ACEN | Australia

New England Solar – Historical Heritage Management Plan

Stage 1b – 400MWac – Operations

Stage 2a – 160MWac/320MW/4hr – Construction

Stage 3b – 200MW/2hr – Operations

Stage 4a – 160MWac/280MW/4hr – Construction

7 October 2026

Document Control

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3	15 October 2020	Final – Approved by DPE	Pamela Kottaras	David Richards	David Richards
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8	**7 October 2026**	**Incorporating Department Feedback**	**Bonnie Barker**	**Patric Millar**	**Sarah Donnan**

ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, TAS 7004

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1 Background

1.1 Approved Project

New England Solar Project (NES) was granted Development Consent from the Department of Planning, Infrastructure and Environment (DPIE) (now the Department of Planning, Housing and Infrastructure [DPHI]) on 9 March 2020 (SSD 9255). The Development Consent was most recently modified on 26 May 2023 (Modification 2), after receiving approval for Modification 1 on 9 Feb 2021.

1.1.1 General project description

ACEN Australia Pty Ltd (ACEN Australia) (formerly named UPC Renewables Australia Pty Ltd) has approval to develop the New England Solar and Battery Project; a significant grid-connected solar and battery energy storage system (BESS) project along with associated infrastructure (the Project), approximately 6 kilometres (km) east of the township of Uralla, which lies approximately 19 km south of Armidale, in the Uralla Shire local government area (LGA) (hereafter referred to as NES). NES is within the New England Renewable Energy Zone (REZ). NES was approved, subject to conditions, by the New South Wales (NSW) Independent Planning Commission (IPC) on 9 March 2020 (SSD 9255).

NES will be constructed in the following stages:

- Stage 1a: Construction of a 400 megawatt (MW) solar PV plant within the Northern Array, which has been completed
- Stage 1b: Operations of 400MW solar PV plant
- Stage 2a: Construction of a 160MW solar PV and 320MW/4hr BESS hybrid plant within the Central Array and the approved substation/ BESS area
- Stage 2b: Operations of 160MW solar PV and 320MW/4hr BESS hybrid plant
- Stage 3a: Construction of 200MW/2hr BESS within the approved substation/BESS area, which has been completed
- Stage 3b: Operations of 200MW/2hr BESS
- Stage 4a: Construction of 160MW solar PV and 280MW/4hr BESS hybrid plant within the balance of the Northern Array and the approved substation/BESS area
- Stage 4b: Operations of 160MW solar PV and 280MW/4hr BESS hybrid plant
- Stage 5: Decommissioning

In accordance with the Department's staging approval, dated 12 May 2026 (SSD-9255-PA-80), this revision of the Plan encompasses Stages 1 through to Stage 3. Management plans associated with Stage 4 and Stage 5 will be completed at a later date, and the relevant management plans will continue to be updated as required and as the various Stages reach completion.

Key components of NES development are summarised in Table 1-1.

Table 1-1 Key components of NES

Aspect	Description
NES project summary	The NES project includes: • A generating capacity of approximately 720 (MWac), including about 560 MWac generated by the northern arrays (Stage 1 & Stage 4) and 160 MWac from the central arrays (Stage 2). • Approximately 1.4 million single-axis tracking solar panels (up to 4.3 metres (m) high) and 150 power conversion units (PCU) (up to 2.7 m high). • A grid substation in the northern array area and connection to TransGrid's 330 kilovolt (kV) transmission line. • A lithium-ion battery storage facility (1,400 MW/2,800 MWh) located adjacent to the substation and within a number of small enclosures (up to 2.9 m high) or larger battery buildings (up to 5.5 m high) (Stage 3 & 4). • Internal access tracks, staff amenities, maintenance buildings (up to 8 m high), offices, laydown areas, car parking and security fencing. • Subdivision of land within the site for the TransGrid switchyard.
Project area	Project boundary: 3,655 hectares (ha). Total NES development footprint: 2,194 ha • Stage 1b footprint: 1,210 ha • Stage 2a footprint: 493 ha • Stage 3b footprint: 10.2 ha • Stage 4a footprint: 470 ha
Access route	All vehicles will access the site via the New England Highway, Barleyfields Road (North) and Big Ridge Road).
Site entry and road upgrades	Two new site entry points are constructed on Big Ridge Road with a rural property access type. Upgrades to the intersection of: • The New England Highway and Barleyfields Road (North), including a Channelised Right Turn (CHR) treatment. • Barleyfields Road (North) and Big Ridge Road, including a Basic Left Turn (BAL) treatment. Upgrades have been made to: • Barleyfields Road (North) between the New England Highway and Big Ridge Road, including sealing to a width of 7.2 m and 1 m gravel shoulders.

	• Big Ridge Road including sealing sections to a width of 7.2 m and 1 m gravel shoulders, and upgrading a section with a gravel surface to a width of 8.7 m.
Rail transport	Construction materials may be transported to the site via a combination of road and rail (average of 2 trains per week). A train unloading area and materials storage area may be constructed adjacent to the Main Northern Railway. Materials will be stored in shipping containers (up to 2.9 m high) until required on-site.
Construction	Construction materials may be transported to the site via a combination of road and rail (average of 2 trains per week). Construction hours limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	The expected operational life of NES is approximately 30 years. However, this may involve infrastructure upgrades that could extend the operational life.
Decommissioning and rehabilitation	The NES project also includes decommissioning at the end of the NES project life, which will involve removing all infrastructure.
Hours of construction	Construction hours are limited to Monday to Friday 7 am to 6pm, and Saturday 8 am to 1pm.
Hours of operation	Once commissioned, NES will be operational 24 hours a day, 7 days a week. Routine operations and maintenance will be undertaken Monday to Friday 7 am to 6 pm, with staff on call during weekends and public holidays for emergencies and necessary maintenance.
Subdivision	Subdivision of the lots on which the approved TransGrid Switchyard is located has been completed.
Employment	Approximately 700 construction jobs and up to 15 full-time operational jobs.
Capital investment value	$1.268 billion.

1.2 Working Hours

1.2.1 Construction

Unless approval has been obtained from the Secretary, construction, upgrading and decommissioning activities on site can only be undertaken between the following hours:

- 7 am to 6 pm Monday to Friday;
- 8 am to 1 pm Saturdays; and
- at no time on Sundays and NSW public holidays.

The following construction, upgrading or decommissioning activities may be undertaken outside these hours without the approval of the Secretary:

- the delivery of materials as requested by the NSW Police Force or other authorities for safety reasons; or
- emergency work to avoid the loss of life, property and/or material harm to the environment.

1.2.2 Operations

Once commissioned, NES will operate 24 hours a day. The facility will be staffed during daylight hours, generally from:

- 7 am to 6 pm Monday to Friday (staff on-call during weekends and public holidays for emergencies and necessary maintenance).

1.3 Purpose and scope of this plan

1.3.1 Overview

EMM Consulting Pty Limited (EMM) prepared the environmental impact statement (EIS) and historical heritage assessment (HHA) and statement of heritage impact (SoHI) for the project, inclusive of an amendment report issued after the public exhibition phase in 2019 (EMM 2018).

The SoHI recommended that a historical heritage management plan (HHMP) be developed to manage post-approval conservation and mitigation of historical heritage within the development footprint.

This HHMP is a requirement of Condition 19 of SSD-9255. The primary purpose of this plan is to define management of historical heritage values within the development footprint. The term 'management' includes both historical heritage protection as well as mitigation of impacts on historical heritage. This HHMP:

- defines the areas to which this plan applies;
- lists relevant contacts, their details and the reporting hierarchy;
- lists all historical sites identified in the project boundary and development footprint;
- identifies management procedures for historical heritage values within and adjacent to the project boundary and development footprint;
- defines provisions for updates of historical site status and the status of management measures towards their completion;
- identifies measures to ensure ongoing consultation with former DPIE (now DPHI) and Heritage NSW (as required);
- provides protocols for educating staff and contractors of their obligations relating to historical heritage values through a site induction process;
- provides protocols for newly identified sites and suspected human skeletal material;
- defines reporting requirements and database update requirements;

- lists provisions for continuous improvement to the plan through auditing and plan modification; and
- lists provisions for review and updates of the HHMP.

1.3.2 Area to which this plan applies

This HHMP applies to the project boundary as shown on Figure 1.2 and represents an envelope covering the development footprint of the two solar arrays and associated infrastructure. The HHMP also provides management measures for historical sites that occur on the border of the project boundary or extend beyond the project boundary, comprising sites HNE01, HNE02, HNE04-12, HNE26, HNE31, and HNE38-40, managed as per table 8.1 of the Historical Heritage Assessment, Appendix E of the EIS for NES (EMM, 2018).

A total of 31 historical sites including one significant cultural landscape were identified during the course of the HHA (EMM, 2018) that are present inside the project boundary and in close proximity, including to the south of the project boundary. The focus of this management plan; however, is the sites described above and in Table 1.2 and Table 1.3. The level of significance is also shown in the tables with 'contributory' signifying that the item does not possess significance in isolation but as part of the wider landscape.

Through the project design revisions, resulting in the removal of the southern array area, there are 15 historical sites including the significant cultural landscape (HNE 37) within the project boundary that require management under this plan.

The historical sites are shown on Figure 2.1 and Figure 2.2 with the three levels of management shown (active, passive, removal). Details for the management of the 15 sites including the significant cultural landscape are presented in Chapter 2 and a summary of the management measures are listed in Table 3.1.

Table 1.2 Historical heritage items – avoid impacts

Site number	Site name	Significance
HNE14	Granite tors	Contributory
HNE17	Gostwyck Shepherd's Hut	State
HNE18	Stockyard	Contributory
HNE19	Remnant house archaeological site	Local
HNE20	Old Gostwyck Road – sections outside the development footprint will be avoided	Contributory
HNE28	Spring Camp house	Local
HNE35	Old Gostwyck platform 3	State

HNE36	Saumarez Hut archaeological site	State
HNE37	Part of the significant cultural landscape	State/local

Table 1.3 Historic heritage items - impacted

Site number	Site name	Significance
HNE15	View through Gostwyck Station	Contributory
HNE16	View from granite tors	Contributory
HNE20	Old Gostwyck Road – sections of the road within the development footprint will be impacted	Contributory
HNE21	Remnant fence line	Contributory
HNE34	Former stockyards	Contributory
HNE41	Row of poplars	Contributory
HNE43	Former fence line	Contributory
HNE37	Part of the significant cultural landscape	State/local

1.3.3 Relevant Conditions of Consent

Conditions 18–19 of SSD-9255 address heritage requirements. The conditions listed in Table 1.4 refer to the relevant sections of this plan which address them.

Table 1.4 Conditions of SSD 9255 relevant to this HHMP

Condition	Where addressed in this document
Protection of Heritage Items 18. The Applicant must ensure the development does not cause any direct or indirect impacts on the Aboriginal heritage items identified in Table 1 of Appendix 5 or the historic heritage items identified in Table 1 of Appendix 6 (Table 1.2), or any Aboriginal or historic heritage items located outside the approved development footprint. *Note: The location of the historic heritage items referred to in this condition are shown in Table 1.2.*	Table 1.3 *Note that this plan does not address Aboriginal heritage items – this is addressed separately in an Aboriginal heritage management plan (AHMP)*
Heritage Management Plan 19. Prior to commencing the development, the Applicant must prepare a Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:	Whole document

Condition	Where addressed in this document
a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;	Section 1.6
b) be prepared in consultation with Heritage NSW, Aboriginal Stakeholders and Council;	Consultation with Uralla Shire Council was undertaken by ACEN between 19 to 26 August 2020. Council made no comment (APPENDIX B). Consultation with Aboriginal stakeholders is not relevant to this plan.
c) include a description of the measures that would be implemented for:	
• protecting the historic heritage items identified in Table 1 of Appendix 6 (Table 1.2) or items located outside the approved development footprint;	Section 2.4
• managing the impact of the development on the historic heritage items identified in Table 2 of Appendix 6 (Table 1.3), including photographic archival records prepared in accordance with Heritage Council of NSW Guidelines for archival recordings;	Section 2.4
• a contingency plan and reporting procedure if:	
– previously unidentified heritage items are found; or	Section 3.1, Section 3.2 and Section 3.3.
– Aboriginal skeletal material is discovered;	Section 3.4, Refer to the NES AHMP Section 5.3 for further details
• ensuring workers on site receive suitable heritage inductions prior to carrying out any development on site, and that records are kept of these inductions; and	Chapter 4
d) include a program to monitor and report on the effectiveness of these measures and any heritage impacts of the project	Section 4.3, Sections 2.5.2.1 and 2.5.3
Following the Secretary's approval, the Applicant must implement the Heritage Management Plan.	This plan, approval as per Appendix A

1.4 Implementation of this plan

The individuals responsible for the implementation of this plan are provided in Table 1.5. The plan will be stored in ACEN's document control system; the latest version will be available on https://newenglandsolar.com.au. As the document owner, ACEN is the contact point for this plan and its requirements and will provide guidance and training to any person that requires additional training regarding this plan.

Table 1.5 Roles and responsibilities

Role	Responsibilities
ACEN Australia Project Manager	• Ensure the implementation of this plan is carried out appropriately during construction. Responsible for notifying agencies if there is an unexpected find or incident.
ACEN Australia Operations Manager	• Ensure the implementation of this plan is carried out appropriately during operations.
During construction, EPC Contractor Project Manager	• Ensure adequate financial and personnel resources are made available for the implementation of this plan. • Manage the implementation of this plan during construction.
ACEN Australia New England Solar Site Manager	• Ensure adequate financial and personnel resources are made available for the implementation of this plan. • Manage the implementation of this plan during operations
All Staff	• Manage the implementation of this plan during construction and operations
ACEN Australia's HSE Manager (Including Contractors HSE managers where relevant).	• Primary contact with archaeologist. • Oversee fencing of areas in accordance with this plan. • Ensure the historic heritage management measures required to be undertaken prior to construction are conducted in accordance with the measures outlined in this plan. • Ensure fencing of historic sites is maintained. • Ensure inclusion of historic heritage in work inductions through delivery or input to induction documents. • Distribute copies of this plan as required. • Engage and coordinate relevant specialist personnel to undertake management measures or additional assessment as specified in this plan. • Ensure relevant reporting, data management and registration is conducted, maintained and updated. • Arrange for a review of this plan in accordance with review cycles and conditions specified in this plan.

1.5 Regulatory consultation

This management plan must be endorsed by DPHI prior to implementation. As the project will not impact on State Heritage Register items or relics, Heritage NSW did not comment on the content of this document (APPENDIX E).

1.6 Authorship

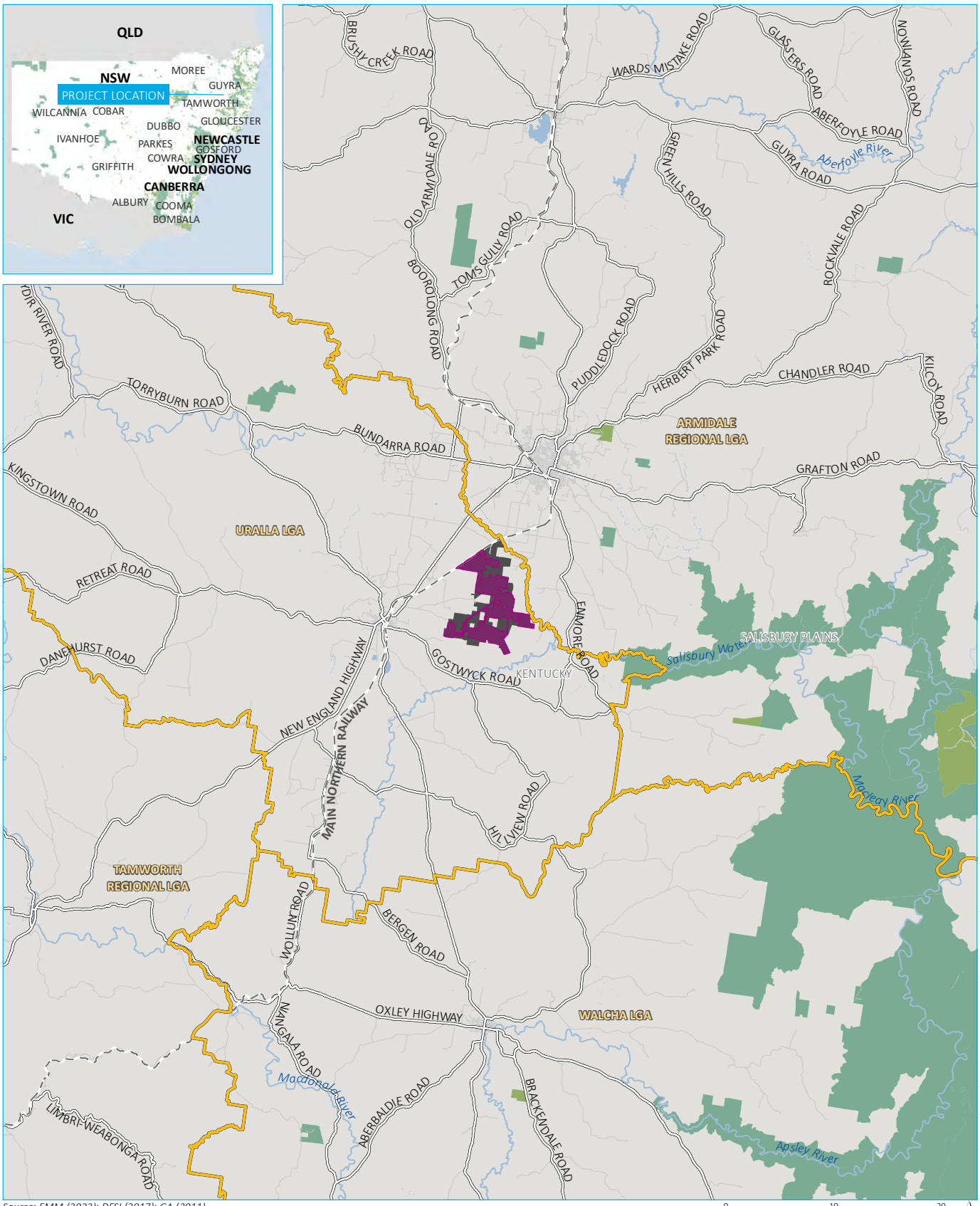
This HHMP has been prepared by EMM on behalf of ACEN and in accordance with relevant conditions of SSD-9255 (Table 1.4). This plan was prepared by Pamela Kottaras (EMM Associate, National Technical Lead – Historical Heritage) with assistance from Amelia O'Donnell (EMM) and Pamela Chauvel (EMM).

