Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

**Statement of Heritage Impact for:** RAE Chapel

**This statement forms part of the Environmental Impact Statement for the Moorebank Intermodal Terminal.**

**Date:** 22 February 2013

**Reference:** Part of the *Australian Army Engineers Group* - Item No. 57 on the Heritage Schedule of the Liverpool City Council Local Environmental Plan.

**Address/Property description:** Corner of Chatham Avenue and Ripon Road
Moorebank, NSW 2170

**Prepared by:** Rebecca Parkes – Principal Archaeologist
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt St
Kingston ACT 2604

(02) 62829415

**For:** Parsons Brinckerhoff on behalf of MIC

**The following aspects of the proposal respect or enhance the heritage significance of the item for the following reasons:**

*Not applicable* – the proposed development would result in potential destruction of the whole or part of the site.

**The following aspects of the proposal could detrimentally impact on the heritage significance. The reasons are explained as well as the measures to minimise impacts:**

The proposed Moorebank Intermodal Terminal would detrimentally impact the RAE Chapel; it would result in demolition of the RAE Chapel. This site has been assessed to be of local and Commonwealth significance in terms of its historical and social values.

The following measures will help to minimise impacts to the heritage significance of the RAE Chapel:

- It is recommended that archival recording be undertaken at this site prior to any impacts.
- Requirements and options for relocating the RAE Chapel have been included within the MUR Project. Portions of the structure and its fittings will be relocated and a detailed log will accompany the dismantling and reconstruction process.

**The following sympathetic solutions have been considered and discounted for the following reasons:**

*Relocation of the entire structure with the MUR* – this option not has not been identified as practicable or desirable within the context of the MUR.

*Conservation of the site* – given the nature of the proposed development, options for *in situ* conservation are not practicable.

**Attachments:** Refer to the attached significance assessments in Appendix 4 of this report and the site descriptions and analysis in Sections 5 through 8 of this report.

**References:**

Eric Martin and Associates 2011, Steele Barracks and Environs Conservation Management Plan – Built Environment, draft report to NOHC on behalf of Parsons Brinckerhoff.

ERM 2013 Moorebank Unit Relocation (MUR) Project: Steele Barracks, NSW Heritage Impact Assessment. A report to Point Project Management on behalf of the Department of Defence.

Graham Brooks and Associates Pty Ltd 2004 Moorebank Defence Site, Moorebank. Heritage Assessment. Report to Department of Defence Property Disposals Task Force.

Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

O'Keefe, Brendan 2011 History of Steele Barracks, Moorebank NSW, Report prepared for NOHC, as part of the EIS assessment of the Moorebank IMT project proposal. [To be included as historical background within the forthcoming EIS. Refer also Attachment A of this proposal].

**Statement of Heritage Impact for:** RAAF STRARCH Hangar

**This statement forms part of the Environmental Impact Statement for the Moorebank Intermodal Terminal.**

**Date:** 22 February 2013

**Reference:** Part of the *Australian Army Engineers Group* - Item No. 57 on the Heritage Schedule of the Liverpool City Council Local Environmental Plan.

**Address/Property description:** Ripon Road
Moorebank, NSW 2170

**Prepared by:** Rebecca Parkes – Principal Archaeologist
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt St
Kingston ACT 2604

(02) 62829415

**For:** Parsons Brinckerhoff on behalf of MIC

**The following aspects of the proposal respect or enhance the heritage significance of the item for the following reasons:**

*Not applicable* – the proposed development would result in potential destruction of the whole or part of the site.

**The following aspects of the proposal could detrimentally impact on the heritage significance. The reasons are explained as well as the measures to minimise impacts:**

The proposed Moorebank Intermodal Terminal would detrimentally impact the RAAF STRARCH Hangar; it would result in demolition of the STRARCH Hangar. This building has been assessed to be of local, State and Commonwealth significance in terms of its technical value.

The following measures would help to minimise impacts to the heritage significance of the RAAF STRARCH Hangar:

- It is recommended that archival recording be undertaken at this site prior to any impacts.
- Requirements and options for adaptive reuse, either *in situ* or within an alternate location within the Moorebank IMT project area should be a priority during the detailed design stage of the project. This would also help to retain some of the cultural landscape context for this item through the provision of a continued association with a storage and logistics function. – Given that mitigation of heritage impacts to the RAAF STRARCH has not been encompassed within the mitigation strategies of the MUR project, it is the responsibility of the Moorebank IMT project to ensure that losses to heritage values are minimised. Adaptive reuse is the only viable mitigation option that respects the heritage significance of this item.

**The following sympathetic solutions have been considered and discounted for the following reasons:**

*Relocation of the entire structure with the MUR* – this option has not been identified as practicable or desirable within the context of the MUR.

*Conservation of the site* – given the nature of the proposed development, options for *in situ* conservation are not practicable.

**Attachments:** Refer to the attached significance assessments in Appendix 4 of this report and the site descriptions and analysis in Sections 5 through 8 of this report.

