing and signage are transferred to construction teams in the field.

Portions of the site outside the construction boundary are identified in Appendix B and are classified as no-go zones, with relevant signage placed periodically along the fencing to notify workers of the no-go zone. No temporary or permanent protection measures will be physically touching the asset as all works will be occurring outside the controlled area.

#### 8.1.4 Aboriginal Heritage Impact Permit

The proposed works within GLC1 (including Artefact Scatter PAD 2023-846 and IFSC 7 Cecil Park) are subject to requirements within existing Aboriginal heritage impact permit (AHIP) C0005620.

The maps contained within Appendix A and Appendix C of the AHIP specifies that those Aboriginal objects in, on or under the land identified must comply with the relevant conditions in the permit. The permit was initially obtained by Sydney Water in March 2020 in relation to the South Prospect to Macarthur water link project (not included in the scope of this HCSP), however, as two of the sites within the permit overlap with the impact area and impact assessment area of the USC project, relevant conditions of the AHIP will be considered. A copy of the AHIP has been included in Appendix F. The project's potential impact is limited to travelling and access through the areas in the AHIP on existing sealed tracks. The project is not undertaking any works in the sites identified in the AHIP. Site Environmental Plans will indicate areas of the project that is subjected to AHIP.

All of the requirements in the permit that have been considered in the development of this HCSP include:

- Salvage excavations nominated in the permit have been completed and included those certain Aboriginal objects approved to be harmed due to the proposed work.
- Aboriginal objects must not be harmed if they are not included in the approved scope of the permit. In the event anything additional is discovered during John Holland's activities, the USC Unexpected Heritage Finds and Human Remains Procedure will be implemented.

#### 8.1.5 Project Approval

The project must be approved by relevant authorities prior to any archaeological salvage activities or construction works were to take place. The Commonwealth Approval and the State Significant Infrastructure Approval will allow for works to take place in the affected area as detailed in Section 9.1 of the EIS.

### 8.2 Non-Aboriginal Heritage

#### 8.2.1 Archival Photographic Recording

In accordance CoA E33, archival photographic digital recording will be undertaken for all listed heritage items and sites assessed to have heritage significance which will be affected by the works (refer Section 6.2). The recording must be undertaken prior to the commencement of work which may impact the items and sites. The Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006). A copy must be provided to Heritage NSW and the relevant council(s) and submitted as part of the Heritage Report required by CoA E35.

The only heritage item requiring archival recording as part of the approved project is the Fleurs Radio Telescope site. Artefact undertook this work commencing with the first round of historical excavation from May 2023 and they are currently in the process of preparing the archival recording report to address Condition E33 and E35.

#### 8.2.2 Upper Canal and Liverpool Offtake Reservoir

In accordance with UMM NAH02, construction activities in proximity to the Upper Canal will be undertaken in accordance with Water NSW 'Guideline for Development Adjacent to the Upper Canal and Warragamba Pipelines'.

This will include:

- dilapidation survey prior to any construction work commencing
- monitoring of vibration and ground movement during tunnelling construction.

During design development, the project has appropriately considered the potential impact to the heritage structure at this location and further information on the construction methodology is detailed in Section 8.1.2

#### 8.2.3 Fleurs Radio Telescope

In accordance with UMM NAH03, prior to the removal of identified historic elements related to the Fleurs Radio Telescope site, photographic archival recording will be undertaken by an experienced heritage consultant and in accordance with the Photographic Recording of Heritage Items using Film or Digital Capture, NSW Heritage Office, 2006.



### 8.2.4 Potential Archaeological Sites

In accordance with UMM NAH05 and NAH06, PAS within the construction boundary will be managed as outlined in Table 8-2. This will include:

- avoiding disturbance where practical
- archaeological testing in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) (Appendix E)
- implementation of the unexpected heritage finds and human remains procedure (Appendix C).

*Table 8-2 PAS management*

PAS	Significance	Management Measure
1 - Blaxland's Farm	Moderate to moderate-high	<ul style="list-style-type: none"> <li>• Avoiding disturbance where practical</li> <li>• Where disturbance cannot be avoided, complete archaeological testing in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) in Appendix E</li> <li>• Complete archaeological salvage and archival recording where this is recommended in archaeological testing.</li> </ul>
2 - Blaxland's Gardens	Moderate	
3 - Blaxland's Crossing	Moderate	
4 - McMaster Field Station	Low to low-moderate	
5 - McGarvie-Smith Farm	Low	<ul style="list-style-type: none"> <li>• Unexpected heritage finds and human remains procedure (Appendix C)</li> </ul>
6 - Exeter House and Farm	Low	
7 - Fleurs Radiophysics Field Station	Low	
8 - Upper Canal and Liverpool Offtake Reservoir	Low-moderate	<ul style="list-style-type: none"> <li>• Avoiding disturbance where practical</li> <li>• Where disturbance cannot be avoided, complete archaeological testing in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) in Appendix E</li> <li>• Complete archaeological salvage and archival recording where this is recommended in archaeological testing.</li> </ul>
9 - Lennox Reserve	High	
10 - Lansvale Park	Moderate to high potential	

Prior to commencement of archaeological testing for the specified PAS, the project's nominated Excavation Director, who complies with Heritage NSW's Criteria for Assessment of Excavation Directors (September 2019). The Excavation Director will oversee relevant excavations, advise on archaeological issues and on the duration and extent of oversight required during archaeological excavations, consistent with the Archaeological Research Design and Excavation Methodology.

Once archaeological testing is completed, heritage clearance will be given to the construction team to confirm that archaeological testing requirements have been satisfied. Should suspected heritage finds be identified following salvage activities, this will be managed through the unexpected heritage finds and human remains procedure (Appendix C). The specific locations will be detailed in Site Environmental Plans and distributed to the team.

### 8.3 Heritage Interpretation Framework

In accordance with UMM NAH04, a Heritage Interpretation Framework will be prepared for the project, incorporating the retention of Aboriginal and non-Aboriginal heritage features at the AWRC site where practical. The framework, as developed by Sydney Water during the detailed design phase will be incorporated into the detailed design. The framework will include consideration of:

- Incorporating historic features into the AWRC design
- Interpretive public art and soundscapes
- The project's approach to the retention of structures / items for the purpose of supporting the development of heritage interpretation, including retention and interpretive use of the two parabolic antennas
- Creation of a heritage display of historic material in the AWRC
- Preparation of digital interpretive resources related to the history of the site
- Preparation of an oral history of the Fleurs Field Station.

## 8.4 World and National Heritage

In accordance with CoA E132, a World Heritage Monitoring Program (WHMP) to verify potential impacts on the Greater Blue Mountains Area World Heritage property and National Heritage place must be prepared in consultation with EHG. Whilst the WHMP is required to be submitted to the Planning Secretary and EHG for information,, and DCCEEW for approval, the submission is required prior to the commencement of operation of the project. SWC will prepare the WHMP in accordance with CoA E132 and E133 to meet the required timeframes.

Each World Heritage monitoring report required by Condition E133 will be provided to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for information within one month of submission of each annual report required by the State Infrastructure Approval.

Additionally, each World Heritage monitoring report required by Condition E133 will be provided to EHG for information within one month of completion of each annual report.

In accordance with CoA E134, no Work within Blue Mountains National Park (part of the Greater Blue Mountains Area) is to occur as part of the works (such as for investigations, monitoring or temporary construction compounds), unless authorisation is granted by the NSW National Parks and Wildlife Service under the *National Parks and Wildlife Act 1974* (NPW Act) or the *National Parks and Wildlife Regulation 2019*.

## 8.5 Unexpected Heritage Finds and Human Remains Procedure

In accordance with CoA E37 and E38, an Unexpected Heritage Finds and Human Remains Procedure (Appendix C) has been developed and issued to the Planning Secretary for information on the 16 January 2023, and will be implemented for the duration of all works.

This procedure has been prepared in accordance with relevant guidelines and standards.

Where archaeological investigations have been undertaken as a result of unexpected finds and resultant notifications, then a Final Archaeological Report will be provided in accordance with Heritage Council guidance and standard requirements for final reporting under the relevant Excavation Permits. *Note: Human remains that are found unexpectedly during the carrying out of Work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.*

## 8.6 Safe Working Distances

In accordance with CoA E51, vibration testing before and during vibration generating activities that have the potential to impact on heritage items will be undertaken to identify minimum working distances to prevent cosmetic damage. Regular inspections and vibration monitoring will be conducted when required as detailed in Section 9.3. As summarised in Section 8.2.2, monitoring of vibration and ground movement during tunnelling construction in proximity to Upper Canal. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the construction methodology will be reviewed and, if necessary, additional mitigation measures implemented.

In accordance with CoA E52, advice from a heritage specialist will be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.

## 8.7 At-Property Treatment

In accordance with CoA E53, before conducting at-property treatment at any heritage item, the advice of a suitably qualified and experienced built heritage expert will be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.

This HCSP will be updated following receipt of relevant advice from a suitably qualified and experienced built heritage expert regarding any potential property or structure that may require treatment, including their details as the nominated expert.

## 8.8 Pre- and Post-Construction Surveys

In accordance with CoA E69, pre-construction surveys of surface and sub-surface structures and other relevant assets identified at risk from vibration, including all listed heritage items and buildings / structures of heritage significance will be undertaken. The results of the survey/s will be documented in a Pre-construction Condition Survey Report and will be provided to all relevant asset owners no less than one month prior to commencement of (potentially affecting) works. A subsequent post-construction survey of the structure / asset must be undertaken to assess damage that may have resulted from vibration generating works by a suitably qualified and experienced engineer and/or building surveyor. In accordance with CoA E71, where damage has been determined as a result of construction works, the project must carry out rectification at its expense and to reasonable requirements of the owner of the structure/asset within nine months of the completion of construction. Alternatively, the project may pay compensation for damage as agreed with the owner. The post-construction survey report must be provided to the owner no later than four months following the completion of construction activity.

## 8.9 Heritage Management Measures

The specific heritage management measures to be implemented as part of the works are provided in below.

Table 8-3 Heritage management measures

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
<b>General</b>					
HER01	All USC Personnel will undergo site inductions that will include the following specific components for heritage: <ul style="list-style-type: none"> <li>Aboriginal and non-aboriginal heritage values in the project area, and the importance of protecting and preserving these values;</li> <li>Mitigation and control measures;</li> <li>The requirements of this plan and any relevant legislative and contractual obligations;</li> <li>Unexpected finds procedures in the event of an unanticipated discovery or accidental damage of a heritage item or place.</li> </ul>	Environment Manager Safety Manager	Prior and during construction	Section 9.2	UMM AH02 UMM NAH08
HER02	All reasonable steps must be taken so as not to harm, modify or otherwise impact Aboriginal objects or places of cultural significance except as authorised by the project approvals.	Construction Manager	Prior and during construction Detailed Design	This HCSP	CoA E29
HER03	The location of heritage sites and heritage no-go zones must be identified in site environmental plans.	Environmental Manager	Prior and during construction	Appendix B	CoA E51
HER04	Barrier fencing will be erected, and signage will be installed to identify and protect heritage no go zones. These controls will be inspected as part of the weekly environmental inspection.	Environmental Manager	Prior and during construction	Appendix B	N/A
HER05	Implement the unexpected heritage find and human remains procedure (Appendix C of this plan) in the event that any heritage objects/items, or potential/suspected heritage objects/items, are identified during the course of works.	Construction Manager  All project personnel	During Construction Detailed Design	Appendix C	CoA E32 CoA E37 CoA E38
HER06	Where archaeological investigations have been undertaken as a result of Unexpected Finds notifications then a Final Archaeological Report must be provided in accordance with Heritage Council guidance and standard requirements for final reporting under Excavation Permits.  <i>Note: Human remains that are found unexpectedly during the carrying out of Work may be under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.</i>	All	During construction	Appendix C	CoA E32 CoA E38 UMM NAH05

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER07	Notify WaterNSW of any unexpected heritage items found on WaterNSW land.	Environmental Manager	During construction	Appendix C	UMM NAH08
HER08	Vibration testing will be conducted before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the construction methodology must be reviewed and, if necessary, additional mitigation measures implemented.	Environmental Manager	During construction	Section 8.6	CoA E51
HER09	The Proponent must conduct pre- and post-construction surveys of surface and sub-surface structures and other relevant assets identified at risk from vibration, including all listed heritage items and buildings / structures of heritage significance. The results of the survey must be documented in a Pre-construction Condition Survey Report and must be provided to all relevant asset owners no less than one month prior to commencement of (potentially affecting) work. The post-construction survey report must be provided to the owner no later than four months following the completion of construction activity.	Construction Manager	Prior to construction	Section 8.8	CoA E69 and E70
HER10	Heritage clearance will be given to the construction team to confirm that archaeological salvage works (Aboriginal) and / or archaeological testing works (non-Aboriginal) have been completed. Should suspected heritage finds be identified within these areas following the completion of these salvage and testing works, this will be managed through the unexpected heritage finds and human remains procedure (Appendix C).	Environmental Manager	During construction	Section 8.1 Section 8.2.4	N/A
<b>Aboriginal Heritage</b>					

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER11	<p>Explore opportunities to avoid or further reduce the identified potential impacts to Aboriginal items where practical. Examples explored include:</p> <ul style="list-style-type: none"> <li>Avoid interaction with Aboriginal items through the redesign of key waterway crossings (e.g., Nepean River crossing,</li> <li>Project wide training and awareness regarding the location and extent of Aboriginal items, including minimising any unnecessary disturbance within the impact area.</li> </ul>	Construction Manager	Prior and during construction Detailed Design	Section 8.1	UMM AH01
HER12	<p>The Registered Aboriginal Parties (RAPs) must be kept regularly informed about the project and nature of the works. The RAPs must continue to be provided with the opportunity to be consulted about the Aboriginal cultural heritage management requirements throughout the project.</p> <p><i>Details regarding ongoing engagement with RAP's has been included in the CSEP.</i></p>	Environmental Manager	Prior and during construction	Section 5.2	CoA E30
HER13	Coordinate Aboriginal Archaeological Salvage with non-Aboriginal heritage salvage excavation, in locations where salvage is required for both.	Environmental Manager, Construction Manager	Prior to construction	Section 8.1.1	UMM AH03
HER14	<p>At the completion of Aboriginal cultural heritage test and salvage excavations, an Aboriginal Cultural Heritage Excavation Report(s) must be prepared by a suitably qualified person. The Aboriginal Cultural Heritage Excavation Report(s), must:</p> <p>(a) be prepared in accordance with the Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW, OEH 2011 and the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, DECCW 2010; and</p> <p>(b) document the results of the archaeological test excavations and any subsequent salvage excavations (with artefact analysis and identification of a final repository for finds).</p>	Environmental Manager	During construction	Section 9.4	CoA E31
HER15	The RAPs must be given a minimum of 28 days to consider the Aboriginal Cultural Heritage Excavation Report(s) and provide comments before the report is finalised.	Environmental Manager	During construction	Section 5.2	CoA E31



Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER16	The final Aboriginal Cultural Heritage Excavation Report(s) must be provided to the Planning Secretary, Heritage NSW, the relevant council(s), LALC, the RAPs and local libraries within 24 months of the completion of the Aboriginal archaeological excavations (both test and salvage).	Environmental Manager	During construction	Section 9.4	CoA E31
HER17	Construction activities undertaken in the following sites will be in accordance with the existing AHIP C0005620 conditions: <ul style="list-style-type: none"> <li>GLC1 (including Artefact Scatter PAD 2023-846)</li> <li>IFSC 7 Cecil Park</li> </ul>	Construction Manager	During construction	Section 8.1.3	UMM AH04
<b>Non-Aboriginal Heritage</b>					
HER18	Archival photographic digital recording must be undertaken for all listed heritage items and sites assessed to have heritage significance which will be affected by the project works. The recording must be undertaken prior to any works commencing which may impact the items and sites. The Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006).	Environmental Manager	Prior and during construction	Section 8.2.1	CoA E33
HER19	A copy of the archival photographic digital recording must be provided to Heritage NSW, DPE and the relevant council(s) and submitted as part of the Heritage Report required by Condition E35.	Environmental Manager	During construction	Section 9.4	CoA E33
HER20	Prior to commencement of archaeological excavation, the nominated Excavation Director will oversee relevant excavations, advise on archaeological issues, advise on the duration and extent of oversight required during archaeological excavations consistent with the Archaeological Research Design and Excavation Methodology (refer to Appendix E).	Environmental Manager Excavation Director	Prior to construction	Suitably qualified Excavation Director, ARDEM (Appendix E)	CoA E34

