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<thead>
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<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD</td>
<td>Central Business District</td>
</tr>
<tr>
<td>CHL</td>
<td>Commonwealth Heritage List</td>
</tr>
<tr>
<td>CHMP</td>
<td>Construction Heritage Management Plan</td>
</tr>
<tr>
<td>CoA</td>
<td>Conditions of Approval</td>
</tr>
<tr>
<td>CUST</td>
<td>Cullen Universal Steel Truss</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979</em></td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Planning and Assessment</td>
</tr>
<tr>
<td>EPBC Act</td>
<td><em>Environment Protection Biodiversity Conservation Act 1999</em></td>
</tr>
<tr>
<td>NPW Act</td>
<td><em>National Parks and Wildlife Act 1974</em></td>
</tr>
<tr>
<td>OEH</td>
<td>Office of Environment and Heritage (including NSW Heritage Council)</td>
</tr>
<tr>
<td>PI</td>
<td>Planning and Infrastructure</td>
</tr>
<tr>
<td>SME EDD</td>
<td>SME Explosive Dog Detection unit</td>
</tr>
<tr>
<td>SoHI</td>
<td>Statement of Heritage Impact</td>
</tr>
<tr>
<td>STRARCH</td>
<td>Abbreviation of 'stressed arch' referring to the design of the STRARCH hangar</td>
</tr>
</tbody>
</table>
1 Introduction

This Options for Mitigation Report (OfMR) has been prepared to address the requirements of the Minister’s Conditions of Approval (CoA), the Recommended Environmental Mitigation Measures (REMMs), Environmental Protection and Biodiversity Conservation Act 1999 approval (EPBC approval) and all applicable legislation relating to the Moorebank Intermodal Land Preparation Works – Demolition and Remediation package (‘the project’).

1.1 Project background

The Moorebank Intermodal Terminal Environmental Assessment (EA) (Parsons Brinkerhoff, 2014) assessed the impacts of construction of the project on non-Aboriginal heritage. As part of EA development, detailed non-Aboriginal cultural heritage assessment was prepared to address the Director General’s Requirements issued by the then Department of Planning. The assessments were included in the EA as:


The following heritage documents were also prepared as part of the response to submissions:

- Appendix J: Cultural heritage report (Navin Officer Heritage Consultants 2014).
- Appendix K: Cultural heritage archival recordings (Navin Officer Heritage Consultants 2014).

1.2 Study area

The Moorebank Intermodal Terminal is located in Moorebank, NSW. The study area is located in the Liverpool Local Government Area, approximately 30 kilometres south-west of the Sydney CBD and 4 kilometres south of the Liverpool CBD (Figure 1).

1.3 Purpose and objectives

The OfMR included the following tasks aimed at satisfying condition B9 of the project approval and the REMMs:

- Pursuit of mitigation options in relation to the CUST Hut, STRARCH Hangar, MH1 Dog Cemetery, MH6 Commemorative Garden, RAE Chapel and B99 Transport Compound in accordance with condition B9 of the project approval and the REMMs.
- Review studies undertaken, condition of the items and their associated significance to identify order alternative options and strategies to mitigate impacts to the above items.
- Information with regards to consultation completed with Department of Planning and Environment (DPE), Office of Environment and Heritage (OEH Heritage Division), Liverpool City Council, Moorebank Heritage Group (local historical society) and SME Explosive Detection Dogs (EDD) Unit.
- Formulate management measures to prevent impact to sites that are to be avoided or mitigated as part of early works.

Details of the mitigation options pursued and consultation undertaken is located in Table 3. The location of heritage items within the study area are displayed in Figure 2.
1.4 Contributors

This report was prepared by Alexander Beben, Principal Archaeologist at Biosis Pty Ltd. This report has been reviewed by Amanda Atkinson, Senior Archaeologist.
Figure 1: Aerial imagery displaying lot boundaries associated with the study area

Acknowledgements: Imagery (c) Nearmap 2014. Topo (c) NSW Land and Planning Information (2012). Source: All layers shown layers were manually digitised from image files provided by Liberty International. Locations should be regarded as indicative only.
Figure 2: Location of non-Aboriginal heritage sites associated with the project.
2 Environmental requirements

The following section outlines the environmental requirements of the project including relevant legislation and guidelines that have been used to assist in the formulation of this OfMR.

2.1 Relevant legislation and guidelines

Legislation relevant to heritage management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Heritage Act 1977* (Heritage Act)

The main guidelines, specifications and policy documents relevant to this CHMP include:

- *Altering Heritage Assets* (Heritage Office and DUAP 1996)
- *Assessing Significance for Archaeological Heritage Sites and Relics* (NSW Heritage Branch Department of Planning)
- *Archaeological Assessment Guidelines* (NSW Heritage Office and NSW Department of Urban Affairs and Planning 1996)
- *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006)

2.2 Ministers conditions of approval

The CoAs, REMMs and EPBC approval conditions relevant to this OfMR are outlined in Table 1.

**Table 1  Conditions of Approval relevant to this OfMR**

<table>
<thead>
<tr>
<th>CoA No.</th>
<th>Condition requirements</th>
<th>OfMR Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B9</strong></td>
<td>Prior to the commencement of Early Works affecting the CUST Hut, RAAF STRARCH Hangar, the Dog Cemetery and Commemorative Gardens, the Applicant shall prepare a report in consultation with the Heritage Council of NSW, the local Council and the local Historical Society which considers options for mitigation of these items. In relation to the Dog Cemetery, consultation should also occur with the School of Military Engineering’s Explosive Detection Dog’s Unit. The report shall include the archival recordings and historical research, where required, to the Secretary, the Heritage Council of NSW, the local Council and local Historical Society.</td>
<td>This OfMR</td>
</tr>
<tr>
<td>CoA No.</td>
<td>Condition requirements</td>
<td>OfMR Reference</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>12A</td>
<td>Where reasonable and feasible, options would be explored to conserve moderate to high significance sites in situ.</td>
<td>Section 4</td>
</tr>
<tr>
<td>13C</td>
<td>Where reasonable and feasible options exist for avoiding impacts on one or more identified heritage items, preference would be given to conserving items of Commonwealth or State significance.</td>
<td>Section 4</td>
</tr>
<tr>
<td>13D</td>
<td>Where avoidance of impacts on a heritage item is not reasonable or feasible, mitigation works inclusive of archival recordings, salvage of archaeological deposits, relocation of significant elements of the built environment and/or adaptive reuse would be undertaken.</td>
<td>Section 4</td>
</tr>
<tr>
<td>13G</td>
<td>In addition to archival recording of the Transport Compound Workshop (B99), consideration would be given during the detailed design stage to the in-situ conservation or adaptive reuse of this structure within the Project site. This would assist with mitigation of heritage impacts on the structure itself and the Moorebank Cultural Landscape as a whole.</td>
<td>Section 4.3</td>
</tr>
<tr>
<td>13H</td>
<td>In addition to archival recording, the Dog Cemetery (MH1) would be repositioned and the individual graves reinterred. This would be carried out in accordance with the wishes of the SMEs Explosive Detection Dogs unit and respecting the social value of the site.</td>
<td>Section 4.4 and Appendix C</td>
</tr>
<tr>
<td>13I</td>
<td>In addition to archival recording, consideration would be given during detailed design to the in-situ conservation of the Commemorative Garden (MH6). If in situ conservation is not possible, the plaques and planting should be relocated to an alternative location on public display within the Project.</td>
<td>Section 4.1</td>
</tr>
<tr>
<td>13M</td>
<td>Further consideration would be given to options for the retention and/or relocation and adaptive reuse of the CUST Hut and the RAAF STRARCH Hangar to mitigate impacts on heritage values associated with these structures and to broaden their cultural landscape. Options considered for mitigation in order of preference are:   - Relocation (either offsite or onsite) and conserve/adaptive reuse – this would be investigated further as part of the detailed design and any future development applications.  - Interpretive commemoration utilising materials/elements from the building – this may be required but would be determined by the findings from investigations in option 1 above.  - Demolition may be required but would be determined by the findings from investigations in option 1 above.  - The first preference would be to retain and adaptively re-use these items on the redeveloped Project site (within the precinct but outside the secure area, as part of the administrative facilities or similar). If this is not feasible or practicable, the second preference would be for relocation to another appropriate location, potentially with adaptive reuse.</td>
<td>Sections 4.2 and 4.3</td>
</tr>
</tbody>
</table>
3 Consultation

3.1 Consultation for preparation of the OfMR

This OfMR has been developed in consultation with the Moorebank Heritage Group, Liverpool City Council, Heritage Council of NSW and the SME EDD Unit in accordance with CoA B9. A summary of consultation undertaken during the preparation of this OfMR is provided in Table 2, a summary of responses received from stakeholders is included in Appendix A.

Table 2  Summary of consultation undertaken during the preparation of the OfMR

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Consultation undertaken</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW Heritage Council</td>
<td>The Options for Mitigation reports were submitted to NSW Heritage Council for review on 28th October 2016.</td>
<td>Under review.</td>
</tr>
<tr>
<td></td>
<td>Initial review response received from NSW Heritage Council 9th November 2016.</td>
<td>Under review.</td>
</tr>
<tr>
<td></td>
<td>Final review response received from NSW Heritage Council 17th November 2016.</td>
<td>Consultation complete.</td>
</tr>
<tr>
<td>Liverpool City Council (LCC)</td>
<td>The Options for Mitigation reports were submitted to LCC for review on 28th October 2016.</td>
<td>Under review.</td>
</tr>
<tr>
<td></td>
<td>Response received from LCC 22nd Nov 2016 in regard to CHMP and Options for Mitigation.</td>
<td>Consultation complete.</td>
</tr>
<tr>
<td></td>
<td>Phone call received from Moorebank Heritage Group 7th November 2016 requesting more time for review.</td>
<td>Under review.</td>
</tr>
<tr>
<td></td>
<td>Email received from Moorebank Heritage Group 10th November 2016 with review response comments.</td>
<td>Comments will be addressed in the Options for Mitigation report. Consultation complete.</td>
</tr>
<tr>
<td>SME EDD Unit</td>
<td>Email from R. Kolano on 18/08/2016 stating that all significant heritage items had been relocated. Biosis requested further clarifications on 01/09/2016 concerning internments within the MH1</td>
<td>Under review.</td>
</tr>
<tr>
<td>Organisation</td>
<td>Consultation undertaken                                                                                                                                                                                                                                                                                                                                瘁</td>
<td>Outcome</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dog Cemetery</td>
<td>Response received from J. Cannon stating that “all the serviceable headstones (13) were relocated to Holsworthy Barracks as part of the MUR”. There is a lack of clarity in both Robert Kolano and J. Canons statements about the status of canine internments within the MH1 Dog Cemetery.</td>
<td>Meeting with SME requested to clarify status of internments.</td>
</tr>
<tr>
<td>Site meeting with representatives from the SME EDD unit on 19 October 2016 to discuss the management of the MH1 Dog Cemetery.</td>
<td></td>
<td>Confirmation that there are internments within the MH1 Dog Cemetery and that the best means of resolving this issue be to salvage these remains for transfer to SME EDD unit who will handle their reinternment.</td>
</tr>
<tr>
<td>Email from Major D. Pitts on 7 November 2016 stating that SME EDD are generally happy with the mitigation advice received. Major Pitts confirmed that SME agreed to salvaging the canine remains and receive these for reinternment at Holsworthy Barracks</td>
<td></td>
<td>Consultation complete.</td>
</tr>
</tbody>
</table>

### 3.2 Consultation with regards to the re-use of the CUST Hut and RAAF STRARCH Hangar

Consultation with regards to the CUST Hut and RAAF STRARCH Hanger was undertaken throughout the project by Tactical. Details of this consultation and attempts to attract potential new locations for the structures are summarised in Table 3.