**References:**

Eric Martin and Associates 2011, Steele Barracks and Environs Conservation Management Plan – Built Environment, draft report to NOHC on behalf of Parsons Brinckerhoff.

ERM 2013 Moorebank Unit Relocation (MUR) Project: Steele Barracks, NSW Heritage Impact Assessment. A report to Point Project Management on behalf of the Department of Defence.

Graham Brooks and Associates Pty Ltd 2004 Moorebank Defence Site, Moorebank. Heritage Assessment. Report to Department of Defence Property Disposals Task Force.

Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

O'Keefe, Brendan 2011 History of Steele Barracks, Moorebank NSW, Report prepared for NOHC, as part of the EIS assessment of the Moorebank IMT project proposal. [To be included as historical background within the forthcoming EIS. Refer also Attachment A of this proposal].

**Statement of Heritage Impact for:** RAE Museum Sandstone Wall

**This statement forms part of the Environmental Impact Statement for the Moorebank Intermodal Terminal.**

**Date:** 22 February 2013

**Reference:** Part of the *Australian Army Engineers Group* - Item No. 57 on the Heritage Schedule of the Liverpool City Council Local Environmental Plan.

**Address/Property description:** Corner of Chatham Avenue and Ripon Road
Moorebank, NSW 2170

**Prepared by:** Rebecca Parkes – Principal Archaeologist
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt St
Kingston ACT 2604

(02) 62829415

**For:** Parsons Brinckerhoff on behalf of MIC

**The following aspects of the proposal respect or enhance the heritage significance of the item for the following reasons:**

*Not applicable* – the proposed development would result in potential destruction of the whole or part of the site.

**The following aspects of the proposal could detrimentally impact on the heritage significance. The reasons are explained as well as the measures to minimise impacts:**

The proposed Moorebank Intermodal Terminal would detrimentally impact the RAE Museum Sandstone Wall; it would result in demolition or relocation of these items. This item has been assessed to be of local and Commonwealth significance in terms of historical and social values.

The following measures would help to minimise impacts to the heritage significance of the RAE Museum Sandstone Wall within the School of Military Engineering:

- It is recommended that archival recording be undertaken at this site prior to any impacts.
- Requirements and options for relocating the RAE Museum Collection have been included within the MUR Project. A detailed log will accompany this process.

**The following sympathetic solutions have been considered and discounted for the following reasons:**

*Conservation of the site* – given the nature of the proposed development, options for *in situ* conservation are not practicable.

**Attachments:** Refer to the attached significance assessments in Appendix 4 of this report and the site descriptions and analysis in Sections 5 through 8 of this report.

**References:**

Eric Martin and Associates 2011, Steele Barracks and Environs Conservation Management Plan – Built Environment, draft report to NOHC on behalf of Parsons Brinckerhoff.

ERM 2013 Moorebank Unit Relocation (MUR) Project: Steele Barracks, NSW Heritage Impact Assessment. A report to Point Project Management on behalf of the Department of Defence.

Graham Brooks and Associates Pty Ltd 2004 Moorebank Defence Site, Moorebank. Heritage Assessment. Report to Department of Defence Property Disposals Task Force.

Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

O'Keefe, Brendan 2011 History of Steele Barracks, Moorebank NSW, Report prepared for NOHC, as part of the EIS assessment of the Moorebank IMT project proposal. [To be included as historical background within the forthcoming EIS. Refer also Attachment A of this proposal].

**Statement of Heritage Impact for:** Moorebank Cultural Landscape

**This statement forms part of the Environmental Impact Statement for the Moorebank Intermodal Terminal.**

**Date:** 22 February 2013

**Reference:** Moorebank Cultural Landscape – Moorebank IMT Project Area .

**Address/Property description:** Moorebank Avenue
Moorebank, NSW 2170

**Prepared by:** Rebecca Parkes – Principal Archaeologist
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt St
Kingston ACT 2604

(02) 62829415

**For:** Parsons Brinckerhoff on behalf of MIC

**The following aspects of the proposal respect or enhance the heritage significance of the item for the following reasons:**

The retainment of elements of the landscape such as Moorebank Avenue (road alignment and name) and portions of regrowth bushland respect some aspects of heritage values associated with the cultural landscape.

**The following aspects of the proposal could detrimentally impact on the heritage significance. The reasons are explained as well as the measures to minimise impacts:**

The proposed Moorebank IMT would detrimentally impact the Moorebank Cultural Landscape; it would result in disturbance to archaeological deposits, demolition or relocation of most landscape elements, loss of the existing landscape setting and loss of access to items. The Moorebank Cultural Landscape has been assessed to be of local and Commonwealth significance in terms of historical associations, social values, representativeness. research potential, technological characteristics, uniqueness, and Aboriginal cultural values.

The following measures will help to minimise impacts to the heritage significance of the "Other Memorials" within the School of Military Engineering:

- It is recommended that archival recording in the form of mapping and a photographic record of salient physical aspects of the Moorebank Cultural Landscape be undertaken prior to any impacts.