Pamela Kottaras was endorsed by DPE (now DPHI) to prepare this HHMP (APPENDIX A).

1.6.1 Revisions

This historical heritage management plan (HHMP) is the third review of the original document, finalised in 2020. It updates historical heritage management aspects of the project since the 2023 report. Revisions and modifications to this report include:

- update to align with staging approach endorsed by DPHI (endorsed 12 May 2026);
- remove references to works completed or no longer relevant to the project; and
- update review triggers for this HHMP.



Source: EMM (2023); DFSI (2017); GA (2011)

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GDA 1994 MGA Zone 56

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KEY

- Development footprint
- Project boundary

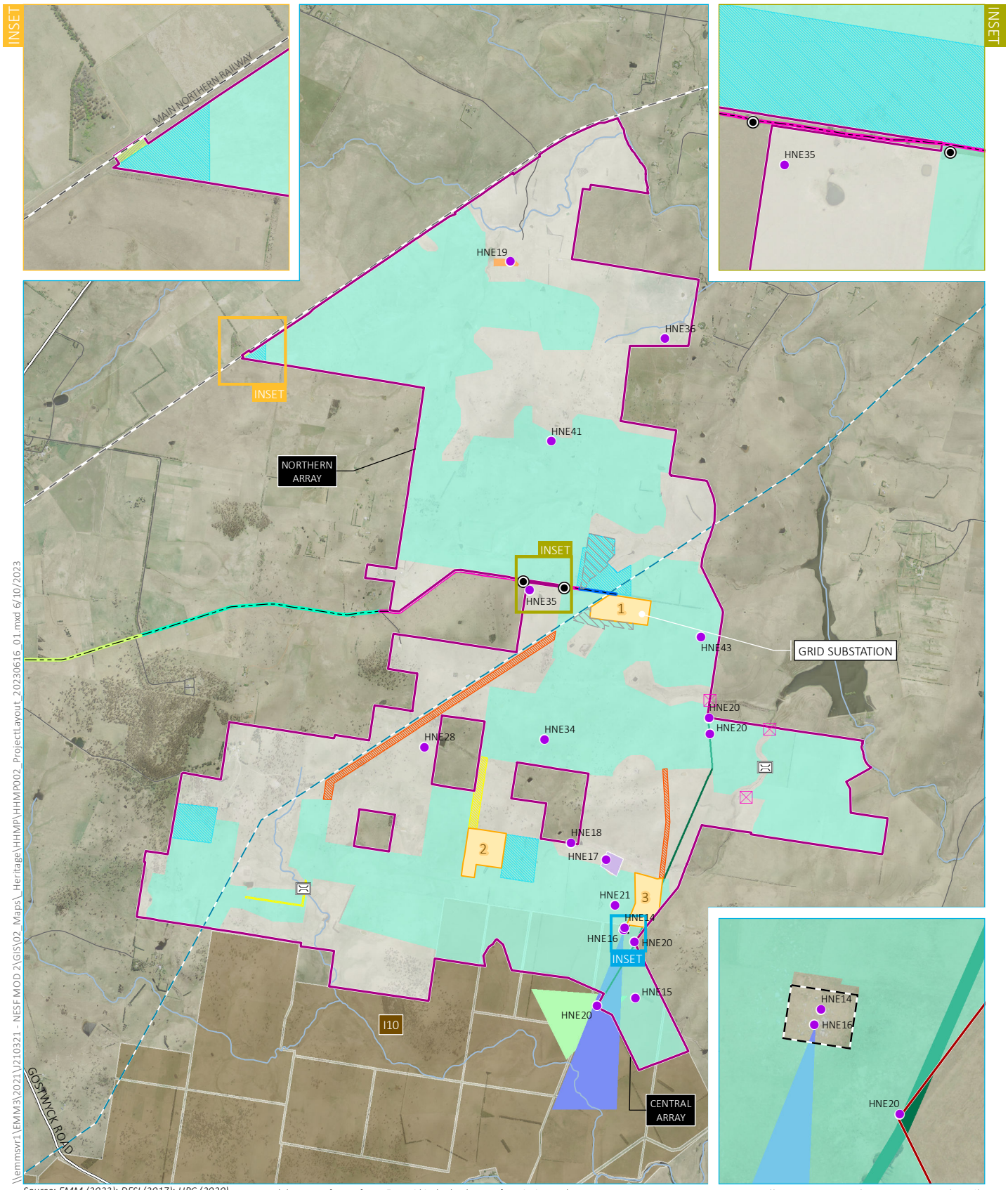
Existing environment

- Rail line
- Minor road
- Major road
- Named watercourse
- Local government area
- Waterbody
- NPWS reserve
- State forest

Regional context

New England Solar and Battery Project
Historical Heritage Management Plan
Figure 1.1

EMM creating opportunities



Source: EMM (2023); DFSI (2017); UPC (2020)

*The extent of Lot 1 of DP 227322 within the development footprint is 205.4 hectares, which represents approximately 8.4% of the total lot. Subsequently, the full extent of Lot 1 of DP 227322 has been excluded from the project boundary.

** The grid substation (location 1) and only one of potential substation location numbers 2 or 3 to be constructed

0 1 2 km

GDA 1994 MGA Zone 56

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KEY

- 330 kV transmission line
- Rail line
- Major road
- Minor road
- Named watercourse
- Project boundary*

Indicative site boundary

- HNE15
- HNE16
- HNE17
- HNE19
- HNE20

- Historic heritage survey item
- Uralla LEP listing - item
- Avoidance buffer (HNE14)
- Additional substation/BESS footprint

Development footprint

- Solar array
- Potential electrical cabling
- Potential site access and electrical cabling
- Potential laydown area/site compound
- Potential substation/BESS footprint (location number) **
- Hardstand in rail corridor

- Potential creek crossing
- Proposed primary site access point
- Indicative location of security fencing across third order watercourse

Primary vehicle access route

- Big Ridge Road - segment 2
- Big Ridge Road - segment 3
- Big Ridge Road - segment 4
- Big Ridge Road - segment 5

Project layout

New England Solar and Battery Project
Historical heritage management plan
Figure 1.2

EMM creating opportunities

2 Historical heritage management

2.1 Heritage management objectives

The overriding objective in managing heritage significance is avoidance of impacts. Avoidance removes the need for mitigation or amelioration and is in keeping with the philosophy of the Australia International Council on Monuments and Sites (ICOMOS) *Burra Charter 2013* (Burra Charter).

In all cases where significant heritage values may be affected by a project, the precautionary approach can be implemented by excising the construction disturbance footprint where it intersects with heritage items or with areas that have been identified as having potential to contain relics. This was the approach adopted by ACEN Australia as part of the refinement process for the project.

An overarching strategy to protect the significance of heritage items within the development footprint has been followed to date and will continue as needed through adoption of a precautionary approach. This will continue to be applied for all activities that could impact on heritage items or potential heritage items. That is, the items will either be completely excluded from the development footprint, or its heritage values will be investigated and recorded prior to the works if its removal is appropriate.

2.2 Obligation to avoid harm

All employees, contractors, sub-contractors and visitors to the project have an obligation to avoid harming historic heritage unless engaged in an historical heritage management activity described in this plan.

2.3 Management of known sites – general

Historic heritage management over the life of the project will primarily take the form of either protective measures for avoided sites or the creation of visual records for sites that will be impacted.

There are 15 sites including the significant cultural landscape (HNE37) within the project boundary. Project impacts to historical heritage are anticipated to occur at six known sites that will be either wholly or partially physically disturbed. The items, level of disturbance and management measures are presented in Table 2.1, which are described in more detail in Section 2.4. Mitigation will be undertaken prior to the start of construction and project area preparation.

Note that the digital photographic archival recording is complete and includes the coordinates of recorded items. The report was submitted to the Heritage NSW Library (heritage.library@environment.nsw.gov.au) on 26 July 2022 via email.

2.4 Management of known sites – specific

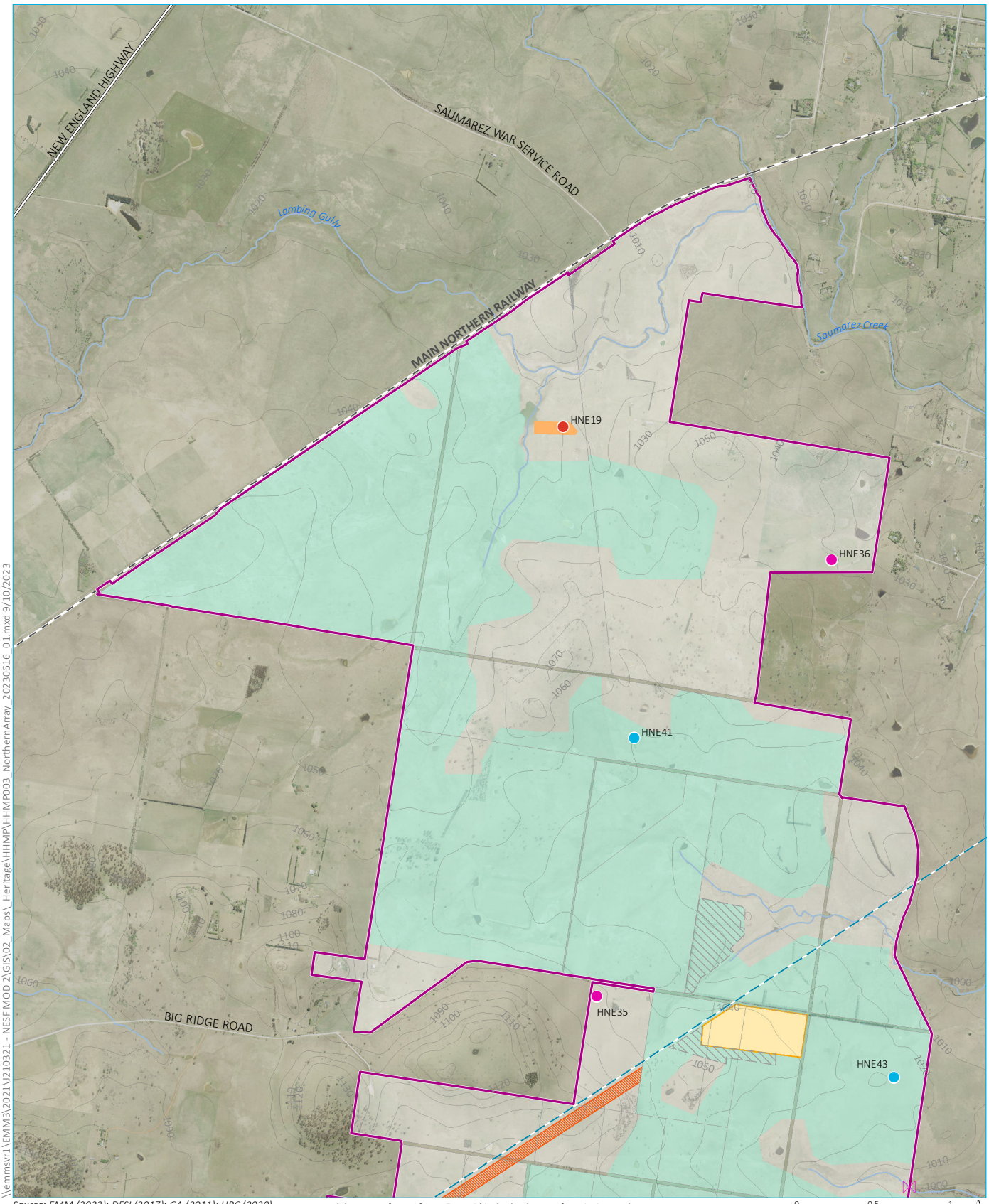
This section details the management and mitigation measures for the 15 historic heritage items identified within the project boundary.

Table 2.1 Management of known sites

Site ID	Stage	Site name	Impact level/type	Management / mitigation
HNE19	Outside Stage 1	Remnant house archaeological site	• None; but in vicinity	• Active protection with the use of bollards and/or flags close to the watercourse that separates it from the northern array (Section 2.5.2). (Flagging complete 17 August 2022). • Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Topographic survey (Section 2.5.1) (Completed Feb 2022).
HNE28	Outside Stage 2	Spring camp house site	• None	• Passive protection to avoid accidental impacts (Section 2.5.3). • Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Topographic survey (Section 2.5.1).
HNE34	Stage 1	Former stockyard	• Total physical	• Topographic survey (Section 2.5.1) (Completed Feb 2022). • Detailed digital photographic archival record (Section 2.4.4) (completed 26 July 2022). • Update 17 August 2022: HNE34 removed
HNE35	Outside Stage 1	Old Gostwyck platform 3	• None	• Passive protection to avoid accidental impacts (Section 2.5.3). • Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Topographic survey (Section 2.5.1) (Completed Feb 2022).
HNE36	Outside Stage 1	Saumarez Hut	• None	• Passive protection to avoid accidental impacts (Section 2.5.3). • Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022).

Site ID	Stage	Site name	Impact level/type	Management / mitigation
HNE41	Stage 1	Row of poplars	• Total physical	• Topographic survey (Section 2.5.1) (Completed Feb 2022). • Included in general landscape digital photographic archival record prior to their removal (Section 2.5.4) (completed 26 July 2022). • Update 17 August 2022: HNE41 removed
HNE43	Stage 1	Former fence line	• Total physical	• Topographic survey (Section 2.5.1) (Completed Feb 2022). • Detailed digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Update 17 August 2022: HNE43 removed
HNE14	Stage 4	Granite tors	• Partial visual	• Active protection with the use of bollards and/or flags close to the watercourse that separates it from the northern array (Section 2.5.2). • Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022).
HNE15	Stage 4	View through Gostwyck Station	• Partial visual	• Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022).
HNE16	Stage 4	View from granite tors	• Partial visual	• Included in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022).
HNE17	Outside Stage 2	Gostwyck Shepherd's Hut	• None	• Active protection with the use of sturdy bollards and/or flags to protect from accidental impacts (Section 2.5.2). • Include in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Topographic survey (Section 2.5.1) (Completed Feb 2022).

Site ID	Stage	Site name	Impact level/type	Management / mitigation
HNE18	Outside Stage 2	Stockyard	• None	• Passive protection to avoid accidental impacts (Section 2.5.3). • Include in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022).
HNE20	Stage 2 & Stage 4	Old Gostwyck Road	• Partial physical	• Include in general landscape digital photographic archival record (Section 2.5.4) (completed 26 July 2022). • Topographic survey (Section 2.5.1) (Completed Feb 2022).
HNE21	Stage 2	Remnant fence line	• Total physical	• Topographic survey (Section 2.5.1). • Detailed digital photographic archival record (Section 2.5.4) (completed 26 July 2022).
HNE37		Cultural Landscape	• Partial physical and visual	• Full archival digital photographic recording of development footprint and immediate surrounds prior to impacts (completed 26 July 2022). • The development footprint and its surrounds are part of a larger significant cultural landscape, which will be partially physically impacted. Views will also be affected (Section 2.5.4).



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Source: EMM (2023); DFSI (2017); GA (2011); UPC (2020)

*The extent of Lot 1 of DP 227322 within the development footprint is 205.4 hectares, which represents approximately 8.4% of the total lot. Subsequently, the full extent of Lot 1 of DP 227322 has been excluded from the project boundary.