### Table 3 Consultation with Department of Defence (DoD) and other tasks

<table>
<thead>
<tr>
<th>Consultation with DoD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6th October 2016</strong></td>
<td>Tactical sent email to DoD personnel regarding the re-use of the CUST Hut and RAAF STRARCH Hangar.</td>
</tr>
<tr>
<td><strong>11th October 2016</strong></td>
<td>Email response from SME advising they do not have a requirement for using these structures.</td>
</tr>
<tr>
<td></td>
<td>Email response from Australian Army History Unit advising that, “Our unit occupied the hangar at the old site and we would very much be interested in having it (the STRARCH Hangar) packed up and re-used elsewhere. At this stage, we are waiting to hear from the Estate people at Oakey to ascertain if there is an appetite to have it erected there</td>
</tr>
</tbody>
</table>
for the protection of several aircraft at the Army Aviation museum.

Further information requested by Australian Army Flying Museum at Oakey. Information provided by Tactical by email.

Australian Army Flying Museum at Oakey advised that, “I can confirm that the STRARCH Hangar will not be required at Oakey”.

Reid Campbell Architects and Artefact Heritage attended a site visit to discuss details of the reuse of components of the structures, the outcomes of this site visit including preliminary sketches are contained in Appendix B.

Consultation complete.

Supplementary tasks undertaken

Advertisements asking for expressions of interest for those who may want to remove the structures and adaptively reuse them on another site. The advertisement was placed in the following locations:

- Sydney Morning Herald newspaper on Tuesday 21st June 2016 for one day
- Liverpool Champion newspaper on Wednesday 22nd June 2016 for one week
- Australian Tenders website for 4 weeks from Wednesday 22nd June to Friday 15th July 2016.

Two companies, Central Industries and Starcon Group, responded to the advertisement and requested tender documentation but neither company provided tender responses. Both organisations were contacted; however, both stated that they would not be submitting tender documentation. The advertisements did not attract potential interest in the adaptive reuse and relocation of the CUST Hut or STRARCH hangar.

Consultation complete.

An article was written in the Liverpool City Champion called "Military structures need new homes". This article called for alternative sites and locations for the STRARCH Hanger and CUST Hut.

This resulted in an enquiry from Narromine Aviation Museum but proved to not be financially viable. This was confirmed with phone conversation between Marc Ragowski and Peter Kierath on 28 November 2016.

Consultation complete.
3.3 Responses from stakeholders

Responses in relation to this OfMR have been received from the Moorebank Heritage Group, Liverpool City Council and Heritage Council of NSW. These responses have been addressed in Appendix A.
4 Consideration of mitigation options

The following sections summarise what is known about the CUST Hut, STRARCH Hangar, MH1 Dog Cemetery, MH6 Commemorative Garden, RAE Chapel and B99 Transport Compound based on information provided in:

- Volume 8, Technical Paper 11: European heritage impact assessment (non-Aboriginal heritage) (Navin Officer Heritage Consultants 2014b).

The following heritage documents were also prepared as part of the response to submissions:

- Appendix J: Cultural heritage report (Navin Officer Heritage Consultants 2014c).
- Appendix K: Cultural heritage archival recordings (Navin Officer Heritage Consultants 2014d).

4.1 Non-Aboriginal heritage sites considered in OfMR

This OfMR report considers mitigation options for the CUST Hut, STRARCH Hangar, MH1 Dog Cemetery, MH6 Commemorative Garden, RAE Chapel and B99 Transport Compound. The significance of these sites is summarised in Table 4. Their locations are identified in Table 4.

Table 4  Significance of Non-Aboriginal heritage sites associated with the project

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Description</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NSW</td>
</tr>
<tr>
<td>MH1</td>
<td>Dog Cemetery</td>
<td>Local</td>
</tr>
<tr>
<td>MH6</td>
<td>Commemorative garden</td>
<td>Local</td>
</tr>
<tr>
<td>-</td>
<td>CUST Hut</td>
<td>State</td>
</tr>
<tr>
<td>-</td>
<td>RAAF STRARCH Hangar</td>
<td>State</td>
</tr>
<tr>
<td>B99</td>
<td>Building 99</td>
<td>Local</td>
</tr>
<tr>
<td>-</td>
<td>Remaining elements of the RAE Chapel</td>
<td>Local</td>
</tr>
</tbody>
</table>

4.2 CUST Hut

4.2.1 Overview of prior assessments

The archival report contains a historical overview of the CUST Hut (NOHC 2014c: 138-142), which states that the Cullen Universal Steel Truss (CUST) Hut was invented by engineering officer, Lieutenant Colonel D.R. Cullen, during World War II. The report also states that it is likely that the CUST Hut was fabricated and erected at Kapooka sometime during Lieutenant Colonel Cullens’ posting in 1942 and the end of WWII in 1945 (NOHC 2014c: 139).
In 1946 the RAE Training Centre at Kapooka (near Wagga Wagga) was disbanded and an RAE Recruit Training Squadron was formed at Moorebank in its stead (NOHC 2014c: 138). NOHC (2014c: 139) suggests that the relocation of the CUST Hut from Kapooka to Moorebank may have occurred as a result of the disbanding of the Kapooka training centre and formation of the Moorebank training squadron.

The CUST Hut is implied by a site plan dating from November to have been erected at Moorebank before 1948 (NOHC 2014c: 139). The plan shows the Hut being occupied by the Plant, Road Sand Airfield (PRA) Troop at the time although it is also possible the Hut was erected around 1952 (NOHC 2014c: 139).

The CUST Hut was assessed by NOHC (2014a: 195) as possessing a local and state level of significance against the NSW significance assessment criterion A, B, C, E, F, and G. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion A, B, C, D, F and H. The statement of significance for the item states that:

*The CUST Hut has a strong and special association with Lieutenant Colonel D.R. (Dan) Cullen. It is important in the history and development of the SME site. The integrity and intactness of this structure provides for a high level of technical significance. The possible subsurface integrity of this site represents significant archaeological research potential at a local level. The site is also rare and representative of its type. Further heritage value in the form of social value could also be assigned to this site.*

4.2.2 Discussion of mitigation options

Consultations with SME regarding relocating the CUST Hut onto the new Holsworthy Barracks confirmed that SME does not have any requirements for the structure. In order to further facilitate offsite relocation, an advertisement requesting expressions of interest for the adaptive reuse and relocation of the CUST Hut (and STRACH Hangar) was developed. The advertisement asked for expressions of interest for those who may want to remove the structures and adaptively reuse them on another site. The advertisement was placed in the following locations:

- Sydney Morning Herald newspaper on Tuesday 21st June 2016 for one day
- Liverpool Champion newspaper on Wednesday 22nd June 2016 for one week
- Australian Tenders website for 4 weeks from Wednesday 22nd June to Friday 15th July 2016.

Two companies, Central Industries and Starcon Group, responded to the advertisement and requested tender documentation but neither company provided tender responses. Both organisations were contacted; however, both stated that they would not be submitting tender documentation. The advertisements did not attract potential interest in the adaptive reuse and relocation of the CUST Hut, as such it is deemed that the offsite reuse is not possible.

Advice received from Reid Campbell Architecture, Interior Design and Planning on the CUST hut indicates that the height of the arch structural roof does not make the building suitable for modern warehouse operations, and the small building footprint and low height also makes the hut unsuitable as a storage system for a modern industrial building. An accepted industry standard minimum of five metres clear height to roller shutter doors is required for a flush dock to enable a heavy vehicle to utilise the dock area. This will limit the loading area, modern racking systems, sortation systems and material handling equipment, such as a forklift.

Reid Campbell Architecture, Interior Design and Planning also noted that due to the constrained building layout and site configuration it would not be suitable for manoeuvring of heavy vehicles associated with
modern warehouse applications. The structure is severely corroded and the columns are at a higher risk of damage from machinery. The CUST Hut is likely to be classified as a Type C (this form of classification relates to fire safety ranked from A to C). As a Type C building the CUST Hut is less fire resistant under BCA C2.2 and would likely have significant fire safety issues. Such BCA compliance issues would likely trigger fire protection and safety upgrades, and these would heavily impact the ability to lease the existing structures.

Such a building, given the location, orientation and internal configuration would not be suitable for industrial use according to Reid Campbell Architecture, Interior Design and Planning. There are limited options for adaptive re-use or relocation of the CUST Hut as avenues for relocating the building have not been forthcoming. As such, for the development to proceed the building will need to be demolished. It may be possible for the CUST Hut to be included as a component of the Moorebank Intermodal Terminal Heritage Interpretation Plan, therefore fabric components will be salvaged for interpretive purposes. Once salvaged, these components will be stored onsite until their role as interpretive material has been established.

A meeting with Moorebank Heritage Group was undertaken on 13 October 2016 as part of this meeting the site was inspected and the groups concerns were discussed. In relation to the CUST Hut the Moorebank Heritage Group stated that the wished for the CUST Hut to be relocated or retained (fully or partially) within the site. The limited options for relocation, retention or reuse were presented to Moorebank Heritage Group and options for salvaging parts of the building as part of the interpretation plan were discussed.

Consultation with the NSW Heritage Council, Liverpool City Council and Moorebank Heritage Group is required as part of COA B9, consultation with these agencies is presented in Section 3 of this report. Evidence of attempts to relocate the CUST Hut is provided in Table 3.

4.2.3 Conclusion to the assessment

The mitigation options explored to address the conditions of approval and REMMS have considered:

- A tender process offering to relocate the structure (Arcadis).
- The structure was offered to new SME barracks (Holsworthy), who advised that this was not wanted, in an email from Major David Pitts.
- The structure was offered to head of Australian Army History Unit (Canberra), who indicated that they are interested in STRARCH Hangar only.
- Advertised in Liverpool Champion with no contact from interested parties made to SIMTA.
- Options to reuse the structure onsite (as whole structure for warehousing) has been determined as not being suitable due to durability issues.
- Options to re-use on site (as components) has been considered as use in interpretive displays (i.e. non-structural). As such, the Heritage Interpretation Plan will incorporate the following approach:
  - Reuse of elements, along with salvage of these elements will be based on architectural and heritage advice.
  - At a minimum the retention of two full arches, 100 metres of timber from the ceiling and retention of the concrete engraving will be undertaken.
  - A conceptual sketch will be included in the interpretive works.
Further details will be determined by the detailed design and as part of the final heritage interpretation plan.

4.3 RAAF STRARCH Hangar

4.3.1 Overview of prior assessments

The archival report contains an overview of the RAAF STRARCH Hangar (STRARCH Hanger) (NOHC 2014c: 106-109). The report states that the hangar is one of 24 similar hangars procured by the RAAF and which had been stored in the Northern Territory for over ten years (NOHC 2014c: 106). The hangar was then erected at the School of Military Engineering (SME) in 2008 by the Construction Wing of the school, as a 'temporary' structure (NOHC 2014c: 106). A plaque located on the wall of the hangar commemorates the opening of the hangar, reading "Re-deployable STRARCH Hangar constructed by Trade Training Troop, Construction Wing officially opened on 25 November 2008 by Lt Col D.A. Rye CO/CI SME" (NOHC 2014c: 106) (see Plate 1).