- In order to address impact to intangible values, it is proposed to develop a European heritage interpretation strategy for the project. The strategy may consider the inclusion of commemorative signage within the project area, and/or the development of a visitor's pamphlet detailing the past European use of the area. This information can also be included on web sites and other public documents. The naming of elements within the project area such as roads and buildings could also be a way of acknowledging the past European use of the site.

  The European heritage interpretation strategy should be developed in close consultation with local historical societies, former and current staff and military personnel. The strategy could consider combining both European and Aboriginal interpretation within the project area.

- Options for commemoration of the cultural landscape should be included as part of the detailed design for the Moorebank IMT. In particular, some of the street names and other toponyms (place names) might be reused.

- Adaptive reuse of the CUST Hut and RAAF STRARCH Hangar within the proposed Moorebank IMT would help conserve elements of the cultural landscape, thus adding to a commemoration of its rich history of military use. This would also help to retain some of the cultural landscape context for these two items through the provision of a continued association with a storage and logistics function.

**The following sympathetic solutions have been considered and discounted for the following reasons:**

*Conservation of the site* – given the nature of the proposed development, options for *in situ* conservation are not practicable.

**Attachments:** Refer to the attached significance assessments in Appendix 4 of this report and the site descriptions and analysis in Sections 5 through 8 of this report.

**References:**

Eric Martin and Associates 2011, Steele Barracks and Environs Conservation Management Plan – Built Environment, draft report to NOHC on behalf of Parsons Brinckerhoff.

ERM 2013 Moorebank Unit Relocation (MUR) Project: Steele Barracks, NSW Heritage Impact Assessment. A report to Point Project Management on behalf of the Department of Defence.

Graham Brooks and Associates Pty Ltd 2004 Moorebank Defence Site, Moorebank. Heritage Assessment. Report to Department of Defence Property Disposals Task Force.

Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

O'Keefe, Brendan 2011 History of Steele Barracks, Moorebank NSW, Report prepared for NOHC, as part of the EIS assessment of the Moorebank IMT project proposal. [To be included as historical background within the forthcoming EIS. Refer also Attachment A of this proposal].

# APPENDIX 6

# DENTAL CROWN REPORT

# Report

Prepared by Dr Denise Donlon, Forensic Anthropologist, 28th August 2012

Senior Lecturer, Department of Anatomy and Histology, University of Sydney, NSW, 2006

Tel: 0439 063 727 Email: ddonlon@anatomy.usyd.edu.au

On the 21st August 2012 I was contacted by Nicola Hayes, Principal Archaeologist of Navin Officer Heritage Consultants about giving an opinion on a possible human tooth found at the Moorebank military school in western Sydney. Apparently it was found while excavating a World War I site.

On 23rd August 2012, Dr Rebecca Parkes, Principal Archaeologist with Navin Officer Heritage Consultants, delivered the tooth to me at the Shellshear Museum at the University of Sydney. I examined the possible tooth crown at the Shellshear Museum on the 23rd and 24th August 2012.

The tooth consisted of a crown only (Figure 1). It appeared that the root had been cut off.


**Figure 1. Occlusal surface of crown. Figure 2. Distal surface of crown with small drilled hole**

The dimensions were as follows:

Mesio-distal breadth = 8.6 mm

Bucco-lingual breadth = 9.8 mm

Crown height = 7.7 mm

The crown was a pale cream colour and was non-greasy. The tooth was examined under a stereo microscope at a magnification of x10. On either side (medial and distal) of the crown was a small hole measuring 1 mm in diameter (Figs 2 & 3). Soil was present in these small holes as well as between the cusps of the crown and in the hole under the crown where it was assumed the root had been cut. Along one side of the crown, a small piece of bone had been cut out, leaving a ledge.


**Figure 3. Mesial surface of crown with small drilled hole. Figure 4: Inferior surface of crown with drilled hole**

The crown was cleaned in a weak alcohol solution to remove the soil. It became clear that the hole under the crown was perfectly circular and that there was no sign of any pulp chambers (Fig 4). The small holes in the sides of the crown were also very circular. All holes had the appearance of being drilled. The surface of the crown was very glossy and lacked the fine ridges which would be present in a crown made of enamel.

Photos of the crown were shown to Dr Russell Lain, a forensic odontologist, who identified the 'tooth' as a porcelain crown to be used as part of a denture. According to Dr Lain the crown possessed "…a diatoric chamber which is the hollow section plus two holes. These are to allow the acrylic to flow in then set. There is no chemical bond between porcelain and acrylic so these old porcelain teeth (not used these days) required mechanical retention."

This crown would have been worn as part of a denture by an adult and is possibly a copy of a second permanent maxillary molar.

**CONCLUSION**

It is my opinion that this possible human tooth is in fact an artificial tooth crown. The material and method used to manufacture this crown is consistent with it being found in a World War I site.

# APPENDIX 7

# UNANTICIPATED DISCOVERY PROTOCOLS

# Protocol to be followed in the event that previously unrecorded (non Aboriginal) relics (historical artefacts) are encountered

In the event that historical sites/objects are revealed during construction works, the following protocol will be actioned:

1. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted in the area of the find(s).