0 0.5 1 km

GDA 1994 MGA Zone 56

N

KEY

Project boundary*

Existing environment

- Rail line
- Major road
- Minor road
- 330 kV transmission line
- Contour (10 m)
- Watercourse/drainage line

Managment of historical site

- Active
- Passive
- To be removed

Indicative site boundary

- HNE19

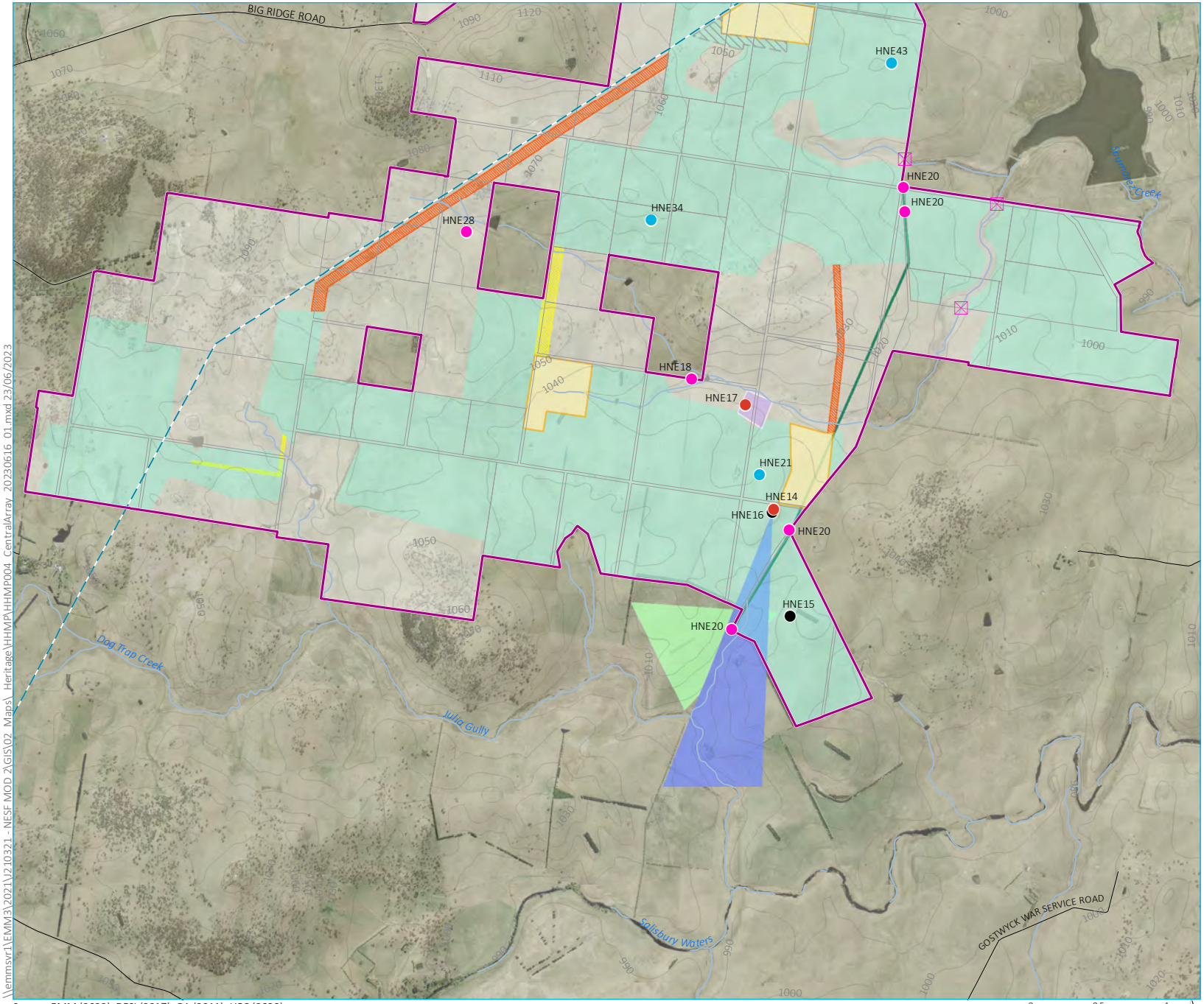
Development footprint

- Solar array
- Potential ETL easement
- Potential substation/BESS footprint
- Indicative location of security fencing across third order watercourse
- Additional substation/BESS footprint

Historical heritage sites - northern array

New England Solar and Battery Project
Historical heritage management plan
Figure 2.1

EMM
creating opportunities



KEY

- 330 kV transmission line
- Local road
- Contour (10 m)
- Watercourse/drainage line
- Project boundary *

Managment of historical site

- Active
- Passive
- To be removed
- NA

Indicative site boundary

- HNE15
- HNE16
- HNE17
- HNE20

Development footprint

- Solar array
- Potential ETL easement
- Potential site access/ETL easement
- Potential substation/BESS footprint
- Indicative location of security fencing across third order watercourse
- Additional substation/BESS footprint

*The extent of Lot 1 of DP 227322 within the development footprint is 205.4 hectares,which represents approximately 8.4% of the total lot. Subsequently, the full extent of Lot 1 of DP 227322 has been excluded from the project boundary.

Source: EMM (2023); DFSI (2017); GA (2011); UPC (2020)

0 0.5 1 km

GDA 1994 MGA Zone 56

N

\\emmsvr1\EMM3\2021\210321 - NESF MOD 2\GIS\02_Maps_Heritage\HHMP\HHMP004_CentralArray_20230616_01.mxd 23/06/2023

Historical heritage sites - central array

New England Solar and Battery Project
Historical Heritage Management Plan
Figure 2.2

EMM creating opportunities

2.5 Management of historical values

2.5.1 General management measures

Historic items that are identified as being impacted by the HHA will be protected from harm through either active or passive protection measures.

- Active protection means construction of fencing and controls implemented on access by those undertaking activities within the project boundary.
- Passive protection means no fencing or other active measures will be applied as the sites are at limited risk of inadvertent impacts because they are a suitable distance from the development footprint.
- Project personnel will be informed of the significance of these items as part of site inductions and toolbox talks.
- Topographic survey to be undertaken for the sites identified under Table 2.1.

A digital photographic archival report was completed in June 2022.

2.5.2 Active protection close to development footprint

Three sites have been scheduled for active protection (HNE14, HNE17 and HNE19). Measures to actively protect these sites include the installation of high visibility flagging and/or heavy bollards before construction activities begin. HNE14 lies within the Stage 4 development footprint, while HNE17 falls beyond the Stage 2 development footprint and HNE19 is beyond the Stage 1 development footprint.

These measures are proposed with the understanding that construction and operation activities will be restricted to identified work areas and access tracks and deviations will not be permitted.

2.5.2.1 Bollards and high visibility flagging

The heritage sites that are to be protected from impacts should be made highly visible and off-limits during construction and operation.

Zone definition should be erected between construction zones and heritage items to protect them from accidental impacts. These zones will form no-construction buffers, where construction activity causing ground disturbance is not permitted.

Construction buffer zones will be at least 10 m, except for a 5 m buffer around HNE14 (granite tors), and will be marked by the project archaeologist with assistance by a qualified surveyor.

Flagging will be present for the life of the project unless ACEN Australia determines after construction has ceased that the risk to inadvertent impacts is minimal, which would permit the removal of protection.

Regular inspections of the Bollards and High visibility flagging will be completed by the construction EPC Project Manager. These inspections are completed monthly or after periods of high wind and will monitor whether the protection mechanisms are intact and have not impacted heritage items.

2.5.2.2 Topographic survey

Relevant sites in, or within 50 m of, the development footprint, will be subject to topographic survey and mapping (refer to Section 2.5.1). The relevant sites and surrounding landscape will be

surveyed prior to the changes that will result from the project. The survey will include the creation of detailed plan drawings and the digital recording of elevations and landscape features for the creation of topographic maps.

Maps and plans will be stored in digital form in ACEN Australia's records management system and linked to the New England Solar (NES) Historical Heritage (HH) Database (Section 5.3).

LiDAR survey has been completed for the project and where possible the information from this survey will be incorporated into the archival record.

2.5.3 Passive protection away from project activities

Passive management will apply to four historic items (HNE18; HNE28; HNE35; and HNE36) that have been identified for protection within the project boundary but over 50 m from the development footprint. While no fencing, signage or active land management measures are proposed for these sites, their locations will be kept on the NES HH Database for persons working on or visiting the project boundary.

Items within the passive protection zone will be clearly identified during the project induction and toolbox talks as project exclusion zones. No project activities can occur in these areas even though they are not visually identified – in these instances ACEN Australia has the obligation to advise relevant landholders about their responsibilities not to harm historic items on their property.

2.5.4 Digital archival photographic recording

A digital archival photographic record has been prepared in accordance with the Heritage Manual guidelines, *Photographic Recording Of Heritage Items Using Film or Digital Capture* (Heritage Office 2006) and *How to prepare archival records of heritage items* (NSW Heritage Office 1998).

The photographic record focuses on the development footprint with views to and from a selection of landmark features (general landscape) and detailed photographs of archaeological sites and natural features using land-based and aerial (e.g. drone) photography. A full archival digital photographic recording of the Cultural Landscape (HNE37) within the project boundary has also been undertaken.

The digital archival photographic record is stored in digital form in ACEN Australia's records management system. As per Section 2.3, the digital photographic archival record has been submitted to Heritage NSW Library on 26 July 2022.

3 Unanticipated finds protocol

3.1 Materiality threshold

An unanticipated finds protocol provides guidance to construction personnel should works uncover objects and fabric that may indicate relics.

Work will stop if a materiality threshold is met. The materiality threshold for this project includes:

- bonded bricks, timber or stones appearing in formation indicating a wall, foundations or floor;
- a well or cistern, which are usually constructed of brick, sandstone and in this region may be granite;
- soil with artefact concentrations such as bottles and broken glass, broken crockery, metal, pins and leather, as this type of feature may be a rubbish pit and indicate other as yet undiscovered features; and
- a collection of bricks that show evidence of early manufacture such as narrower than modern bricks, inconsistent colour and material and striations across the length.

Items that are unlikely to meet the materiality threshold are discarded items that do not appear to belong in the location. For instance, a sole metal implement or a single beer bottle.

Photographic examples of relics that would require work to stop are provided below in Table 3.1 and Appendix C.

3.2 Discovery of new historical items

Field survey and desktop analysis for the HHA and SoHI was thorough but in some circumstances, where early historical data such as maps and plans were not available, a reliable characterisation of the archaeological landscape cannot be made, especially in this early historical landscape. Therefore, the possibility that significant archaeological sites exist that were not recorded should be considered.

In the event of discovery of new historical sites within the project boundary, the following will apply:

- if the find meets the materiality threshold, work will immediately but temporarily cease and a minimum of 5 m around the site will be secured to protect the find with temporary fencing/ flagging;
- the find will be immediately reported to the work supervisor who will immediately advise ACEN Australia's HSE Manager or other nominated senior staff member;
- an archaeologist will be contacted to assess the find, where relevant, and determine if it is clearly a relic or has moderate to high potential to be a relic (this may require additional research) – if possible, identification would be competed over email using photographs and if necessary, the archaeologist will attend the site;

- if the find is determined to be a relic, a 146 notification (of the NSW *Heritage Act 1977*) is to be forwarded to the Heritage Council who will be consulted on the appropriate management measure; which may include:
    - exclusion of the site from the impact area
    - consultation with DPHI, Heritage NSW and any other relevant agency to determine the most appropriate way forward with respect to approvals and excavation method
- if the find is assessed and is not a relic, work inside the area that was made a no-go area can re-commence after ACEN Australia has been notified in writing by DPHI; and
- any new sites will be added to the HHMP site inventory during its next review and update cycle.

Appropriate management measures range from do nothing to archaeological excavation. Table 3.1 outlines further detail for each of the different sites that may be encountered.

3.3 Management of new historical items

Section 3.2 sets out the measures that will be employed for newly identified historic items. All proposed salvage measures must be completed by a qualified archaeologist(s).

3.3.1 Newly identified sites within 20 m of approved disturbance areas

Avoidable sites that are within 20 m of approved disturbance areas of the development footprint will be managed through active protection measures identified in this plan (Section 2.5.2).

Sites that cannot be avoided will trigger the stop work procedure described in Section 3.1.

3.3.2 Newly identified sites that are not at risk of impact

Sites considered not to be at risk (i.e. those that are over 20 m from approved disturbance areas of the development footprint) will be avoided through passive protection (Section 2.5.3).

Table 3.1 Management of newly identified items

Site type	If the site can be avoided	If avoidance is not feasible
Potential relics Archaeological sites that may be of local or State significance. Sub-surface structures (bonded bricks, timber or stones in formation) and soil deposits with artefacts concentrations.	• Apply passive protection measures (Section 2.5.3).	• Assess significance to develop a suitable management strategy. • ACEN Australia to contact the project archaeologist and provide detailed and contextual photographs and intended treatment (e.g. total or part demolition, avoidance). • The project archaeologist will provide advice via email, which may address the issue or may determine that a site visit and additional research are required assess the item. • If the item is determined to be a relic, the NSW Heritage Council will require notification under s146 of the Heritage Act prior to any physical actions being taken. • If the item is a relic management would be in accordance with the NSW Heritage Council guidelines *Archaeological Assessments* 1996 and *Assessing Heritage Significance 2015* and the ICOMOS *Burra Charter 2013,* which aims for conservation before all else. Protecting the site would be the first consideration. • The item may be photographed and included in the archival record before removal (if removal is the only option). • Any archaeological and/or salvage program would require: - consultation with DPHI and Heritage NSW to determine the most appropriate way forward with respect to approvals and excavation method - a report on the methods and outcomes of the removal. • If the find is assessed and is not a relic, work inside the area that was made a no-go area can re-commence after ACEN Australia has been notified in writing by DPHI.
Moveable heritage items	• Apply passive protection measures (Section 2.5.3).	• Moveable heritage includes items such as farm machinery and water tanks and stands. Immovable items, such as walls and fences, or archaeological artefacts/ sites are not included in the definition of moveable heritage. • If moveable heritage items will be impacted through construction and/or operation activities the following measures will be employed: ○ the project archaeologist will be contacted and informed of the item; ○ archival recording of the item will be undertaken prior to removal to capture context; and ○ the item will be protected by re-locating it to another area of the property, not impacted by works, in consultation with the landholder.

Site type	If the site can be avoided	If avoidance is not feasible
Built heritage	• Apply active or passive protection measures as per Section 2.5.3.	• Assess significance to develop a suitable management strategy. • ACEN Australia to contact the project archaeologist and provide detailed and contextual photographs and intended treatment (e.g., total or part demolition). • The project archaeologist will provide advice via email, which may address the issue or may require a site visit and additional research to assess the item. • If the item is assessed to be of local or State significance, management would be in accordance with the ICOMOS Burra Charter 2013, which aims for conservation before all else. • The item may be photographed and included in the archival record before removal (if removal is the only option). • Any salvage program would require a report on the methods and outcomes of the removal.
Other site types not known to occur in the project boundary (e.g. mining sites or government works).	• Apply passive protection measures (Section 2.5.3).	• Assess significance to develop a suitable management strategy. • ACEN Australia to contact the project archaeologist and provide detailed and contextual photographs and intended treatment (e.g., total or part demolition). • The project archaeologist will provide advice via email, which may address the issue or may require a site visit and additional research to assess the item. • If the item is assessed to be of local or State significance, management would be in accordance with the ICOMOS *Burra Charter 2013,* which aims for conservation before all else. • The item may be photographed and included in the archival record before removal (if removal is the only option). • Any salvage program would require a report on the methods and outcomes of the removal. • If located outside the development footprint additional approvals may be required as per Section 4.4.

3.4 Discovery of human remains

In the event that known or suspected human remains, including skeletal remains, are encountered during the activity, the procedure presented in Table 3.2 will be followed.

Table 3.2 Procedure for the discovery of potential historic human remains

Steps	Actions
1. Stop work and secure site	• The immediate vicinity will be secured to protect the find and the find will be immediately reported to the work supervisor who will immediately advise the site supervisor or other nominated senior staff member. • A 10 m no-go zone will be established around the immediate area of the site. • Contact the project heritage specialist for advice – provide images and location information via email. • If the bones are not clearly human and are difficult to identify, such as an isolated long bone, access the services of a physical anthropologist who may be able to identify origins based on photographs.
2. Establish the origin of the remains	• This will occur after discussion with the project heritage specialist. • If the bones are identified as human or suspected of being human, follow step 3 below.

3. Notification to authorities and stakeholders if the bones are human	• ACEN Australia's HSE Manager or other nominated senior staff member will notify:
	  ○ the DPHI Archaeologist for the New England region (02 6773 7005) within two days – DPHI employs specialists in-house that may be able to confirm the origin of the bones;
	  ○ Uralla Police (02 6778 4400) at the same time as DPHI – the police will notify the State Coroner;
	  ○ if the human remains are less than 100 years old, they will be addressed under the *NSW Coroners Act 2009*; and
	  ○ determine if the bones are ancestral Aboriginal remains or a historical burial; and if so, manage as step 4 below.