The building is a unique example of a RAAF stressed arch system (STRARCH) re-deployable hangar, which was developed to provide prefabricated quick erection hangars to house F111 fighters (NOHC 2014c: 106-107). According to the SME, this Hangar may be the only example of the STRARCH hangar still in Defence possession although this is not confirmed (NOHC 2014c: 106).

The RAAF STRARCH Hangar was assessed by NOHC (2014a: 196) as possessing a local and state level of significance against the NSW significance assessment criterion C. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion F. The statement of significance for the item states that:

The integrity and intactness of the hangar provides for a high level of technical significance, whilst not possessing associated archaeological research potential.
4.3.2 Discussion of mitigation options

Consultations with SME regarding relocating the STRARCH hanger onto the new Holsworthy Barracks confirmed that SME does not have any requirements for the structure. In order to further facilitate offsite relocation, an advertisement requesting expressions of interest for the adaptive reuse and relocation of the STRARCH Hangar (and CUST Hut) was developed. The advertisement asked for expressions of interest for those who may want to remove the structures and adaptively reuse them on another site. The advertisement was placed in the following locations:

- Sydney Morning Herald newspaper on Tuesday 21st June 2016 for one day
- Liverpool Champion newspaper on Wednesday 22nd June 2016 for one week
- Australian Tenders website for 4 weeks from Wednesday 22nd June to Friday 15th July 2016.

Two companies, Central Industries and Starcon Group, responded to the advertisement and requested tender documentation but neither company provided tender responses. Both organisations were contacted; however, both stated that they would not be submitting tender documentation. The advertisements did not attract potential interest in the adaptive reuse and relocation of the STRARCH Hangar. Communications with the Defence Museum located at Oakey have intimated that there may be an option for the relocation of the STRARCH Hanger to the museum. Correspondence received from Major William Clark on Friday 21 October 2016 confirmed that the STRARCH Hanger is not required at Oakey. As such it is deemed that the offsite reuse is not possible.

Options for re-use of the RAAF STRARCH Hangar building, provided by Reid Campbell Architecture, Interior Design and Planning note that the height and Arch structural roof does not make the building suitable for
modern warehouse operations such as receiving and despatch operations, material handling equipment operations and sortation systems. The small building footprint and low height makes the Hangar unsuitable for storage in modern industrial buildings. An accepted industry standard minimum of five metres clear height to roller shutter doors is required for a flush dock to enable a heavy vehicle to utilise the dock area. This will limit the loading area, modern racking systems, sortation systems and the deployment of material handling equipment, such as a forklift. The building layout and site configuration is constrained and would not be suitable for manoeuvring of heavy vehicles associated with modern warehouse applications. The structure is at a higher risk of damage from machinery.

Reid Campbell Architecture, Interior Design and Planning also commented that the STRARCH Hangar is likely to be classified as Type C (this form of classification relates to fire safety ranked from A to C). As a Type C building the STRARCH Hangar is the least fire resistant under BCA C2.2 and would likely have significant fire safety issues. Such BCA compliance issues would likely trigger fire protection and safety upgrades, and these would heavily impact the ability to lease the existing structures.

Such a building, given the location, orientation and internal configuration would not be suitable for industrial use according to Reid Campbell Architecture, Interior Design and Planning. There are limited options for adaptive re-use or relocation of the STRARCH Hangar as avenues for relocating the building have not been able to be identified in the final design of the precinct. As such, for the development to proceed the building will need to be demolished. It may be possible for components of the STRARCH Hangar to be included as part of the Moorebank Intermodal Terminal Heritage Interpretation Plan, therefore fabric components will be salvaged for interpretive purposes. Once salvaged, these components will be stored onsite until their role as interpretive material has been established.

A meeting with Moorebank Heritage Group was undertaken on 13 October 2016 as part of this meeting the site was inspected and the groups concerns were discussed. In relation to the STRARCH Hangar the Moorebank Heritage Group (the local historical society) stated that the wished for the STRARCH Hangar to be relocated, the process for identifying options for relocating the structure were discussed, at the time there was an option for the STRARCH Hangar to be relocated to Oakley, however this option is now no longer available.

Consultation with the NSW Heritage Council, Liverpool City Council and Moorebank Heritage Group is required as part of COA B9, consultation with these agencies is presented in Section 3 of this report.

4.3.3 Conclusion to the assessment

The mitigation options explored to address the conditions of approval and REMMS have considered:

- A tender process offering to relocate the structure (Arcadis).
- The structure was offered to new SME barracks (Holsworthy), who advised that this was not wanted, in an email from Major David Pitts.
- The structure was offered to head of Australian Army History Unit (Canberra), who stated that they were interested and referred the matter to the Australian Army Flying Museum (Oakey, QLD). On contact the Australian Army Flying Museum (Oakey, QLD) advised that the structure was not wanted.
- Analysis of the construction method has indicated that dismantling requires jacks, correspondence with Defence has indicated that they are no longer in possession of these.
• Options to reuse the structure onsite (as whole structure for warehousing) has been determined as not being suitable due to durability issues.

• Options to re-use on site (as components) has been considered as use in interpretive displays (i.e. non-structural). As such, the Heritage Interpretation Plan will incorporate the following approach:
  – Reuse of elements, along with salvage of these elements will be based on architectural and heritage advice.
  – At a minimum the retention of retain 4 lower sections of the STRARCH including all necessary connectors and retention of the engraving will be undertaken.
  – A conceptual sketch will be included in the interpretive works.

Further details will be determined by the detailed design and as part of the final Heritage Interpretation Plan.

4.4 MH1 Dog Cemetery

4.4.1 Overview of prior assessments

The archival report contains a historical overview of the MH1 Dog Cemetery (NOHC 2014c: 315-317), this states that the cemetery is thought to have begun as an informal burial ground for dogs since the recommencement of SME dog training during the Vietnam War. The earliest marked grave is from the early 1990s (‘Marcus’, situated on the northern edge of the platform). The number, location and arrangement of these suspected unmarked graves are not known. It is thought that some unmarked graves may be private (non-defence force) dog burials, perhaps related to individual EDD handlers. Based upon the historical review undertaken by NOHC (2014c) the following chronology for the MH1 Dog Cemetery is outlined in Table 5.

Table 5  Chronology for the MH1 Dog Cemetery

<table>
<thead>
<tr>
<th>Date</th>
<th>Description of event</th>
</tr>
</thead>
<tbody>
<tr>
<td>c.1970 – 1990s</td>
<td>Possible burials within the area of the current cemetery, in unmarked graves, records not kept.</td>
</tr>
<tr>
<td>1990s – c. 2006</td>
<td>Most marked memorials or interments occur around the memorial.</td>
</tr>
<tr>
<td>c.2006 – 2013</td>
<td>Burials are conducted in the revived cemetery area, all are deaths in Australia. Cremated remains and memorials continue to be placed around the memorial.</td>
</tr>
<tr>
<td>2014</td>
<td>Burials no longer practiced, replaced by cremations.</td>
</tr>
</tbody>
</table>

The MH1 Dog Cemetery was assessed by NOHC (2014a: 195) as possessing a local level of significance against the NSW significance assessment criterion A, B and D. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion A, G and H. The statement of significance for the item states that "The cemetery as a memorial possesses significant social value at a local level whilst not possessing archaeological research potential."

The EDD unit and staff have conducted an internal salvage and relocation program as part of their demobilisation from the site in 2015, with the aim of incorporating the headstones and memorial into a new commemorative area at their new headquarters at Holsworthy Barracks. No reinternment of remains
were undertaken within the cemetery, as such there is the potential for internments and associated material to be encountered during the early works program.

4.4.2 Discussion of mitigation options

Biosis believe that due to the public attention that military service dogs have received in the recent past that the management of the MH1 Dog Cemetery needs to be undertaken with great care. Biosis also notes that the Environmental Assessment (NOHC 2014a: 388) recommends that "The Dog Cemetery (MH1) should be repositioned and the graves reinterred, this should be carried out in accordance with the wishes of the SME's Explosive Detection Dogs unit and respecting the social value of the site". This recommendation within the NOHC 2014a report was later incorporated into the REMMs. As such, the cemetery, specifically the canine remains that it contains need to be handled in a sensitive manner that corresponds with its social significance.

Biosis believes that the historical summary in the archival report is too cursory and would benefit from further research, specifically information pertaining to the service history of the dogs that have been interred within the cemetery. The history and achievements of the service dogs are likely to be of interest to the wider Australian community outside of Defence stakeholders and need to be commemorated. Biosis has identified a number of associations dedicated to acknowledging Military Service Dogs, specifically the Australian Defence Force Trackers and War Dogs Association Incorporated and Australian Combat Dog Profiles that may have information concerning the cemetery. It should be noted that a number of internments within the cemetery, specifically Jasmine and Storm, match EDD Dog profiles who actively served in Afghanistan. It should also be noted that Marcus is listed as a 1990s internment in the archival recording, however, according to AussieWarDogs.com the internment may date to the 1970s and the Vietnam War.

The EDD unit and staff have conducted an internal salvage and relocation program consisting of removal of all cremations, with the aim of incorporating the headstones and memorial into a new commemorative area at their new headquarters at Holsworthy Barracks. Biosis' recent inspection of the cemetery indicates that no reinternment of skeletal remains has been undertaken within the cemetery to date. The inspection of the dog cemetery identified at least 13 intact burials. The burials ranged from formal sandstone/stone framed internments (some with dog toys located on the headstone) to more informal graves identified by both mounds and depressions (made when the material remains of the body degrade resulting in the slight collapsing of soils covering the grave) (see Plate 2). Two burials identified were capped with bricks arranged in a pattern and framed with large wooden beams. There was also evidence of other possible graves/head stones in the underbrush of the surrounding woodland.
Consultation with SME EDD unit on the 19 October on site resulted in a second earlier grave site being identified, located to the north west of the formal dog cemetery this second site consisted of at least 10 burials (see Figure 1). These burials consist of informal graves surrounding a former stone memorial. Indentations in the soli profiles suggest former grave markers have been removed but no excavation of skeletal remains has been undertaken to date. SME EDD unit agreed to salvage of the remaining graves. Once skeletal elements and any remaining grave goods have been salvaged these will then be handed over to SME for cremation and reinternment (scattering) in the commemorative area at the new EDD headquarters at Holsworthy Barracks.

Consultation with the NSW Heritage Council, Liverpool City Council and Moorebank Heritage Group is required as part of COA B9, consultation with these agencies is presented in Section 3 of this report.

4.4.3 Conclusion to the assessment

The salvage of the canine remains within the MH1 Dog Cemetery will be undertaken according to the salvage strategy contained within Appendix C. The canine remains once salvaged will be transferred to SME EDD unit for repatriation.
4.5 MH6 Commemorative Garden

4.5.1 Overview of prior assessments

The archival report contains an overview of the MH6 Commemorative Garden (NOHC 2014c: 273-280), this states that the commemorative nature of the garden is informal, small scale and relatively opportunistic in nature. The Garden is located within an enclosed area consisting of parklands interspersed with mature and young trees (NOHC 2014c: 273). This enclosed area is thought to have originally begun as the Second District Nursery, which the second plaque commemorates the opening of on 29 August 1978 (NOHC 2014c: 273). The garden contains four commemorative plaques in total:

- One relating to 'pine trees' from the Gallipoli 'Lone Pine.'
- One commemorating the opening of the Second Military District Nursery.
- One noting the Grodno Winery origin of the border stones.