2. The find will be reported to the site supervisor and the Principal/Project Manager.

3. The approximate extent, nature, associated archaeological potential and likely significance of the find(s) will be determined by an appropriately qualified person, such as the project archaeologist.

4. The appropriately qualified archaeologist will determine if the finds belong to a previously recorded site. If the location of the finds is consistent with a previous recording, construction work can proceed provided that any required mitigative actions defined in an approved management Plan which addresses cultural heritage impacts have been completed.

5. If the find is a new recording then the Heritage Branch of OEH will be notified of the find and an appropriately qualified person or persons (such as the project archaeologist), will record the find(s), and assess the likely significance of the finds and any associated deposits.

6. The recording and assessment results will be reported to Proponent/Project Manager and an appropriate management strategy will be developed and instigated, in consultation with the Heritage Branch. The management of the find(s) may involve

    a. No further action,

    b. Collection of surface artefacts and any other required samples; or

    c. The conduct of an archaeological salvage excavation with the aim of recovering a sufficient sample of the deposit to allow an analysis which is commensurate with the assessed potential of the deposit, and

    d. The temporary storage of recovered items by the project archaeologist pending the completion of analysis.

7. In the event of the collection of European artefacts from the project area:

    a. The artefacts will be appropriately recorded and collected.

       The location of the recovered artefacts will be recorded using a hand-held GPS, (if available and where necessary), or alternatively, by noting road project chainage intervals;

    b. The collected artefacts will be placed in a clear-plastic bag and placed in temporary secure storage at the site office

       Each bag should have the following information marked on it using a broad nib permanent spirit pen:

       - The site location;
       - The date (day/month/year);
       - The collector's name; and
       - Any other relevant information (such as a GPS reference or description of contents);

- Where necessary, the Proponent is responsible for the temporary and secure storage of recovered EuropeanEuropean artefacts prior to their long term management (refer step 9).

8. Following the completion of those construction works, the project archaeologist will analyse the data from the collected artefacts, together with any data from the recorded sites and prepare a report as per standard NSW Heritage Branch reporting guidelines.

9. The management of any recovered items will be the subject of liaison with the Heritage Branch of OEH.

# Protocol to follow in the event of the discovery of suspected human remains

**Protocol to be followed in the event that suspected human remains are encountered in the course of archaeological test excavations at Moorebank**

No Salvage will occur, this protocol if for the conduct of archaeological testing.

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. Parsons Brinckerhoff and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context (Be aware that the site may be considered a crime scene containing forensic information). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following people of the discovery:

    a) The local Police (this is required by law);

    b) Department of Planning and Infrastructure

    c) An archaeologist or Aboriginal Heritage Officer from the Office of the Environment and Heritage (OEH), Environment Protection and Regulation Group, Metropolitan Branch (02 9995 5000), or call the OEH Environment Line: 131555 (excluding mobiles);

    d) An archaeologist or appropriate staff member from the Heritage Branch, Office of the Environment and Heritage (OEH) (02 98738500); and

    e) Representative(s) from the registered Aboriginal stakeholders (as appropriate).

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Excavation works in the area of the find(s) may not resume until written approval is received from the relevant statutory authority: from the Police or Coroner in the event of an investigation, or from OEH in the case of Aboriginal or EuropeanEuropean remains outside of the jurisdiction of the Police or Coroner.

    In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage Council, then all or some of the following steps *may* be conducted:

6. Facilitate, in co-operation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

7. If the specialist identifies the remains as non-human then, where appropriate, the protocol for the discovery/recording of European or Aboriginal artefacts should be followed.

8. If the specialist determines that the remains are human, then the proceeding course of action may be of three types:

    a. The remains are of an Aboriginal or European person who died less than 100 years ago. All further decisions and responsibilities regarding the remains and find location rest with the Police and/or the State Coroner.

    b. The remains are of a European person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

        i. Ascertain the requirements of the Heritage Branch (OEH), the proponent, the project archaeologist, and the views of any relevant community stakeholders;

        ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

            1. Avoiding further disturbance to the find and conserving the remains in situ (this option may require relocating the development and this may not be possible in some contexts);

            2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

            3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

            4. Recovering samples for dating and other analyses; and/or

            5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

    c. The remains are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

        i. Ascertain the requirements of the relevant Aboriginal stakeholders, the OEH, the proponent, and the project archaeologist;

        ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

            1. Avoiding further disturbance to the find and conserving the remains in situ, (this option may require relocating the development and this may not be possible in some contexts);

            2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

            3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

            4. Recovering samples for dating and other analyses; and/or

            5. Subsequent reburial at another place and in an appropriate manner determined by the Aboriginal stakeholders and the OEH.

# APPENDIX 8

# SUBSURFACE TESTING METHODOLOGY APPROVED BY NSW PLANNING AND INFRASTRUCTURE

Research Design

# Archaeological Test Excavation Program European Heritage

## Proposed Moorebank Intermodal Terminal

*Navin Officer Heritage Consultants* *26 July 2012*

# TABLE OF CONTENTS

# 1. Background to this Submission

## 1.1 Purpose of this Document

The purpose of this document is to submit, for review, a proposed research design and methodology for the conduct of archaeological subsurface testing at two European potential archaeological deposits (MHPAD1 and MHPAD2) in the Moorebank Defence precinct.