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER21	<p>Manage ground disturbance and excavation in the potential archaeological sites of moderate to high significance outlined in Section 8.2.4 by:</p> <ul style="list-style-type: none"> <li>Avoiding disturbance where practical</li> <li>Where disturbance cannot be avoided, complete archaeological testing in accordance with the Archaeological Research Design and Excavation Methodology (ARDEM) in Appendix P of the EIS (and also provided in Appendix E of this HCSP)</li> <li>Complete archaeological salvage and archival recording where this is recommended in archaeological testing.</li> </ul>	Environmental Manager, Construction Manager	Prior and during construction	Section 8.2.4	UMM NAH05 UMM NAH06
HER22	<p>Manage disturbance in the following potential archaeological sites of low significance through the unexpected human remains and finds procedure:</p> <ul style="list-style-type: none"> <li>McGarvie-Smith Farm</li> <li>Exeter House and Farm</li> <li>Fleurs Radiophysics Field Station.</li> </ul>	Environmental Manager, Construction Manager	Prior and during construction	Section 8.2.4	UMM NAH05 UMM NAH06
HER23	<p>Following completion of archaeological excavation program, a Heritage Report must be prepared that includes:</p> <ol style="list-style-type: none"> <li>the details of any archival recording,</li> <li>further historical research undertaken</li> <li>results of archaeological excavations (including artefact analysis and identification of a final repository for finds); and</li> <li>details of any significant artefacts recovered, where they were located, and details of their ongoing conservation and protection in perpetuity.</li> </ol> <p>The report must be prepared in accordance with guidelines and standards required by Heritage NSW.</p>	Environmental Manager	During construction	Section 9.4	CoA E35 CoA E36
HER24	<p>The Heritage Report must be submitted to the Planning Secretary, Heritage NSW, the relevant council(s), relevant local libraries and relevant local historical societies no later than 12 months after the completion of archaeological excavation programs.</p>	Environmental Manager	During construction	Section 9.4	CoA E36

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER25	<p>Construction activities in proximity to the Upper Canal and Warragamba Pipelines will be undertaken in accordance with WaterNSW 'Guideline for Development Adjacent to the Upper Canal and Warragamba Pipelines'. This will include:</p> <ul style="list-style-type: none"> <li>• Dilapidation survey prior to any construction work commencing</li> <li>• Monitoring of vibration and ground movement during tunnelling construction.</li> <li>• Monitoring criteria will be in accordance with the Noise and Vibration CEMP Sub-plan, Section 6.5.4</li> <li>• Monitoring equipment will be established and operated so as not to encroach the zone of controlled area. No monitoring equipment will be physically attached to heritage structure.</li> </ul>	Construction Manager	During construction	Section 8.2.2	UMM NAH02
HER26	<p>Prior to the removal of identified historic elements related to the Fleurs Radio Telescope site, photographic archival recording will be undertaken by an experienced heritage consultant and in accordance with the Photographic Recording of Heritage Items using Film or Digital Capture, NSW Heritage Office, 2006.</p>	Construction Manager	During construction	Section 8.2.3	UMM NAH03
HER27	<p>A Heritage Interpretation Framework must be prepared for the project, incorporating the retention of Aboriginal and non-Aboriginal heritage features at the AWRC site where practical. The framework will include consideration of:</p> <ul style="list-style-type: none"> <li>• Incorporating historic features into the AWRC design</li> <li>• Interpretive public art and soundscapes</li> <li>• Retention and interpretive use of the two parabolic antennas</li> <li>• Creation of a heritage display of historic material in the AWRC</li> <li>• Preparation of digital interpretive resources related to the history of the site</li> <li>• Preparation of an oral history of the Fleurs Field Station.</li> </ul>	Environmental Manager	Prior to Operation	Section 8.3	UMM NAH04CoA

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER28	Advice from a heritage specialist must be sought on methods and locations for installing equipment used for vibration, movement and noise monitoring at heritage-listed structures.  Note: The installation of noise and vibration equipment must not impact on the heritage values of the Heritage items.	Environmental Manager, Construction Manager	During construction	Section 8.6	CoA E52
HER29	Before conducting at-property treatment at any heritage item identified in the documents listed in Condition A1, the advice of a suitably qualified and experienced built heritage expert must be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.	Construction Manager	During construction	Section 8.7	CoA E53
<b>World and National Heritage</b>					
HER30	A World Heritage Monitoring Program (WHMP) will be prepared to verify whether potential impacts on the Greater Blue Mountains Area World Heritage property and National Heritage place during construction are in accordance with impacts previously assessed. The WHMP must be prepared in consultation with EHG and submitted to the Planning Secretary and EHG for information prior to the commencement of operation. The WHMP must include, but not necessarily limited to: a. baseline and post-commissioning monitoring of representative attributes that: i. contribute to the Outstanding Universal Value (OUV) of the Greater Blue Mountains Area; and ii. are identified in the planning assessment documents as potentially impacted as a result of the works; b. relevant water quality monitoring data; and c. photos at each monitoring point.	Environmental Manager	Prior to commencement of operation	Section 8.4	CoA E132  EPBC 2020/8816 CoA 8 and 10.

Ref.	Requirement	Responsibility	Timing	Resources	Requirement Origin
HER31	No Work within Blue Mountains National Park (part of the Greater Blue Mountains Area) will occur as part of the project (such as for investigations, monitoring or temporary construction compounds), unless authorisation is granted by the NSW NPWS under the NPW Act or the National Parks and Wildlife Regulation 2019.	Environmental Manager	Prior to and during construction	Section 8.4	CoA E134

## 9 Compliance, Review and Continuous Improvement

### 9.1 Resources

Roles and responsibilities related to the environment discipline are outlined in Section 3.3 of the CEMP. The USC Project's organisational structure is also included in the CEMP. Section 8.9 of this Plan includes specific responsibilities around heritage management.

### 9.2 Training and Awareness

All staff and subcontractors will undergo project-specific induction training that includes relevant heritage sensitivity on site, guidance on identifying unexpected finds, obligations under the Heritage Act 1977 and heritage management measures that must be implemented and taken into account when planning and delivering work.

Additional daily and task-specific training and awareness material may be delivered to relevant staff and workforce, in the form of toolbox talks and pre-start meetings, to ensure that where detailed information is required, it is accessible to all involved with the project. Section 3.5 of the CEMP details the required training and awareness of all site personnel.

### 9.3 Monitoring and Inspections

Daily informal observations will be undertaken of construction work that is occurring within the vicinity of any heritage areas. All observations will be recorded in site diaries will be managed through John Holland's online project management system, Project Pack Web (PPW), as required. These observations, along with weekly environmental inspections will occur throughout construction and will include a review of heritage protection measures, such as barrier fencing, no-go signage and vibration monitoring of heritage structures. Vibration criteria related to heritage building and structures is specified in Section 6.5.4 of the Noise and Vibration CEMP Sub-plan. Further information regarding environmental monitoring and inspections are detailed in section 3.9 of the CEMP.

### 9.4 Incident Management

Potential impacts related to construction activities are addressed in Section 7.2 which may result in a corrective action(s) that will be managed in accordance with Section 3.8.2 of the CEMP.

All heritage incidents, reportable events, regulatory actions and non-compliance will be raised via the internal John Holland system, Soteria. In the event of an unanticipated discovery or accidental damage of a heritage item, the unexpected finds procedure will be implemented (Appendix C). Incidents will be reported to Sydney Water as a report action (RA) for integration into the Sydney Water Incident Recording and Learning (SWIRL) system, as is required under Sydney Water *Incident Management Procedure* (DC0000506).

RAs will capture 'actual' or 'potential' incidents or non-conformances and their severity. The following details will be provided as part of the Report Action:

- detailed explanation of the Report Action
- Root Cause Analysis (RCA)
- description of what would be put in place to prevent incident from reoccurring
- cost of Materials/Consumables used to close out the Report Action e.g. Backfill material, concrete, pipe and fittings, welding electrodes, etc.
- hours required to close out the Report Action i.e. PM, PE, Admin, Subcontractors hours, supervision, work crew hours, design hours, investigation hours etc

Incident management and classification will be managed in accordance with Appendix A7 of the CEMP.

### 9.5 Auditing and Reporting

Reporting requirements are documented in Section 3.9 of the CEMP.

Details of field observations shall be reported via the weekly environmental inspection checklist, and communicated to all staff during pre-starts, toolbox and team meetings, as required.

Any environmental incidents related to heritage will be reported in accordance with the project's environmental incident management plan (IMP), provided in Appendix A10 of the CEMP. The IMP is consistent with Sydney Water's Incident Management Procedure (DC0000506). Any incident that has caused or is likely to cause material harm to the environment will be reported to Sydney Water within 30 minutes after the incident was first notified, as required by the Sydney Water Environment Incident Reporting Process (REF0866). The John Holland Regional HSEQ team is to be immediately informed of any incident that has caused or has potential to cause material harm to the environment and will advise on the notification of relevant regulators and stakeholders.



Site card related to Aboriginal archaeological investigations are required to be updated to account for impacts as part of the project will be lodged with the AHIMS manager within a reasonable period of time. John Holland will provide relevant construction phase information to Sydney Water to enable the efficient and timely updating of the site cards.

A summary of project-specific heritage matters, including incident management, is provided in the project monthly report issued to Sydney Water.

Specific reporting requirements relevant to heritage are specified in Table 9-1.

*Table 9-1 Heritage reporting requirements*

Reporting Output	Recipient	Timing	Requirement
Aboriginal Cultural Heritage Excavation Report(s) Prepared in accordance with the Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW, OEH 2011 and the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, DECCW 2010.	Planning Secretary, Heritage NSW, the relevant council(s), LALC, the RAPs and local libraries	Within 24 months of the completion of the Aboriginal archaeological excavations (both test and salvage).	CoA E31
Heritage Report	Planning Secretary, Heritage NSW, the relevant council(s), relevant local libraries and relevant local historical societies	No later than 12 months after the completion of archaeological excavation programs.	CoA E35 CoA E36
Archival photographic digital recording	Heritage NSW and the relevant council(s)	To be submitted as part of the Heritage Report.	CoA E33
Final Archaeological Report	Heritage NSW	During implementation of Unexpected Heritage Finds and Human Remains Procedure	CoA E38
Aboriginal Heritage Information Management System (AHIMS) Registration	Heritage NSW	Upon completion of Unexpected Heritage Finds and Human Remains Procedure	CoA E32

## 9.6 Continuous Improvement

The Project shall continually review and improve the suitability, adequacy and effectiveness of this plan against the environmental objectives, performance criteria and relevant legislative and other associated guidance documentation, for the purpose of identifying opportunities for improvement.

## 9.7 HCSP Update and Change Management

The processes described in Section 3.12 of the CEMP may result in the need to update or revise this Plan. This will occur as needed. Any revisions to the HCSP will be in accordance with the process outlined in Section 3.12 of the CEMP.

Throughout the lifetime of the project, consultation with relevant stakeholders (including but not limited to RAPs and HeritageNSW) may result in the need for an update to the CEMP and this sub-plan which will be done in accordance with details specified in this section of the HCSP. Further, any revisions to the design and construction of the project which changes the assessed impact on Aboriginal culture heritage, may require the project to prepare an assessment of the new impacts in consultation with an archaeologist. If impacts are inconsistent with previously identified impacts and is considered to have a more significant impact on Aboriginal heritage, then Sydney Water would require an amendment to the mitigation measures in the EIS and may require a modification. Consultation with Aboriginal stakeholders will also be undertaken.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.10.2 of the CEMP.

## Appendix A – CoA A9 Consultation Summary

## Appendix B – Heritage Mapping

Note: Non-redacted heritage figures included below. All locations of heritage items are redacted in the publicly displayed document.