The first three plaques are all of similar appearance and font, being mounted on undressed sandstone, and it is thought that they have all been manufactured by the same party (NOHC 2014c: 274). The Lone Pine plaque may be referring to one or all four pine tree plantings located in the garden (NOHC 2014c: 274). These trees are quite young and most likely date from the 1980s when seedlings and grafts from the Australian War Memorial Lone Pine seedling were given to various organisations and schools around Australia (NOHC 2014c: 274). The fourth plaque consists of an angled dressed stone incorporated into a ring of sandstone blocks. The plaque commemorates the stones that came from 'Grondo Winery', which was originally located on the Holsworthy firing range circa 1870 (NOHC 2014c: 274).

The MH6 Commemorative Garden was assessed by NOHC (2014a: 196) as possessing a local level of significance against the NSW significance assessment criterion A, B and D. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion A, G and H. The statement of significance for the item states that:

The Garden as a memorial possesses significant social value at a local level whilst not possessing archaeological research potential.

The site inspection undertaken by Amanda Atkinson and Lian Flannery on 17 August 2016 indicated that significant fabric from the commemorative garden is still present therefore further salvage is required. In particular the following plantings and fabric are still present:

- The Gallipoli 'Lone Pine plaque and pine trees are also still present.
- Grondo Winery plaque and border stones.
- Plaque commemorating the opening of the Second Military District Nursery.

Photographs of the remaining fabric within the MH6 Commemorative Garden is presented in Plate 3.
4.5.2 Discussion of mitigation options

Advice received from Reid Campbell Architecture, Interior Design and Planning on the Commemorative Garden indicates that the remaining fragments are not suitable for modern industrial use, in any capacity in their current location. As such the remaining fabric will be removed to enable the project to proceed. It may be possible for the Commemorative Garden to be included as a component of the Moorebank Intermodal Terminal Heritage Interpretation Plan.

Consultation with the NSW Heritage Council, Liverpool City Council and Moorebank Heritage Group (the local historical society) is required as part of COA B9. A meeting with Moorebank Heritage Group was undertaken on 13 October 2016 as part of this meeting the site was inspected and the groups concerns were discussed. In relation to the Commemorative Garden, Moorebank Heritage Group identified several memorials and items of fabric that they would like to have relocated to the Holsworthy Museum. These plaques will be offered to the Museum, in the event that they are not wanted, these will be considered for incorporated as part of interpretation. Relocation of the Lone Pines within the garden does not represent a feasible option as these trees are young and propagated from the Lone Pine at the Australian War Memorial. Seeding's from this tree are also commercially available through the Australian War Memorial.

Consultation with the NSW Heritage Council, Liverpool City Council and Moorebank Heritage Group is required as part of COA B9, consultation with these agencies is presented in Section 3 of this report.
4.5.3 Conclusion to the assessment

The plaques and associated stones will be retained with the remainder of the garden being demolished. The retained items will be offered to Holsworthy Museum. In the event that Holsworthy Museum is unable to take the retained items they will be considered in the Heritage Interpretation Plan for the site.

4.6 RAE Chapel

4.6.1 Overview of prior assessments

The technical paper contains information about the history of the RAE Chapel (NOHC 2014a: 48-49; 360-362). This states the chapel was designed by Colonel D.A. Davey and Captain J.M. Brindley and built by personnel from the School of Military Engineers (SME) in 1968 to replace the old chapel built in 1958. The RAE chapel was funded by donations from members and friends of the SME and built using stone from a variety of sources (NOHC 2014a: 48-49). The external walls of the chapel were built using stone that was hand-cut by convicts in the 1850s for the Bow Bowing Flour Mill at Campbelltown. Additional sandstone blocks used in the chapel also came from Victoria Barracks in Sydney (NOHC 2014a: 49). The stones behind the altar were salvaged from the old married quarters at Holsworthy that had been built by German internees during World War 1 (NOHC 2014a: 49). The chapel is also associated with several memorials and commemorative items, including:

- A memorial commemorating the Eighth Division Engineers who were imprisoned at Changi or as prisoners of war worked on the Burma-Thai railway, located in the chapel courtyard.
- A headstone which has been relocated from the Rockwood Cemetery grave of Lieutenant Samuel Hodgson, who is considered the founder of the New South Wales Colonial Volunteer Corp.
- The CO’s Walk, which consists of a line of trees along the pathway leading to the RAE Officer’s Mess that were planted by successive Commanding Officers.
- Two national flags mounted on the north wall that recognises servicemen who died in the Vietnam War and whose next of kin have been notified.

The RAE Chapel was assessed by NOHC (2014a: 196) as possessing a local level of significance against the NSW significance assessment criterion A, B and D. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion A, G and H. The statement of significance for the item states that:

The religious nature of the chapel and its containment of various items, namely a number of memorials, ascribe to it at social value at a local level whilst not possessing archaeological research potential.

4.6.2 Discussion of mitigation options

The RAE Chapel was demolished and much of the significant fabric has been relocated as part of the Moorebank (MUR) project (see Plate 4). The remaining concrete floor is not suitable for modern industrial use. The site inspection undertaken by Amanda Atkinson and Lian Flannery on 17 August 2016 confirmed that little significant fabric from the RAE Chapel remains following the Defence decommissioning of Steele Barracks. The remaining fabric has limited heritage value and no further salvage is required. For the development to proceed the remaining fabric will need to be removed. It may be possible for the RAE Chapel to be included as a component of the Moorebank Intermodal Terminal Heritage Interpretation Plan, however given the lack of original fabric remaining little of it is suitable for interpretive purposes.
Plate 4  South facing view of the RAE Chapel remains (Source: Biosis 2016).

4.6.3 Conclusion to the assessment

There is no remaining fabric of significance associated with the RAE Chapel. These remains will be demolished with no further tasks required.

4.7 B99 Transport Compound Workshop

4.7.1 Overview of prior assessments

The archival report contains a historical overview of the B99 Transport Compound Workshop (NOHC 2014c: 194), this states that the construction date is not known, but it is presumed to predate 1943 during World War 2 (WWII) when Moorebank underwent significant expansion. The building originally functioned as the main workshop of the Land Headquarters Electrical and Mechanical Engineers School, including the School’s Armoured Fighting Vehicle Wing, in the 1940’s (NOHC 2014c: 194). The warehouse was most recently used as a storehouse, garage compound and transport workshop (NOHC 2014c: 194). Similar structures were erected during WWII along the eastern seaboard, including Hangar 79 at Amberley RAAF Base, and buildings 46-48 at RAAF base Fairbairn (NOHC 2014c: 194). The building itself is not a rare or unusual building type, but it is the last remaining in situ structure from WWII at Moorebank (NOHC 2014c: 194). The importance of the workshop in the course or pattern of Moorebank’s history is difficult to interpret given the loss of context from contemporary buildings. This loss of content detracts from the item’s historical value.
The B99 Transport Compound Workshop was assessed by NOHC (2014a: 195) as possessing a local level of significance against the NSW significance assessment criterion F. The statement of significance for the item states that:

*Of itself the Transport Compound Workshop is not considered to be significant; however, it is locally rare, within the context of the Moorebank Cultural Landscape, as a WWII era building that remains in situ. This building also contributes to the historical significance of The Moorebank Cultural Landscape.*

### 4.7.2 Discussion of mitigation options

Advice received from Reid Campbell Architecture, Interior Design and Planning on the B99 Transport Compound Workshop indicates that the arch structural roof does not make the building suitable for modern warehouse operations such as receiving and dispatch operations, material handling equipment operations and sortation systems. The small building footprint and low height is not suitable for storage systems in modern industrial buildings. An accepted industry standard minimum of 5-6m clear height to roller shutter doors is required for a flush dock to enable a heavy vehicle to utilise the dock area. This will limit the loading area, modern racking systems, sortation systems and material handling equipment, such as a forklift. The building layout and site configuration is constrained and would not be suitable for manoeuvring of heavy vehicles associated with modern warehouse applications. The structure is severely corroded and the columns are at a higher risk of damage from machinery.

The B99 Transport Compound Workshop is likely to be classified as a Type C (this form of classification relates to fire safety ranked from A to C). As a Type C building the B99 Transport Compound Workshop is least fire resistant under BCA C2.2 and would likely have significant fire safety issues. Such BCA compliance issues would trigger fire protection and safety upgrades, and these would heavily impact the ability to lease the existing structures.

Such a building, given the location, orientation and internal configuration would not be suitable for industrial use according to Reid Campbell Architecture, Interior Design and Planning. There are limited options for adaptive re-use and the building is not suitable for relocation due to the nature of its construction. As such, for the development to proceed the building will need to be demolished. It may be possible for the B99 Transport Compound Workshop to be included as a component of the Moorebank Intermodal Terminal Heritage Interpretation Plan, however given the nature of the construction and condition of the B99 Transport Compound Workshop, its fabric will not be suitable for salvage and incorporation into landscaping for interpretive purposes.

### 4.7.3 Conclusion to the assessment

The B99 Transport Compound Workshop will be demolished with no further tasks required.
5 Recommendations

The following recommendations have been formulated based upon the information and consultation presented within this report.

CUS Hut

The following recommendations have been prepared in order to manage impacts to the CUST Hut as part of the project works:

- NOHC (2014c) contains a full and comprehensive archival recording of the CUST Hut and as such no further archival recording is required.
- As discussed in the NOHC (2014a) assessment the CUST Hut has archaeological research potential; therefore, it is recommended that archaeological monitoring be carried out on the CUST Hut site. This involves monitoring of the removal of the concrete slab and subsequent test excavations within the footprint of the CUST Hut to determine the nature of any potential archaeological deposits. If an archaeological deposit or structural evidence is uncovered, open area excavation and detailed recording would be undertaken as per the Historical Heritage Salvage Strategy (Biosis 2016). The excavation results and a selection of artefacts suitable for display should form part of the Heritage Interpretation Plan for the Moorebank IMT site.
- It is recommended that the Moorebank IMT interpretation plan considers incorporating components of the CUST Hut into interpretive media to be placed around the base. At a minimum the interpretation plan should consider signage, interpretive boards and landscaping to represent the history of the CUST Hut. This should utilise the history in the NOHC (2014c) report and photographs from the archival recording.

STRARCH Hangar

The following recommendations have been prepared in order to manage impacts to the STRARCH Hangar as part of the project works:

- NOHC (2014c) contains a full and comprehensive archival recording of the STRARCH Hangar. No further archival recording is required.
- It is recommended that the Moorebank IMT interpretation plan considers incorporating components of the STRARCH Hangar into interpretive media to be placed around the base. At a minimum the interpretation plan should consider signage, interpretive boards and landscaping to represent the history of the STRARCH Hangar. This should utilise the history in the NOHC (2014c) report and photographs from the archival recording.

MH1 Dog Cemetery

- Whilst the NOHC (2014c) contains a full and comprehensive archival recording of the cemetery prior to the removal of headstones and other fabric from the heritage item it does not contain a detailed record of the dogs interred within the cemetery. Biosis recommends that additional research is undertaken which incorporates knowledge held by veteran’s organisations such as the Australian
Defence Force Trackers and War Dogs Association Incorporated and Australian Combat Dog Profiles and SME.