4. Determination of the find and further notification	• If it is determined that the skeletal remains are historic in origin, engage project heritage specialist to assist and/or facilitate management of the remains with ACEN Australia, which will include contacting Heritage NSW. • If it is determined that the skeletal remains are Aboriginal ancestral remains, follow the process in the AHMP.
	• If the skeletal material is not human, and not part of an archaeological deposit, resume work. Ensure determination of non-human material is provided by relevant experts (e.g. Police or DPHI archaeologist) to the ACEN Australia Project Manager, who provides approval to resume work.
	• If the remains are historic, the NSW Heritage Council will be consulted to determine requirements in accordance with the Heritage

Steps	Actions
	Act and relevant guidelines. Further actions are likely to require adherence with the following NSW Heritage Council guidelines: ○ Conservation *Management Documents: Guidelines on Conservation Management Plans and other Management Documents.* ○ Skeletal *Remains; Guidelines for Management of Human Skeletal Remains*.
	• If the remains are non-Aboriginal and non-historical human remains, coordinate ACEN Australia's involvement with police. Works will not proceed until written approval is granted from relevant authorities.
5. Initial planning and reporting if it is determined that the remains are historic remains.	• Historic remains certificate to be submitted to the Police/Coroner to address the *Coroners Act 2009* (Coroners Act). • In consultation with the archaeologist, establish investigation area and any additional protocols to be adhered to during further investigation. The investigation will aim to establish whether any other burials are within or likely to occur nearby. Suitable methods could include controlled and monitored hand or machine excavation and/or non-invasive techniques such as geophysical techniques. • Engage an archaeologist to record the site and undertake significance and impact assessment of the burial site. Site recordings must involve drawings and photography. Additional technical studies and samples may be taken such as those for dating and biological information (e.g. age, sex and health of deceased). • Record the burial site on the NES HH Database.
6. Engagement with construction and operation manager to determine whether disturbance of the burial site(s) can be avoided.	If the historical remains cannot be avoided: • consult with project archaeologist to facilitate recovery and reburial protocols and actions - recovery methods must include: ○ an exhumation permit form NSW Health will be required before removal of the bones will be permitted; ○ exhumation in a controlled archaeological method and placed into a secure, temperature-controlled storage location until a final reburial site can it identified; ○ access to the secure storage location containing any human remains will be managed and facilitated by ACEN Australia; ○ the project archaeologist will determine if further studies, media releases or other investigations are appropriate for the finds; and ○ where required, ACEN Australia will help facilitate any culturally appropriate reburial or ceremonial methods; • prepare report for Heritage NSW and DPHI on the outcome of relevant investigation, recovery and reburial outcomes; • update HHMP by adding the newly discovered burial site to Table 2.1 and describing subsequent actions; and • works will not recommence until written approval is received from relevant authorities.

Steps	Actions
	• If the historical remains can be avoided: ○ develop appropriate management and mitigation measures in consultation with archaeologists; ○ prepare report for DPHI; ○ update HHMP; and ○ works will not recommence until written advice is provided from the project archaeologist that the remains are suitably protected and away from project impacts.

4 Ongoing operational and training protocols

4.1 Obligation to protect historical heritage

4.1.1 Obligation to protect and implement management measures

Site personnel, contractors and subcontractors responsible for land management or construction have an obligation to protect historical heritage within their area or work responsibility. Protection means active recognition of known historical heritage and active measures to avoid it. This may include fencing, erosion control and modification of work plans to avoid impacts to historic heritage, as well as ensuring all work personnel are aware of the nearby heritage.

Site personnel, contractors and subcontractors also have the responsibility to ensure that appropriate management measures have been employed prior to, or in association with, their activities which impact historic items.

4.2 Historic heritage induction and permitting process

4.2.1 Site inductions

All employees, contractors, sub-contractors and visitors to the project will be made aware of their obligation to avoid harm to historic heritage through an historic heritage component of the general site induction. Records of these inductions will be kept by ACEN Australia and/or the EPC Contractor.

The following points will be conveyed through site induction material:

- historical sites have been identified across the project boundary and beyond;
- some historical sites are of high significance;
- historical sites are protected by law; SSD-9255 includes conditions allowing impacts to certain specified historic sites in accordance with this plan;
- historical sites include built sites (such as houses, fences, and walls), archaeological sites and views;
- historical sites can be hard to recognise; therefore, reference must be made to the historical heritage figures in this plan and the NES HH Database (refer Section 5.3) in order to clearly identify them;
- certain sites must be protected or salvaged by the project archaeologist prior to ground disturbance activities; and
- there are new finds procedures which involve stopping work if suspected or known historic items/sites or skeletal material is identified on-site.

4.3 Measuring performance

Actions undertaken under the plan will be incorporated into revisions of the plan. Compliance with the plan will be measured by standard environmental auditing procedures undertaken at regular intervals as required under the conditions of consent.

Audits will include an assessment of compliance with relevant conditions of SSD-9255 and will include auditing the following measures:

- protection of all nominated sites;
- inductions are taking place and include appropriate material;
- inspection of site condition before and after construction works have been completed in the vicinity (within 100 m);
- inspection of all sites within the development footprint on a bi-yearly basis (six months apart) except where construction works are being undertaken in the vicinity (refer to point above);
- incidents to be recorded as physical damage, or if vehicles and plant travers or are parked on the site as these actions are prohibited; and
- the NES HH Database is updated and maintained as required by this plan.

4.4 Ground disturbance proposed outside of development footprint

Ground disturbance proposed outside of the approved development footprint, or outside other existing approved areas under SSD-9255, will not occur without prior historical heritage assessment and other relevant legislative and internal approvals.

If the proposed activity requires additional environmental assessment, such as a modification to the existing development consent, an HHA may be required in accordance with relevant assessment requirements (as specified by DPHI).

5 Reporting, review and data management

5.1 Statutory reporting requirements

Notifications to DPHI and Heritage NSW are required in relation to discovery, impact and care of historic objects under Section 146 of the Heritage Act. This will be the responsibility of ACEN Australia's Project Manager as per Table 3.1.

5.2 HHMP review

5.2.1 Review cycle for this plan

This HHMP will be reviewed and, if necessary, revised to the satisfaction of the Secretary prior to carrying out works associated with any modification to the conditions of SSD-9255.

This HHMP will be reviewed following a discovery of heritage significance, any incident or independent audit where issues are found. Additional review is to occur when there is an audit conducted for the site.

5.2.2 Making changes to this plan

Changes to the plan will be made in the following circumstances:

- the discovery of human skeletal remains and/or burials if this results in additional exclusion zones or as a result of process update;
- where new historic sites are discovered, they must be added to the inventory in this HHMP within one month of the find;
- if an audit or incident report is provided to ACEN Australia which result in changes to the HHMP, the HHMP will be updated within one month of receiving the audit or incident report
- where approved modifications to the project introduce new impacts on historic heritage which are not generally covered by this HHMP;
- where approved actions to the project change or remove previously planned impacts on historic heritage;
- where mitigation was proposed in this plan but is no longer required; and/or
- where other conditions or situations arise that require the updating of this plan.

5.2.3 Heritage NSW review

A draft of this HHMP was submitted to Heritage NSW. Upon review Heritage NSW stated the following:

"review of this document by the Heritage Council is not required, given that the project will not impact State Heritage Register items or historical archaeological relics/sites."

A copy of this correspondence can be found in APPENDIX E.

5.3 New England Solar Historic Heritage Database

The NES HH Database is maintained by ACEN Australia. The database is a 'live' document of historical heritage resources within the project boundary and is updated to reflect new finds and their management status.

The database includes:

- a record of current location and significance of all historical sites in the project boundary or in the vicinity that may be affected;
- management measures to be completed, underway and completed; and
- a record of Aboriginal heritage survey coverage as historical survey was undertaken at this time also (represented by GPS survey tracks).

The database comprises datasets available in both MS Excel format and Geographical Information System (GIS) format. GIS data can be made available for mapping purposes to assist in the identification and management of all heritage sites and areas during the life of the project. The database is 'version controlled' to ensure that all relevant parties involved in heritage management are working with the most up-to-date datasets.

ACEN Australia is responsible for ensuring that all relevant employees, Contractors and subcontractors are provided with up-to-date datasets.

The database will continue to be updated within 28 days in the following circumstances:

- discovery of human remains;
- discovery of new relics, works or built heritage items;
- changes or incidents to existing sites;
- changes to the management status of heritage sites and areas; and/or
- the completion of heritage activities such as survey, excavation, and protective measures.

Note that any newly identified historical archaeological sites of local or State significance must be notified to the NSW Heritage Council under s146 of the Heritage Act.

5.4 Complaints

The following contact details are available for the community to make a complaint or send an enquiry:

- A 24-hour telephone number (1800 844 889)
- An email address to which electronic complaints may be transmitted (info@newenglandsolar.com).
- A Facebook page has been established (https://www.facebook.com/newenglandsolarfarm).

These details are provided on the NES website.

5.5 Notifiable Incidents

The Development Consent defines an incident as:

> *An occurrence or set of circumstances that causes or threatens to cause material harm.*

The Development Consent defines material harm as harm that:

- *involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or*
- *results in actual or potential loss of property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).*

This definition of 'material harm' is consistent with the definition in Section 147 of the *Protection of the Environment Operations Act 1997* and the associated legal obligations to notify the EPA where a 'pollution' incident occurs such that material harm to the environment is caused or threatened.

In the context of historical heritage management, a notifiable incident is:

- Damage to an archaeological site, ruin or other element of the project area that has been identified in this report being present on-site or is an unexpected find (Section 3 - Unanticipated finds protocol).
- Driving across or parking on a known heritage item or an unexpected find (Section 3 - **Error! Reference source not found.**).

5.5.1 Immediate Response

Any incident that occurs that causes or threatens to cause material harm will be reported immediately to ACEN Australia's Project Manager (during construction and operations).

Upon receiving notification of an incident, ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) will immediately attend the incident and:

- Isolate the area affected by the incident
- Stop works around the area
- Implement containment measures to prevent the impact of the incident spreading
- Decide as to whether the incident has caused or threatens to cause material harm
- Discuss the event with the project team and contractors to avoid future potential harm and include the date of discussion and a written record of it in the HHMP 'corrective actions' section.
- It is particularly important to note however, if a scatter or collection of artefacts occurs near structural features or in combination with mature fruit trees or ornamental trees such as elms, caution should be exercised, work in the vicinity stopped temporarily and a heritage specialist contacted.

5.5.2 External Notifications

5.5.2.1 Duty to Report

If ACEN Australia's Project Manager (or their nominee if off-site at the time of the incident) has determined the incident has caused or threatens to cause material harm, he/she will, pursuant to requirements under Section 148 of the *Protection of the Environment Operations Act 1997* immediately notify the EPA, the NSW Ministry of Health, Fire and Rescue NSW and SafeWork NSW by verbal means.

These authorities will be notified (verbally) and provided the following relevant information:

- The time, date, nature, duration and location of the incident
- The location of the place where pollution is occurring or is likely to occur
- The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- The circumstances in which the incident occurred (including the cause of the incident, if known)
- The action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.

The EPA may direct ACEN Australia to notify such other persons of the incident as the EPA requires.

5.5.2.2 Notifications

All Agencies including DPHI, are to be notified immediately after becoming aware of an incident, ACEN Australia will immediately notify DPHI in writing. Consistent with Schedule 4 Condition 7 of the Development Consent, notification to DPHI will be in writing via the Major Projects website portal, including the following information:

- Identify the development (i.e. the NES) and the application number (SSD 9255)
- Set out the location and nature of the incident.

Seven days after the incident, ACEN Australia will prepare a report as per Appendix 7 of the Development Consent.

5.6 Non-Compliance

5.6.1 Commitment

A failure to comply with a Condition of Development Consent or statutory approval will constitute a non-compliance.

5.6.2 Response

In the event of a non-compliance, ACEN Australia and its contractor (where relevant) will undertake the five steps as outlined within

Table 5-1 below, consistent with the guidance advice for ISO 14001 – Environmental management systems.

Table 5-1 Non-compliance Response

Step	Action
React	React to the non-compliance and, as applicable: 1. Act to control and correct it 2. Notify and communicate to relevant parties where required 3. Deal with the consequences, including mitigating adverse environmental impacts.
Evaluate	Evaluate the need for action to eliminate the cause of the non-compliance in order that it does not recur or occur elsewhere by: 1. Reviewing the non-compliances 2. Determining the cause of the non-compliances 3. Determining if similar non-compliances exist or could potentially occur.
Act	Implement any action required.
Review	Review the effectiveness of any corrective action taken.
Change	Make changes to the environmental management plans, if necessary

5.6.3 Corrective Action

Any non-compliance will trigger a Corrective Action appropriate to the significance of the effect of the non-compliance. ACEN Australia and its Contractor (where relevant) will retain documented information as evidence of the nature of the non-compliance and any subsequent actions taken, and the results of the Corrective Action.

5.6.4 Notification

Consistent with Schedule 4 Conditions 8-10 of the Development Consent, DPHI will be notified in writing via the Major Projects website portal within seven days after ACEN Australia and its Contractor becomes aware of any non-compliance. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance

The notification will:

- Identify the development (i.e. as NES) and the application number (SSD 9255)
- Set out the Condition/s of Development Consent that the NES is non-compliant with
- The way in which it does not comply
- The reasons for non-compliance (if known)
- What actions have been done, or will be, undertaken to address the non-compliance.

DPHI can also be contacted via the Major Projects Portal.

References

EMM Consulting Pty Limited (EMM) 2018 *New England Solar Farm: Historical heritage assessment and statement of heritage impact*. Report prepared by EMM for UPC (now ACEN Australia).

Heritage Office 2006, *Photographic Recording Of Heritage Items Using Film or Digital Capture*

- 1998, *How to prepare archival records of heritage items*
- 1996, *Archaeological Assessments*

NSW Heritage Council 2015, *Assessing Heritage Significance*

- 2006, *Statements of Heritage Impact Guidelines*.
- 2004, *Investigating Heritage Significance*.

APPENDIX A LETTER OF AUTHOR ENDORSEMENT

Planning, Industry & Environment

Killian Wentrup
Head of Solar Development
UPC Renewables
Level 14, 77 King Street
Sydney, NSW 2000

06/04/2020

Dear Killian

New England Solar Farm (SSD 9255)
Request for endorsement to prepare Heritage Management Plan

I refer to the letter dated 25 March 2020 requesting endorsement for suitably qualified and experienced persons to prepare a Heritage Management Plan for the New England Solar Farm.

The Department has reviewed the nominations and information provided and is satisfied that the proposed consultants are suitably qualified and experienced to prepare a Heritage Management Plan for the development, in accordance with condition 19, Schedule 3 of the Development Consent.

Accordingly, the Secretary has endorsed Ryan Desic and Pamela Kottaras to prepare a Heritage Management Plan.

If you wish to discuss the matter further, please contact Javier Canon on 02 9373 2821 or at Javier.Canon@planning.nsw.gov.au

Yours sincerely

Nicole Brewer
Director
Energy Assessments

APPENDIX B STAKEHOLDER CONSULTATION

From: **Tim Kirk** tim.kirk@upc-ac.com
Subject: Re: New England Solar Farm - management plans for Council's review
Date: 27 August 2020 at 1:29 pm
To: Matt Clarkson MClarkson@uralla.nsw.gov.au
Cc: Terence Seymour TSeymour@uralla.nsw.gov.au

TK

Hi Matt,

Thank you for the response.

Kind Regards,

Tim Kirk | Project Development Manager
UPC\AC Renewables Australia
A UPC Renewables and AC Energy Company

UPC\AC Renewables AUSTRALIA

M: +61 403 857 079
E: tim.kirk@upc-ac.com

Hobart: Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004
Melbourne: 61 Cromwell Street, Collingwood VIC 3066
Sydney: Level 14, 77 King Street, Sydney, NSW 2000

www.upc-ac.com

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From: Matt Clarkson <MClarkson@uralla.nsw.gov.au>
Date: Wednesday, 26 August 2020 at 1:53 pm
To: Tim Kirk <Tim.Kirk@upc-ac.com>
Cc: Terence Seymour <TSeymour@uralla.nsw.gov.au>
Subject: RE: New England Solar Farm - management plans for Council's review

Hi Tim

I've reviewed the plans and Council does not wish to provide comment.

Regards
Matt Clarkson
Manager of Development and Planning

Uralla Shire Council I Po Box 106 Uralla NSW 2358
p 02 6778 6310 I **f** 02 6778 6349 I **m** 0419 861 719

URALLA SHIRE COUNCIL

From: Tim Kirk [mailto:Tim.Kirk@upc-ac.com]
Sent: Wednesday, 26 August 2020 12:10 PM
To: Matt Clarkson
Cc: Tim Greenaway
Subject: Re: New England Solar Farm - management plans for Council's review

Hi Matt,

Can you please confirm receipt of the below email? I also left a message on your phone yesterday.

Kind Regards,

Tim Kirk | Project Development Manager
UPC\AC Renewables Australia
A UPC Renewables and AC Energy Company

UPC\AC Renewables AUSTRALIA

M: +61 403 857 079
E: tim.kirk@upc-ac.com

Hobart: Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004
Melbourne: 61 Cromwell Street, Collingwood VIC 3066
Sydney: Level 14, 77 King Street, Sydney, NSW 2000

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From: Tim Kirk <Tim.Kirk@upc-ac.com> on behalf of Tim Kirk <Tim.Kirk@upc-ac.com>
Date: Wednesday, 19 August 2020 at 3:07 pm
To: Matt Clarkson <MClarkson@uralla.nsw.gov.au>
Cc: Tim Greenaway <tim.greenaway@upc-ac.com>
Subject: New England Solar Farm - management plans for Council's review

Hi Matt,

Hope you have been well.

UPC are currently preparing for the commencement of construction of the New England Solar Farm. Before we are allowed to start construction we are required to consult with Uralla Shire Council on a number of management plans pursuant to Schedule 3, item 19 of the New England Solar Farm's Development Consent.