DRAFT – Early Release

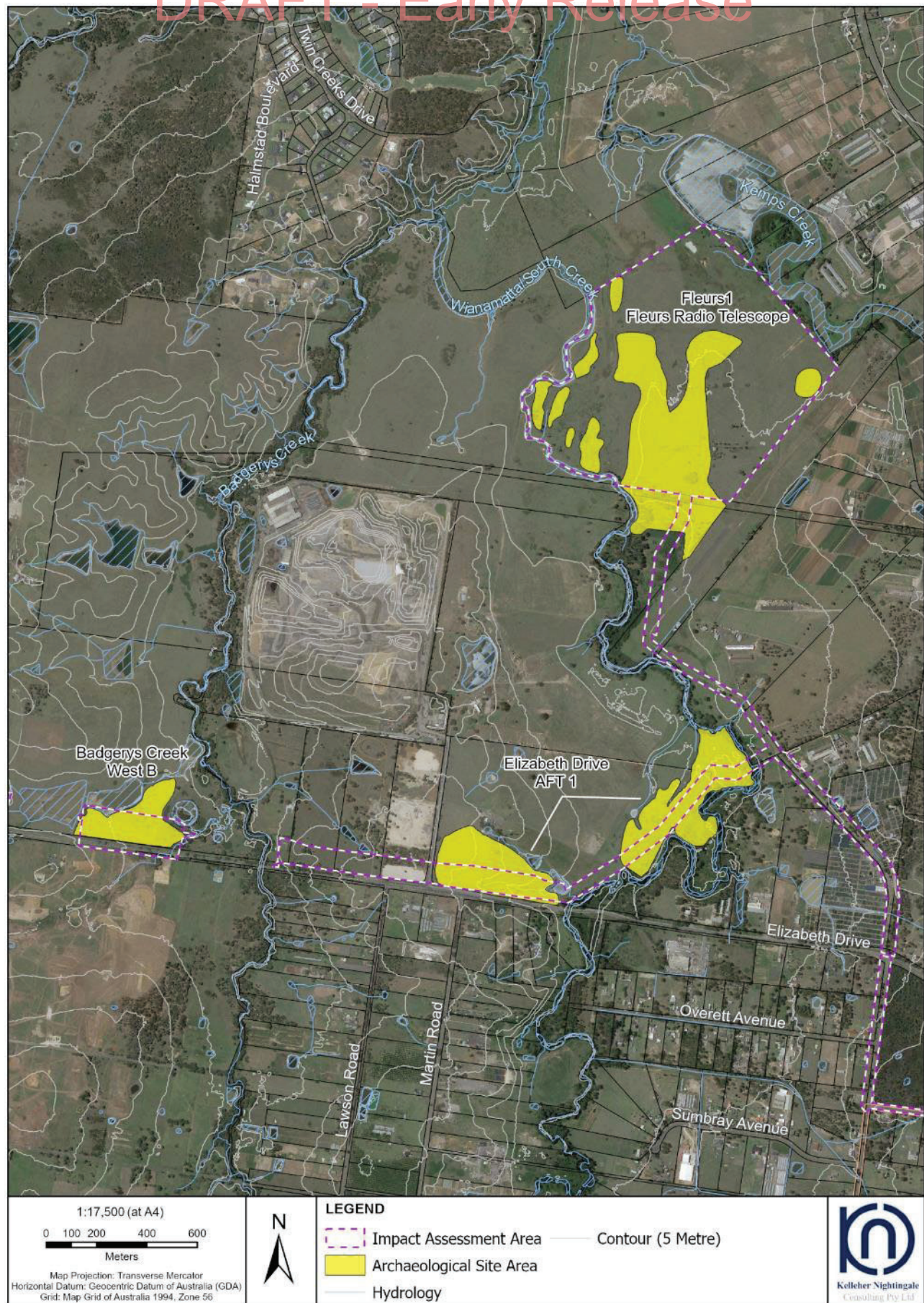


Figure 10. Archaeological sites within IAA at Badgerys Creek and Kemps Creek



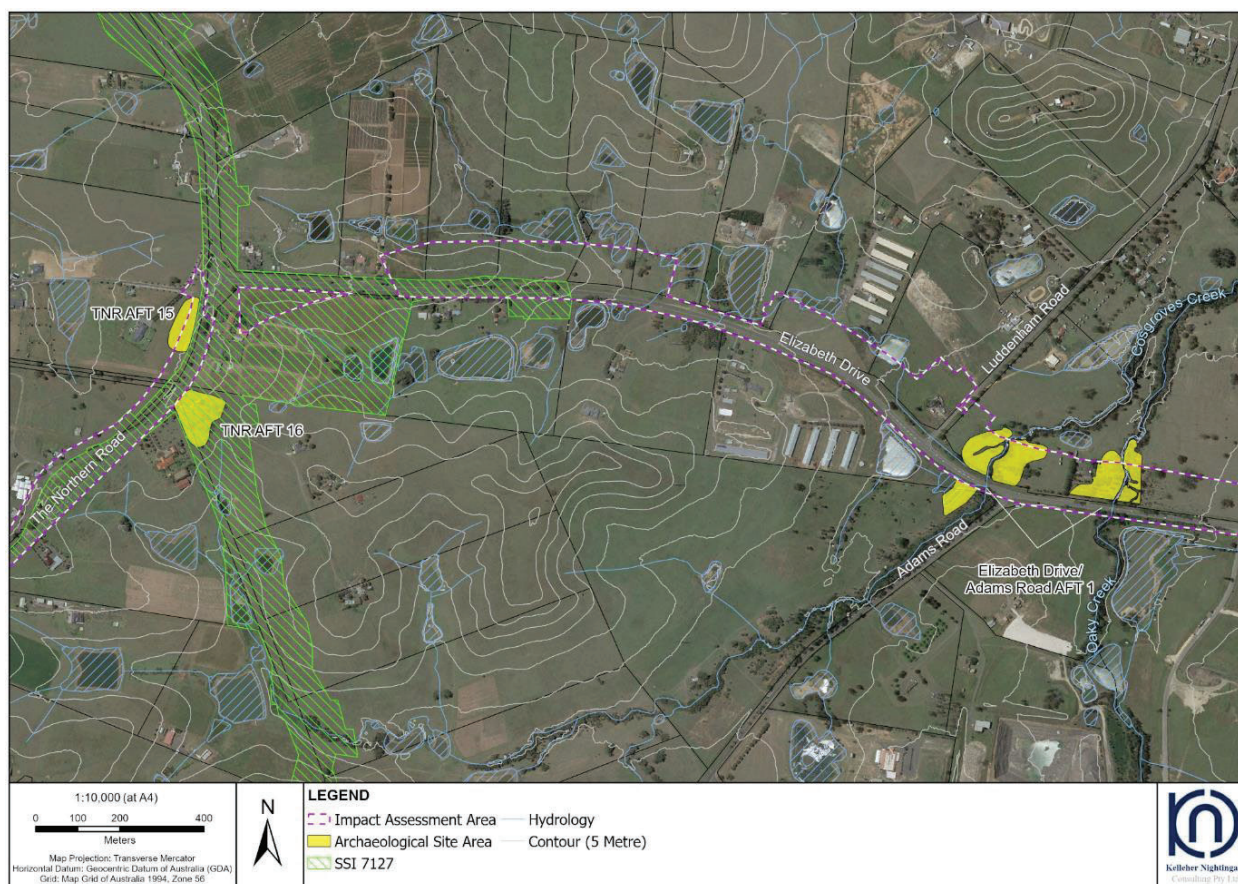


Figure 9. Archaeological sites within IAA at Luddenham



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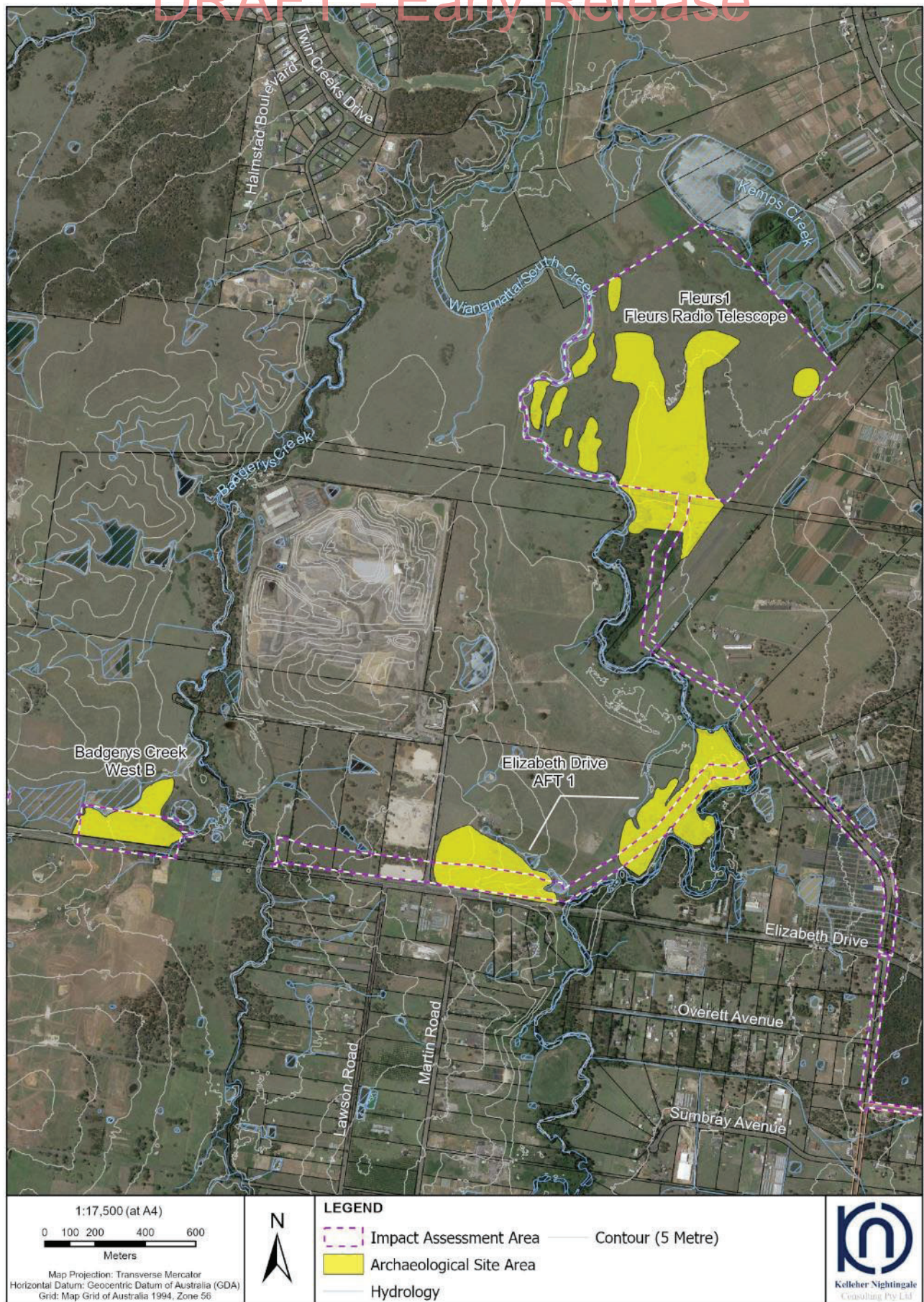


Figure 10. Archaeological sites within IAA at Badgerys Creek and Kemps Creek



DRAFT – Early Release

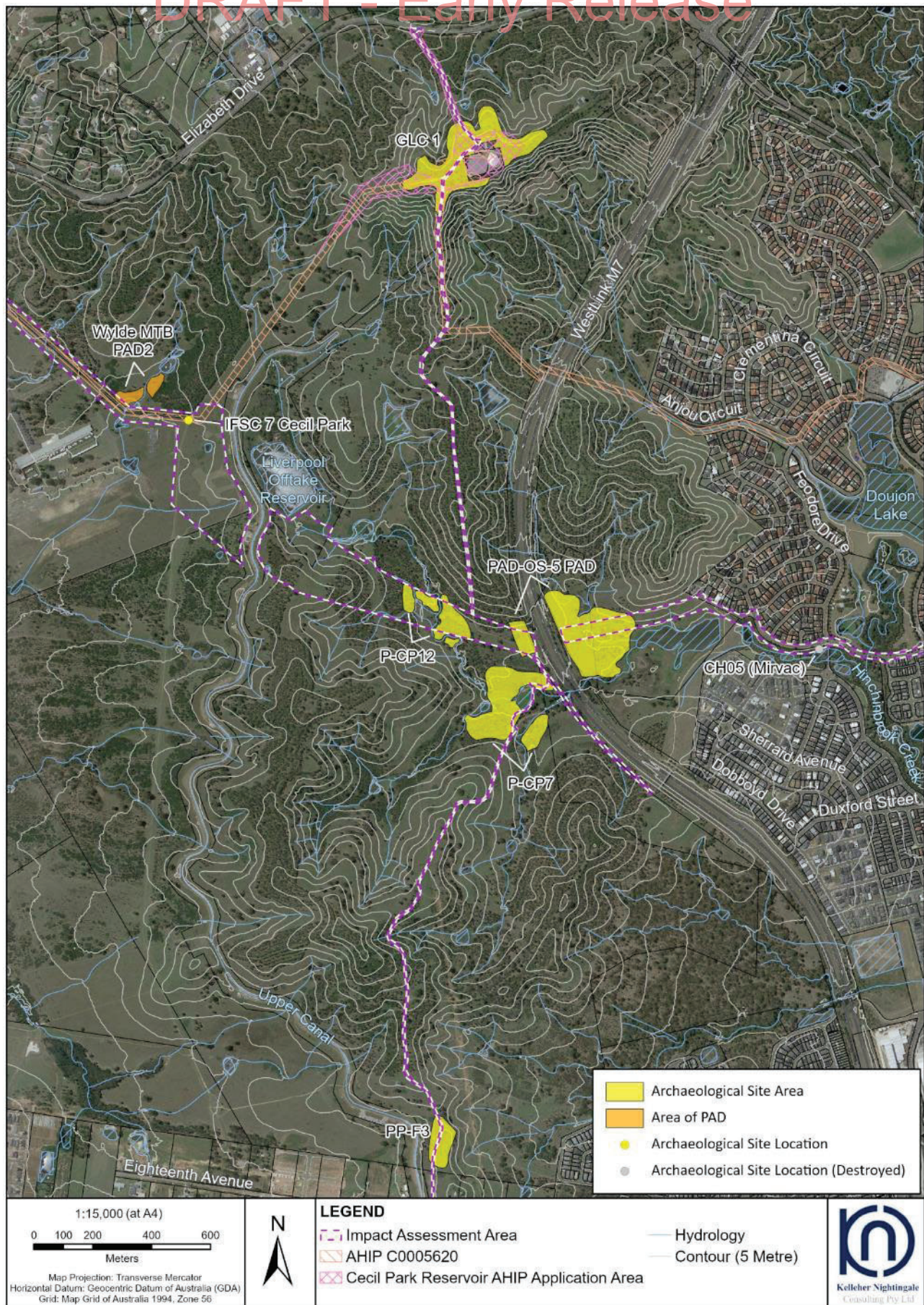


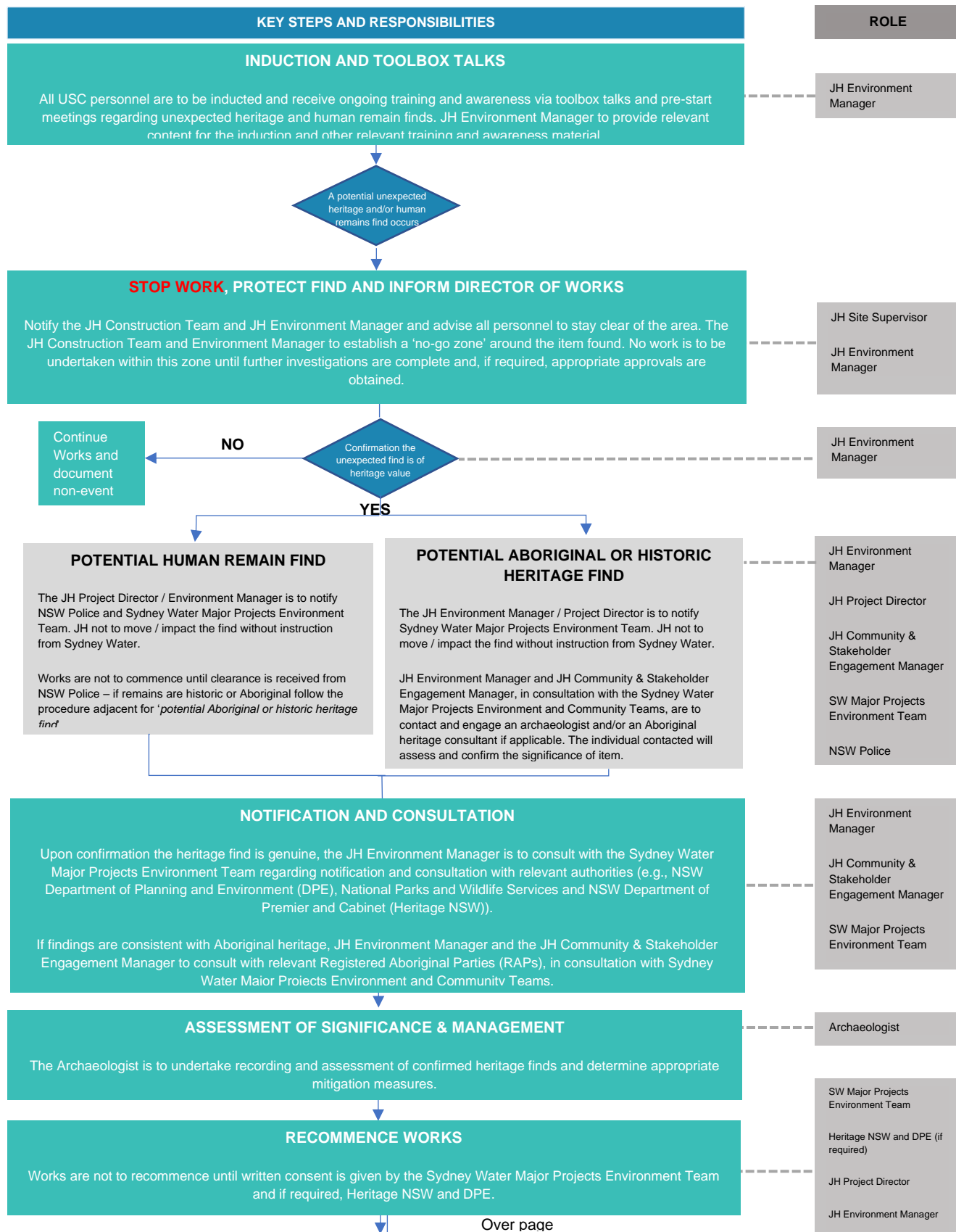
Figure 11. Archaeological sites within IAA – Cecil Hills, Cecil Park and Elizabeth Hills



## Appendix C – Unexpected Heritage Finds and Human Remains Procedure

# Unexpected Heritage Finds and Human Remains Procedure

**Scope:** This Procedure has been prepared in accordance with Environmental Planning and Assessment Act 1979 (EP&A Act), Heritage Act 1977 (Heritage Act), Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office 1998), Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997) and National Parks and Wildlife Act 1974 (NPW Act) for the management of unexpected heritage finds on the Upper South Creek Advanced Water Recycling Centre Project (USC).