- The canine remains within the two cemetery sites form an integral part of the social significance of the MH1 Dog Cemetery. It is recommended that reinternment of the canine remains within the cemetery is undertaken and these remains are cremated. The remains will then be transferred to SME for cremation and reinternment at the commemorative area within Holsworthy Barracks. Should the commemorative area not be available, SME will make alternative arrangements for the reinternment of the remains.

- As discussed in the NOHC (2014a) assessment the canine remains have limited archaeological research potential, therefore the reinternment of these remains does not need to form part of an archaeological salvage strategy. However, archaeological approaches are likely to be the best means of identifying unmarked graves, the provenance of these remains and ensuring that they are retrieved in a respectful manner. An excavation methodology, appended to this letter outlining best practice of archaeological excavation of skeletal remains in regards to MH1 dog cemetery should be followed.

- The results of the reinternment must be incorporated into the revised archival recording and submitted to NSW Heritage Council, Liverpool City Council, Moorebank Historical Society, SME and the identified veteran's organisations.

- Should unidentified graves/skeletal remains be revealed during later stages of the project in the area of the dog cemeteries then the unexpected recovery of finds procedure, as outlined in the construction heritage management plan should be followed.

MH6 Commemorative Garden
The following recommendations have been prepared in order to manage impacts to the Commemorative Garden as part of the project works:

- NOHC (2014c) contains a full and comprehensive archival recording of the garden prior to the removal of plaques, trees, and other fabric from the heritage item. No further archival recording is required.

- The site inspection indicated that significant fabric is still present within the commemorative garden and that no adaptive reuse is possible. Further consultation should be carried out with SME and the Moorebank Heritage Group to ensure that the fabric is removed and reinstated in an appropriate location prior to demolition.

- It is recommended that the Moorebank IMT interpretation plan considers incorporating the Commemorative Garden into interpretive media to be placed around the base. At a minimum the interpretation plan should consider signage, interpretive boards and landscaping to represent the history of the Commemorative Garden. This should utilise the history in the NOHC (2014c) report and photographs from the archival recording.

RAE Chapel
The following recommendations have been prepared in order to manage impacts to the chapel as part of the project works:
The archival photographs of the RAE Chapel contained in NOHC 2014c contains limited information and does not constitute a full and comprehensive record. Unfortunately the building has been removed and reconstructed as part of the MUR Relocation Project. As such it is not possible to undertake the necessary works to record its pre-relocation condition and no further work is able to be undertaken to compensate for the lack of information contained within this report.

It is recommended that the Moorebank IMT interpretation plan considers incorporating the RAE Chapel into interpretive media to be placed around the base. At a minimum the interpretation plan should consider signage, interpretive boards and landscaping to represent the history of the RAE Chapel. This should utilise the history in the NOHC (2014c) report and photographs from the archival recording.

**B99 Transport Compound**

The following recommendations have been prepared in order to manage impacts to the B99 Transport Compound Workshop as part of the project works:

- NOHC (2014c) contains a full and comprehensive archival recording of the B99 Transport Compound Workshop. No further archival recording is required.

- It is recommended that the Moorebank IMT interpretation plan considers incorporating the B99 Transport Warehouse into interpretive media to be placed around the base. At a minimum the interpretation plan should consider signage, interpretive boards and landscaping to represent the history of the B99 Transport Compound Workshop. This should utilise the history in the NOHC (2014c) report and photographs from the archival recording.
6 References


Navin Officer Heritage Consultants 2014c. *Appendix K: Cultural heritage archival recordings (NOHC 2014c).* Prepared for Parsons Brinkerhoff.

Recommended Development Consent (Application No. SSD 5066), condition B9.
Appendix A: Responses to stakeholders

Responses in relation to this OfMR have been received from the Moorebank Heritage Group, Liverpool City Council and Heritage Council of NSW. These responses are outlined in Table 6.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Consultation undertaken</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorebank Heritage Group</td>
<td>The following general recommendations were made by Moorebank Heritage Group in their submission.</td>
<td>This request is outside of the CoAs and REMMs for the project.</td>
</tr>
<tr>
<td>General comments</td>
<td></td>
<td>This request is outside of the CoAs and REMMs for the project.</td>
</tr>
<tr>
<td>Consultation</td>
<td>That the participation parties as stipulated in DDC B9, are provided with copies of all submissions to allow for a further opportunity for feedback.</td>
<td>This recommendation has been incorporated into Section 3.3 of this report.</td>
</tr>
<tr>
<td>Army Motorcycle Training Area</td>
<td>That research is undertaken to underpin archival reporting and interpretative strategy for the site.</td>
<td>Options for adaptive re-use have been explored and have been discounted due to the size and limitations of the structure.</td>
</tr>
<tr>
<td>Interpretation Strategy</td>
<td>Consideration be given to setting aside a small area within the MPE site for joint interpretation purposes that incorporates relocation of part of the STRARCH Hangar and/or CUST Hut.</td>
<td>Correspondence with Defence has indicated that they have no space or use for the structure. See Table 3 for correspondences with Defence.</td>
</tr>
<tr>
<td>STRARCH Hangar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 1: On-site adaptive re-use</td>
<td>With at least 2 complete bays retained (trusses and the intermediate roof sections). Suggested uses ... outdoor shade area, staff amenities, smokers' designated area, and carport.</td>
<td></td>
</tr>
<tr>
<td>Option 2: Relocation to Defence-owned land</td>
<td>With at least 2 complete bay retained (trusses and the intermediate roof sections). Relocation to Holsworthy. Suggested uses ... outdoor shade area for training purposes, student preparation area, outdoor shade amenities area, and temporary storage / goods transfer area.</td>
<td></td>
</tr>
<tr>
<td>Organisation</td>
<td>Consultation undertaken</td>
<td>Outcome</td>
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<tr>
<td>Option 3: Use as an Outdoor Interpretative Centre</td>
<td>With at least 2 complete bays (trusses and the intermediate roof sections) retained either onsite or relocated to an appropriate place such as Rifle Range Park or Moorebank Precinct East.</td>
<td>Portions of the STRARCH Hangar and CUST Hut will be used as interpretive features as part of the Heritage Interpretation Plan.</td>
</tr>
<tr>
<td>Option 4: Retained and Stored Until a Suitable Purpose and/or location Are Found</td>
<td>Recovery of at least two complete bays (trusses and the intermediate roof sections) to allow re-erection. These components to be stored on pallets until a suitable purpose and/or site are found.</td>
<td>Whilst the retention of components of the STRARCH Hanger could be possible, this option could result in long term care and control options and ultimately may limit possible reuse options through decay or damage that may occur.</td>
</tr>
<tr>
<td>Option 5: Salvage of components for onsite interpretative Installations</td>
<td>Please note that the wholesale demolition of the Strarch Hangar is not supported by the Moorebank Heritage Group.</td>
<td>Portions of the STRARCH Hangar and CUST Hut will be used as interpretive features as part of the Heritage Interpretation Plan.</td>
</tr>
<tr>
<td>Historical Research / Archival Recording</td>
<td>Additional historical research is undertaken in respect to the development of the Strarch Hangar and its inventor, Captain Lewis Ronald (Lew) Harding, in particular his service with the Royal Australian Engineers and PWDAD.</td>
<td>The archival recording contains a brief synopsis of the STRARCH Hanger suitable to provide context to the information contained relating to the</td>
</tr>
<tr>
<td></td>
<td>Historical research, and comparative analysis, of is undertaken of other examples of large clear span warehouse designs of steel construction of Australian origin.</td>
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<td>The link is made between the role of the former Minister of Defence, The Hon Kim Beazley personnel.</td>
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<tr>
<td>Organisation</td>
<td>Consultation undertaken</td>
<td>Outcome</td>
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<td>MP, in conserving the CUST Hut in 1988, and his involvement in Defence’s contract for the construction of the 18 STRARCH Hangars at the RAAF base at Tyndall, located near Katherine in the Northern Territory also in 1988.</td>
<td>built form, appearance and context of the item. The archival recording conforms with the NSW Heritage Office guideline <em>How to Prepare Archival Recordings for Heritage Items</em>. The historical information complies with this guideline as it “<em>an outline history of the heritage item and the associated sites, structures and events.</em>” As such further detailed research and assessment of the STRARCH Hanger is outside of the scope of this assessment.</td>
</tr>
</tbody>
</table>

**Alternative Option**

The option as per the Recommendations 9.1(c) of the Strarch Hangar and CUST Hut Condition Inspection Report (Parsons Brinckerhoff 2014 p.17) to:

“... *disassemble before or during early IMT Early Works to recover at least two complete trusses and the intermediate roof sections to allow re-erection. These components could be stored on pallets ...*”

This option is to be fully explored and documented prior to any decision being made in respect to the future of the Strarch Hangar.

**Holsworthy Option**

A full record, and with whom, is provided in respect to the ‘consultation’ with the SME.

As mentioned above, the storage of components of the STRARCH and CUST Hut has been explored and will result in long term care and control issues. Options for disassembly and relocation have been explored without success. As such the partial salvage of the structure is proposed as part of the interpretive works to be outlined in the Heritage Interpretation Plan. Refer to Appendix B for further detail on portions of these buildings that are being retained.

A full record of consultation with SME is detailed in Table 3.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Consultation undertaken</th>
<th>Outcome</th>
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<tr>
<td><strong>Jacks</strong></td>
<td>Further enquiries are made as to the location of the jacks reportedly held by the SME.</td>
<td>Consultation with SME during the course of the project, specifically Major Joshua Porte, Construction wing, Major Craig Clunas, and Major Jack Plummer has determined that Defence are no longer in possession of the jacks.</td>
</tr>
<tr>
<td><strong>Plaque</strong></td>
<td>If not already removed, consideration should be given for the plaque to be deposited with the Australian Army Museum of Military Engineering, Holsworthy.</td>
<td>The plaque has been removed and will be used for interpretive purposes, failing this it will be deposited with the Australian Army Museum of Military Engineering, Holsworthy.</td>
</tr>
<tr>
<td><strong>Records held by SME Construction Wing</strong></td>
<td>That consideration is given for the records to be transferred from SME Construction Wing to the Australian Army Museum of Military Engineering, (Corps Museum of the RAE), for safe keeping and to be added to the other Strarch Hangar records held in the museum collection.</td>
<td>The collation of information held by third parties is outside the scope of this assessment.</td>
</tr>
<tr>
<td><strong>Other Documents</strong></td>
<td>A copy of all relevant documents and reports are deposited with the Australian Army Museum of Military Engineering, (Corps Museum of the RAE), for safe keeping and to be added to the other Strarch Hangar records held in the museum collection. Exceptions would be those documents considered ‘commercial in confidence’ or contain other sensitive material.</td>
<td>All relevant documents relating to the project are publically and freely accessible.</td>
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</table>