UPC are seeking Uralla Shire Council's review and feedback on the **Historic Heritage Management Plan** and **Aboriginal Heritage Management Plan**, both attached to this email. The UPC team are available for a teleconference if required.

Please let me know if you have any questions.

Kind Regards,

Tim Kirk | Project Development Manager
UPC\AC Renewables Australia
A UPC Renewables and AC Energy Company

M: +61 403 857 079
E: tim.kirk@upc-ac.com

Hobart: Suite 2, Level 2, 15 Castray Esplanade, Battery Point, TAS 7004
Melbourne: 61 Cromwell Street, Collingwood VIC 3066
Sydney: Level 14, 77 King Street, Sydney, NSW 2000

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Department of Planning, Housing and Infrastructure

Our ref: SSD-9255-PA-91

Sarah Donnan
Construction Director Project Services
ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, TAS, 7004

8 October 2026

Subject: New England Solar Project (SSD-9255) – Consultation Exemption Request - Historical Heritage Management Plan

Dear Ms Donnan,

I refer to your submission dated 30 September 2026, in which you seek an exemption from completing consultation on the revised Historical Heritage Management Plan. The Department understands that the document will be revised to reflect updated staging of the Project, and other minor administrative changes only.

The Department has reviewed the information you have provided and in accordance with Schedule 4, Condition 3 of SSD-9255 (as modified) is satisfied that consultation with Heritage NSW is not required on this occasion for the proposed revisions to the Historical Heritage Management Plan.

Please ensure the revised Historical Heritage Management Plan is submitted to the Planning Secretary for review and approval.

If you wish to discuss the matter further, please contact Jasmine Walden on (02) 6773 7009.

Yours sincerely,

Samantha Wynn
A/Director
Energy Assessments

As nominee of the Planning Secretary

APPENDIX C UNEXPECTED FINDS

Unexpected finds

Examples of unexpected finds are shown in the images below.

Plate C.1 HNE06: A constructed stone platform of unidentified purpose. Scale is 2

Plate C.1 is a site in the New England region and is likely to have associations with the earliest historical phase of the area. It is distinguished by its rectilinear form, consistently sized stone block and is made of local stone. Excavation would identify its purpose, but the item is not in in the project area and will not be affected by the project.

This feature denotes an archeological site that may extend further than surface indications. If so, it is a relic and is protected.

Plate C.2 HNE35: Former hut site.

This item is likely to be the site of a shepherd's hut. It is outside the construction area but in proximity to construction works and will need to be protected. Note the timber and stones in the foreground, and the stone surrounding the tree. These items have form when viewed from above. The tree is a European fruiting fig and is also an indication that a habitation site is nearby. Artefacts were recorded beneath the fig tree (refer to C.10).

It is highly probable that this feature is an archaeological site that may extend further than surface indications. If so, it is a relic and is protected.

Plate C.3 HNE11: remnant basalt wall, now dismantled

HNE11 is an archaeological site or relic that was identified outside the project area as part of the preparation of the historical heritage assessment. It represents the remnants of a stone wall that may have been an early property boundary and was likely dismantled to remove potential rabbit breeding habitat. It is an obvious feature and can be seen from the ground and in aerial photography. Other such features may survive in poorer condition across the project area.

HNE11 is an example of an archaeological site or relic that, if encountered during construction, would warrant further investigation and potentially protection.

Plate C.4 A section of the adjoining dismantled stone wall (HNE12) with post, possibly a gate post.

Plate C.5 HNE09: Floor of the Old Gostwyck Woolshed. Detail

HNE09 is an example of a floor built into the ground. Note the bricks are not standard modern brick dimensions and have longitudinal markings on them identifying them as of sandstock production. It is believed that this is a portion of the earliest form of the Gostwyck Woolshed.

This feature denotes what is likely to be an archaeological site and if so, is a relic and is protected.

Plate C.6 HNE09: Floor of the Old Gostwyck Woolshed. Landscape view. Scale is 2 m.

Plate C.7 A component of HNE36 Saumarez Hut. Scale is 2 m.

HNE36 is a site comprised of a former stone hut (refer below) and other stone features. Details of dates and features were not investigated as while it is in the project area, it is a distance from construction work and in a separate paddock.

While the hut is easily identifiable (refer to plate C.8), a feature such as that shown in Plate C.7 in not as obvious but is the base of a structure, nonetheless. This feature denotes what is likely to be an archaeological site and if so, is a relic and is protected.

Plate C.8 HNE36: The main hut ruin.

Plate C.9 A collection of artefacts from the region.

Plate C.9 is a collection of artefacts that may signify an archaeological site if found in concentrations on and in the ground. Visible are ceramic plate sherds, a component from a horse bridle, the neck of a glass bottle and a spoon or fork handle amongst other things.

Note that a small collection of ceramic sherds or bottle glass are likely to be discarded and not representative of an intact archaeological site.

It is particularly important to note however, if a scatter or collection of artefacts occurs near structural features or in combination with mature fruit trees or ornamental trees such as elms, caution should be exercised, work in the vicinity stopped temporarily and a heritage specialist contacted.

Plate C.10 A collection of artefacts close to the shepherd's hut site HNE35.

The collection in Plate includes green bottle glass, clear bottle glass, a fragment of an earthenware vessel (above the clear glass), blue-banded tableware (between the green bottle glass), white ceramic and two sandstock bricks. This collection is likely to belong to the site HNE35, which is in proximity to project construction areas but not within.

Note that a small collection of ceramic sherds or bottle glass are likely to be discarded and not representative of an intact archaeological site.

It is particularly important to note however, if a scatter or collection of artefacts occurs near structural features or in combination with mature fruit trees or ornamental trees such as elms, caution should be exercised, work in the vicinity stopped temporarily and a heritage specialist contacted.

APPENDIX D PHOTOGRAPHIC ARCHIVAL RECORD GUIDELINES

HERITAGE INFORMATION SERIES

PHOTOGRAPHIC RECORDING OF HERITAGE ITEMS USING FILM OR DIGITAL CAPTURE

Heritage Office

ACKNOWLEDGEMENTS

This document was prepared by Lawrie Greenup in 2006 based on the original guidelines, *Guidelines for Photographic Recording of Heritage Items* produced by Don Godden for the Heritage Office in 1994.

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Heritage Office
Department of Planning
Locked Bag 5020
Parramatta NSW 2124
Ph: (02) 9873 8500
Fax: (02) 9873 8599
www.heritage.nsw.gov.au

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INTRODUCTION

These guidelines provide an outline for making a photographic record of sites, buildings, structures and movable items of heritage significance. They are particularly relevant to the recording of items of industrial or technological significance and domestic items and interiors.

Making a photographic record of a heritage place or object documents it for the future, before it is lost or changed, either by progressive alterations or by the ravages of time. Photographic records are often required by authorities such the Heritage Council of NSW or local councils as part of a conditional approval for work to be carried out on a heritage place, or, in some instances, before demolition.

This document revises the earlier guidelines on photographic recording published by the Heritage Council of NSW. It includes the use of both film-based and digital-based technology as acceptable methods of photographic recording for heritage purposes. The guideline takes into account changing photographic technologies, but provides a system that does not compromise the overall goal of a stable and long term photographic record. It addresses concerns about print permanency, long-term stability of digital storage media and software obsolescence, and has been written with safeguards in mind.

A recent development in colour prints, using specific archival inks and photographic paper, has shown, under accelerated ageing laboratory tests, to have long-term permanency similar to archivally processed black and white prints. Digital storage media and software obsolescence have been addressed by following the guidelines that have been developed by key Australian archival authorities.

WHAT YOU NEED TO KNOW ABOUT PHOTOGRAPHIC RECORDING FOR ARCHIVAL PURPOSES

What is a photographic recording?
A photographic recording is an archival record of a heritage place or object. Its purpose is to document a heritage item for future generations. Specific requirements on photographic equipment, archivally stable materials and photographic method aim to ensure optimum survival of the photographic record.

A photographic recording can be made using film-based technology, OR digital technology.

When is a photographic recording needed?
A photographic recording of an item on the State Heritage Register may be required by the Heritage Council of NSW as part of conditional approval for work to be carried out on the place or object, or before full or partial demolition. It can also be required as part of an archaeological investigation.

Local councils may also require a photographic recording be made of a heritage item on their local environmental plan as part of the approval process.

These guidelines have been written for items listed on the State Heritage Register, but may be cited by local councils as a reference document.

What are the requirements?
A model brief is provided to guide those commissioning or carrying out photography for heritage purposes [see page 30]. Below is a summary of the Heritage Council's final requirements for a photographic record of an item on the State Heritage Register. For more detailed information, turn to the page indicated:

Film-based Projects:

- Three copies of the photographic report including catalogue sheets, photographic plan, supplementary maps [see pages 18 & 23];
- B&W materials:
  - One set of archivally processed and numbered B&W negatives stored in archival sheets or envelopes [see page 23]
  - Three sets of archivally processed proof (contact) sheets, labelled and cross-referenced to the catalogue sheets [page 23];
- Colour materials:
  - Three sets of colour transparencies (either original transparency plus two duplicates or three original images taken concurrently) numbered, labelled and cross-referenced to the catalogue sheets and stored in archival slide sheets [see page 23].

Digital Projects

- Three copies of the photographic report including catalogue sheets, photographic plan, supplementary maps [pages 18 & 25];
- Three sets of thumbnail image sheets (e.g. A4 page with six images by six images) showing images and reference numbers. The thumbnail sheets should be processed with archivally stable inks on archivally acceptable photographic paper and cross referenced to catalogue sheets [page 25-26];
- Three copies of CD or DVD containing electronic image files saved as TIFF files with associated metadata, and cross-referenced to catalogue sheets [page 27];
- One full set of 10.5x14.8cm (A6) prints OR, if a large project, a representative set of selected images processed with archivally stable inks on archivally acceptable photographic paper [page 25].

How should the report be presented?
The report should be presented in a suitable archival binder and slipcase, and all storage of individual components must be in archival quality packaging suitable for long term storage. [page 26]

Has everything been included in the report?
Use our checklist to ensure that you include all the required elements of the report [page 34].

Where should the report be deposited?
The placement of material depends on whether the record was required by the Heritage Council or NSW, or a local council [see page 28 for details].

Reports required by Heritage Council	**Required by Local council**
First set: deposit at Heritage Office **Second set:** deposit with State Library of NSW for public access **Third set:** deposit with owner/client	**First set:** deposit at local council **Second set:** deposit with local council library for public access **Third set:** deposit with owner/client

PHOTOGRAPHER'S REQUIREMENTS

The photographer undertaking the recording of a heritage place needs to have:

- requisite training, skills and equipment to undertake heritage assignments;
- awareness that heritage sites and surrounds often have a range of hazards, which have to be considered in undertaking the photography, including:
  - dangerous substances
  - confined spaces
  - demolition activity
  - adverse environmental and weather conditions
  - moving machinery and vehicles
  - noise
  - dust
  - overhead hazards
  - remote locations
  - working at height, or over, near, on, in or under water;
- public liability insurance, as well as workers compensation Insurance (if assistants or support staff are used);
- an understanding of the requirements of the Occupational Health Safety and Rehabilitation (OHS&R) Act, a Hazard Control Plan and Work Safety Plan, and an understanding of environmental considerations generally;
- ability to meet the client's working and safety requirements. The photographer needs to visit the site prior to commencing the project. Preferably this should be with someone who has an understanding of the heritage photographic project. This allows the photographer to assess what photographic equipment is required, as well as being able to assess the site's safety requirements;
- access to safety clothing such as safety helmet, safety glasses, ear protection, highly visible safety vest, steel-toed boots or shoes. The client may have requirements for additional safety equipment for the photographer if working at heights or over or near water;
- materials for recording and documenting the photographic undertaking including such things as notebooks, pens, pencils, maps, torches and a compass;
- personal items such as sunscreen and insect repellent.

EQUIPMENT – FILM-BASED RECORDING

CAMERAS

35mm Single Lens Reflex (SLR) Camera

This is the most popular and versatile camera format and, when combined with quality lenses, is entirely adequate for most heritage photography.

There are a large number of brands available and the most suitable ones for heritage photography have the following specifications:

- full exposure control, especially manual control and the ability to override full autoexposure;
- range of shutter speeds, including the ability to take long exposures in dark places or dull light;
- remote release devices, such as cable releases and electronic releases, to minimize camera vibrations;
- mirror lock-up which is useful to stop camera shake, especially with larger lens;
- depth-of-field preview to see what's in or out of focus;
- connections for external flash.

Medium Format Cameras

Medium format cameras, especially SLR systems, are often used. However, these cameras are generally heavier and less versatile for field work than 35mm SLRs. The format is ideal if large, quality enlargements are required. Some types have interchangeable backs allowing one camera body to be used with different film types.

Large Format Cameras

Large format cameras are for specialised use, such as architectural photography, and are best when a slow and studied approach can be undertaken. Their bulk restricts their use in the field.

Lenses

The following deals primarily with 35mm SLR camera systems but the principles can be applied to both medium and large format camera systems.

A range of lenses with different focal lengths is required to cover all aspects of heritage photography. Either fixed focal length lenses or zoom lenses can be used and should cover the focal length range of 20mm – 300mm. The following is recommended:

- **fixed lenses:** 20mm, 28mm, 35mm, 50mm, 105mm, and 300mm focal length;

- **zoom lenses:** 18-85mm; 70-200mm; 1.4X or 2.0X extender lens. Other combinations can be used as long as they cover the 20mm – 300mm focal length range;
- **specialised lenses:** perspective control lens and macro lens for close-up images. Macro lenses are usually available as 50mm, 60mm, 105mm 180mm or 200mm focal lengths. These lenses can be substituted for fixed focal length lenses.

Only some of these lenses may be needed for a particular assignment.

Camera Accessories

These will vary depending on the project. Again, the following is relevant for both 35mm SLR cameras and medium and large format camera systems:

- tripod - heavy duty;
- flash units – one or more flash guns and slave unit;
- scale rods - for inclusion in the photographs, where appropriate;
- polarising and other filters;
- cable or remote electronic releases;

FILM

There is a range of black and white, colour transparency and colour negative films on the market. Films vary in their sensitivity to light. If the film is highly sensitive to light, it needs only a little light to form an image and is called a fast film. A slow film needs a lot of light to form the image so therefore is called a slow film. ISO is the standard way to indicate film speed or its sensitivity to light. A high ISO number indicates a fast film; a low ISO indicates a slow film.

Slower films are preferred for heritage photography as they give fine-grained images, with excellent contrast and sharpness. Sometimes faster films may be necessary because of low light conditions.

Most good quality, brand-name film from recognised manufacturers is acceptable.

Black and White Film & Processing

Black and white film, if properly processed and stored, is the preferred medium for archival recording. Slow and medium speed black and white films, 50 – 125 ISO, are preferred, although faster films, 400 ISO or faster, may be required under low light conditions.

Black and white films designed to be processed using the chromogenic C41 process are not acceptable because they are not sufficiently stable and are unsuitable for long term storage.

Processing Film for Long-term Stability

Careful processing of the negatives under clean and controlled conditions is the first step in achieving optimum long-term stability. This includes developing and fixing of the image followed by washing and drying of the negatives. Photographic companies producing black and white films have fact sheets outlining the correct procedures to follow in the processing of their film products. Film processing should be done by professional laboratories or by the photographer, if they have darkroom facilities.

The following steps should be followed for maximum image stability:

- **step 1 – developer** is used to develop the image. The appropriate film developer should be used to achieve the finest grain and sharpness;
- **step 2 – acid stop bath** is used to stop the action of the developer;
- **step 3 – fixer** fixes the visible, but unstable, image formed during the developer process. Best results with frequent agitation and adherence to recommended fixing times;
- **step 4 – good washing** in clean water is important for image stability;
- **step 5 – drying** in an environment that will avoid contamination by chemicals or dust.

Processing Contact Prints and/or Prints for Long-term Stability

As with film negatives, processing of black and white papers should be undertaken under clean and controlled conditions. The steps are similar to those followed for negatives. Again, photographic companies producing black and white films and papers have fact sheets outlining the correct procedures to follow in the processing of their paper products. Processing can be done by professional laboratories or by the photographer, if they have darkroom facilities.

The following steps should be followed for maximum image stability:

- **step 1 - developer** is used to develop the image;
- **step 2 – acid stop bath** stops development immediately, reduces the risk of staining, and will extend the life of the fixer bath;
- **step 3 - two-bath fixing** is best for both fibre-based and resin-based papers. Best results with intermittent agitation and adherence to recommended fixing times;
- **step 4 – good washing** in clean running water is important;
- **step 5 - drying** in an environment that will avoid contamination by chemicals or dust.

Either resin-coated or fibre-based photographic papers can be used. Optimum permanence is achieved with fibre-based papers, although they may not be as readily available. Long-term stability with fibre-based paper is ensured by adequate fixing and washing. This is achieved by following an optimum permanence sequence after and including **step 3.** The sequence is:

- **fixing** with intermittent agitation;
- **first wash** in fresh and clean running water;
- **rinse** with a wash aid with intermittent agitation, and;
- **finally washing** in fresh and clean running water;
- **drying** in an environment that will avoid contamination by chemicals or dust.