The review is a requirement specified in the Director General's Environmental Assessment Requirements for the Moorebank Intermodal Terminal project (SSD – 5066). The review bodies are specified to be: the Department of Planning and Infrastructure (DP&I), the Office of Environment and Heritage (Environmental Protection Authority), and the Heritage Council of New South Wales. This submission is made on behalf of the Moorebank Project Office and the Commonwealth Government (Department of Finance and Deregulation).

## 1.2 Background to Submission

In May 2010 the Australian Government tasked the Department of Finance and Deregulation to conduct a Feasibility Study into the potential development of an intermodal terminal (IMT) at Moorebank in south western Sydney. The IMT site is currently occupied by the Department of Defence including the School of Military Engineering (SME) to the west of Moorebank Avenue. The Government has determined that SME will relocate to new purpose-built facilities at the nearby Holsworthy Barracks with the move complete by the end of 2014.

Navin Officer Heritage Consultants Pty Ltd (NOHC) was commissioned in 2010 by Parsons Brinckerhoff to undertake a cultural heritage assessment for the Moorebank Defence precinct on behalf of the Commonwealth Government (Department of Finance and Deregulation).

The results of interim heritage studies conducted to date, including (surface & built environment) field survey, the identification and assessment of heritage values, and a review of potential development constraints, have been reported in two preliminary reports:

- A scoping report which presented a summary of known and potential constraints based on a desktop review (NOHC 2011); and
- A report on existing Aboriginal and European Heritage (CDFD Aug 2011) which supported a Preliminary Project Environmental Overview (CDFD 2011)

There are currently site access restrictions in place on the Liverpool City Council (LCC) land which have prevented field survey, however a desktop assessment has been undertaken of the LCC land.

In April 2012 the Australian Government committed to development of the Moorebank Intermodal Terminal (IMT) Project after reviewing the findings of a detailed business case for the facility (CDFD Feb. 2012). The project is subject to planning approval with an Environmental Impact Statement due to be displayed late in 2012 to enable public feedback. Both Federal and NSW planning approval is being sought.

The Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) has determined that Moorebank IMT Project is a Controlled Action requiring the development of an EIS for assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).* The Commonwealth has lodged a submission under the EPBC Act and elected to make a submission under Part 4.1 of the New South Wales *Environmental Planning and Assessment Act 1979* EP&A Act). Pursuant to the provisions of S 83(B) of the EP&A Act, a staged development application is proposed. This application is for a Stage 1 development application for the entire IMT. A staged development application sets out the concept proposals for the development of a site for which detailed proposals for separate parts of the site are to be the subject of subsequent development applications.

In February 2012, the NSW Department of Planning and Infrastructure (DP&I) issued Director General's Requirements (DGRs) that are the State equivalent of the SEWPaC requirements.

The DGRs state that where impacts to National, State or locally significant historic heritage items are identified the assessment shall:

- Outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the guidelines in the NSW Heritage Manual (1996) [NSW HO & DUAP 1996];
- Be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed, the relevant consultant must meet the NSW Heritage Council's Excavation, Director criteria);
- Include a statement of heritage impact for all heritage items (including significance assessment);
- Consider impacts from vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment; and
- Where archaeological excavation is required, demonstrate that an appropriate archaeological assessment methodology, including research design (where relevant) has been undertaken, to guide physical archaeological test excavations and include the results of these excavations.

The identification of the potential archaeological deposits, MHPAD1 and 2, and the need to assess any potentially occurring archaeological resource, is based on the findings of the interim studies (NOHC 2011 and CDFD Aug 2011). The conduct of the proposed subsurface testing program, is required as part of the cultural heritage component of the forthcoming Environmental Impact Statement for the Moorebank IMT project. The conduct of the subsurface testing program, its results and analysis will be documented as part of the Environmental Impact Statement (EIS) for the project.

Reviewers of this proposal are invited to provide comments and suggestions back to NOHC via Parsons Brinckerhoff.

NOHC contact information is as follows:

The Secretary
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
Kingston ACT 2604

*email:* navinofficer@nohc.com.au

*phone:* 0262829415
*fax:* 02 62829416

Parsons Brinckerhoff contact information is as follows:

Paul Greenhalgh
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AUSTRALIA

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*fax:* 02 9272 5101

### 1.2.1 The Moorebank IMT Project Area

The Project site is Commonwealth-owned land currently occupied by the Department of Defence (Figure 1.1). It is approximately 220 hectares in size, located within the suburb of Moorebank within the City of Liverpool Local Government Area approximately 30 kilometres south-west of the Sydney Central Business District. The Project site is generally defined as the land bounded by the Georges River to the

west, Moorebank Avenue to the east, the M5 Motorway and ABB Medium Voltage Production facility to the north and the East Hills Railway line to the south.