Copies of all relevant documents held by other Defence entities, including SME and RAAF, be deposited with Australian Army Museum of Military Engineering.
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<tr>
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<td></td>
<td>All documentation be digitised to provide a permanent record of the Strarch Hangar design, erection method and history, and of its inventor Captain Lewis Ronald (Lew) Harding.</td>
<td>The collation of information held by third parties is outside the scope of this assessment.</td>
</tr>
<tr>
<td><strong>CUST Hut</strong></td>
<td><strong>Option 1: On-site adaptive re-use</strong>&lt;br&gt;With at least 2 complete bays retained (trusses and the intermediate roof sections). Suggested uses ... outdoor shade area, staff amenities, smokers' designated area, and carport.</td>
<td>Options for adaptive re-use have been explored and have been discounted due to the size and limitations of the structure.</td>
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<td><strong>Option 2: Relocation to Defence-owned land</strong>&lt;br&gt;With at least 2 complete bay retained (trusses and the intermediate roof sections). Relocation to Holsworthy. Suggested uses ... outdoor shade area for training purposes, student preparation area, outdoor shade amenities area, and temporary storage / goods transfer area.</td>
<td>Options for adaptive re-use have been explored and have been discounted due to the size and limitations of the structure. A structural assessment, contained in Appendix B indicates that once the Cullen Universal Steel Trusses which form the building are dismantled, the arches are no longer structurally sound. As such, the only viable option for these structural elements would be as sculptural elements within the landscape, evoking the shape and stature of the original building and providing a visual anchor-point for interpretation.</td>
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<td><strong>Option 3: Use as an Outdoor Interpretative Centre</strong>&lt;br&gt;With at least 2 complete bays (trusses and the intermediate roof sections) retained either onsite or relocated to an appropriate place such as Rifle Range Park or Moorebank Precinct East.</td>
<td>Correspondence with Defence has indicated that they have no space or use for the structure. See Table 3 for correspondences with Defence personnel.</td>
</tr>
<tr>
<td></td>
<td><strong>Option 4: Retained and Stored Until a Suitable Purpose and/or location Are Found</strong>&lt;br&gt;Recovery of at least two complete bays (trusses and the intermediate roof sections) to allow re-erection. These components to be stored on pallets until a suitable purpose and/or site are found.</td>
<td>Whilst the retention of components of the STRARCH Hanger could be possible, this option could result in long term care and control options and ultimately may limit possible reuse options through decay or damage that may occur.</td>
</tr>
<tr>
<td></td>
<td><strong>Option 5: Salvage of components for onsite interpretative Installations</strong>&lt;br&gt;Please note that the wholesale demolition of the CUST Hut is not supported by the Moorebank Heritage Group.</td>
<td>Portions of the STRARCH Hangar and CUST Hut will be used as interpretive features as part of the Heritage Interpretation Plan. Portions of the STRARCH Hangar and CUST Hut will be used as interpretive features as part of the Heritage Interpretation Plan. The CUST Hut arches will maintain their form after disassembly. The arches will be used as sculptural elements affixed to a large wall in the new development, possibly a warehouse wall.</td>
</tr>
</tbody>
</table>
Historical Research / Archival Recording
Additional research is undertaken in respect to the development of the CUST Hut and its inventor Royal Australian Engineering officer Lieutenant Colonel D. R. (Dan) Cullen during the Second World War.

The conservation of the CUST Hut through intervention of Sappers of all ranks, the Corps Committee, and a deputation led by Lieutenant Brian Collings (Ret.) to Canberra in 1988 is fully researched and recorded.

The link is made between the role of the former Minister of Defence, The Hon Kim Beazley MP, in conserving the CUST Hut in 1988 and his involvement in Defence's contract for the construction of the 18 Strarch Hangars at the RAAF base at Tyndall, located near Katherine in the Northern Territory also in 1988.

Historical research, and comparative analysis, is undertaken of other examples of large clear span warehouse designs of steel construction of Australian origin.

Alternative Option
The option as per the Recommendations 9.1(c) of the Strarch Hangar and CUST Hut Condition Inspection Report (Parsons Brinckerhoff 2014 p.17) to: "... disassemble before or during early IMT Early Works to recover at least two complete trusses and the intermediate roof sections to allow re-erection. These components could be stored on pallets ...
"

This option is fully explored and documented prior to any decision is made in respect to the future of the CUST Hut.

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<tr>
<td>Historical Research / Archival Recording</td>
<td>Additional research is undertaken in respect to the development of the CUST Hut and its inventor Royal Australian Engineering officer Lieutenant Colonel D. R. (Dan) Cullen during the Second World War.</td>
<td>The archival recording contains a brief synopsis of the CUST Hut suitable to provide context to the information contained relating to the built form, appearance and context of the item. The archival recording conforms with the NSW Heritage Office guideline How to Prepare Archival Recordings for Heritage Items. The historical information complies with this guideline as it &quot;an outline history of the heritage item and the associated sites, structures and events.&quot; As such further detailed research and assessment of the CUST Hut is outside of the scope of this assessment.</td>
</tr>
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<td>The conservation of the CUST Hut through intervention of Sappers of all ranks, the Corps Committee, and a deputation led by Lieutenant Brian Collings (Ret.) to Canberra in 1988 is fully researched and recorded.</td>
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<td>The link is made between the role of the former Minister of Defence, The Hon Kim Beazley MP, in conserving the CUST Hut in 1988 and his involvement in Defence's contract for the construction of the 18 Strarch Hangars at the RAAF base at Tyndall, located near Katherine in the Northern Territory also in 1988.</td>
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<td>Historical research, and comparative analysis, is undertaken of other examples of large clear span warehouse designs of steel construction of Australian origin.</td>
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<td>As mentioned above, the storage of components of the STRARCH and CUST Hut has been explored and will result in long term care and control issues. Options for disassembly and relocation have been explored without success. As such the partial salvage of the structure is proposed as part of the interpretive</td>
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<td></td>
<td><strong>Other Documentation</strong></td>
<td>works to be outlined in the Heritage Interpretation Plan. Refer to Appendix B for further detail on portions of these buildings that are being retained.</td>
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<tr>
<td></td>
<td>Additional research is undertaken to locate existing records through the various Defence agencies, National Archives of Australia (NAA), unit associations and the like.</td>
<td>The collation of information held by third parties is outside the scope of this assessment.</td>
</tr>
<tr>
<td></td>
<td>Copies of all relevant documents held by other Defence entities, NAA etc, be deposited with Australian Army Museum of Military Engineering.</td>
<td>The collation of information held by third parties is outside the scope of this assessment.</td>
</tr>
<tr>
<td></td>
<td>All documentation be digitised to provide a permanent record of the CUST Hut design, erection method and history, and of its inventor Lieutenant Colonel D. R. (Dan) Cullen.</td>
<td>All relevant documents relating to the project are publically and freely accessible.</td>
</tr>
<tr>
<td></td>
<td>The recommendations for the Commemorative Garden and MH1 Dog Cemetery were supported by the Moorebank Heritage Group without further comment.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Liverpool City Council</td>
<td>Thank you for the opportunity to comment on the above project and the Moorebank Intermodal Terminal Construction Heritage Management Plan (CHMP), 23 September 2016 by Biosis. In undertaking this review Council has contacted the report author Alex Beben to better understand the report and its findings. Council has also been sent submissions made by the Moorebank Heritage Group in relation to the Biosis report and the separate Interpretation Strategy by Artefact.</td>
<td>Further information concerning the</td>
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<td>significant. Council understands that as a result of the Mitigation reports, public expressions of interest were called to remove and reuse the CUST Hut and STRACH Hangar buildings, as it had been determined that they could not be adaptively reused for a functional use associated with the Intermodal. It is understood that no expressions of interest were forthcoming and that therefore full demolition is now proposed (archival recording is understood to have occurred). Council believes that the premise of both the Mitigation and the CHMP reports are wrong in relation to relocation being the only available mitigative action. These elements are significant and it is usual heritage best practice to retain heritage items on the site for which they are associated. At least parts of both of these structures should be retained and conserved within the site as part of a site wide Interpretation Strategy.</td>
<td>mitigation options explored with the report are contained within Appendix B.</td>
<td></td>
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<tr>
<td>Council is concerned that the CHMP states that the Condition of Approval (CoA) 13E which requires an Interpretation Strategy is outside scope of Early Works (ie demolitions). This should not be the case, because if they are removed as part of early works what physical evidence is left to interpret? The CUST Hut and STRACH hangar are substantial physical items and to rely on photos and drawings to interpret these and their significance is not adequate.</td>
<td>As mentioned previously, partial salvage of the structure is proposed as part of the interpretive works to be outlined in the Heritage Interpretation Plan.</td>
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<tr>
<td>While the whole buildings would not need to be retained to conserve significance, a substantive amount of structure and cladding should be conserved so that the scale, spatial form and materiality of these structures and buildings can be appreciated and interpreted.</td>
<td>A salvage plan has been produced based on consultation with a structural engineer and heritage interpretation specialist, this has been included as Appendix B. This salvage plan provides a preliminary outline of the proposed interpretation of the CUST Hut and STRARCH Hangar. A finalised Heritage Interpretation Plan is subject to detailed design and will be completed in early 2017.</td>
<td></td>
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<tr>
<td>Council understands that part of the site is identified for staff recreation use within the Conservation zones of the site and parts of these structures could be re-erected to form interpretation shade shelters for staff using the recreation spaces within the Conservation areas of site and also used for the protection and display of other works and objects. It may be that the framing but not all cladding was retained. An option could include the use of shade mesh or translucent cladding in place of the steel cladding.</td>
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<tr>
<td>NSW Heritage Council</td>
<td>Council does not support the disassembly and temporary storage for potential removal to another site. The responsibility for these structures should remain with the owners and managers of this site. If that connection of responsibility is lost then it is most likely nothing will happen, particularly where another site owner may not have the resources to undertake active conservation and interpretation. Council recommends that no demolition of the CUST Hut and STRARCH Hanger should occur until such time as the Interpretation Strategy be reviewed and amended by Tactical to include the relocation, conservation and adaptive reuse of substantial sections of these two structures for staff recreation use and interpretation within the recreation areas of site within the site Conservation zone. Planning should include architects and landscape planners and designers with experience on innovative site interpretation (see for example the former gas holders incorporated in a park at Ballast Point Reserve, Birchgrove). The conservation of these reconstructed elements should include interpretation that is linked to the display of other site artefacts and the interpretation of site archaeology across the site, such as the WW1 Isolation Ward footings. It is recommended that these comments be forwarded to the Department of Planning and that you ask Tactical to expedite the review of the Interpretation Strategy to ensure that it addresses the relocation, conservation and interpretation of at least parts of the structure and cladding of the CUST Hut and STRARCH Hanger within the staff recreation parts of the Conservation area of this site. Council accepts the general recommendations made in relation to Aboriginal archaeology and non-Aboriginal archaeological investigations made in the CHMP report as they appear to follow appropriate methodology.</td>
<td>This detail will be addressed in the Final Archaeological Report (forthcoming) and Heritage Interpretation Plan.</td>
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<td></td>
<td>The relocation options do not provide enough detail on the items in question. All reports should be updated with a location map and photograph of the items. Additionally, the information from the advertisements for reuse tenders for the STRARCH Hangar and CUST Hut should be included in an updated report to assist in understanding how the tenders were approached.</td>
<td>The mitigation reports have been reformatted into a standalone report that presents more information on each individual item and its location.</td>
</tr>
</tbody>
</table>
As mitigation is likely to involve interpretation all the options reports rely heavily on the Moorebank IMT interpretation plan, which has not been completed, to incorporate elements of the items in interpretation throughout the new facilities. This lack of information from the overall site interpretation plan does not assist in understanding if the items in the options reports will be appropriately mitigated in the finished interpretation design. An updated options report should include additional detail on the status of the interpretation plan for the entire Moorebank site.

Finally, each options report should provide additional information on exactly what elements of each item will be able to used in interpretation. This section should also include guidance on the most appropriate interpretation options for each item based on an understanding of its history and significance.