Colour Transparency Film and Processing

Colour transparency film (colour reversal film or colour slide film) should be taken, as well as black and white, because it provides colour information about the heritage item. Also, it can be digitally scanned and used in electronic presentations. The long-term stability of modern colour transparency film has improved considerably, although black and white is still the most stable.

Colour transparency film to be stored for maximum longevity should not be projected.

Slow and medium speed colour transparency films, 50 – 100 ISO, are preferred, although faster films, 400 ISO or faster, may be required under low light conditions.

Processing (E6 chemistry)

Colour transparency film needs to be developed using E6 processing. This should be done at recognised commercial laboratories which meet the quality assurance standards of the major film companies. This ensures consistent and professional results.

Colour Negative Film or Prints

Colour negative or print films using chromogenic C41, processing are not acceptable for heritage recording as their longevity is poor and they do not meet the permanence standards. Colour negatives and prints often fade, lack the detail and sharpness of colour transparency film, and have restricted contrast and colour range. *

Black and white prints produced by C41 processing have the same problems as colour negatives or prints.

Colour prints have a limited life as the colours are chemically unstable. However, they can be useful for digitising and for use in reports and publications. If colour prints are to be included as part of the archival recording, they should be labelled as such and, only be used to SUPPLEMENT the B&W film and colour transparencies .

Storage of Black and White and Colour Transparencies

The following conditions will ensure optimum survival of records:

- storage must be in archival quality packaging suitable for long-term storage. If plastic packaging is used it should be polypropylene, **not** PVC;
- black and white negatives can be stored in polypropylene sleeves which are manufactured to hold a range of image formats;
- black and white contact sheets can be stored in polypropylene sleeves, as can black and white prints. A range of sleeves, which take various image sizes, are available;
- colour transparency slides, both 35 mm and other formats, can be stored in polypropylene sleeves. Note that in a high humidity environment plastic sleeves can cause problems as they restrict air flow and stick to moist film emulsion. In circumstances where there are problems with high or fluctuating humidity store slides in appropriate and archivally suitable storage units.
- negatives, prints and slides require a temperature and humidity controlled environment for optimum long-term storage;
- annotate and cross-reference the negatives, contact sheets, prints and transparencies using archivally stable ink.

EQUIPMENT - DIGITAL RECORDING

A comparison between film-based recording and digital recording reveals many similarities, as well as differences. The following is a brief summary of some of the features of digital recording:

- **digital camera** – a camera is basically a box that holds a lens that focuses the image. With digital photography the camera converts the light to an electronic image. Further processing can be done within the camera to the captured image;
- **LCD Monitor** - major advantage of digital cameras is the image can be reviewed on the LCD monitor within seconds of taking the shot. This gives the photographer the opportunity to evaluate the image and re-take, if necessary;
- **histogram -** checking the camera's histogram, shown in the LCD monitor, enables the photographer to see and assess the brightness range of the captured image;
- **digital sensors -** digital cameras expose pictures using methods identical to film cameras. The sensitivity standards for both film and sensors are similar and the shutter and aperture mechanisms are the same;
- **memory cards -** instead of film, digital cameras use memory cards which are used to store the images. These come in a range of sizes; most have the capacity to hold more images than film. Images on a memory card can be deleted, transferred or kept any time. Once the images are transferred to a computer or other storage device, the memory card can be re-used;
- **ISO -** digital cameras can be set to record different light sensitivities or ISO speeds. This can be done at any time and the ISO setting can be changed from image to image. Technically, digital cameras do not have a true ISO, but for practical purposes a digital camera's ISO equivalent settings correspond to film;
- **noise and grain -** noise in digital photography is equivalent to grain in film photography. It appears as an irregular, sand-like texture and, if large, can be unsightly and hide details. This is undesirable in heritage photography and, as with film photography, lower ISO settings should be used where possible;
- **resolution -** in digital cameras resolution is expressed as the number of pixels contained in the sensor area, usually expressed as the number of megapixels (MP). Generally, the higher the number of pixels the higher the resolution and the corresponding increase in detail;
- **light settings -** digital cameras can automatically check the light and calculate the proper settings for the light's colour temperature. This is done based on an internal setting called the white balance. This enables digital cameras to be set to specific light conditions, such as daylight, shade, fluorescent or tungsten, removing the need for most filters.

DIGITAL CAMERAS

35mm Single Lens Reflex (SLR) Digital Camera

As with film photography this is the most popular and versatile camera format. Again, when combined with quality lenses and a range of accessories, the 35mm digital SLR camera is very suited to most heritage photography needs.

There are a number of brands available and the most suitable ones for heritage photography should have the following specifications:

- 8 megapixels or more resolution.
  NB A good quality 8 MP digital SLR camera can produce high quality A4 or A3 images or prints which are suitable for most heritage studies. If larger images or prints are required cameras with a 10 MP or more may be needed.
- ISO range 100/200 – 800 (noise reduction function an advantage);
- interchangeable-lenses;
- good image histogram;
- image shooting information – metadata;
- comprehensive viewfinder display;
- comprehensive flash control features;
- flexible white-balance controls;
- raw capture and high quality raw-conversion software;
- full exposure control, especially manual control and the ability to override full autoexposure;
- range of shutter speeds, including the ability to take long exposures in dark places or dull light;
- remote release devices, such as cable releases and electronic releases, to minimize camera vibrations;
- mirror lock-up, a useful device to stop camera shake, especially with larger lenses;
- depth-of-field preview to see what's in or out of focus;
- facilities for external flash.

Medium and Large Format Cameras

Digital backs are available for both medium and large format cameras.

Lenses

The following deals primarily with 35mm digital SLR camera systems but the principles can be applied to both medium and large format camera systems.

Digital cameras sensors can vary in size and are frequently smaller than a 35mm-film frame. If the sensor is smaller a focal-length magnification or lens conversion factor is applied to the focal length of the lens.

An example: a digital SLR camera has an APS sensor, which is smaller than a 35mm film-frame, and has a focal length conversion factor of 1.5X. This means a 50mm lens on the digital SLR camera would be equivalent to 75mm (50mm x 1.5 = 75mm) on a film SLR camera. Some digital cameras have a full size (35mm) sensor and, therefore, do not have to apply focal length conversion factor.

As with film or analogue SLR cameras, a range of lenses with varying focal lengths are necessary to cover all aspects of heritage photography. These can be either fixed focal length lenses or zoom lenses. Either fixed focal length lenses or zoom lenses can be used and should cover the focal length range of 20mm – 300mm.

As there is range of sensor sizes used in digital SLR cameras the lens focal lengths are given for a full size (35mm) sensor. The focal length conversion factor will need to be applied for cameras with smaller sensors.

- **Fixed lenses** (35mm equivalent): 20mm, 28mm, 35mm, 50mm, 105mm and a telephoto lens of 300mm focal length.
- **Zoom lenses** (35mm equivalent): 18-85mm; 70-200mm, 1.4X or 2.0X extender lens. Other combinations can be used as long as they cover the 20mm – 300mm focal length range.
- **Specialised lenses** (35mm equivalent): macro lenses are used for close-up images. Macro lenses are usually available as 50mm, 60mm, 105mm 180mm or 200mm focal length. These lenses can be substituted for fixed focal length lenses.

Only some of these lenses may be needed for a particular assignment.

Image Storage

Digital cameras use some form of removable storage, usually memory cards. Memory cards come in a range of sizes and the type to use varies between camera brands. The number of images stored depends on the capacity of the storage device and the resolution at which the image is taken.

As an example: - a 1GB memory card can store approximately 80-90 images captured in RAW format with an 8 MP digital SLR camera. This is equivalent to 2.2 rolls of 36 exposures of 35mm film. Cameras with higher resolutions than 8MP will have larger image size resulting in fewer images being able to be stored on the storage card.

The photographer needs to ensure there is sufficient storage capacity on the available memory cards to undertake the assignment.

The photographer in the field has two options:

(1) have sufficient capacity on the memory cards to be able to record images without having the need to transfer the images to another storage device; or

(2) use a portable downloader or have access to a computer, normally a portable laptop. The images can be transferred each time the storage card is full. Laptop can be a problem on difficult sites because of their weight and fragility.

Image File Size, Format and Digital Image Management

Heritage photography requires quality images and the photographer needs to make choices about image sizes, compression, and file formats. These choices determine the image quality and image file size.

The photographer should undertake the following:

- photograph at the highest quality;
- record image in RAW format to capture the maximum amount of information; and
- provide client with a copy of the image in RAW format and a copy converted to TIFF format, a universal format.
- **DO NOT** save images in JPEG format as this uses lossy compression which degrades the image to some extent.

There are a number of software packages which can be used to sort, label and file captured images. The labelling should relate to the specific project and to the catalogue sheets.

Digital Camera Accessories

These will vary depending on the project:

- tripod - heavy duty;
- flash units – one or more flash guns and slave unit;
- scale rod/s - for inclusion in the photographs, where appropriate;
- filters, such as polarising and UV filters;
- cable or remote electronic releases;
- additional batteries;
- battery charger.

PHOTOGRAPHIC METHOD

Every photographer has an individual technique. When photographing for the purpose of making an archival record, however, it is the information content rather than the artistic effect which is paramount. Photographs of a particular scene should be uncluttered with extraneous material and should emphasis the subject.

The photographer should be aware of all plans and documentary evidence available on the place and should have an understanding of its history and operations. This is especially important with industrial sites. Without this knowledge significant items may not be treated appropriately. If necessary, the photographer should be accompanied on the site by a person familiar with the site's heritage significance and the processes related to it.

The preferred shooting method is to proceed from the general to the specific. There are two methods which can be used.

1. In the first method the context photo is taken first, then the structures or items showing their relationship to each other, followed by the external facades of each building, the relationship of the elevations to each other and to all equipment or relics housed in each space. Internally, the main elevation of each room or space should be photographed. Finally, each piece of equipment in each space should be carefully and completely photographed.

2. In the second method, the external content photographs are taken initially and the individual buildings and relics are then photographed in a sequence determined by either geographic location, a precinct convention, or, in the case of industrial sites, by a material flow chart.

Whichever method is used the photographer must be aware of the appropriate sequence, and the site must be inspected and the project planned before commencement.

BASE PLAN

The photographer must be equipped with a map of the site on which each building, structure or movable item is shown. Each building, structure or movable item must be given its correct name or it must be denoted by a symbol such as a number or letter of the alphabet. Identify movable items. Where there are a number of buildings on a site, it may be necessary to draw each building separately. In some cases, each space may have to be drawn separately.

Some photographers like to draw a sketch plan themselves as it increase their awareness of the buildings and their contents.

SCALE RODS AND MEASURING STICKS

It may sometimes be useful to include a measuring stick placed in the plane of the photograph's subject which will serve as an indication of the relative scale. (Note: this will be essential for an archaeological excavation, but may not always be practical or necessary for other kinds of photographic recording.)

For large scale photographs the stick or rod should be similar to a field surveyors levelling staff, at least one metre long calibrated in bands from 10mm to 1 000mm wide. For photographs of smaller details prepare a ruler approximately 300mm long with calibrations from 1mm to 10mm. The markings on the scale rods must be bold to be able to be read in the print or slide.

RECORD OF PHOTOGRAPHIC METHOD

Photographic records are taken on behalf of a client and it is essential that the client, or the client's representative, is able to review the catalogue and be satisfied that the coverage is complete.

Photographic Catalogue

Each image must be catalogued. By adopting a set sequence the catalogue recording is much simpler. With film it is normal to assign a number or alphabetical prefix symbol to each type of film, then to number each roll of film and finally to number each frame. Digital images have a unique image file number.

It is normal practice to have a catalogue sheet and enter as much information as possible in the field. Further annotation may be made off-site if required. This may be done when the images are available to be viewed or it may be done simply by reference to the original field notes. The catalogue sheet is then typed. The typed version then becomes the image catalogue. In the case of film this is stored with the negatives and all copies of the contact sheets. With digital recording the catalogue sheet should be stored with the 'thumbnail' image sheet and the CD-R disc.

When cataloguing information for each image it is essential to record data in a consistent manner. Again, different photographers will vary the way they enter information in the catalogue. It is important that the method of entering the information remains the same throughout the project.

It is recommended that the catalogue sheets be specially prepared for each project. In the case of film photography the catalogue sheet should list the site name, date, photographer's name, camera type and lenses, film type, roll number and a description of each frame. Digital recording catalogue sheets need to list site name, date, photographer's name, camera type and lenses, image file number, and a description of each image.

See Appendices A-1 & A-2 for examples of photographic catalogue sheets.

Photographic Plan

A plan of the site, each building and of each space within the building should be obtained and each image or frame exposed should be entered directly on that plan. Each entry should show the position of the camera and the direction in which it was fired. (see Appendix B). The nomenclature should be identical to that used for the catalogue sheets. Normally, a map of the site or a plan of a building should be lodged with the catalogue sheet and contact sheet in the case of film photography or the catalogue sheet and 'thumbnail' image sheet with digital recording. The plan should have a north point which can be true north or a nominal north.

The plan should show the sequence in which the photographs were taken.

PHOTOGRAPHIC TECHNIQUE

CONTEXT PHOTOGRAPHS

Each site, place or movable item or collection should be recorded in its context. This means that the surrounding landscape with the site and structures in it should be photographed from several distant points. Buildings, rivers, landform and other items should be included and their relationship with the subject defined. Photograph the site, room or space where movable items are located and show how the items relate to each other and their setting. In some cases this will require 8-10 images.

RELATIONSHIP OF BUILDINGS ON SITE TO EACH OTHER

The spatial relationship of each structure to another, and to surrounding buildings or structures should be shown. This will allow functional connections to be recognised. Quite often, this can be done by placing the camera where four or five buildings are in view and taking a series of images radiating from the point where the photographer is standing. On a complex site five or six positions may be required before each building is defined in its relationship with those surrounding it. In other cases, one or two shots are all that are required.

INDIVIDUAL BUILDINGS OR STRUCTURES

External images should be taken of each façade with a perspective control lens or a telephoto lens where possible. Wide angle lenses tend to distort the perspective of building facades.

The detail of each façade should be approached in a logical manner usually working from the upper left-hand corner to the bottom right. Details such as eaves, soffits, rainwater heads, downpipes, window reveals and sills, doorways and steps, and balustrades will require individual treatment.

Where individual features are outstanding because of their form, texture, historic nature or condition, several images of one item may be necessary. This may include images taken from a distance as close as a few centimetres, in which case a macro lens will be required.

INTERNAL SPACES

Internal spaces of an individual building are usually more complex. Here knowledge of the operation of the space is essential. Images should be taken in a sequence to show all internal elevations, including floors and ceilings, where possible. Special attention should be placed on structural elements, fittings and any movable items. Do not forget spaces which are difficult to get to, such as the roof, basements, shafts and underfloor spaces.

ITEMS AND RELICS

Individual relics and movable items such as the machinery on an industrial site or furniture in a building should be photographed perpendicular to each face and from each corner. Where possible they should also be photographed from above or from a high vantage point. Normally each item is completely photographed before the photographer moves on to the next one.

Relics and movable items usually exist as assemblages, collections or systems and this should be taken into account by the photographer.

An **assemblage** is a relic or structure including all the artefacts, tools and items normally associated with it when it was operating. In the case of a workshop machine, it would include spanners and wenches used to tighten nuts, the tools needed to adjust gears or belts, the safety screens which prevent contact with moving parts and, if applicable, samples of completed or partially completed work. It also includes signs, pipe work and associated services.

The term **collection** describes a number of relics, movable items or structures which belong to a group because they perform the same function or produce the same finished product. Items in a collection are usually photographed concurrently.

A **system** is more than a collection of artefacts. It is an operational group of related relics or structures which cannot function effectively if any of them is removed. Where a system is being recorded the sequence in which the items are photographed will be determined by the operation of the system.

Photographers, who have not worked extensively in recording buildings and sites, should be walked through the complex before work starts by someone who knows the process related to the site.

ACCUMULATED CULTURAL MATERIAL

On some sites accumulated cultural material or rubbish may be so distracting that it has to be cleared before photography can be undertaken. Details may be partially obscured or completely hidden and a clean-up is essential. This is particularly necessary if the site has been vacant for some years and is subject to weed growth, bird infestations, squatters and vandalism.

Care should be taken not to disturb materials that are a legitimate part of the historic record. Material which appears disruptive to the photographer's eye and which belongs to a structure or relic, such as an oil can, may be relevant to the operation of the machine and should not be removed. It may, however, be repositioned if such action will not compromise the relationship of the items within the assemblage.

FINAL PHOTOGRAPHIC IMAGE REPORT - FILM-BASED REQUIREMENTS

MINIMUM REQUIREMENTS FOR FILM PHOTOGRAPHIC REPORT

When the survey is complete the minimum requirements for the **photographic report** and materials are:

- an introduction which explains the purposes of the report and gives a brief description of the subject, as well as details of the sequence in which photographs were taken. The report may also address the limitations of the photographic record and may make recommendations for future work;

- the report should include all technical details including camera and lenses, film types and processing, and photographic prints and processing;

- the report should also contain the catalogue sheets, photographic plan, and supplementary maps or plans.

MINIMUM REQUIREMENTS FOR FILM MATERIALS

Black and White Film

The minimum requirements for black and white film are as follows:

- one set of archivally developed and numbered negatives in strips and stored in archival sheets or envelopes;
- three sets of proof sheets, labelled and cross-referenced to the catalogue sheets.