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# Unexpected Heritage Finds and Human Remains Procedure

**Scope:** This Procedure has been prepared in accordance with Environmental Planning and Assessment Act 1979 (EP&A Act), Heritage Act 1977 (Heritage Act), Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office 1998) and National Parks and Wildlife Act 1974 (NPW Act) for the management of unexpected heritage finds on the Upper South Creek Advanced Water Recycling Centre Project (USC)..

## CLOSE-OUT AND FINALISE REPORTING

Reporting of findings and assessment to be finalised and submitted to Heritage NSW, RAPs and relevant Councils in consultation with the Sydney Water Major Projects Environment Team, including registering the new Aboriginal heritage sites in Aboriginal Heritage Information Management System (AHIMS) register.

SW Major Projects  
Environment and  
Community Teams

JH Environment  
Manager

**Table 1: Relevant Conditions of Approval**

Condition	Condition Requirement	How Addressed
E32	Where previously unidentified Aboriginal objects or places of cultural significance are discovered, all Work must immediately stop in the vicinity of the affected area. Works potentially affecting the previously unidentified objects and places must not recommence until Heritage NSW has been informed. The measures to consider and manage this process must be specified in the Unexpected Heritage Finds and Human Remains Procedure required by Condition E37 and include registration in the Aboriginal Heritage Information Management System (AHIMS).	The USC Unexpected Heritage Finds and Human Remains procedure (this procedure) has been developed with provision for previously unidentified Aboriginal objects or places of cultural significance, in accordance with MCoA E32.
E37	An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by Heritage NSW and the Heritage Council of NSW. The Unexpected Heritage Finds and Remains Procedure must be submitted to the Planning Secretary for information before the commencement of Work. The procedure must be included in the Heritage CEMP Plan required by Condition C4.	This procedure has been addressed to meet the requirements of MCoA E37. It has been prepared to manage any unexpected heritage find in accordance with the guidelines and standards stated within the procedure.  It has been submitted to the Planning Secretary for information before commencement of Work under the Infrastructure Approval and will be appended to the Heritage CEMP Sub-plan.
E38	The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of Work.  Where archaeological investigations have been undertaken as a result of Unexpected Finds notifications then a Final Archaeological Report must be provided in accordance with Heritage Council guidance and standard requirements for final reporting under Excavation Permits.	This procedure forms part of the CEMP and the Heritage CEMP Sub-plan for implementation throughout the duration of Work.  It includes provision for archaeological investigations as a result of unexpected finds, including the requirements of E38 whereby Work will commence once a Final Archaeological Report is provided following engagement with relevant stakeholder, including Heritage NSW.

# Unexpected Heritage Finds and Human Remains Procedure

**Scope:** This Procedure has been prepared in accordance with Environmental Planning and Assessment Act 1979 (EP&A Act), Heritage Act 1977 (Heritage Act), Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office 1998) and National Parks and Wildlife Act 1974 (NPW Act) for the management of unexpected heritage finds on the Upper South Creek Advanced Water Recycling Centre Project (USC)..

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## Appendix D – Salvage Methodology (Aboriginal)

## Appendix C - Salvage Excavation Methodology

### Methodology

#### Research Aims

The main aims of the proposed salvage excavation program are:

- ♦ To salvage a representative sample of identified archaeological sites prior to development impact.
- ♦ To analyse the salvaged archaeological material to gain and conserve knowledge and understanding of the scientific and cultural information exhibited by the activities associated with ridgelines and along major water courses in the region.
- ♦ To use the excavation results to gain insight into the subsurface archaeology of the adjacent areas not being impacted by the proposal. This would increase future educational opportunities and allow more informed management of Aboriginal heritage.

The further scientific aim of the salvage excavation program would be to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposit and the specific types of associated archaeological/cultural activities.

- ♦ Determining the integrity of the deposit involves assessing the degree of disturbance which is present.
- ♦ Determining the statistical extent of the sites and/or activity areas involves identifying the boundaries associated with the identified archaeological deposit.
- ♦ Assessing the spatial distribution involves identifying the presence/absence of archaeological material across the identified archaeological sites.
- ♦ The nature of the sites refers to the type of activities indicated by the artefactual material (e.g. primary production, domestic knapping, hunting camps). The goal would be to retrieve entire assemblages from specific activities if such activities were present.
- ♦ Retrieved assemblages would be compared with the results from other relevant archaeological projects in order to assess significance.

### Research Questions

The results of the proposed salvage excavation would increase our understanding of subsurface archaeology of the impact assessment area. In particular, research would focus on the archaeologically identifiable cultural activities that took place on landforms within the Hinchinbrook Creek, Nepean River and Wianamatta/South Creek catchments.

**Question 1:** Are cultural activities archaeologically identifiable within the Nepean River catchment area at Aboriginal archaeological sites: Baines Creek Wallacia AFT 1, Bents Basin Road Wallacia AFT 1 and Wallacia Weir AFT 1? What cultural activities are archaeologically identifiable and are there any differences in the identifiable activities at these locations?

**Question 2:** Are cultural activities archaeologically identifiable within the Wianamatta/South Creek catchment area at Aboriginal archaeological sites: Elizabeth Drive AFT 1, Elizabeth Drive/Adams Road AFT 1, TNR AFT 15 and Fleurs1 Fleurs Radio Telescope? What cultural activities are archaeologically identifiable and are there any differences in the identifiable activities at these locations?

**Question 3:** What cultural activities are archaeologically identifiable within the Hinchinbrook Creek catchment area at sites: P-CP12 and PAD-OS-5? Are there differences in activities between these three locations?



**Question 4:** Do the artefact assemblages from the Aboriginal archaeological sites differ between the sites located within Hinchinbrook Creek, Nepean River and Wianamatta/South Creek catchments? Are there differences in raw material or artefact type and how do these differences compare to other sites in the vicinity and the wider region?

**Question 5:** What are the taphonomic features of the Aboriginal archaeological sites and what does this indicate about site integrity and artefact survivability for similar landforms?

#### **What can we expect?**

It is anticipated that differences in stone tool assemblages may be related to different cultural activities (e.g. primary reduction vs maintenance flaking). The science of archaeology is paramount to any research question and it is important to stress that the goal for the salvage program for all excavated sites is straight forward: to retrieve a viable sample for comparative analysis using established techniques (see Field Methods below). In this regard interpretation would not precede data collection. The proposed archaeological program would systematically sample the relevant area using standard techniques with the outcome being a viable, robust and comparable sample. Analysis of the sample would follow and interpretations would be made distinctly separate from the results.

#### **Archaeological Salvage Areas**

Salvage excavation would be undertaken at Aboriginal archaeological sites:

Baines Creek Wallacia AFT 1, Bents Basin Road Wallacia PAD 1, Elizabeth Drive/Adams Road AFT 1, Elizabeth Drive AFT 1, Fleurs1 Fleurs Radio Telescope, P-CP12, PAD-OS-5, TNR AFT 15 and Wallacia Weir AFT 1. Salvage excavation of the sites and areas of PAD would focus on the extraction of collections of artefacts related to activity areas and geomorphic information.

#### **Historical Heritage**

Historic heritage within the impact area has been assessed in a separate specialist report. Several of the proposed archaeological salvage excavation areas intersect locations of known historic heritage significance. Archaeological salvage excavations in these areas must be undertaken in consultation with the approved historic heritage specialist and relevant government agencies as required. Likewise, any historical heritage excavation must be undertaken in consultation with the approved Aboriginal heritage specialist and relevant government agencies as required.

The archaeological salvage excavations for Aboriginal heritage will be purposefully located outside of any known physical locations of historic objects. If archaeological salvage excavations for Aboriginal heritage need to be undertaken within the physical locations of historic objects, excavations in these areas may need to be monitored by historic heritage specialists.

The archaeological salvage excavations for Aboriginal heritage will desist if significant or potentially significant historic heritage is encountered.

#### **FIELD METHODS**

The goal of the field excavation program is to recover significant assemblages of artefacts

#### **Salvage Program**

In order to achieve the most robust and comparable result, KNC advocates an open area salvage excavation. The first phase in open area salvage is to establish the statistical boundaries of the archaeological deposit. In other words, recording the spread of activities across the site/landscape. This approach is designed to salvage the spatial properties of the site as shown in the lithic continuum.

## Phase 1

A series of 1 m<sup>2</sup> squares are excavated on a transect grid at 15 metre intervals overlain on each site to mark the spread of lithics and related geomorphic activity.

GDA 94 coordinates would be recorded for each square to enable three dimensional modelling. Statistical salvage following this method is highly beneficial because it creates a robust inter-site sample, sufficiently random, critical for regional comparative analysis. No other method is as efficient or effective. It is anticipated that a minimum of 10 m<sup>2</sup> would be excavated within each site during Phase 1.

Individual excavation squares measuring 1 m<sup>2</sup> would be hand excavated in stratigraphic units (Unit A, Unit B, etc.). Squares would be excavated until the basal layer or culturally sterile deposit is reached (usually 25-35 cm). Previous excavation of the podzolic soils associated with the area indicates no archaeological stratigraphy within units. As such the A1 and A2 soil layers are culturally one layer (suffering from cyclical soil transfer resulting in a mixed cultural profile within the soil) and can be salvaged as one unit where possible. All excavated deposit would be sieved using nested 5.0 mm and 2.5 mm sieves. Where potential micro-debitage is recovered 1.0mm sieves will be utilised.

The location of each excavated square would be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would be drawn and all squares would be photographed. Soil samples as well as thin section profiles (where feasible) would also be collected. The stratigraphy of all excavated areas would be fully documented and appropriate records archived.

## Phase 2

Open area salvage of significant deposit follows the Phase 1 assessment. Additional 1 m<sup>2</sup> squares, constituting an open area, will be excavated around information bearing deposits along the excavation grid. Information bearing deposits are identified by triggers such as: significant quantities of artefacts, variations in raw material, unusual artefacts, chronological material and/or taphonomic indicators. In this context chronologic material is anything that can be used to date artefacts or deposit: charcoal or charcoal bearing deposit (e.g. hearth ash), sandy deposit, gravels (e.g. aluminium feldspar). Phase 2 open area investigation would expand to encompass entire activity areas. The location of Phase 2 open area investigation would be based on Phase 1 results.

Where possible, carbon samples will be collected and analysed for material relating to both the archaeology and geomorphology. Where appropriate cosmogenic and radiometric dating of soils and rock surfaces will be applied (Nishiizumi et al. 1986, 1993).

## Analysis

Artefacts would be analysed on a comparable level with previous analyses of excavated assemblages. Information derived from this analysis; in particular the identification of specific artefact types and their distributions and associations; would be used to put together interpretations about how sites were used, where sites were located across the landscape, the age of sites and to assess cultural heritage values. By comparing different areas it would be possible to determine whether there were differences in the kinds of activities carried out and if different activities were related to different landforms.

A range of stone artefacts may be present across the salvage areas and the analysis would expand accordingly to account for artefact variability. All information would be recorded in database form (MS Excel). Various types of evidence would be used to determine the kinds of activities that were carried out. A short description of the proposed analysis is outlined below.

- ♦ Field analysis would record basic data, such as material type, number and any significant technological characteristics, such as backing or bipolar techniques; added to this would be any provenance data such as pit ID and spit number. The purpose of the field recording is twofold: 1) establish a basic recording of artefacts retrieved and 2) to allow on-going assessment of the excavation regime (e.g. whether higher stratigraphic resolution is required while digging).
- ♦ Detailed (laboratory) analysis would entail recording a larger number of characteristics for each individual artefact. These details would be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis.
- ♦ Lithic characteristics to be recorded cover a range of basic information but are not limited to these categories (see example below). For transparency, terms and category types would in large part be derived from Holdaway and Stern (2004).

Sample Categories		
Record Number	% Cortex	Flake Type
Pit ID	Length	Termination Type
Spit Number	Width	Core Type
Count	Thickness	Number of Scars (Core)
Raw Material	Weight	Scar Type (Core)
Colour	Modification	Shape of Flake
Quality	Reduction Type	Platform Type

- ♦ A detailed explanation and glossary would be provided with the final excavation report.
- ♦ Minimum Number of Flake (MNF) calculations formulated by Hiscock (2000, 2002) would be undertaken where applicable (although past experience indicates MNF calculations would not be required for this excavation program).

The analysis of artefacts recovered during the excavation program would be undertaken in a transparent and replicable fashion so as to permit the comparison of the entire excavated assemblage with data from other areas. This would also allow for an interpretation of the impact assessment area's archaeological significance.

## Appendix E – Archaeological Research Design and Excavation Methodology (ARDEM)

## 9. Excavation methodology

The excavation methodology outlined in this section of the report responds to impacts arising from the works proposed in the impact assessment area, which was provided in early 2021. Impacts may be further minimised or avoided as the final project plans are developed. If the impacts can be reduced or avoided, the requirement for archaeological test trenches and open area excavation outlined in this ARDEM may be similarly reduced. This will ensure that areas with the potential for significant historical archaeological remains are not unduly impacted by unnecessary archaeological investigations.

### 9.1 Test excavation

The following methodology would apply to test excavations in PAS 1, 2, 9 and 10:

- Excavation of test trenches would be completed using a mechanical excavator (up to 13 tonnes in size) fitted with a flat bucket unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- A Dial Before You Dig (DBYD) and utilities search would be completed prior to ground disturbance occurring to ensure that no live utilities were impacted by the mechanical excavator.
- Mechanical excavation would be undertaken under the Excavation Director's direction and supervision.
- Where mechanical excavation is not feasible, manual excavation by qualified archaeologists will occur where required. Small hand tools such as pointing trowels, picks, shovels, brushes, and pans will be used in manual excavation, either for cleaning excavated areas or revealing exposed features or deposits.
- Significant archaeological remains would be cleaned and exposed by hand. They would be located and recorded but not removed.
- Sealed artefact deposits of local or state significance will be left in situ and not excavated during testing. Diagnostic artefacts from fill deposits will be collected to assist with site phasing.
- In the event that structural fabric or significant deposits are not located, excavation will cease when the depth of impact is reached, or where culturally sterile or natural deposits are identified.
- At the cessation of test excavations, trenches with significant structural remains and deposits will be covered by geofabric prior to backfilling. This will allow for significant evidence to be relocated with minimal impact during later stages of excavation, if required. It will also ensure significant remains are protected if they are to be retained in situ.

Following the completion of test excavations, a succinct summary report must be prepared outlining the findings of the testing program. The findings of the test excavation program will also inform the requirement for areas requiring further archaeological investigations to mitigate the impacts of the project. The summary report will also make recommendations for:

- Minor redesign options (where possible) to avoid impacts to highly significant archaeological relics;
- Areas with intact and legible archaeological remains and deposits requiring salvage excavation;
- Areas with dispersed and truncated archaeological remains requiring archaeological monitoring; and
- Areas of with low potential for significant archaeological remains or relics where work could proceed under an unexpected finds protocol.

If substantial archaeological remains are not identified and further investigations are not warranted, a full post-excavation report must be prepared for the test excavation program (see Section 9.6). Where a summary report is prepared to inform a second stage of investigations, the findings of the test excavation must also be incorporated into the final post-excavation report (see Section 9.6) for each site.

Archaeological salvage excavation and monitoring must be completed in accordance with the excavation methodology presented in Section 9.2.