**RAAF STRARCH Hangar**
Consideration of the options for mitigation for the RAAF STRARCH Hangar (the Hangar) have included relocation, however the report indicates this is not feasible. The option presented, demolition, is not considered to be the most appropriate, particularly for an item of State heritage significance. While it is understood that the Hangar presents difficulties in retention for industrial purposes due to fire safety, options for the relocation of the Hangar within the Moorebank site or reuse of the Hangar for non-industrial use do not appear to have occurred. Further information on these issues and any additional comments from other stakeholders should be included in an updated options report.

**CUST Hut**
Consideration of the options for mitigation for the CUST Hut have included relocation, however the

<table>
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<td>As mitigation is likely to involve interpretation all the options reports rely heavily on the Moorebank IMT interpretation plan, which has not been completed, to incorporate elements of the items in interpretation throughout the new facilities. This lack of information from the overall site interpretation plan does not assist in understanding if the items in the options reports will be appropriately mitigated in the finished interpretation design. An updated options report should include additional detail on the status of the interpretation plan for the entire Moorebank site. Finally, each options report should provide additional information on exactly what elements of each item will be able to used in interpretation. This section should also include guidance on the most appropriate interpretation options for each item based on an understanding of its history and significance.</td>
<td>A salvage plan has been produced based on consultation with a structural engineer and heritage interpretation specialist, this has been included as Appendix B. This salvage plan provides a preliminary outline of the proposed interpretation of the CUST Hut and STRARCH Hangar. A finalised Heritage Interpretation Plan is subject to detailed design and will be completed in early 2017.</td>
</tr>
<tr>
<td><strong>RAAF STRARCH Hangar</strong></td>
<td>Consideration of the options for mitigation for the RAAF STRARCH Hangar (the Hangar) have included relocation, however the report indicates this is not feasible. The option presented, demolition, is not considered to be the most appropriate, particularly for an item of State heritage significance. While it is understood that the Hangar presents difficulties in retention for industrial purposes due to fire safety, options for the relocation of the Hangar within the Moorebank site or reuse of the Hangar for non-industrial use do not appear to have occurred. Further information on these issues and any additional comments from other stakeholders should be included in an updated options report.</td>
<td>Additional information on elements of the sites to be utilised in the interpretation plan are now included within Section 4 and Appendix B.</td>
</tr>
<tr>
<td><strong>CUST Hut</strong></td>
<td>Consideration of the options for mitigation for the CUST Hut have included relocation, however the</td>
<td>Additional information of the mitigation</td>
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<td>report indicates this is not feasible. The option presented, demolition, is not considered to be the most appropriate, particularly for an item of State heritage significance. While it is understood that the CUST Hut presents difficulties in retention for industrial purposes due to fire safety, options for the relocation of the CUST Hut within the Moorebank site or reuse of the CUST Hut for non-industrial use, do not appear to have occurred. Further information on these issues and any additional comments from other stakeholders should be included in an updated options report.</td>
<td>options explored as part of the project has been included in Section 4 and Table 3.</td>
</tr>
<tr>
<td>MH6 Commemorative Garden</td>
<td>The options report for the MH6 Commemorative Garden has not provided adequate management options for the landscape elements of the garden which appear to require removal. An updated report should provide a clear understanding of what trees or other plants can be reused or relocated.</td>
<td>Additional information has been included in Section 3.</td>
</tr>
<tr>
<td>MH1 Dog Cemetery</td>
<td>The Heritage Division agrees that the most appropriate technique for relocation of remains in these areas is to archaeologically excavate and supports the method included in the options report. Additional information on where the remains will be reinterred should be included in an updated report.</td>
<td>Additional information has been included in Section 3.</td>
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Appendix B: Salvage and interpretation report for the CUST Hut and STRARCH Hangar
Land Preparation Works – Heritage Salvage Plan

CUST Hut and STRARCH Hangar Heritage Interpretation

28th November 2016
Version Control

Document information

<table>
<thead>
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<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Changes</th>
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<tbody>
<tr>
<td>A</td>
<td>24/11/2016</td>
<td>Marc Ragowski</td>
<td>For Internal Review</td>
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<tr>
<td>0</td>
<td>28/11/2016</td>
<td>Marc Ragowski</td>
<td>Final</td>
</tr>
</tbody>
</table>

Author: Marc Ragowski
Reviewer: Nathan Cairney
Project ID: LPWDR
Sensitivity: Commercial In-Confidence
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2. General 4
   2.1. Dismantling and Storage 4
   2.2. References 4

3. CUST Hut 5

4. STRARCH Hangar 6

5. Preliminary Interpretation Sketches 7
1. Purpose

The purpose of this plan is to allow the early salvage of components of the STRARCH Hangar and CUST Hut for future heritage interpretation works. The plan outlines the removal of the structures from the work area so that they may be safely stored until such time that the architectural design and associated civil earthworks and pavements are complete.

SIMTA has engaged Reid Campbell Architects and Artefact Heritage in the development of this plan to ensure the components retained for interpretation are chosen based on the significance in preserving the historical value of the structures while providing preliminary but practical solutions.

2. General

2.1. Dismantling and Storage

Heritage dismantling works are to be undertaken in such a way that does not damage any components which are to be retained. The retained components shall be stored on pallets or timber gluts and suitably covered with plastic to protect from weather. The components shall be stored at the below location and delineated accordingly:

2.2. References

Artefact memo ‘Re. Heritage interpretation advice for CUST Hut and STRARCH Hangar at Moorebank Precinct West (MPW)’ dated 28/11/2016
Reid Campbell memo ‘Heritage Interpretation’ dated 28/11/2016
3. CUST Hut

The Contractor is to carefully dismantle the CUST Hut while retaining the following components:

- 4 off upright and initial arch section (blue)
- 4 off base plates (orange)
- 3 off bracing (yellow)
- 1 off plaque (green)

No cladding or purlins are required to be retained.
4. STRARCH Hangar

The Contractor is to carefully dismantle the STRARCH Hangar while retaining the following components:

- 2 full arches (1 at each end, blue)
- 2 full runs of timber purlins (must be original and in good condition, approx. 30 pieces, red)
- 1 off concrete inscription, external to building, SW corner (yellow)

No cladding or end section to be retained
5. Preliminary Interpretation Sketches
Annexure 1  Reid Campbell memo
Moorebank Logistics Park

Purpose and background
Reid Campbell Architects were engaged by Tactical Group to provide advice on the practicalities and possibilities in the re-use of components of the CUST hut and STRARCH hangar in artistic interpretation. This advice is to be read in conjunction with heritage advice provided by Artefact Heritage. A site inspection was attended on Tuesday 22nd November 2016 in conjunction with Artefact Heritage and Tactical Group to discuss options regarding both structures. The purpose of this memo is to document observations made during the site visit and provide a preliminary but feasible recommendation for possible interpretation of the specified structures.

CUST hut

Observations
- The majority of the structure has been modified after its original erection. The types and quantity of modifications would suggest additional rigidity in the arches was necessary. It was noted that each external arch appears unmodified.
- The lower sections of each arch are not recoverable as each is encased in concrete and likely corroded.
- A significant quantity of structural timber is rotting/damaged, some has been replaced.
- The structural timber does not appear to be treated.
- The arches will require reinstatement of the protective coating prior to re-use.
- The lower timber sections appear to be damaged, most likely due to collision with plant/vehicles which is understood to have occupied the building.

Recommendations
- If a full arch is retained, it is to serve only for ornament and not for any structural purpose. A suggested use may be to attach an arch to the wall of a proposed building. The design of the supporting wall would need to consider the impact of this arch.
- If timber is retained, that is it taken from the 2nd row up as this is generally undamaged.

Conceptual sketch
STRARCH hangar

Observations
- The structure is a purpose-built system which relies on multiple arches and significant forces within post tensioned cables to create stability, if either of these two items is affected, the structure will likely become unstable.
- The cladding system appears to be manufactured from Lysaght stock (BlueScope Steel).
- Shortening cross bracing and spacing between arches would be relatively simple and inexpensive although may take away from the uniqueness of the frame.
- Condition of the post tension cable is unknown.

Recommendations
- End pieces of arches (columns) may be considered for artistic re-use. Retaining an even number of pieces would allow the construction of a smaller archway/sculpture. Retention of the necessary joining sections, base plates cross bracing would need to be considered.

Conceptual sketch

General
The architectural design for the Moorebank Precinct West is currently in development and is not finalised. At this stage it is not possible to confirm exact location, orientation or configuration of any of the heritage interpretation work. It is however possible to provide a list of potentially suitable locations for which the heritage interpretation plan should consider, these are:
- visible warehouse walls
- petrol station
- freight village – retail areas
- parking areas
- administration building(s)
- noise walls – lining the western outer road

Note: Internal areas of the terminal are largely automated and thus not considered suitable for heritage interpretation.

References
- Moorebank Intermodal Company – Cust Hut Building Condition survey – Parsons Brinkerhoff 2014
- Strarch Hangar and Cust Hut Condition Inspection Report – Parsons Brinkerhoff 2014
Annexure 2  Artefact Heritage memo
28 November 2016

Mr Marc Ragowski
Project Manager
Tactical Group
15/124 Walker St
North Sydney 2060

Dear Mr Ragowski,

Re. Heritage interpretation advice for CUST hut and STRARCH Hangar at Moorebank Precinct West (MPW)

Artefact has been engaged by Tactical Group to provide preliminary advice on possible adaptive reuse of elements the Cullen Universal Steele Truss (CUST) Hut and the STRessARCH (STRARCH) Hangar at the Moorebank West Precinct site for interpretive purposes.

1.1 Resources

Preparation for this advice involved a site visit on 22/11/2016, and review of and sourcing from the following documents:

Arcadis. 2016. MPW Concept Plan Approval.


1.2 Background

The CUST Hut and the STRARCH Hangar at the MPW site have been assessed as having heritage value against both NSW and Commonwealth Heritage Listing significance criteria. In particular the “the historical significance of the CUST Hut to the SME site [and its] rare construction type and
technical significance” has been emphasised, and the STRARCH Hangar has been identified as a “unique example of a RAAF Strarch re-deployable Hangar believed to be the only example of this period in Australia.”

The European Heritage Assessment for the site stated that:

Adaptive reuse of the CUST Hut, Transport Compound Workshop (B99) and the RAAF STRARCH Hangar would mitigate impacts on heritage values associated with the loss of their broader cultural landscape context. More importantly, it would provide an alternative to the potential destruction and loss of the structures themselves. As the Moorebank Cultural Landscape has been extensively affected by the MUR Project, any remaining elements are a tangible link to that landscape and there is an increased value in keeping these elements within the landscape.

Adaptive re-use of the CUST Hut and STRARCH Hangar have been outlined in REMM13M, with one of the measures relating specifically to interpretive uses of the structures (NB. emphasis added below):

Further consideration would be given to options for the retention and/or relocation and adaptive reuse of the CUST Hut and the RAAF STRARCH Hangar to mitigate impacts on heritage values associated with these structures and to broaden their cultural landscape. Options considered for mitigation in order of preference are:

- **Relocation** (either offsite or onsite) and conserve/adaptive reuse – this would be investigated further as part of the detailed design and any future development applications

- **Interpretive commemoration utilising materials/elements from the building** – this may be required but would be determined by the findings from investigations in option 1 above

- **Demolition** may be required but would be determined by the findings from investigations in option 1 above

- The first preference would be to retain and adaptively re-use these items on the redeveloped Project site (within the precinct but outside the secure area, as part of the administrative facilities or similar). If this is not feasible or practicable, the second preference would be for relocation to another appropriate location, potentially with adaptive reuse.