The black and white negatives, one set of proof sheets, and one copy of the photographic report should be stored together in a public archive. One set of proof sheets and the photographic report should be stored together in a second archive. The final set of one set of proof prints and photographic report should be located with the client. (see section: Lodgement of Final Film or Digital Photographic Report for details)

In the case of movable items and collections, it is recommended to keep one set with the items and another in the archives.

Colour Transparencies

The minimum requirements for colour transparencies are:

- three sets of colour transparencies (either original transparency and two duplicate or three original images taken concurrently) numbered,

labelled and cross-referenced to the catalogue sheets and stored in archival slide sheets.

One set of transparencies (original images) together with the photographic report should be stored together in a public archive. The second set of transparencies (original or duplicates) with the photographic report should be stored together in a second archive. The final set of one set of transparencies (original or duplicates) and photographic report should be located with the client. (See Lodgement of Final Film or Digital Photographic Report on page 28 for details.)

In the case of movable items and collections, it is recommended to keep one set with the items and another in the archives.

Digitisation of film material

All film material, black and white negatives and prints, colour transparencies, and colour negatives and prints can be digitised by the use of scanners. Details relating to the use and storage of digital images are dealt with in the next section on the digital image report and placement of digital materials.

Australian National Library Guidelines for the digitisation of film-based materials are as follows:

- coloured photographic prints: 24 bits per pixel, 300 or 600 pixel per inch (PPI), RGB colour space;
- colour transparencies: 24 bits per pixel; 2000 PPI; RGB colour space;
- colour negatives: 48 bits per pixel; 2000 PPI; RGB colour space;
- black and white prints: 8 bits per pixel; 300 or 600 PPI; greyscale;
- black and white negatives: 8 bits per pixel; 3000 PPI; greyscale.

FINAL PHOTOGRAPHIC REPORT - DIGITAL REQUIREMENTS

MINIMUM REQUIREMENTS FOR DIGITAL PHOTOGRAPHIC REPORT

When the survey is complete the minimum requirements for the **photographic report** and materials are:

- a very brief report or introduction which explains the purposes of the report and gives a brief description of the subject, as well as details of the sequence in which images were taken. The report may also address the limitations of the photographic record and may make recommendations for future work;
- the report should include all technical details including camera and lenses, image file size and format, technical metadata associated with the images, and colour information;
- the report should also contain the catalogue sheets, photographic plan, and supplementary maps or plans.

MINIMUM REQUIREMENTS FOR DIGITAL MATERIALS

The minimum requirements for digital work are:

- three hard (paper) copies of the photographic report including catalogue sheets, photographic plan and supplementary maps;
- three sets of thumbnail image sheets (e.g. A4 photographic paper with six images by six images) showing images and file numbers. Thumbnail image sheets should be processed with archivally stable inks using approved archival photographic papers and cross-referenced to catalogue sheets;
- three copies of archival quality CD-R discs containing electronic images files and associated metadata, cross-referenced to catalogue sheets. If there are a large number of images, then DVD media can be used;
- one set of 10.5 x 14.8cm (A6), prints using archival quality paper and archivally stable inks. If the project is very large and includes a considerable number of digital images, key or representative images may be selected for reproduction at 10.5 x 14.8cm.

Digital Thumbnail Sheets and Prints

The thumbnail image sheets or prints should be printed on archival paper using archival inks or dyes. This will ensure optimal longevity.

Image stability, a problem in the past, is improving rapidly with new technology, improved inks and papers. A number of printer manufacturers offer printers which, with correct inks and specific papers, can produce prints with an expected life comparable to traditional black and white prints, provided storage conditions are suitable. These results are based on laboratory accelerated ageing techniques.

This technology is available through professional photographic laboratories.

Currently, there are three acceptable systems:

- Epson PictureMate Printers (or Epson equivalent) using Epson UltraChrome K3 inks and Epson archival photographic paper (Epson PictureMate paper (dye-based inkjet printing);
- Hewlett-Packard (HP) Photosmart Photo Printers (or HP equivalent) with HP Vivera Inks and HP Premium Plus photographic paper papers (dye-based inkjet printing); or
- FujiFlex utilising Fujicolor Crystal Archive Type One or Type Two Paper printed with Fuji Frontier digital minilab and Fuji washless chemicals(silver-halide colour prints).

Photographers are advised to check each company's website to keep up-to-date on improvements in printers, inks, chemical processing or photographic papers. In the future other companies may develop archivally acceptable methods.

Rather than relying on claims made by the various companies an objective assessment of the permanency of any particular system can be found at www.wilhelm-research.com

Costs may be similar to or slightly higher than that charged for producing film proof sheets and prints.

One-hour shops, particularly those using C-41 processing, are not suitable for producing prints acceptable for long-term storage.

STORAGE OF PHOTOGRAPHIC MATERIALS

PROOF SHEETS, SLIDES AND PRINTS

Proof sheets, slides and prints should meet the following storage standards:

- all storage must be in archival quality packaging suitable for long-term storage. If plastic packaging is used it should be polypropylene, **not** PVC;
- colour transparency slides, both 35 mm and other formats, can be stored in polypropylene sleeves. Note that in a high humidity environment plastic sleeves can cause problems as they restrict air flow and can cause the film emulsion to stick to the plastic. In these circumstances appropriate storage containers should be used;
- prints can be stored in polypropylene sleeves which are manufactured to hold a range of image formats;
- thumbnail image sheets (usually A4 size) can be stored in polypropylene sleeves;

- the photographic report and photographic materials should be stored in a suitable archival binder. These include a slipcase to ensure optimal survival and protection from the dust.

All printed material requires a temperature and humidity controlled environment for archival storage.

Any cross-reference notes and details associated with the prints or proof sheets should be written in pencil (preferably B) or with approved archival photo-labelling pen. Any writing should be restricted to the borders of prints or proof sheets.

CD-ROM OPTICAL MEDIA DISCS

With good care and maintenance a high quality CD-R disc is said to last around 30 years, although some manufacturers claim lifespan of 100 years plus. The difficulty is finding out which discs are best and knowing where the disc was manufactured. Another problem with CD-R is the technology may become obsolescent before the disc deteriorates, so the wisest option is to transfer the information to new media every 10 years.

DVDs are a storage option if the project is very large. Again, be careful to select a good quality DVD with long lasting qualities.

To ensure optimum life of CD-R discs and DVDs the following is suggested:

- use high quality CD-R discs or DVDs that are produced by a reputable brand and meet quality controlled manufacturing standards;
- burn CD-R or DVD at 1x or 2x speed to minimise data errors and then verify to make sure there are not data faults;
- it is recommended that TIFF images be saved as a Windows PC file rather than MAC. However, this should be determined with the client based on the client's computer system and future use..
- CD-R discs should be in plastic jewel cases which should be stored upright and under suitable storage conditions;
- CD-R discs should be labelled on their protective packaging rather than directly on the discs themselves;
- ensure CD-R are handled with due care, keeping them away from food, drink and dust. Never handle the underside of the disc and use the utmost care when handling the disc so as not to scratch the surface in any way. Gloves are recommended for the handling of archival discs;
- CD-R discs should never be bent or flexed and must be kept away from direct sunlight and stored vertically in their cases after use.

LODGEMENT OF FINAL FILM AND DIGITAL PHOTOGRAPHIC RECORDS

There should be three sets of the photographic report and film materials or digital materials. The place in which the material is lodged depends on whether the photographic project was requested by the NSW Heritage Council or local government. The following table summarises the lodgement details for photographic records.

Material	**Minimum requirements**	**Repository**	
		For Records Required by the Heritage Council of NSW	**For Records Required by a Local Council**
Black & White Film (plus any supplementary colour film)	• Three copies of photographic report • One set of negatives • Three sets of proof sheets and catalogue	Report + negatives + 1st set of proof sheets: Heritage Office Report + 2nd set of proof sheets: State Library of NSW Report + 3rd set of proof contact sheets: Owner/client	Report + negatives + 1st set of proof sheets: Local Council Report + 2nd set of proof sheets: Local Council Library Report + 3rd set of proof sheets: Owner/client
Colour Transparencies or Slides	• Three copies of photographic report • One set of original transparencies and two sets of duplicates OR • Three sets of original images taken concurrently	Report + original transparencies: Heritage Office Report + duplicate/concurrent transparencies: State Library of NSW Report + duplicate/concurrent transparencies: Owner/client	Report + original transparencies: Local Council Report + duplicate/concurrent transparencies: Local Council Library Report + duplicate/concurrent transparencies: Owner/client
Digital Materials	• Three copies of photographic report – paper copy • Three sets of thumbnails • Three CD-Rs • One set of selected 10.5x14.8cm prints	Report (paper) + thumbnails + CD-R + prints: NSW Heritage Office Report (paper) + thumbnails + CD-R: State Library of NSW Report (paper) + thumbnails + CD-R Owner/client	Report (paper)+ thumbnails + CD-R + prints: Local Council Report (paper) + thumbnails + CD-R: Local Council Library Report (paper) + thumbnails + CD-R: Owner/client

APPENDICES

A Model Brief for Heritage Photography
B Checklist for a Heritage Photographic Report
C Catalogue Sheet
D Photographic Plan Sheet
E Photographic Suppliers
F References

APPENDIX A - MODEL BRIEF FOR HERITAGE PHOTOGRAPHY

FILM RECORDING

PHOTOGRAPHER'S DETAILS		
Name		
Address		
Phone:	**Mobile phone:**	**Facsimile:**
Email:		
Recent Heritage Jobs:		
Contact/s (re recent heritage assignments**)**		
Name:		
Contact Details:		

PHOTOGRAPHIC ASSIGNMENT DETAILS
Assignment Outline:

ASSIGNMENT REQUIREMENTS		
Public Liability Insurance	**Yes/No**	**Amount:**
Additional Requirements:		
Copyright/Image Ownership:		

FILM REQUIREMENTS		
Start:	**Finish:**	**Report:**
Camera/s:		
Lenses:		
Accessories:		
Film:	**Black & White**	
	Colour Transparency	
Processing:	**Black & White**	
	Colour Transparency	
Archival Materials:	**Boxes**	
	Sleeves	
	Paper	

Signatures (agreeing to above requirements and/or conditions**)**

Photographer **Client**

SAMPLE MODEL BRIEF FOR HERITAGE PHOTOGRAPHY FILM RECORDING

PHOTOGRAPHER'S DETAILS		
Name	Allan Person	
Address	PO Box 000 Suburb NSW 2000	
Phone: 02 0000 0000	**Mobile Phone**: 0000 000	**Facsimile**: 02 0000 0000
Email: john.smith@server.com.au		
Recent Heritage Jobs:	Federation House 2006	
	Wooden Rail Bridge 2005	
	Sewerage Pumping Station 2004	
Contacts [regarding recent heritage assignments]		
Name:	Kate Individual	
Details:	Sydney Archival Agency	
	Phone: 02 0000 0000	
PHOTOGRAPHIC ASSIGNMENT BRIEF		
Assignment Outline: Weatherboard House [a] Photography of house prior to demolition [b] Photographic requirements include cameras, wide angle, standard and telephoto lenses; film - black & White & colour transparencies required [c] Final report to use approved archival standard materials		
ASSIGNMENT REQUIREMENTS		
Public Liability Insurance	**Amount:** $5 000 000	
Additional Requirements: [a] completion & signed Heritage Office Client Checklist; [b] adherence to contract details unless changes agreed to by requisitioning authority; [c] work safety plan; [d] on-site induction; [e] confined spaces training or accompanied by qualified person		
Copyright/Image Ownership:	Images property of client	
FILM REQUIREMENTS		
Start: date/month/year	**Finish**: date/month/year	**Report:** date/month/year
Camera/s: Camera type/s – Single Lens Reflex		
Lenses: 21, 24, 35, 50, 85, 135, 200 & 300mm		
Accessories: filters, tripods, measuring sticks, flash		
Film:	Black & White	Ilford Delta 100 & Ilford delta 400
	Colour Transparency	Fuji Velvia 100
Processing:	Black & White	negatives & proofs sheets to archival standard
	Colour Transparency	E6 – professional laboratory
Archival Material:	Boxes	Approved archive storage boxes
	Sleeves	Approved archival protector pages
	Paper	Acid-free

Signatures:
Photographer: **Client:**

MODEL BRIEF FOR HERITAGE PHOTOGRAPHY DIGITAL RECORDING

PHOTOGRAPHER'S DETAILS		
Name		
Address		
Phone:	**Mobile phone:**	**Facsimile:**
Email:		
Recent Heritage Jobs:		
Contact/s (re recent heritage assignments**)**		
Name:		
Contact Details:		

PHOTOGRAPHIC ASSIGNMENT DETAILS		
Assignment Outline:		
ASSIGNMENT REQUIREMENTS		
Public Liability Insurance	**Yes/No**	**Amount:**
Additional Requirements:		
Copyright/Image Ownership:		
DIGITAL REQUIREMENTS		
Start Date:	**Finish Date:**	**Report Due:**
Camera/s:		
Lenses:		
Accessories:		
Storage Media:		
Proof Sheets:		
Archival materials:	**Boxes**	
	Sleeves	
	Paper	

Signatures: (agreeing to above requirements and/or conditions**)**

Photographer: **Client:**

SAMPLE MODEL BRIEF FOR HERITAGE PHOTOGRAPHY DIGITAL RECORDING

PHOTOGRAPHER'S DETAILS		
Name	Allan Person	
Address	PO Box 000 Suburb NSW 2000	
Phone: 02 0000 0000	**Mobile Phone**: 0000 000 000	**Phone**: 02 0000 0000
Email: allan.person@server.com.au		
Recent Heritage Jobs:	Federation House 2006	
	Wooden Rail Bridge 2005	
	Sewerage Pumping Station 2004	
Contacts [regarding recent heritage assignments]		
Name:	Kate Individual	
Details:	Sydney Archival Agency	
	Phone: 02 0000 0000	
PHOTOGRAPHIC ASSIGNMENT DETAILS		
Assignment Outline: Weatherboard House [a] Photography of house prior to demolition [b] Photographic requirements include cameras, wide angle, standard and telephoto lenses; sufficient on-site storage media cards. [c] Digital report to consist of paper copy, proof 'thumbnail' sheet/s, prints stored on approved electronic storage media [d] Paper copy, proof sheets & digital storage media in approved archival materials		
ASSIGNMENT DETAILS		
Public Liability Insurance	**Amount:** $5 000 000	
Additional Requirements: [a] completion & signed Heritage Office Client Checklist; [b] adherence to contract details unless changes agreed to by requisitioning authority; [c] work safety plan; [d] on-site induction; [e] confined spaces training or accompanied by qualified person		
Copyright/Image Ownership:	images property of client	
DIGITAL IMAGING REQUIREMENTS		
Start:: date/month/year	**Finish**: date/month/year	**Report:** date/month/year
Camera/s: Brand Name Digital Camera - Single Lens Reflex [minimum 8.0 MP]		
Lenses: 21, 24, 35, 50, 85, 135, 200 & 300mm [35mm equivalent]		
Accessories: filters, tripods, measuring sticks, flash		
Storage Media:	Approved CD or DVD	
Proof Sheets:	Brand name archival ink/Brand name archival photographic paper	
Archival material:	Boxes	Approved archive storage boxes
	Sleeves	Approved archival protector pages
	Paper	Acid-free

Signatures:
Photographer: **Client:**

APPENDIX B - CHECKLIST FOR PHOTOGRAPHIC REPORT

PROJECT NAME:		
FILM-BASED PROJECTS		
	Yes	**No**
Is there a hardcopy report?		
Does the B&W report contain:		
[a] a set of B&W negatives and proof sheet/s?		
[b] negatives & proof sheets sleeved in archival protective pages?		
[c] B&W prints [if required] sleeved in archival protective pages?		
[d] cameras, lenses, and accessories details?		
[e] film types and archival processing details?		
[f] map showing photographic location and direction of images?		
[g] list of all images, correctly numbered and described?		
Does the colour image report contain:		
[a] a set of colour transparencies, correctly numbered & described		
[b] each set stored in archival protective pages?		
[c] cameras, lenses, and accessories details?		
[d] film types and archival processing details?		
[e] map showing photographic location and direction of images?		
[f] list of all images, correctly numbered and described?		
Is the photographic material and report labelled correctly?		
Are the boxes/folders/containers made of archivally acceptable material?		
Are there two separate containers for B&W and colour material?		
Were the B&W negatives, proof sheets and prints archivally processed?		
Is the paper used in the report acid-free?		
DIGITAL PROJECTS		
Is there a hardcopy report?		
Does the hardcopy report contain:		
[a] thumbnail proof sheet processed in an archivally acceptable method?		
[b] proof sheet properly sleeved in archival protective pages?		
[c] appropriate electronic storage media with report and images?		
[d] cameras, lenses, and accessories details?		
[e] map showing image location and details?		
[f] list of all images, correctly numbered and described?		
Is there an electronic report?		
How is the information stored?		
[a] CD Rom – what type		
[b] DVD – what type		
[c] Other		
Can the storage media be opened?		
Is the information the same as that contained in the hardcopy report?		
Are the images saved as TIFF files, contain metadata and follow guidelines?		
If not, what is the file format & where have they diverted from guidelines?		
Is the storage media filed in an acceptable container?		
Is there a back-up copy stored with the hardcopy report?		
Is there a full set of 10.5 x 14.8 (A6) images processed with archivally stable inks and paper?		
Comments for either film and/or digital reports:		

APPENDIX C - FILM CATALOGUE SHEET

Project Name:	
Camera:	**Film Type:**
Film No.	**Photographer:**
Comments:	

Image No.	Date	Lens	Details (1)

1. include details of the structures and/or object captured on film and direction from which image was photographed

DIGITAL IMAGE CATALOGUE SHEET

Project Name	
Camera:	**Lenses**
Sensor size:	**35mm lens equivalent (1):**
Image Folder:	**Photographer:**
Comments:	

Image File No. (2) & (3)	Date	Site (4)	Details (4)

1 35mm-equivalent focal length is the relation between the digital sensor and 35mm film coverage.
2 file numbering systems vary between various camera brands.
3 image file number, date, lens focal length, exposure compensation, flash and other details are recorded in the metadata file which must be included with or linked to the image file.
4 relates to the site or position from which image was taken as recorded on the Photographic Plan Sheet.
5 this information is not recorded on in the metadata.