## 9.2 Salvage excavation and monitoring

The following methodology would apply to salvage excavation and monitoring:

- Excavation in the areas of archaeological potential would be carried out by using a mechanical excavator fitted with a flat bucket unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills.
- Mechanical excavation would be undertaken under the Excavation Director's direction and supervision. All of the exposed archaeological remains would be cleaned by hand.
- Where mechanical excavation is not feasible, manual excavation by qualified archaeologists will occur where required. Small hand tools such as pointing trowels, picks, shovels, brushes and pans will be used in manual excavation, either for cleaning up excavated areas or revealing exposed features or deposits.
- Where an *in situ* historic feature that is the target of the excavation is located, mechanical excavation will cease. The feature will then be cleaned by hand and recorded. The archaeologist will endeavour to expose and identify all significant historic features and deposits in order to fully realise their archaeological research potential.

- In the event that structural fabric is not located, excavation will stop when the depth of impact is reached, or where culturally sterile or natural deposits are identified.
- The Excavation Director will have the authority to direct site works throughout the ground works, as required, in order to undertake all necessary investigation, detailed recording and/or preservation of exposed relics.
- The need for detailed investigation and recording of specific deposits or features would be determined by the Excavation Director throughout the course of the investigation to ensure that important parts of the site are adequately investigated and recorded, and that resources are not employed in areas that do not warrant further investigation.
- All artefacts excavated from sealed artefact deposits will be collected for detailed analysis by an artefact specialist. For deposits with lower research potential, such as imported fills or disturbed/mixed deposits, only diagnostic artefacts will be collected to enable phasing.
- Where possible, artefacts will be cleaned, dried and sorted on site during salvage excavation to reduce the scope of post-excavation work.

### 9.3 Site recording

Generally, the archaeological recording of the site would be conducted according to the following methods:

- A site datum, keyed to Australian Height Datum (AHD) would be established to record the levels of extant deposits and features.
- Where any archaeological remains are exposed, measured drawings would be prepared. These will be keyed into the master site plan.
- The location of archaeological remains would also be plotted by a surveyor to assist with readily relocating them if a second stage of archaeological investigations is required.
- All archaeological deposits and features will be allocated a unique context number and recorded in detail on pro-forma context sheets. This will be supplemented by preparation of a Harris Matrix showing the stratigraphic relationships between features and deposits.
- Significant soil deposits will be recorded with reference to the Munsell soil chart.
- Photographic recording of all phases of work on site would be undertaken, using a scale bar and north arrow.
- If suitable deposits are found during archaeological investigation, soil samples will be collected for further archaeobotanical analysis.
- Specific to test excavations, findings from each test trench excavated will be recorded on a 'Trench Sheet' providing an overview of key finds and related contexts to assist with decision-making around areas requiring open-area excavation or monitoring. The trench



sheet should indicate the depth of significant deposits and features, as well as the trench's stratigraphic profile.

## 9.4 Artefact management

- Any artefacts retrieved from sealed artefact deposits during the on-site works will be collected, cleaned, and catalogued in accordance with the investigation methodology recommended in this report and best archaeological practice.
- Bulky artefact types, such as building materials, may be sampled. Fill deposits will also be sampled, with diagnostic and dateable artefacts recovered to assist with phasing.
- Any artefacts retrieved would be provenanced according to their contexts.
- Artefacts will be bagged in suitable polyethylene bags, tagged with labels, and put in an agreed temporary, secure storage location.
- All artefacts will be retained for analysis during the post-excavation phase of archaeological works in order to fully answer the research questions that guide the archaeological investigation. This analysis would take place off site and would be conducted by various qualified specialists. The results of the analysis would be included as part of a final report.
- At the conclusion of the project, the artefacts will be handed over to the client for retention and/or lodgement in an appropriate storage facility.

## 9.5 Management of Aboriginal objects

In the event that any Aboriginal objects are identified during historical archaeological investigations they should be managed in accordance with the management measures specified in the Upper South Creek Aboriginal Cultural Heritage Assessment (KNC 2021).

Note that where areas of non-Aboriginal heritage identified for excavation overlap with areas of potential Aboriginal heritage identified for investigation, as identified in the Upper South Creek Aboriginal Cultural Heritage Assessment (Kelleher Nightingale, 2021), excavation works in this ARDEM may need to be adapted slightly to be consistent with the Aboriginal heritage salvage excavation methodology.

## 9.6 Post excavation reporting

Upon completion of the program of all required on-site works and artefact analysis, the Excavation Director would prepare a post-excavation report that presents a detailed description of the works performed and their results, illustrated by photographs, survey plans, and an artefact catalogue, as appropriate. The report would include a response to the research questions raised in this document.

The report of the results of all archaeological fieldwork would be produced in accordance with standard conditions of approval. The report would include:

- A description of the results of the investigation, including a discussion of the nature of the archaeological remains recorded;
- A response to the research questions raised in this report;
- The results of any post-excavation analysis undertaken, including artefact or sample analysis;
- Site records, including artefact catalogues, measured drawings, and photographs, where appropriate;
- Conclusions relating to the nature and extent of surviving archaeological remains; and
- Identification of the repository for material recovered from the site.

The final archive of archaeological material should consist of all site records produced throughout the physical investigation, which may include context sheets, artefact sheets, photographs, drawings, and artefacts (inventoried, boxed, labelled, and catalogued), as well as a final copy of the post-excavation report.

## 9.7 Team

All archaeological investigation works would be managed by a suitably qualified senior archaeologist. Extent's suitably qualified senior archaeologists, include Anita Yousif (Associate Director), Graham Wilson (Principal Heritage Advisor) and Dr Jennifer Jones-Travers (Senior Associate).

Anita Yousif, Associate Director and National Technical Lead, Historical Archaeology, will be the nominated Primary Excavation Director for all sites of State significance, including PAS 1 (Blaxland's Farm) and PAS 2 (Blaxland's Gardens). Anita Yousif is an approved Excavation Director for sites of local and state significance with over 20 years' experience in Australian historical archaeology, who fully satisfies all requirements of the NSW Heritage Council's *Excavation Director Criteria* (2019). Anita is the current President of the Australasian Society for Historical Archaeology.

Dr Jennifer Jones-Travers, Senior Associate, or Graham Wilson, Principal Heritage Advisor, would be nominated Secondary Excavation Directors for all sites of State significance. Graham and Jennifer are both approved Excavation Directors for sites of local and State significance in NSW. Graham has more than 30 years of experience as an archaeologist supervising and directing excavations, while Jennifer has 17 years of experience. Anita, Graham and/or Jennifer would be nominated as Primary or Secondary Excavation Director for all remaining sites of local significance, depending on project timing and availability.

Site surveying and planning would be undertaken by Kerry Platt. A team of assistant archaeologists would be drawn from the Extent Heritage pool of permanent staff and sub-consultants, on an 'as needed' basis.

## 9.8 Unexpected finds protocol

The unexpected finds protocol details the actions to be taken when a previously unidentified historical heritage feature/relic/site is found during ground disturbance activities. This procedure is applicable to all activities conducted by project personnel that have the potential to uncover an historical feature/relic/site. The unexpected finds protocol delivered to site contractors as part of a heritage induction will be developed with regard to Sydney Water's SWEMS009.

A standard unexpected finds protocol is provided below.

- **STOP ALL WORK** in the vicinity of the find and immediately demarcate the area to protect the feature/relic/site.
- The Excavation Director is to record the details, take photos of the find and ensure that the area is adequately protected from additional disturbance.
- If the Excavation Director advises that the find is not a significant historical relic, work will recommence in consultation with the Site Supervisor.
- If the Excavation Director advises that the find is a significant historical archaeological item, the affected area will remain protected from any further ground disturbance until the item is fully excavated and recorded so that its research potential is fully realised.

### 9.8.1 Procedure for discovery of possible human skeletal remains

- In the unlikely event that human remains are discovered in the course of the proposed work the protocols, the Site Supervisor/Manager notify the NSW Police by calling '000' and the Office of the NSW State Coroner by calling '(02) 8584 7777'. They must also engage a forensic specialist to confirm the discovery.
- Should the NSW Police determine the remains to not be of a criminal nature, the Excavation Director should notify Heritage NSW, DPC to determine if the remains are of Aboriginal ancestry. If the remains are Aboriginal in origin, Heritage NSW and/or the Excavation Director in liaison with the Registered Aboriginal Parties would determine the most appropriate course of action, which may include deviation of the construction works, or the careful removal of the remains and reburial elsewhere.
- Should Heritage NSW determine the remains to be of historic ancestry, the most appropriate course of action, which may include deviation of the construction works, or the careful removal of the remains and reburial elsewhere, would be decided in consultation with the Site Supervisor/Manager and the Excavation Director.
- Should the remains determined to be of non-human origin, construction works may proceed.

## 10. Conclusions

- This ARDEM has been prepared in conjunction with the HAA for the Upper South Creek Advanced Water Recycling Centre (Extent Heritage 2021) to satisfy the requirements of SEAR 25 of the SEARs issued for the project (SSI-8609189).
- Historical archaeological test excavations at PAS 1 (Blaxland's Farm) should be completed at the earliest opportunity to enable minor redesign to reduce impacts to the site's highly significant historical archaeological resources.
- More broadly, historical archaeological test excavations at PAS 1 (Blaxland's Farm), PAS 2 (Blaxland's Gardens), PAS 9 (Lennox Reserve), and PAS 10 (Lansvale) should be completed as part of early works to provide more certainty in estimating project costs and timeframes, minimising disruption or delays to the construction program.
- The results of test excavations will inform further requirements for archaeological salvage excavation and monitoring for each site.
- Archaeological monitoring of ground disturbance in areas of archaeological potential in PAS 3 (Blaxland's Crossing) and PAS 8 (Upper Canal) should be completed during the main works program to mitigate the impacts of the project.
- Archaeological investigations must be completed in accordance with the research frameworks and methodologies presented in this ARDEM.
- A final post-excavation report must be budgeted for and completed for archaeological investigations at each site, presenting the findings of the excavation, the results of any specialist analysis (artefact, soil, timber, etc), and responses to the research questions in this ARDEM.
- A copy of each post-excavation report must be lodged with Heritage NSW, DPC, as well as the relevant local studies library.

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## Appendix F - Aboriginal Heritage Impact Permit



# Issue of Aboriginal Heritage Impact Permit

*National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

Your reference: Prospect South to Macarthur drinking water link  
Our reference: AHIMS No. 4577 / SF20/4759  
Notice number: C0005621  
Contact: gs.ach@environment.nsw.gov.au

Sydney Water  
1 Smith Street  
PARRAMATTA NSW 2150  
ABN: 49 776 225 038

ATT: Mura Muralitharan, Sydney Water  
Matthew Kelleher, Kelleher Nightingale Consulting

## NOTICE OF THE ISSUE OF ABORIGINAL HERITAGE IMPACT PERMIT C0005620

Issued pursuant to section 90C(4) of the *National Parks and Wildlife Act 1974*

### BACKGROUND

- A. Sydney Water (the applicant) applied to the Department of Planning, Industry and Environment (DPIE) under section 90A of the *National Parks and Wildlife Act 1974* (NPW Act) for an Aboriginal Heritage Impact Permit (AHIP). The AHIP application was in relation to the South Prospect to Macarthur water link.
- B. DPIE received the application on 6 January 2020 and further information was received on 14 and 19 February 2020.
- C. An AHIP does not automatically entitle its holder to enter land for the purpose of conducting work related to the AHIP. The AHIP holder is responsible for obtaining permission to enter land from the owner and/or occupier of the land.

### ISSUE OF ABORIGINAL HERITAGE IMPACT PERMIT

1. DPIE has considered the application and supporting information provided and matters under section 90K of the NPW Act and has decided to issue an AHIP C0005620 subject to conditions.
2. The AHIP is attached.
3. You must read the AHIP carefully and ensure you comply with its conditions. In particular please note the following conditions:
  - Visual markers must be installed prior to start of salvage excavation and construction works to clearly indicate the location of the 'no-impact areas' described in condition 9.
  - Aboriginal objects described in Schedule C must not be harmed unless all salvage excavations described in Schedule B2 have been completed in the area.

# Issue of Aboriginal Heritage Impact Permit

National Parks and Wildlife Act 1974



Planning,  
Industry &  
Environment

It is an offence under section 90J NPW Act to fail to comply with the conditions of the AHIP. The maximum penalty that a court may impose on a corporation for failing to comply with this AHIP is \$1.1m. DPIE can also issue penalty notices for this offence.

*S. Harrison*

SUSAN HARRISON

Senior Team Leader Planning

Climate Change and Sustainability Division

(by Delegation)

Date: 2 March 2020

## INFORMATION ABOUT THIS NOTICE

- Details provided in this notice will be available on DPIE's Public Register in accordance with section 188F of the NPW Act.

## Variation of this AHIP

- This AHIP may only be varied on application by the AHIP holder or by DPIE to correct typographical errors or resolve inconsistencies between conditions of the AHIP. A permit can only be varied by subsequent variation notices.

## Appeals against this decision

- You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
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**AHIP number: C0005620**

(AHIMS Permit ID: 4577)

**AHIP Issued To:**

Sydney Water  
1 Smith Street  
Parramatta, NSW 2150

ABN: 49 776 225 038

**DPIE Office issuing this AHIP**

Climate Change and Sustainability Division

Environment Energy and Science Group

Greater Sydney Branch

PO Box 664

PARRAMATTA NSW 2124

Email: [gs.ach@environment.nsw.gov.au](mailto:gs.ach@environment.nsw.gov.au)

**Additional details for public register**

<b>a) Name of development or project</b>	Prospect South to Macarthur system drinking water link
<b>b) Location</b>	Various locations between Prospect South and Macarthur in Bringelly, Cobbitty, Cecil Hills, Cecil Park, Denham Court and Harrington.
<b>c) Local Government Area(s)</b>	Camden, Campbelltown, Fairfield and Liverpool
<b>d) Description of harm authorised</b>	<ul style="list-style-type: none"><li>• Salvage excavations</li><li>• Harm to certain Aboriginal objects through the proposed works</li></ul>
<b>e) AHIP commencement date and duration</b>	<i>Commencement:</i> 2 March 2020 <i>Duration:</i> 5 years

## AHIP TO HARM ABORIGINAL OBJECTS

### A. Background

- (i) On 6 January 2020 an application was made to the Secretary of the Department of Planning, Industry and Environment (DPIE) for an Aboriginal Heritage Impact Permit (AHIP) pursuant to s.90 of the *National Parks and Wildlife Act 1974* (the Act).
- (ii) The application is for construction of the Prospect South to Macarthur distribution system link by Sydney Water.
- (iii) A Review of Environmental Factors for this proposal was approved by Sydney Water on 11 December 2019.
- (iv) DPIE considered the application and supporting information provided on 14 and 19 February 2020 and matters under section 90K of the Act and decided to issue an AHIP subject to conditions.

### B. AHIP issued subject to conditions

An AHIP is issued to harm Aboriginal objects identified in Schedules B and C, in accordance with the conditions of this AHIP.

This AHIP is issued pursuant to section 90 of the Act.

### C. Commencement and duration of AHIP

This AHIP commences on the date it is signed unless otherwise provided by this AHIP.

Unless otherwise revoked in writing, this AHIP remains in force for **five years** from the date of commencement.

### D. Proposed Works

- Construction of the Prospect South to Macarthur distribution system link including around 35km of additional pipeline, upgrades to existing infrastructure and construction of new infrastructure. The link will supply drinking water to the Western Sydney Aerotropolis Growth Area and the South West Growth Area.
- Salvage excavation of five AHIMS sites must be conducted in accordance with the *Salvage Excavation Methodology* prepared by Kelleher Nightingale Consulting and dated December 2019.