The retention or adaptive reuse of the structures has been discounted due to the condition of the structures.

Additionally, the Condition Report recommendations (C) and (G) state:

(C) [The STRARCH Hangar] could be carefully disassembled before or during the IMT Early Works to salvage at least 2 complete trusses and the intermediate roof section to allow partial re-erection. These components could be stored on pallets to facilitate safe handling and offered to the SME Museum for storage and display at the new Holsworthy Barracks Military Engineering Heritage and Learning Centre.

and

(G) That consideration is given to salvaging sections of the original CUST trusses and their timber bracing members from the CUST Hut during disassembly. These components could be stored on pallets to facilitate safe handling and offered to the SME Museum for storage and display at the new Holsworthy Barracks Military Engineering Heritage and Learning Centre.

It is noted that the Holsworthy Barracks new Australian Army Museum of Military Engineering has declined the offer of the CUST Hut and STRARCH Hangar for storage or display.

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2 ERM. 2013.
3 ERM. 2013.
4 NOHC. 2014a.
5 Arcadis. 2016.
6 PB. 2014.
This memo addresses the above mitigation measures, by providing preliminary advice on interpretive possibilities for elements of the CUST Hut and STRARCH Hangar on-site at MPW.

1.3 STRARCH HANGAR

The STRARCH Hangar is one of 24 similar hangars produced by the RAAF as ‘de-ployable’ structures. The STRARCH Hangar at Moorebank was erected at School of Military Engineering in 2008 by the Construction Wing of the School as a temporary facility, after being stored in the Northern Territory for over ten years. A plaque located on the wall states “Re-deployable STRARCH Hangar constructed by Trade Trading Troop, Construction Wing officially opened on 25 November 2008 by Lt Col D.A.Rye CO/Ci SME.” The construction system was developed to provide prefabricated quick erection hangars to house F111 fighters. The system was subsequently developed for non-Defence commercial use by a company called STRARCH Australia, and this type of design and construction occurs elsewhere in Australia, for example Drage’s AirWorld at Wodonga and at Avalon Airport at Melbourne, however the STRARCH Hangar at Moorebank may be the only example of such a hangar remaining in Defence possession.

Figure 1: STRARCH Hangar (NOHC. 2014c)

The key component of the structure is the stressed arch system, with 5 trusses each spanning 32m and with a height of 10m. As such, the heritage value of the STRARCH Hangar lies primarily with the significance of the technically stressed arch system. The curve of the arches is a key visual element in evoking the shape and stature of the building and provides a visual anchor-point for interpretation. Once dismantled, the trusses are no longer structurally sound, so their re-use would be as sculptural elements within the landscape.

Figure 2: STRARCH Hangar, internal views (NOHC. 2014c)

Retaining an entire arch for adaptive re-use in the landscape as an interpretive sculptural element would be the preferred option, as it would evoke the iconic sweep of the original structure. If the size, condition, and complexity of the tension structure of the trusses preclude one being re-used in total,
sections which evoke the shape and show the ingenuity of the original design should be retained for use as interpretive sculptural elements. These sections should contain the footings, columns, and parts of the arches which are as large as practically possible up to an appropriate supporting point. Retaining four such sections would allow for re-use in a variety of design situations, either as stand alone sculptural elements, or as defining a walkway path, or creating a destination point in the landscape. Retaining samples of the iron cladding, approximately 15-20 years old, is not a priority.

The arch, or sections of arches, should be supported by an interpretive panel, with text, images and possibly oral history quotes, giving information about the original structure, its context and use. The placement of the arch, or arch sections, should be at a location that is as accessible to as many workers and visitors as possible, such as external to the Freight Village or services areas.

The plaque commemorating the construction of the STRARCH Hangar in 2008 should also be retained and used with associated interpretation.

Figure 3: Commemorative plaque (NOHC. 2014c)

Consideration should be given to whether the truss elements should be left untreated, ie. corroded and paint peeling, or reconditioned. The decision will be led by the design of the facility or landscape area they are to be mounted in.

Figure 4: Examples of re-use of truss/metal building elements:

Hudson River Park, truss sculpture (www.galvanizeit.org/project-gallery)
Cowboys Stadium, truss arch (regularmain.wordpress.com)
1.4 CUST HUT

The CUST Hut was relocated from Kapooka to Moorebank in approximately 1948. Assuming it was fabricated and erected at Kapooka previously to this, it is approximately 70 years old. The Hut was initially occupied by the Plant, Roads and Airfield [PRA] Troop, which was part of the School of Military Engineering’s’ Military Training Wing. The building was originally open at both ends and apparently had an earthen floor. It underwent major refurbishment in the mid 1990’s, including replacement of the roof cladding and its supporting purlins, and the addition of brick end walls, windows and roller shutter doors. The CUST Hut has a strong and special association with Lieutenant Colonel D.R. (Dan) Cullen, who invented the CUST system during World War 2. He had served with the 7th Division Engineers in the Middle East where he also designed a series of bridges with rolled steel joists. On his return to Australia in 1942, he was one of the select group of officers handpicked to revamp the courses at SME. After the war, Cullen served in the Occupation Force in Japan where, in collaboration with another engineering officer, he had planned the new city of Hiroshima. He died in July 1971.

Three CUST Huts are reported to exist in Sydney including one at Liverpool and two at Maroubra.
The heritage value of the CUST Hut lies primarily in its rare construction type and the technical significance of its truss structure. The structural arrangement comprises 14 internal and two end arched open web steel CUST trusses spanning 49m in width and each reaching 9.4m in height. Once dismantled, the arches are no longer structurally sound, so their re-use would be as sculptural elements within the landscape, evoking the shape and stature of the original building and providing a visual anchor-point for interpretation.

Unlike the tension arches in the STRARCH Hut, the arches in the CUST House can retain their iconic shape if dismantled. It is therefore recommended that two full arches be retained for adaptive re-use on site. Retaining the two end arches, the arches less affected by later maintenance works and in original condition, is likely to be the most effective and efficient option.

The arches could be used as sculptural elements affixed to a large wall in the new development, possibly a warehouse wall. Depending on the wall spaces available, it may only be possible to use a half arch as indicative of the size and shape of the original CUST Hut.

Additionally, possible re-use of some smaller spans of the trusses as supports for interpretive panels could be considered.
While the original timber bracing members in the roofing are cracked and split in a number of locations, it is possible to consider some of the least damaged for re-use in the landscaping, as small structural elements or as stand-alone pieces. Located together as a small group and supported by an interpretive panel, they would add to the sense the history of the site. It is therefore recommended that 20 of the soundest timber bracing members be retained.

Figure 9: Timber bracing members (NOHC. 2014c) Figure 10: Example of re-use of timber beams, Point Gellebrand (challisdesign.com.au)

Retaining the walls at either end (bricks, roller doors, windows) and the roof cladding for interpretive purposes is not considered a priority, since they are a recent additions from the mid 1990s.

On the south west external corner of the CUST is an inscribed concrete slab between the original truss footings which is likely to have been installed during the hut’s construction. It states ‘102 CONST SQN 19??’. It is recommended that this slab be retained and re-used as an interpretive element in the landscaping in close proximity to the location of the re-used roof trusses and timber bracings so that an interpretive panel installed with these elements can provide a supportive context.

Figure 11: Concrete slab (NOHC. 2014c)

1.5 RECOMMENDATIONS

1.5.1 STRARCH Hangar

1. Retain four arch sections including footings, support cables, columns and as long a part of the arch as structurally possible, for re-use as sculptural elements within the landscape

2. Retain the commemorative plaque

3. Support the architectural elements with an interpretive panel which provides information about the original structure and its historical context.
1.5.2 CUST Hut

1. Retain the two full end arches for re-use, in parts, as sculptural elements affixed to large walls
2. Retain 20 timber bracing members, for re-use as interpretive elements
3. Retain the commemorative concrete slab
4. Support the architectural elements with an interpretive panel which provides information about the original structure and its historical context.

Yours sincerely,

[Signature]

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Appendix C: MH1 Dog Cemetery archaeological methodology

The MH1 Dog Cemetery was assessed by NOHC (2014a: 195) as possessing a local level of significance against the NSW significance assessment criterion A, B and D. The heritage item was also assessed as possessing significance under the Commonwealth Heritage List (CHL) criteria, specifically criterion A, G and H. The statement of significance for the item states that "The cemetery as a memorial possesses significant social value at a local level whilst not possessing archaeological research potential."

The EDD unit and staff have conducted an internal salvage and relocation program consisting of removal of all cremations, headstones and memorial with the aim of incorporating these items into a new commemorative area at their new headquarters at Holsworthy Barracks. During subsequent site investigations intact burials were identified in two areas, the formal MH1 dog cemetery and the original informal burial ground located to the approximately 200 meters north west of the formal cemetery.

Therefore archaeological salvage has been proposed of the remaining internments as the most efficient method for the removal all remaining significant elements of the site. The excavation programme should be undertaken by qualified archaeological persons proficient in excavations of skeletal elements.

The following steps are proposed to remove the remaining internments with regards to the recommendations outlined in the Options for mitigation report: MH1 Dog Cemetery, to which this methodology is appended.

Mechanical removal of topsoil

Due to the removal of some gravestones the most efficient means of identifying graves would be to clear all vegetation and remaining monuments prior to undertaking a mechanical scrape of the cemetery areas. This will allow the identification of grave cuts associated with internments. The figure below has identified the areas that would be subject to investigation.

Site plan

A site plan will be undertaken once the grave cuts have been identified where each grave will be given a unique grave number. This will enable later documentation to refer to specific graves and help in the identification of individual internments.

Hand excavation

The individual graves would undergo 100% excavation using hand tools only to identify and remove skeletal remains and any associated grave goods. In the event that grave goods (collars and tags) are identified with the skeletal remains, these may prove useful in determining the names and service histories associated with the service dogs buried within the cemetery. These could be cross referenced as part of the additional research required to update the archival recording with service dog profiles.
Skeletal remains are likely to be robust in nature and easily identifiable. As such, no sieving of the grave fill should be required. Sieving of grave fills will only occur where skeletal remains are difficult to identify and sieving would aid in the identification of remains.

On site recording

As identified in NOHC (2014a) the skeletal remains pose limited research potential, therefore the skeletal elements would not need to be subject to any scientific analysis beyond a basic on site recording. This recording will include:

- Recording of contexts excavated, inclusions other than skeletal and any other pertinent information.
- Photographic documentation.
- Identification of skeletal elements retrieved. As the assemblage will not undergo any form of post excavation processing or interpretation a record of elements retrieved from individual graves will be completed on site.

Reporting

A brief archaeological excavation write up will be prepared that will be included in the final archaeological excavation report with the remaining archaeological sites to ensure compliance with CoA’s. This will also inform the revision of the archival report of the MH1 dog cemetery. The report will include the findings of the excavations, outlining the graves identified and the on site recordings. Mapping will be provided which will identify all graves excavated during the excavation programme.
MH1 dog cemetery. Areas that will undergo mechanical removal of topsoil are indicated in red. Additional areas may be identified during the excavation programme, due to the nature of archaeological deposits it is difficult to ascertain the exact location of unmarked graves.