APPENDIX D - PHOTOGRAPHIC PLAN SHEET

Project Name:		
Date:		**Photographer:**
Camera:		**Lens/es:**
Film No/s.	**Frame Nos:**	**Film Type:**

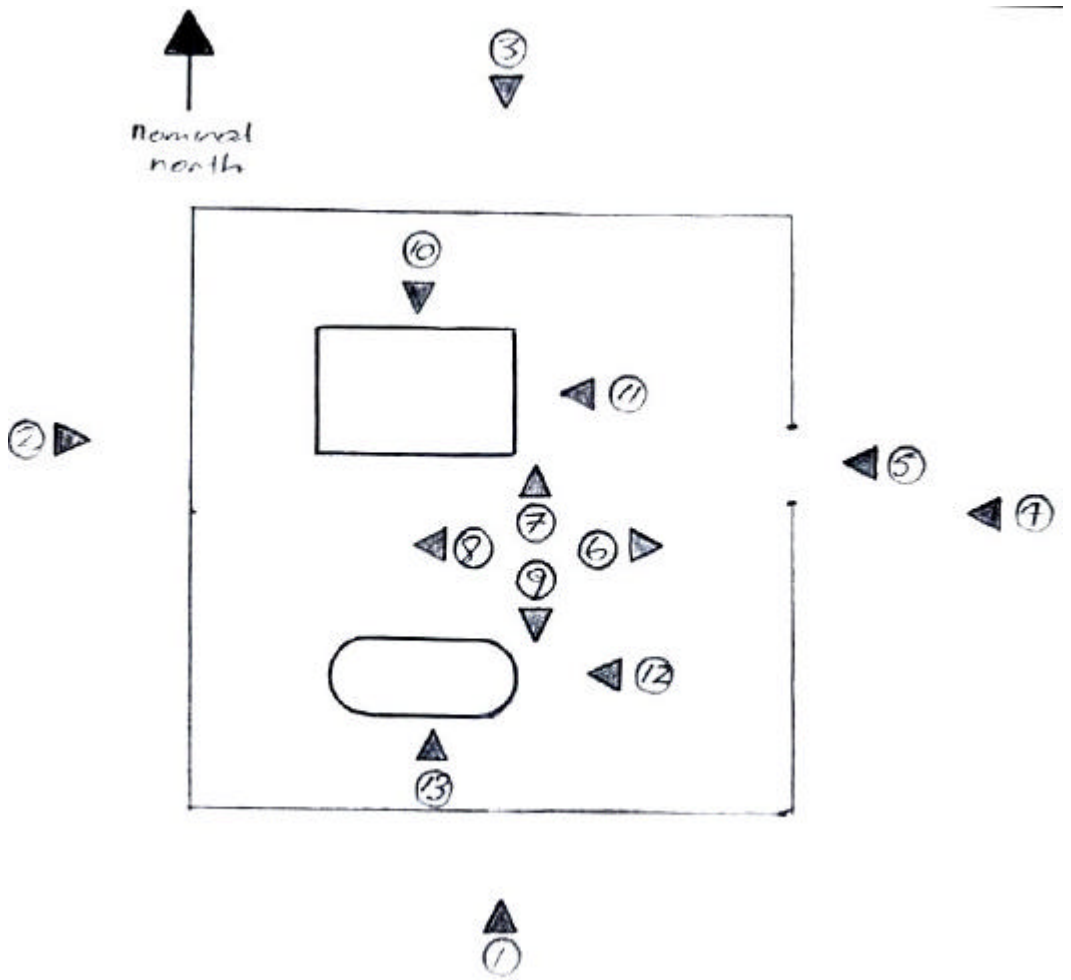
1. The Photographic Plan Sheet can be used for both black & white and colour film images. Many photographers will have their own established system which will be satisfactory provided all the information can be cross-referenced to the Photographic Catalogue Sheets.

2. With digital photography each location can be labelled as a site which should then be included in the appropriate Photographic Catalogue Sheet cross-referenced to the appropriate digital file number. In this case remove the text File No/s and Frame Nos and substitute Site No.

3. The side of the building or structure closest to true north can be used as 'nominal north' for the purpose of describing the directions in which the images were taken. This is easier than trying to work out exact directions in relation to true north.

SAMPLE PHOTOGRAPHIC PLAN SHEET

Project Name: Sample		
Date:		**Photographer:**
Camera:		**Lens/es:**
Film No/s.	**Frame Nos:**	**Film Type:**



1. The Photographic Plan Sheet can be used for both black & white and colour film images. Many photographers will have their own established system which will be satisfactory provided all the information can be cross-referenced to the Photographic Catalogue Sheets/.

2. With digital photography each location can be labelled as a site which should then be included in the appropriate Photographic Catalogue Sheet cross-referenced to the appropriate digital file number. In this case remove the text File No/s and Frame Nos and substitute Site No.

3. The side of the building or structure closest to true north is used as ‘nominal north’ for the purpose of describing the directions in which the images were taken. This is easier than trying to work out exact directions in relation to true north.

APPENDIX E - USEFUL CONTACTS

Pro Labs – film and print processing
The list below includes some of the major photographic labs that undertake film and digital processing in NSW and is intended as a directory only. The inclusion of a person or business should not be taken to imply their endorsement by the Heritage Office, Department of Planning, or the Heritage Council of NSW.

Photographers should check the specifications and archival quality of services provided. Rural photographers can also check company websites for details on mail order services.

Campsie Digital Lab*†
Unit 3/9 Elizabeth Street
Campsie NSW 2194
Ph: 02 9718 8667‡
Fx: 02 9789 1564
www.digitalprolab.com.au

Created for Life Print Studio
2/14 Barralong Road
Erina NSW 2250
Ph: 02 4365 1488
Fx: 02 4367 0850
www.createdforlife.com

Icon Imageworks*
3/52 Champion Road
Tennyson Point NSW 2111
Ph: 02 9966 8781
Fx: 02 9966 87 86
www.iconcom.com.au

Photo King Professional
173 Alison Road
Randwick NSW 2031
Ph: 02 9310 0340
Fx: 02 998 5199
www.photking.com

The B&W Lab Big Image*
71 Palmer Street
Cammeray NSW 2062
Ph: 02 9957 4933
Fx: 02 9957 1828

The Lighthouse BPS Pty Ltd*
2/219 Bondi Road
Bondi NSW 2066
Ph: 02 9365 6063
Fx: 9365 6013
www.thelighthousebps.com.au

Vision Graphics
88 Pitt Street
Redfern NSW 2016
Ph: 02 9319 3300
www.visiongraphics.com.au

Vision Graphics
2B Northcote Street
St Leonards NSW 2065
Ph: 02 9902 4000
www.visiongraphics.com.au

* Black & white processing services provided

ARCHIVAL MATERIAL SUPPLIERS

[archival photographic sleeves and storage boxes]

Albox Australia Pty Ltd
56 North Terrace
Kent Town SA 5067
Ph: 08 8362 4811
Fx: 08 8362 4066
www.albox.com.au [retailer supplier list for all states and territories]

Archival Survival Pty Ltd
Ph: 1300 781 199
email: info@archivalsurvival.com.au

Prints & Images
77 Keppel Street
Bathurst NSW 2795
Ph: 02 6332 4410
Fx: 02 6332 6770
email: cottagegate@bigpond.com

Preservation Australia
PO Box 210
Enmore NSW 2042
Ph: 1300 651 408
Fx: 1300 651 406
www.preservationaustralia..com.au

Shared Memories
PO Box 6
Sans Souci NSW 2219
Ph: 1300 554 229
www.sharedmemories.com.au

The Photo Album Shop
105 Hunter Lane
Hornsby NSW 2077
Ph: 9476 2610
Fx: 9476 5192
www.photoalbumshop.com.au

APPENDIX F - REFERENCES

Personal contacts

- Murray Fagg – Australian National Botanical Gardens
- Erica Ryan - National Library of Australia
- Andrew Long – National Library of Australia
- Sheryl Jackson – National Archives of Australia
- Richard Neville – State Library of NSW
- Scott Wagon – State Library of NSW
- Tony Sillavan – Sydney Water
- Jon Breen - Sydney Water (retired)
- Chris Cane – The Lab
- Alan Ward – Vision Graphics

National and State Guidelines

- Australian National Botanical Gardens
    - Photograph Collection Policy
- National Archives of Australia
    - Digital Preservation Guidance Note 3 - Care, Handling and Storage of Removable Media
    - Archives Advice 6 - Protecting & handling optical discs
    - Archives Advice 7 - Protecting & handling photographs
    - Archives Advice 7 - Protecting & handling objects
- NSW Heritage Office
    - Guidelines for Photographic Recording of Heritage Items 2004
- National Library of Australia
    - Still Image Digitisation at the National Library
    - Traditional Format Library Materials
- State Library of New South Wales
    - Digital practice: Guidelines for digitising images in NSW public libraries
- State Library of Queensland
    - Digitisation Policy
- Victorian State Government
    - Electronic Records Strategy – Forever Digital

Magazines

- Australian Photography
- Better Pictures
- Outdoor Photography
- Practical Photography
- Photography Monthly
- ProPhoto

Books, Press Releases and Information Sheets

- Fujifilm Professional Complete Film Line-up for Professionals
- Kodak 2004 Press Release – Kodachrome Film Availability
- Ilford Fact Sheet 2001 Processing B&W Fibre Based Paper
- Ilford Fact Sheet 2002 The Ilford Black & White Photographic Chemical Range
- Ilford Fact Sheet 2002 Processing B&W Resin Coated Paper
- International Digital Enterprise Alliance Inc.2004. DISC Metadata for Digital Image Submission
- Photograph Australia with Steve Parish – Film and Digital Photography Steve Parish Publishing Pty Ltd 2003
- The B&W Lab Big Image 2006 Price List

Websites

Guidelines and Policy

www.anbg.gov.au Australian National Botanical Gardens Photograph Collection Policy
www.archives.com National Archives (USA)
www.asmp.org The Universal Photographic Digital Imaging Guidelines
www.cr.nps.gov. National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion March 2005
www.diglib.org Technical Guidelines for Digitizing Materials for Electronic Access
www.nmnh.si.edu CoPAR Bulletin 14 – Creating Records That Will Last
www.montana.edu Experts Give Tips for Preserving Photos
www.prov.vic.gov.au Victorian Electronic Records Strategy – Forever Digital
www.nla.gov.au National Library of Australia
www.naa.gov.au National Archives of Australia
www.tasi.ac.uk Basic Guidelines for Image Capture and Optimisation
www.williamsphotographic.com Archival and Storage Issues

Archival Albums and Storage Materials

www.photoalbumshop.com
www.preservationaustralia.com.au

Archival inks, papers, printers and image longevity

www.epson.com.au Epson's New Ultrachrome Ink
www.epson.com.au Technical Brief – Epson Archival Inks
www.fineartgicleeprinters.org Discussion on the color gamut of the new UV pigmented inks from Hewlett-Packard for HP DesignJet 5000 and 5500ps for photorealistic and fine art giclee prints
www.inksupply.com MIS archival Pigments
www.photoreview.com.au The Test of Time
www.wilhelm-research.com Permanent care of colour photographs: traditional & digital, colour prints, colour negatives, slides & motion pictures

Digital storage media

www.cdmediaworld.com CD-R Quality
www.disctronics.co.uk CD-ROM Specification
www.melbpc.org.au How long will a CD-R last?
www.sro.wa.gov.au Preservation Notes – Keeping CDs Safe
www.cdmediaworld.com CD-R Quality

Digital photography – working with images
www.arisedition.com Creating a Digital Master
www.gbbc.org.uk Bit Depth and File Size, File Size and Resolution
www.pictureaustralia.org Australian Heritage Photo Library; ACT Heritage Library
www.scantips.com A Simple Way to Get Better Scans
www.wildlifephoto.net Digital Workflow

Cameras - film and digital
www.canon.com.au
www.hasseblad.com.com
www.horsemanUSA.com
www.konicaminolta.com
www.kyocera.co.jp
www.linhof.de
www.nikon.com
www.olympus.com
www.pentax.com
www.sigma.com
www.sinarcameras.com
www.tamron.com

Software
www.adobe.com

Printers and inks
www.digitalfilm.com
www.epson.com.au
www.fujifilm.com
www.hp.com.au
www.lyson.com

Film and digital processing and printing
www.icon.com.au
www.imx.nl Kodak Kodachrome: a critical appraisal and its role in the future
www.visiongraphics.com.au
www.thelabsydney.com

APPENDIX E HERITAGE NSW RESPONSE HHMP REVIEW

Heritage Council of New South Wales

Level 6, 10 Valentine Avenue
Parramatta NSW 2150
Locked Bag 5020
Parramatta NSW 2124

Telephone: 61 2 9873 8500
Facsimile: 61 2 9873 8599
heritagemailbox@environment.nsw.gov.au
www.heritage.nsw.gov.au

Our File: EF14/9823
Our ref no: DOC19/972278
Your ref no: SSD 9255

Tatsiana Bandaruk
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001
By email: Tatsiana Bandaruk <Tatsiana.Bandaruk@planning.nsw.gov.au>

Dear Ms Bandsruk,

RE: Draft Conditions of Consent Referral – New England Solar Farm, Uralla Shire, SSD 9255

I refer to your email dated 6 November 2019 inviting comments from the Heritage Council of NSW on recommended draft conditions for the above State Significant Development application. The Heritage Council of NSW provided comments to the Department of Planning, Industry and Environment on 24 June 2019 regarding this application and its anticipated impacts to historic heritage items including historical archaeological sites.

The letter dated 24 June 2019 supported the approach to reduce impacts to historic heritage items and the stated commitments to manage the conservation of items and unexpected archaeological relics during the project.

Heritage NSW supports the proposed conditions 17 as drafted. Condition 17 (protection of heritage items) links to Table 1, of Appendix 6 (and which lists a number of heritage items which will be avoided by the project).

The proposed Heritage Management Plan condition (18) supports the commitments in the EIS and as amended by the Response to Submissions towards the management of unexpected historical archaeological relics as well as other conservation commitments, such as archival recordings. However, the Condition requires the HMP be prepared in consultation with the Heritage Council of NSW. It is recommended Condition 18 is revised to remove this requirement with the condition stating the HMP must be prepared in compliance with Heritage Council of NSW Guidelines for archival recordings and best practice to ensure avoidance of historic items (as identified by condition 17 of the approval).

Review of this document by the Heritage Council is not required, given that the project will not impact State Heritage Register items or historical archaeological relics/sites.

If you have any questions regarding the above matter please contact Felicity Barry, Senior Historical Archaeologist, at Heritage NSW, Department of Premier and Cabinet on (02) 9995 6914 Felicity.Barry@environment.nsw.gov.au.

Yours sincerely

11 November 2019

Dr Siobhan Lavelle OAM
Senior Team Leader – Specialist Services
Heritage, Community Engagement,
Department of Premier and Cabinet
As Delegate of the NSW Heritage Council

APPENDIX F SECRETARY'S APPROVAL OF THIS PLAN

Department of Planning, Housing and Infrastructure

Our ref: SSD-9255-PA-87

Sarah Donnan
Project Manager
Acen Australia
Suite 2, Level 2
15 Castray Esplande
Battery Point, TAS, 7004

9 October 2026

Subject: New England Solar Farm – Historical Heritage Management Plan Update

Dear Ms Donnan,

I refer to your submission requesting approval of the Historical Heritage Management Plan for Stage 1, Stage 2 and Stage 3 (Revision 8 dated 7 October 2026). I also acknowledge your response to the Department's review comments and request for additional information.

The Department has carefully reviewed the document and is satisfied that it meets the requirements of the relevant conditions of consent (SSD-9255 as modified). As nominee of the Planning Secretary, I approve the Historical Heritage Management Plan for Stage 1, Stage 2 and Stage 3 (Revision 8 dated 7 October 2026).

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Jasmine Walden on (02) 6773 7009.

Yours sincerely,

Samantha Wynn
A/Director
Energy Assessments

As nominee of the Planning Secretary

ACEN | Australia