The Project requires additional supporting infrastructure external to the Project site including the development of a rail crossing of the Georges River connecting to the Southern Sydney Freight Line (SSFL). This infrastructure would require some development on land currently owned by Liverpool City Council.

An archaeological assessment of the Commonwealth Land site based on surface survey was undertaken in 2010 (CDFD Aug 2011). The field surveys identified one area of European archaeological subsurface potential MHPAD1. Following further research, a separate, smaller area was added to the MHPAD1 recording and an additional PAD (MHPAD2) was identified. The two PADs are areas of former World War I and/or World War II infrastructure, where subsequent earth works and re-development appears to have been relatively minimal. The PAD locations are shown in Figure 1, relative to the current anticipated indicative development footprint.

### 1.2.2 A Staged Assessment Process

This methodology deals primarily with the Commonwealth owned land portion of the project site. As mentioned there are currently site access restrictions in place on the LCC land which have prevented field survey.

It is proposed that the current EIS and planning approval application (Stage 1) will focus primarily on detailed assessments on the Commonwealth owned land and that subsequent staged applications will address the LCC land in greater detail.

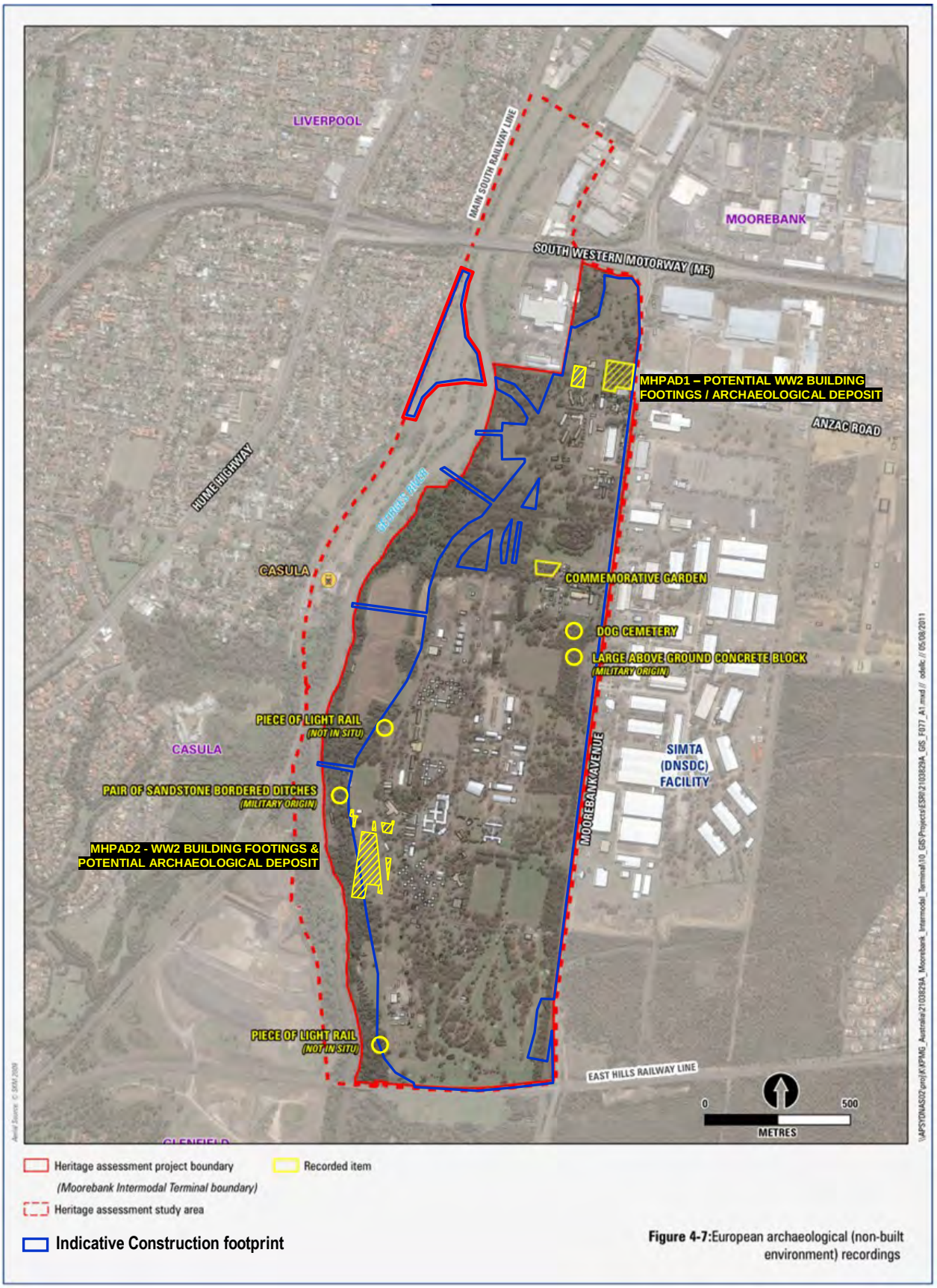


**Figure 1.1** Location of MHPAD1 and 2 (yellow cross hatched areas), together with other European heritage recordings (non-built environment), relative to indicative construction footprint of the development (blue outline) (after Figure 4.7 in CDFD Aug 2011, p76).