**Note:** A Dictionary at the end of the AHIP defines terms used in this document. Further information about this AHIP is also set out after the Dictionary.

.....*S. Harrison*.....

SUSAN HARRISON

Senior Team Leader Planning

Climate Change and Sustainability Division

(by Delegation)

DATED: 2 March 2020



# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
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## CONTENTS

LAND TO WHICH THIS AHIP APPLIES .....	4
CONDITIONS .....	4
Administrative Conditions .....	4
Operational Conditions .....	4
Notification and Reporting Conditions .....	6
General Conditions .....	8
SCHEDULES .....	9
Schedule A: Aboriginal objects which must not be harmed .....	9
Schedule B: Aboriginal objects that may be harmed through the certain actions .....	9
Schedule C: Aboriginal objects which may be harmed through the proposed works .....	10
DICTIONARY .....	13
INFORMATION ABOUT THIS AHIP .....	15
APPENDIX A: Land to which this AHIP applies .....	17
APPENDIX B: Maps of areas outside the AHIP area .....	19
APPENDIX C: Map of salvage excavation areas .....	22
APPENDIX D: Salvage excavation methodology .....	27

## LAND TO WHICH THIS AHIP APPLIES

- Those Aboriginal objects in, on or under the land marked orange (and labelled 'AHIP application area') on the maps in Appendix A as part of works associated with the South Prospect to Macarthur water link project. Excluding areas as highlighted in light blue and labelled in the map legend as 'no impact (protective fencing along AHIP boundary)' on the maps in Appendix B.
- The AHIP area is bounded by the GPS coordinate points provided with the AHIP application on 6 January 2020 and contained in the GIS shape file 'AHIP\_Application\_Area\_191218' dated 19 December 2019.

## CONDITIONS

The conditions of this AHIP specify the actions that are permitted and/or required in relation to areas and Aboriginal objects, which are detailed in the Schedules that follow.

### Administrative Conditions

#### Responsibility for compliance with conditions of AHIP

1. The AHIP holder must ensure that all persons involved in actions or works covered by this AHIP (whether employees, contractors, sub-contractors, agents or invitees) are made aware of and comply with the conditions of this AHIP.

#### Project manager to oversee the actions relating to this AHIP

2. A suitably qualified and experienced individual must be appointed as a project manager who is responsible for overseeing, for and on behalf of the AHIP holder, all the actions relating to this AHIP.
3. The individual appointed as project manager must be the project manager nominated in the application form.
4. If an alternative to the nominated project manager is appointed, DPIE must be notified of their contact details within 14 days of this appointment.

#### Actions must be in accordance with AHIP application

5. All actions on the land must be carried out in accordance with the application except as otherwise expressly provided by a condition of this AHIP.

#### Any required approvals under the *Heritage Act 1977* must be in place and complied with

6. No actions can commence on the land until any approval(s) required under the *Heritage Act 1977* have been obtained.

## Operational Conditions

#### Certain Aboriginal objects must not be harmed

7. All human remains in, on or under the land must not be harmed, other than any human remains identified in Schedule B4.
8. The Aboriginal objects described in Schedule A must not be harmed.



# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

9. To ensure that the parts of AHIMS sites #45-5-0905, #45-2-0369 #45-5-5278, #45-5-5280, #45-5-5279, and #52-2-3321 are not impacted, the following measures must be implemented as soon as practicable and complied with:
  - (a) Visual markers must be installed prior to start of salvage excavation and construction works to clearly indicate to any person on foot or in a vehicle, the location of these sites on the maps in Appendix B and Appendix C; and
  - (b) Persons entering the land such as employees, contractors, sub-contractors, agents and invitees must be provided with a copy of maps in Appendix B and Appendix C.

## Salvage excavations

10. Salvage excavations may be carried out in, on or under each salvage excavation area described in Schedule B2, but only in accordance with the map in Appendix C and the methodology in Appendix D.
11. Aboriginal objects that are recovered during the excavations may be analysed on-site and/or may be taken off-site for further analysis.
12. The salvage excavations and analysis of Aboriginal objects must be carried out in accordance with the methodology that was provided with the application.
13. The salvage excavations must be completed in an area before any harm of Aboriginal objects described in Schedule C can commence in that same area.

## Harm of certain Aboriginal objects through the proposed works

14. The Aboriginal objects described in Schedule C may be harmed. Nothing in this condition authorised harm to Aboriginal objects described in Schedule A (whether human remains, or Aboriginal objects).
15. Aboriginal objects described in Schedule C must not be harmed unless all salvage excavations described in Schedule B2 have been completed in the area.

## Temporary storage of certain Aboriginal objects

16. Any Aboriginal objects that are removed from the land by actions authorised by this AHIP, must be moved as soon as practicable to the temporary storage location in the table below, pending any agreement reached about the long-term management of the Aboriginal objects.
17. The temporary storage location is as follows:

<b>Location name:</b>	Office of Kelleher Nightingale Consulting Pty Ltd
<b>Address:</b>	Level 10, 25 Bligh Street, Sydney NSW 2000
<b>Storage particulars:</b>	Secure storage location in locked office

18. Any Aboriginal objects stored at the temporary storage location must not be further harmed, except in accordance with the conditions of this AHIP.

## Long term management of certain Aboriginal objects

19. Requirement 26 "Stone artefact deposition and storage" in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (24 September 2010, available online at: <http://www.environment.nsw.gov.au/licences/archinvestigations.htm>) must be complied with.

## Access routes

20. Where practicable, existing access routes to parts of the land where actions relating to this AHIP are to be carried out must be used.

## Notification and Reporting Conditions

### Notification of commencement and completion of actions

21. Written notice must be provided to the DPIE office at least 7 days prior to the commencement of actions authorised by this AHIP.
22. Written notice must be provided to the DPIE office within 7 days of the completion of actions authorised by this AHIP.

### Copy of this AHIP and notices to be provided to Registered Aboriginal Parties

23. A copy of this AHIP must be provided to each Registered Aboriginal Party, within 14 days of receipt of the AHIP from DPIE.
24. Where this AHIP is varied or transferred, a copy of the AHIP variation or transfer notice must be provided to each Registered Aboriginal Party, within 14 days of receipt of the notice.

## Human remains

25. If any human remains (other than any human remains described in Schedule B4) are discovered and/or harmed in, on or under the land, the AHIP holder must:
- (a) not further harm these remains
  - (b) immediately cease all work at the particular location
  - (c) secure the area so as to avoid further harm to the remains
  - (d) notify the local police and DPIE's Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location, and
  - (e) not recommence any work at the particular location unless authorised in writing by DPIE.

### Incidents which may breach the Act or AHIP

26. The AHIP holder must notify the DPIE office in writing as soon as practicable after becoming aware of:
- (a) any contravention of s.86 of the Act not authorised by an AHIP, and/or
  - (b) any contravention of the conditions of this AHIP.

### Reports about incidents which may breach the Act or AHIP

27. Where DPIE suspects that an incident has occurred, which may have breached the Act or AHIP, DPIE may request a written incident report, which includes the following:
- (a) the nature of the incident
  - (b) the actual or likely impact of the incident on Aboriginal objects and/or Aboriginal places



- (c) the nature and location of these Aboriginal objects and/or Aboriginal places, referring to and providing maps and photos where appropriate
- (d) any conditions of an AHIP which may have been breached, and
- (e) the measures which have been taken or will be taken to prevent a recurrence of the incident.

28. The incident report must be provided to the DPIE office within the timeframe specified in the request.

## Provision of Aboriginal Site Impact Recording Form

29. An Aboriginal Site Impact Recording Form must be completed and submitted to the AHIMS Registrar, for each AHIMS site identified in Schedules B and C, within 4 months of the completion of the actions authorised by this AHIP.

### Note:

- (i) The Aboriginal Site Impact Recording Form can be found on the DPIE website:  
<http://www.environment.nsw.gov.au/licences/DECCAHIMSSiteRecordingForm.htm>
- (ii) Contact details for the AHIMS Registrar can be found on the DPIE website:  
<http://www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm>

## Report about harm to Aboriginal objects (Salvage Report)

30. A Salvage Report must be prepared about the actions relating to the harm of Aboriginal objects (as permitted by this AHIP). The report must:
- (a) include a short summary of the report
  - (b) provide a description of the methods and results of the salvage excavation
  - (c) detail the results of any analysis of Aboriginal objects
  - (d) provide analysis of the geomorphological context and site formation processes in relation to the results of the salvage excavation and analysis of the Aboriginal objects
  - (e) provide analysis of the local and regional context in relation to the results of the salvage excavation and analysis of the Aboriginal objects
  - (f) provide a predictive model and avenues for future research and desirable conservation outcomes for the region based on the results of the salvage excavation and other work that has been completed in the region
  - (g) detail the results of the analysis of Aboriginal objects in relation to the research questions formulated prior to the excavation
  - (h) describe any ongoing consultation with or involvement of representatives of Registered Aboriginal Parties in relation to this AHIP
  - (i) provide details of the Aboriginal objects which were fully or partially harmed in the course of undertaking the actions
  - (j) comment on the effectiveness of any mitigation measures that were implemented
  - (k) if any Aboriginal objects were moved to a temporary storage location, a description of the nature and types of Aboriginal objects which are now at that location
  - (l) detail the long-term management arrangements for any Aboriginal objects, and
  - (m) include a statement confirming that all Aboriginal Site Impact Recording Forms have been completed and submitted to the AHIMS Registrar.
31. The Salvage Report must be submitted to the DPIE office within 4 months of the completion of the actions authorised by this AHIP.

32. A copy of the Salvage Report, including a summary of the report in plain English, must be sent by registered post to each Registered Aboriginal Party within 14 days of the report being submitted to DPIE.

## General Conditions

### Indemnity

33. The AHIP holder agrees to indemnify and keep indemnified, the Crown in right of NSW, the Minister administering the Act, the Secretary of DPIE, and their employees, agents and contractors, in the absence of any willful misconduct or negligence on their part, from and against all actions, demands, claims, proceedings, losses, damages, costs (including legal costs), charges or expenses suffered or incurred by them resulting from:
- (a) any damage or destruction to any real or personal property; and
  - (b) injury suffered or sustained (including death) by any persons arising out of or in connection with any actions undertaken pursuant to this AHIP.

### Release

34. The AHIP holder agrees to release to the full extent permitted by law, the Crown in right of NSW, the Minister administering the Act, the Secretary of DPIE, and their employees, agents and contractors, in the absence of any willful misconduct or negligence on their part, from all suits, actions, demands and claims of every kind resulting from:
- (a) any damage or destruction to any real or personal property; and
  - (b) injury suffered or sustained (including death) by any persons arising from or in connection with any actions undertaken pursuant to this AHIP.

### Written notice

35. Any requirement to provide written notice to the DPIE office in this AHIP may be complied with by emailing the notice to the DPIE office's email address or by sending by registered post to the DPIE office's address. The DPIE office's contact details are specified at the front of this AHIP.



## SCHEDULES

The following schedules identify the areas and Aboriginal objects that are subject to the conditions of this AHIP.

### Schedule A: Aboriginal objects which must not be harmed

#### A1 Human remains

All human remains in, on or under the land must not be harmed, other than any human remains identified in Schedule B4, as specified by the conditions of this AHIP.

#### A2 Aboriginal objects that are identified on AHIMS

Not applicable.

#### A3 No-harm areas

Not applicable.

### Schedule B: Aboriginal objects that may be harmed through the certain actions

#### B1 Movement only

Not applicable.

#### B2 Salvage excavations

Salvage excavations may be carried out in the areas marked "indicative phase 1 transects", on the map in Appendix C, but only in accordance with the conditions of this AHIP.

The salvage excavation area comprises the following known Aboriginal objects, as identified on AHIMS (excluding any Aboriginal objects described in Schedule A):

Portion of Site (whole or part)	AHIMS Site ID	Site Feature	Site Name	Information access restriction? (Y/N)	Easting	Northing	Datum
Part – those areas marked as "indicative phase 1 transects", on the map in Appendix C	#45-5-5277	Artefact scatter	Cecil Park Water Reservoir AFT 1	N	299289	6248948	GDA
Part – those areas marked as "indicative phase 1 transects", on the map in Appendix C	#45-5-5282	Artefact scatter	Denbigh Trig AFT 1	N	289847	6236685	GDA
Part – those areas marked as "indicative phase 1	#45-5-2561	Artefact scatter	GLC1	N	299586	6249046	GDA

# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

transects", on the map in Appendix C							
Part – those areas marked as "indicative phase 1 transects", on the map in Appendix C	#45-5-4022*	Potential Archaeological Deposit	PAD 2023-846	N	299586	624046	GDA
Part – those areas marked as "indicative phase 1 transects", on the map in Appendix C	#45-5-4931	Potential Archaeological Deposit	Lowes Creek PAD	N	291165	6239601	GDA

\*duplicate AHIMS record of #45-5-2561

## B3 Community collection

Not applicable.

## B4 Other

Not applicable.

## Schedule C: Aboriginal objects which may be harmed through the proposed works

The Aboriginal objects described in this schedule may be harmed, but only in accordance with the conditions of this AHIP (excluding any Aboriginal objects described in Schedule A).

### C1 Harm of Aboriginal objects identified on AHIMS

Portion of Site (whole or part)	AHIMS Site ID	Site Feature	Site Name	Information access restriction? (Y/N)	Easting	Northing	Datum
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-2-0369	Artefact scatter	Bringelly 1	N	293005	6243350	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-0905^	Artefact scatter	Bringelly 1;	N	293005	6243350	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-5277	Artefact scatter	Cecil Park Water Reservoir AFT 1	N	299289	6248948	GDA



# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-5282	Artefact scatter	Denbigh Trig AFT 1	N	289847	6236685	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-5278	Artefact scatter	Denham Court Road AFT 1	N	299247	6238647	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-2561	Artefact scatter	GLC1	N	299586	6249046	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-4022*	Potential Archaeological Deposit	PAD 2023-846	N	299586	624046	GDA
Whole	45-5-2430	Artefact	IFSC7; Cecil Park	N	298695	6248170	GDA
Whole	45-5-4032	Artefact	Isolated Object 2033-5	N	292010	6240911	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-4931	Potential Archaeological Deposit	Lowes Creek PAD	N	291165	6239601	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	52-2-3321	Artefact scatter	Mt Annan Macarthur sub station site 6	N	294020	6240911	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-5280	Artefact scatter	Ramsay Road South AFT 1	N	293129	6244136	GDA
Whole	52-2-4559	Artefact	SUEZ Spring Farm Resource Recovery Park IF 1	N	292790	6227631	GDA
Part – the land to which this AHIP applies (those areas marked orange in the map in Appendix A)	45-5-5279	Artefact scatter	Wynyard Avenue South Creek AFT 1	N	292881	6243072	GDA

\*duplicate AHIMS record of #45-5-2561

^duplicate AHIMS record of #45-2-0369

## C2 Areas where harm of Aboriginal objects is authorised

- Those Aboriginal objects in, on or under the land marked orange on the maps in Appendix A and within the “indicative phase 1 transects” in the map in Appendix C. Only in accordance with Schedules B2, C1 and the Salvage Excavation methodology in Appendix D.
- The AHIP area is bounded by the GPS coordinate points provided with the AHIP application on 6 January 2020 and contained in the GIS shape file 'AHIP\_Application\_Area\_191218' dated 19 December 2019.

## DICTIONARY

In this AHIP, unless the contrary is indicated the terms below have the following meanings:

<b>Aboriginal object</b>	has the same meaning as in the Act.
<b>Act</b>	means the <i>National Parks and Wildlife Act 1974</i> .
<b>AHIMS</b>	means the Aboriginal Heritage Information Management System maintained by DPC, as defined in s.90Q of the Act.
<b>AHIP</b>	means Aboriginal Heritage Impact Permit
<b>AHIP holder</b>	means the entity or person listed on the cover page under the heading "AHIP issued to".
<b>Application</b>	means the completed application form and all other documents in written or electronic form which accompanied the application when it was lodged or which were subsequently submitted in support of the application.
<b>Community collection</b>	means the collection of Aboriginal objects by one or all Registered Aboriginal Parties or their representatives.
<b>Community collection area</b>	means an area described as a community collection area in Schedule B3
<b>DPIE</b>	Department of Planning, Industry and Environment (NSW)
<b>DPIE office</b>	means the office listed on the cover page of this AHIP.
<b>DPC</b>	Department of Premier and Cabinet (NSW)
<b>Harm</b>	has the same meaning as in the Act. In relation to Aboriginal objects, harm means the movement, damage, defacement and/or destruction of Aboriginal objects. In relation to an Aboriginal place, harm means the damage, defacement and/or destruction of the Aboriginal place.
<b>Land</b>	means the land described under the heading "Land to which this AHIP applies".
<b>No-harm areas</b>	means those areas described in Schedule A3.
<b>Proposed works</b>	means the works described under the heading "D. Proposed Works" at the front of this AHIP.
<b>Public register</b>	means the public register established under s.188F of the Act, that contains details of AHIPs issued by DPIE, as described under the heading "Information about this AHIP".
<b>Registered Aboriginal Parties</b>	means the Registered Aboriginal Parties listed in the application.
<b>Salvage excavation</b>	means an archaeological excavation carried out in accordance with the methodology accompanying the application, as modified by the conditions of this AHIP. The purpose of salvage excavation is to recover a sample of Aboriginal objects as an archival record of Aboriginal life from a site that will be destroyed.
<b>Salvage excavation area</b>	means any area described as a salvage excavation area in Schedule B2.



# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

<b>Test excavation</b>	means an archaeological excavation carried out in accordance with methodology accompanying the application, as modified by the conditions of this AHIP. The purpose of test excavation is to collect a sample of Aboriginal objects, in order to establish the nature and extent of sub-surface Aboriginal objects and to assist in the assessment of management options for the site.
<b>Test excavation area</b>	means any area described as a test excavation area in Schedule B2

## INFORMATION ABOUT THIS AHIP

### Public Register

Under section 188F of the Act, the Secretary of DPIE is required to keep a public register containing the details of each AHIP issued. The details of this AHIP that will be published on the public register are outlined on the front page of this AHIP.

The public register is available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

### Appeals

Under section 90L of the Act, the AHIP holder may appeal to the Land and Environment Court if they are dissatisfied with any condition of this AHIP. The appeal must be lodged within 21 days of the date this AHIP was issued.

### Penalties for breach of the Act or AHIP condition

Significant penalties can be imposed by the Land and Environment Court for harm to an Aboriginal object or Aboriginal Place other than as authorised by a condition of an AHIP, or for a breach of an AHIP condition. DPIE can also issue penalty notices for a breach of the Act or AHIP condition.

### Responsibility for obtaining all approvals and compliance with applicable laws

The AHIP holder is responsible for obtaining and complying with all approvals necessary to lawfully carry out the work referred to in this AHIP, including but not limited to development consents.

### Other relevant provisions of the *National Parks and Wildlife Act*

Newly identified Aboriginal objects must be notified to the Secretary of DPIE under s.89A of the Act using the form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

Stop work orders, interim protection orders and remediation directions may be issued in certain circumstances to protect Aboriginal objects or places.

### Obligation to report Aboriginal remains under Commonwealth laws

The AHIP holder may have additional obligations to report any discovery of Aboriginal remains under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

### Exercise of investigation and compliance powers

Officers appointed or authorised under the Act may exercise certain powers and functions, including the power to enter land.

### Duration of AHIP

This AHIP remains in force for the period specified in the AHIP.

### Variation of AHIP

The AHIP holder may apply to the DPIE office for a variation of any conditions of an AHIP, using the AHIP variation application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au). Requests for significant variations must be accompanied by evidence of further consultation with Registered Aboriginal Parties and may include payment of fees.

The conditions of an AHIP may be varied at any time by the Secretary of DPIE in order to correct a typographical error or to resolve an inconsistency between conditions. The AHIP holder may appeal a decision of the Secretary of DPIE to vary the conditions of the AHIP.

# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
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## Transfer of AHIP

The AHIP holder may apply to transfer this AHIP to another person by using the AHIP transfer application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au).

## Surrender of AHIP

The AHIP holder may apply to surrender this AHIP by using the AHIP surrender application form available online at [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au). The surrender must be approved by the Secretary of DPIE and may be subject to conditions.

## Suspension and revocation of AHIP

An AHIP may be suspended or revoked at any time at the discretion of the Secretary of DPIE. Prior to suspending or revoking the AHIP, the AHIP holder will be given notice and an opportunity to make submissions. The AHIP holder will be notified in writing of the final decision. The AHIP holder may appeal a decision to revoke the AHIP.

## Entry to land

An AHIP does not automatically entitle its holder to enter land for the purpose of conducting work related to the AHIP. The AHIP holder is responsible for obtaining permission to enter land from the owner and/or occupier of the land.

## Disclosure of information pursuant to lawful requirement

This AHIP does not prevent the disclosure of any information or document in DPIE's possession in accordance with any lawful requirement.

## Making copies of reports

By providing a report, the AHIP holder acknowledges that DPIE can use the information in that report to inform its regulatory functions, note details of that report in AHIMS and include a copy of the report in its library which may be available to members of the public.

DPIE is able to make copies of any reports provided to DPIE under this AHIP.



# Aboriginal Heritage Impact Permit

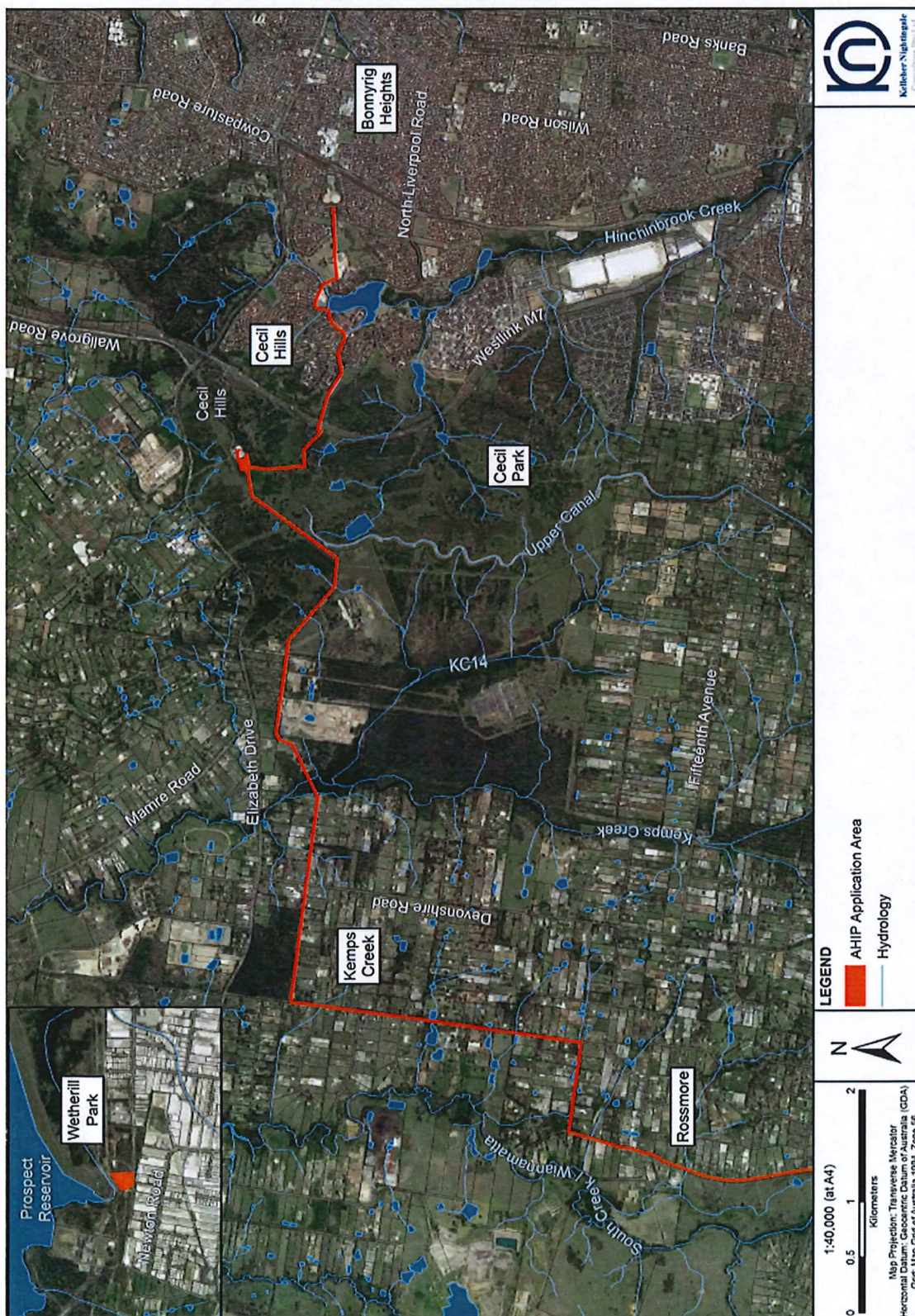
Section 90 of the National Parks and Wildlife Act 1974



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## APPENDIX A: Map 1 land to which this AHIP applies

Those Aboriginal objects in, on or under the land highlighted in orange (and labelled 'AHIP application area' in the figure below), as part of works associated with the South Prospect to Macarthur water link project. The AHIP area is bounded by the GPS coordinate points provided with the AHIP application on 6 January 2020 and contained in the GIS shape file 'AHIP\_Application\_Area\_191218' dated 19 December 2019.





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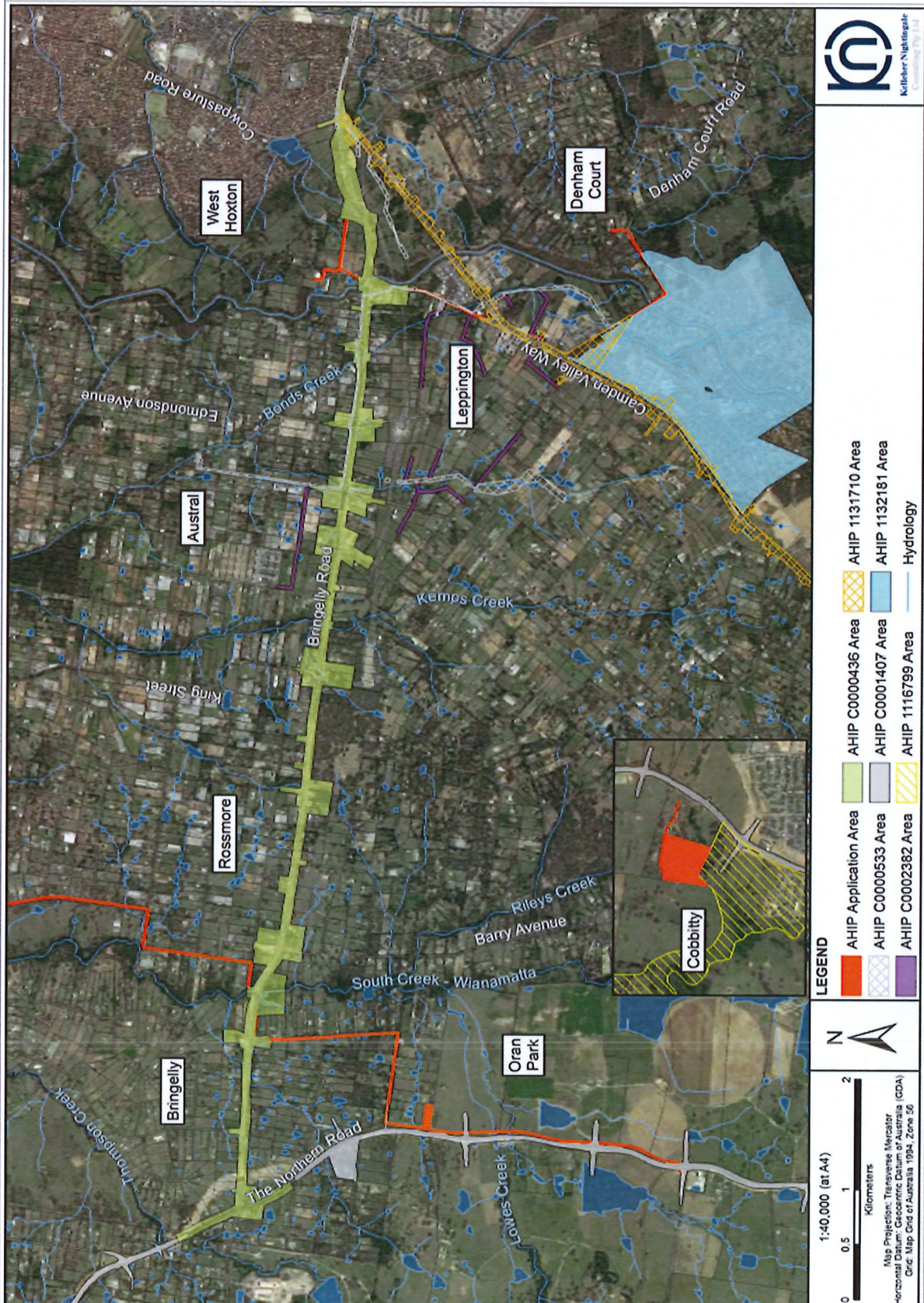
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## APPENDIX A: Map 2 land to which this AHIP applies

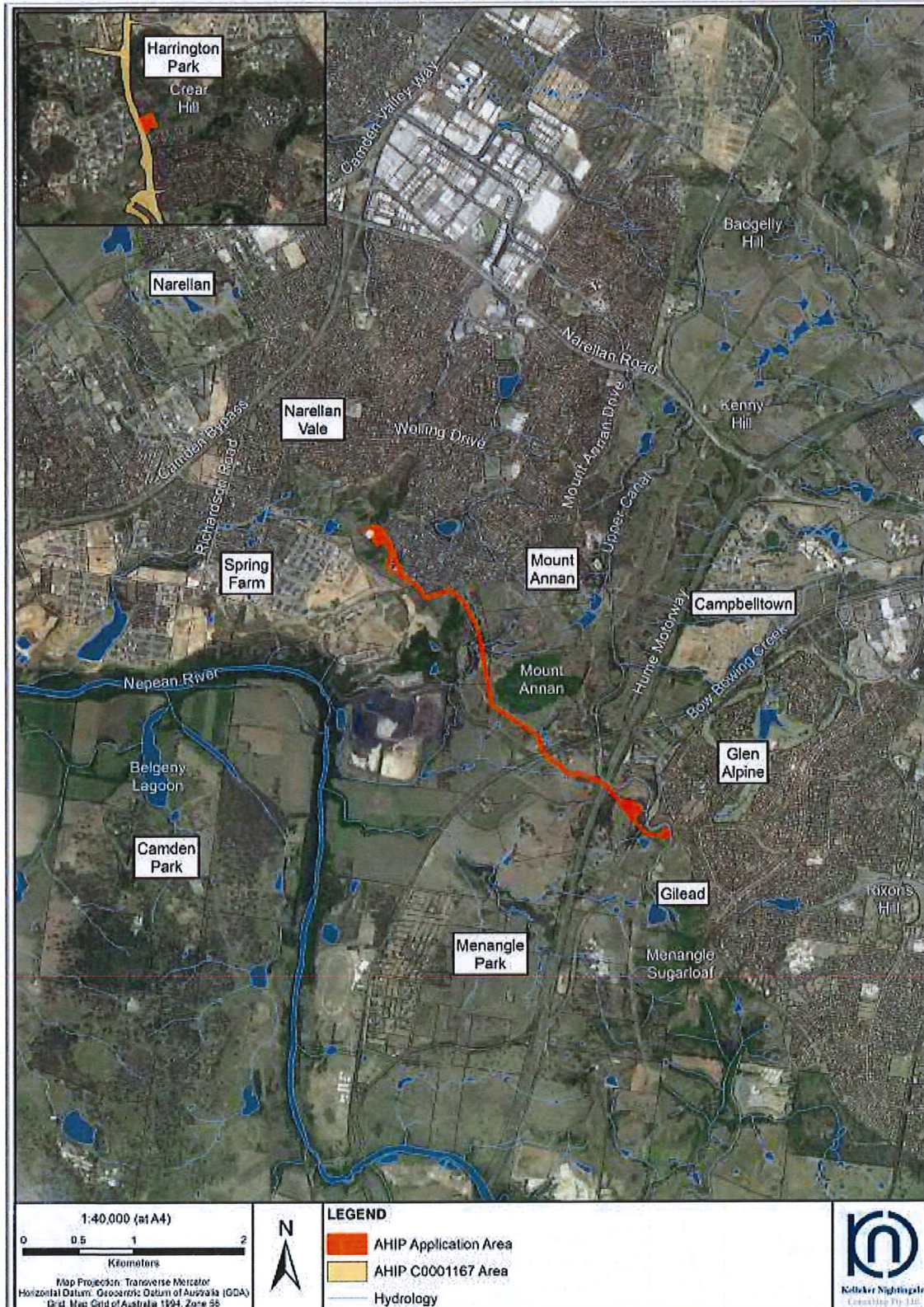
Those Aboriginal objects in, on or under the land highlighted in orange (and labelled 'AHIP application area' in the figure below), as part of works associated with the South Prospect to Macarthur water link project. The AHIP area is bounded by the GPS coordinate points provided with the AHIP application on 6 January 2020 and contained in the GIS shape file 'AHIP\_Application\_Area\_191218' dated 19 December 2019.