# 2. Historical Background

## 2.1 Pre-Military Occupation and Use

### 2.1.1 Thomas Moore

The site of the proposed IMT was formerly all part of the Moorebank Estate that was established and built up by Thomas Moore. Born at Lesbury in Northhamptonshire in 1762, Moore first visited Sydney in July 1792 when he was a ship's carpenter aboard the ship *Britannia*. After two more visits, he returned in May 1796 intending to settle in the colony. In October 1796, Governor Hunter appointed him the colony's Master Boat Builder in the Port Jackson dockyard. However, Moore was intent from the outset on pursuing a range of business opportunities. He traded in goods and, by 1797, owned a few sheep. Moore soon diversified into raising cattle and horses as well.[1] These he may have run on a grant of 470 acres between Petersham and the Cook's River.

In this period, there was a shortage of shipbuilding timbers in the colony. Accordingly, in May 1803, Governor King appointed Moore to be the official 'Surveyor of Timber throughout the colony for naval purposes'. Through this new commission, Moore became acquainted with the George's River as he pushed upriver in his quest for suitable timbers.

As early as 1798, grants of land had been made on or near the George's River in the Holsworthy area, particularly along Harris Creek. The recipients of the grants were mainly military or naval officers who had cleared some of the land and begun to grow wheat and maize and to raise sheep, cattle, hogs and horses. This early exploitation of the land did not extend to what would become Moore's extensive Moorebank property along the eastern bank of the river; this remained uncleared and unoccupied. The existing holdings, however, demonstrated to Moore the agricultural and pastoral potential of land in the area.[2]

In December 1805, Moore acquired partly by purchase and partly by grant an expanse of 750 acres along the eastern bank of the Georges's River in what are now the suburbs of Chipping Norton and Moorebank. This was the genesis of his Moorebank estate. The acquisition was also a critical point in his turning away from boatbuilding towards agricultural and grazing as his major business interest. This shift was further marked by his commencing to erect on his land a substantial new home for himself and his wife Rachel. The house, the site of which is situated in Thomas Moore Park, Whelan Avenue, Chipping Norton, was completed about the end of 1808. In September the following year, Lieutenant Governor Paterson granted Moore another 600 acres in the area. By this time, Moore had made his mind up to resign as Master Boat Builder. His resignation was accepted at the beginning of October and, a month later, he was granted another 1,000 acres which extended his holdings southward along the eastern side of the George's River.[3]

Like his predecessors in the Holsworthy area, Moore took to growing grain and raising sheep, cattle, hogs and horses on his extensive riverside property. In November 1810, the new Governor, Lachlan Macquarie, visited Moore and his wife at their Moorebank estate in the course of his tour of the colony and his search for sites for new townships. Macquarie fixed upon a site across the river from Moore as the site for a township to be called Liverpool. Moore, who had been gazetted a Magistrate for the

[1] Peter G. Bolt, *A Portrait in his Actions: Thomas Moore of Liverpool (1762-1840)*, part 1, *Lesbury to Liverpool*, Camperdown, Bolt Publishing Services, 2010, pp. 15, 35, 116, 123, 143-4, 145, 162; M.L. Loane, 'Moore, Thomas (1762 - 1840)', *Australian Dictionary of Biography* [hereafter *ADB*], Carlton, Melbourne University Press, vol. 2, 1967, pp. 254-5.
[2] Christopher Keating, *On the Frontier: A Social History of Liverpool*, Sydney, Hale and Iremonger, 1996, p. 9; Bolt, *A Portrait in his Actions*, part 1, p. 352; Christa Ludlow and Catherine Snowden, 'History and Significance of the Site of the Remount Depot, Holsworthy', Report to the Defence Housing Authority, July 1993, pp. 5-13.
[3] Bolt, *A Portrait in his Actions*, part 1, pp. 240, 325-6, 352-3, 354; Bolt, *Thomas Moore of Liverpool*, pp. 109-10.

George's River district the previous May, was the logical person to become the leading figure in the new community.[4]

As Moore accumulated significant wealth from his agricultural, pastoral and other business interests, he was able to consolidate his holdings in the Moorebank area. This process was considerably helped when, in August 1820, he received another grant amounting to 2,000 acres along the George's River. By this time, his holdings included seven miles of river frontage. He became one of the largest landowners in the colony and, in the local area, was known as the 'King of Liverpool'.[5]

Moore's wife died in November 1838 and Moore, who had no heirs, decided to leave all his property to the Church of England in New South Wales. Before his death, Moore transferred his Moorebank estate of approximately 6,400 acres, together with lots he owned in the township of Liverpool, to the church to be held in trust. The land was worth about £20,000.[6]

Moore himself died on 24 December 1840. Under the terms of his will, the rents and income received from 2,080 acres of his Moorebank estate were to serve as an endowment for the Church of England See of Sydney; those received from the other 4,315 acres were to provide a fund to augment stipends for the clergy. Moore also left his house and its grounds to the church for the establishment of a college for young Protestant men; this was the origin of Moore Theological College. The college opened in premises next to Moore's former home in 1856, but it was transferred to a site in Newtown near the University of Sydney in 1891.[7]

### 2.1.2 A Church of England Estate

With the passing of the Moorebank estate to the Church of England, the church leased out the land to a number of tenants engaged in farming and other rural pursuits.