## APPENDIX A: Map 3 land to which this AHIP applies

Those Aboriginal objects in, on or under the land highlighted in orange (and labelled 'AHIP application area' in the figure below), as part of works associated with the South Prospect to Macarthur water link project. The AHIP area is bounded by the GPS coordinate points provided with the AHIP application on 6 January 2020 and contained in the GIS shape file 'AHIP\_Application\_Area\_191218' dated 19 December 2019.





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Environment

## APPENDIX B: Map 1 Denbigh Trig AFT 1 included in AHIP area is shaded red

Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





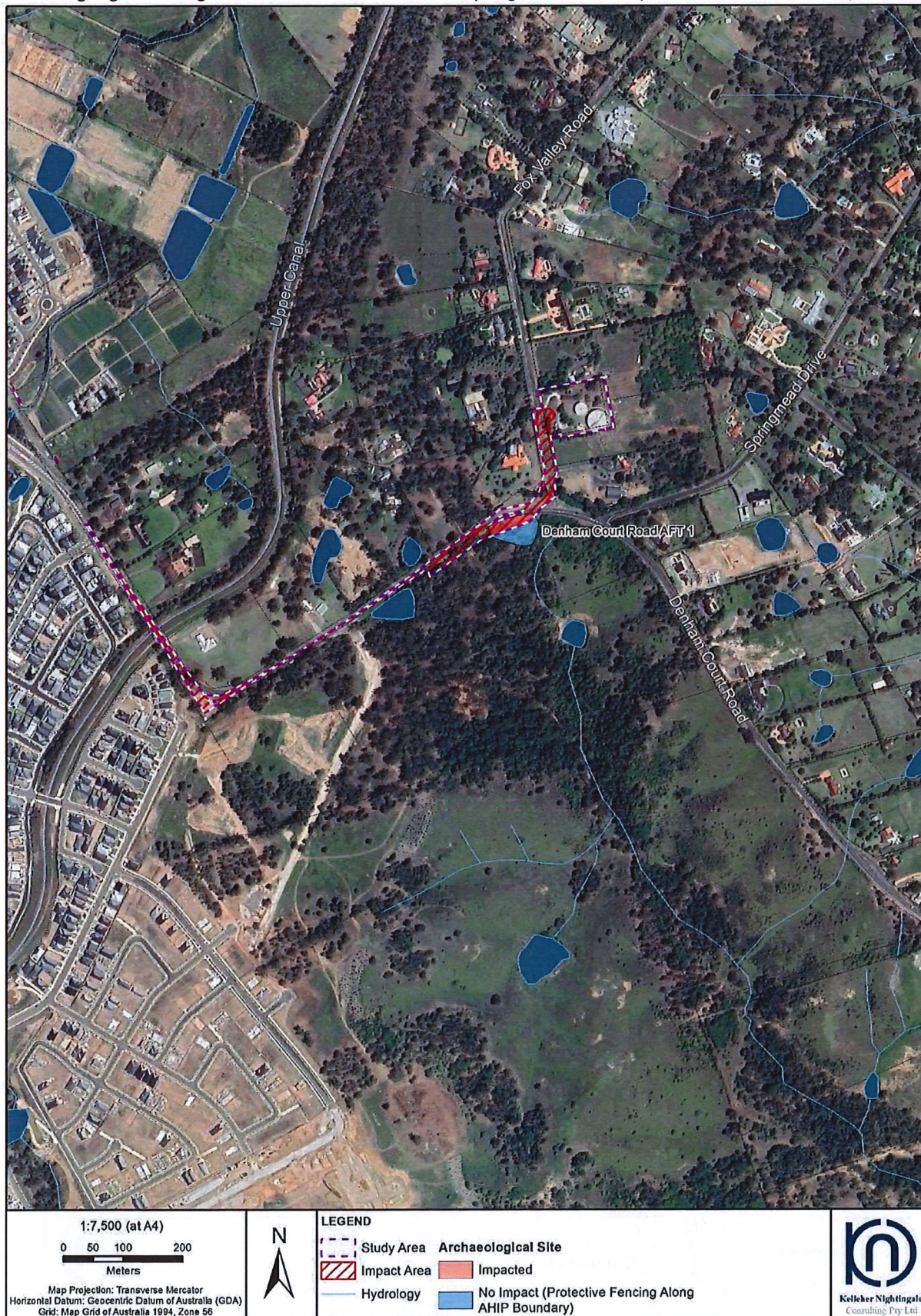
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Environment

**APPENDIX B: Map 2 Denham Court Road AFT 1 included in AHIP area is shaded red**  
Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





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Industry &  
Environment

## APPENDIX B: Map 3 Cecil Park Reservoir AFT 1 included in AHIP area is shaded red

Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



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Industry &  
Environment

## APPENDIX B: Map 4 Lowes Creek PAD included in AHIP area is shaded red

Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





# Aboriginal Heritage Impact Permit

Section 90 of the National Parks and Wildlife Act 1974



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Environment

**APPENDIX B: Map 5 Mt Annan Macarthur sub-station 1 included in AHIP area is shaded red**  
Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



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Industry &  
Environment

## APPENDIX B: Map 6 Ramsey Road South AFT 1, Bringelly 1 and Wynyard Ave South Creek AFT 1 areas included in AHIP are shaded red

Areas highlighted in light blue and labelled in the map legend as 'no impact' should not be subject to harm.





## APPENDIX C: Map of salvage excavation areas

Salvage excavations may be carried out in the areas marked "indicative phase 1 transects", but only in accordance with the conditions of this AHIP.





## APPENDIX D: Salvage excavation methodology

### Methodology

#### Research Aims

The main aims of the proposed salvage excavation program are:

- To salvage a representative sample of identified archaeological site prior to development impact.
- To analyse the salvaged archaeological material to gain and conserve knowledge and understanding of the scientific and cultural information exhibited by the activities associated with ridgelines and along major water courses in the region.
- To use the excavation results to gain insight into the subsurface archaeology of the adjacent areas not being impacted by the proposal. This would increase future educational opportunities and allow more informed management of Aboriginal heritage.

The further scientific aim of the salvage excavation program would be to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposit and the specific types of associated archaeological/cultural activities.

- Determining the integrity of the deposit involves assessing the degree of disturbance which is present.
- Determining the statistical extent of the sites and/or activity areas involves identifying the boundaries associated with the identified archaeological deposit.
- Assessing the spatial distribution involves identifying the presence/absence of archaeological material across the identified archaeological sites.
- The nature of the sites refers to the type of activities indicated by the artefactual material (e.g. primary production, domestic knapping, hunting camps). The goal would be to retrieve entire assemblages from specific activities if such activities were present.
- Retrieved assemblages would be compared with the results from other relevant archaeological projects in order to assess significance.

#### Research Questions

The results of the proposed salvage excavation would increase our understanding of subsurface archaeology of the study area. In particular, research would focus on the archaeologically-identifiable cultural activities that took place on landforms within the upper reaches of the South Creek/Wianamatta catchment. Research in the area thus far has focused on archaeological sites in the vicinity of more permanent water sources due to the higher density of artefacts and greater rate of preservation generally found in these locations.

**Question 1:** What cultural activities are archaeologically identifiable at sites Cecil Park Water Reservoir AFT 1, Denbigh Trig AFT 1, GLC1 (including Artefact Scatter PAD 2023-B46) and Lowes Creek PAD compared to sites along higher order creeks (South Creek/Wianamatta)? Are there differences in activities between these three locations?

**Question 2:** What are the taphonomic features of archaeological sites Cecil Park Water Reservoir AFT 1, Denbigh Trig AFT 1, GLC1 (including Artefact Scatter PAD 2023-B46) and Lowes Creek PAD? What does this indicate about site integrity and artefact survivability for similar landforms on ridges or within the upper reaches of the South Creek/Wianamatta catchment (Lowes Creek)?

#### What can we expect?

It is anticipated that differences in stone tool assemblages may be related to different cultural activities (e.g. primary reduction vs maintenance flaking). The science of archaeology is paramount to any research question and it is important to stress that the goal for the salvage program for all excavated sites is straight forward: to retrieve a viable sample for comparative analysis using established techniques (see Field Methods below). In this regard interpretation would not precede data collection. The proposed archaeological program would systematically sample the relevant area using standard techniques with the outcome being a viable, robust and comparable sample. Analysis of the sample would follow and interpretations would be made distinctly separate from the results.



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## Archaeological Salvage Areas

Salvage excavation would be undertaken at identified archaeological sites Cecil Park Water Reservoir AFT 1, GLC1 (including Artefact Scatter PAD 2023-846) and Lowes Creek PAD. Salvage excavation of the sites would focus on the extraction of collections of artefacts related to activity areas and geomorphic information.

## FIELD METHODS

The goal of the field excavation program is to recover significant assemblages of artefacts

### Salvage Program

In order to achieve the most robust and comparable result, KNC advocates an open area salvage excavation. The first phase in open area salvage is to establish the statistical boundaries of the previously identified archaeological deposit. In other words, recording the spread of activities across the site/landscape. This approach is designed to salvage the spatial properties of the site as shown in the lithic continuum.

#### Phase 1

A series of 1 m<sup>2</sup> squares are excavated on a transect grid at 15 metre intervals overlain on each site to mark the spread of lithics and related geomorphic activity (Figure 9).

GDA 94 coordinates would be recorded for each square to enable three dimensional modelling. Statistical salvage following this method is highly beneficial because it creates a robust inter-site sample, sufficiently random, critical for regional comparative analysis. No other method is as efficient or effective. It is anticipated that a minimum of 5m<sup>2</sup> would be excavated within each site during Phase 1.

Individual excavation squares measuring 1 m<sup>2</sup> would be hand excavated in stratigraphic units (Unit A, Unit B, etc.). Squares would be excavated until the basal layer or culturally sterile deposit is reached (usually 25-35 cm). Previous excavation of the podzolic soils associated with the area indicates no archaeological stratigraphy within units. As such the A1 and A2 soil layers are culturally one layer (suffering from cyclical soil transfer resulting in a mixed cultural profile within the soil) and can be salvaged as one unit where possible. All excavated deposit would be wet sieved using nested 5.0 mm and 2.5 mm sieves. Where potential micro-debitage is recovered 1.0mm sieves will be utilised.

The location of each excavated square would be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would be drawn and all squares would be photographed. Soil samples as well as thin section profiles (where feasible) would also be collected. The stratigraphy of all excavated areas would be fully documented and appropriate records archived.

#### Phase 2

Open area salvage of significant deposit follows the Phase 1 assessment. Additional 1 m<sup>2</sup> squares, constituting an open area, will be excavated around information bearing deposits along the excavation grid. Information bearing deposits are identified by triggers such as: significant quantities of artefacts, variations in raw material, unusual artefacts, chronological material and/or taphonomic indicators. In this context chronologic material is anything that can be used to date artefacts or deposit: charcoal or charcoal bearing deposit (e.g. hearth ash), sandy deposit, gravels (e.g. aluminium feldspar). Phase 2 open area investigation would expand to encompass entire activity areas. The location of Phase 2 open area investigation would be based on Phase 1 results.

Where possible, carbon samples will be collected and analysed for material relating to both the archaeology and geomorphology. Where appropriate cosmogenic and radiometric dating of soils and rock surfaces will be applied (Nishiizumi et al. 1986, 1993).



# Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*



Planning,  
Industry &  
Environment

## Analysis

Artefacts would be analysed on a comparable level with previous analyses of excavated assemblages. Information derived from this analysis; in particular the identification of specific artefact types and their distributions and associations; would be used to put together interpretations about how sites were used, where sites were located across the landscape, the age of sites and to assess cultural heritage values. By comparing different areas it would be possible to determine whether there were differences in the kinds of activities carried out and if different activities were related to different landforms.

A range of stone artefacts may be present across the salvage areas and the analysis would expand accordingly to account for artefact variability. All information would be recorded in database form (MS Excel). Various types of evidence would be used to determine the kinds of activities that were carried out. A short description of the proposed analysis is outlined below.

- \* Field analysis would record basic data, such as material type, number and any significant technological characteristics, such as backing or bipolar techniques; added to this would be any provenance data such as pit ID and spit number. The purpose of the field recording is twofold: 1) establish a basic recording of artefacts retrieved and 2) to allow on-going assessment of the excavation regime (e.g. whether higher stratigraphic resolution is required while digging).
- \* Detailed (laboratory) analysis would entail recording a larger number of characteristics for each individual artefact. These details would be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis.
- \* Lithic characteristics to be recorded cover a range of basic information but are not limited to these categories (see example below). For transparency, terms and category types would in large part be derived from Holdaway and Stern (2004).

Sample Categories		
Record Number	% Cortex	Flake Type
Pit ID	Length	Termination Type
Spit Number	Width	Core Type
Count	Thickness	Number of Scars (Core)
Raw Material	Weight	Scar Type (Core)
Colour	Modification	Shape of Flake
Quality	Reduction Type	Platform Type

- \* A detailed explanation and glossary would be provided with the final excavation report.
- \* Minimum Number of Flake (MNF) calculations formulated by Hiscock (2000, 2002) would be undertaken where applicable (although past experience indicates MNF calculations would not be required for this excavation program).

The analysis of artefacts recovered during the excavation program would be undertaken in a transparent and replicable fashion so as to permit the comparison of the entire excavated assemblage with data from other areas. This would also allow for an interpretation of the study area's archaeological significance.

## Field Team

KNC directors, Dr Matthew Kelleher and Alison Nightingale, would be responsible for the salvage excavation program. Dr Matthew Kelleher would direct the excavation component of the Aboriginal archaeological assessment. Matthew has extensive experience in managing archaeological excavations and research projects. Matthew would also be the principal contact for the overall Aboriginal archaeological assessment for the project. The salvage excavation will be undertaken in association with registered Aboriginal stakeholders.