By the 1880s at the latest, some tenants on the Moorebank estate had turned to poultry farming, while others had established orchards and vineyards on their holdings. Probably, the largest and longest-established orchard and vineyard was that run for the Church of England Diocese of Sydney by Frederick Edward Barker on Section 5 Lot 1 of the Parish of Holsworthy (in the southwestern corner of the project area). Barker eventually purchased what was called the Verona Vineyard around the end of the 1910s. Consisting of over 32 acres, the property occupied a prime river frontage site and included a cottage in which Barker lived, first as caretaker and later as owner.

In the latter half of the 19th century, both the produce that Barker and tenant farmers produced and the rents that the tenants paid constituted a valuable source of income for the diocese. In 1892, after parts of the estate had been sold (Figure 2.1), the annual income the diocese was receiving from the estate lands still amounted to £1,067.[8]

In the mid-1880s, the Sydney Diocese decided to sell the estate. In 1888 the estate was offered for sale under the title of the Moorebank Farms Estate, in lots ranging from seven to one hundred acres (Figure 2.2). Those lots with the benefit of a river frontage were quickly sold. In February 1893, an auction for the many remaining unsold allotments was held, with sale prices of about £14 an acre.[9]

Around this time, the NSW government showed interest in exploiting the Estate lands in a rather different manner. In 1889-90, the government commenced exploratory drilling for coal on the Estate. The drill eventually found a coal seam at a depth of 2,583 feet 4 inches [about 787 metres], but mining of coal in the area never proceeded.[10]

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[4] Loane, *ADB*, vol. 2, pp. 254-5; Bolt, *A Portrait in his Actions*, part 1, pp. 374, 376; Ludlow and Snowden, 'History and Significance of the Site of the Remount Depot, Holsworthy', p. 5.
[5] Keating, *On the Frontier*, pp. 25-6; Loane, *ADB*, vol. 2, pp. 254-5.
[6] Loane, *ADB*, vol. 2, pp. 254-5; *Australian*, 29 December 1840, p. 2.
[7] Loane, *ADB*, vol. 2, pp. 254-5; Keating, *On the Frontier*, p. 25.
[8] Keating, *On the Frontier*, p. 93; Municipality of Liverpool Valuation Book 1911-1913, assessment no. 2265; *Sydney Morning Herald*, 9 March 1889, p. 11; 18 August 1892, p. 7.
[9] Keating, *On the Frontier*, p. 107; *Sydney Morning Herald*, 22 February 1893, p. 9.
[10] *Sydney Morning Herald*, 30 October 1889, p. 10; 16 April 1890, p. 4.

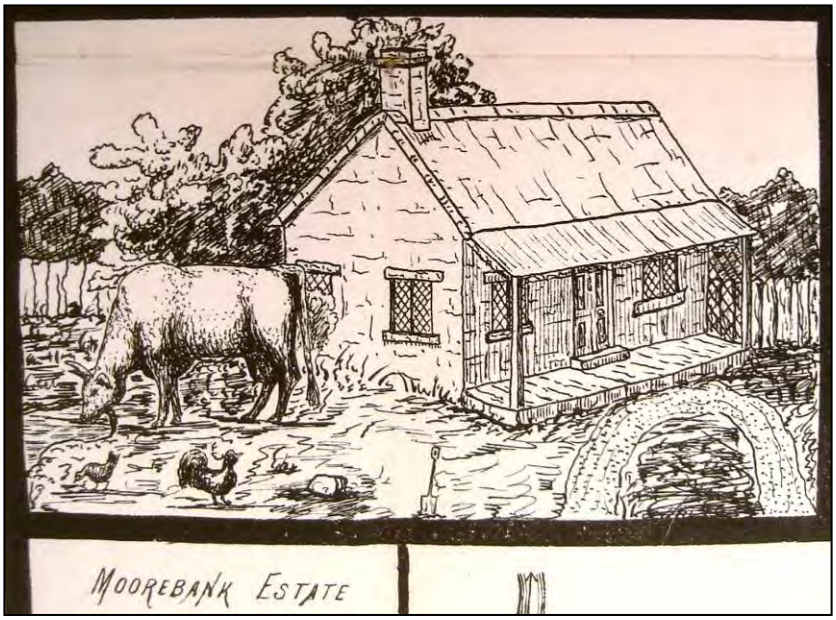


**Figure 2.1** ***A real estate agent's depiction of life on the Moorebank Farms Estate, c 1888 [Estate plan, Map Folder 93, LFSP 1351, NLA]***

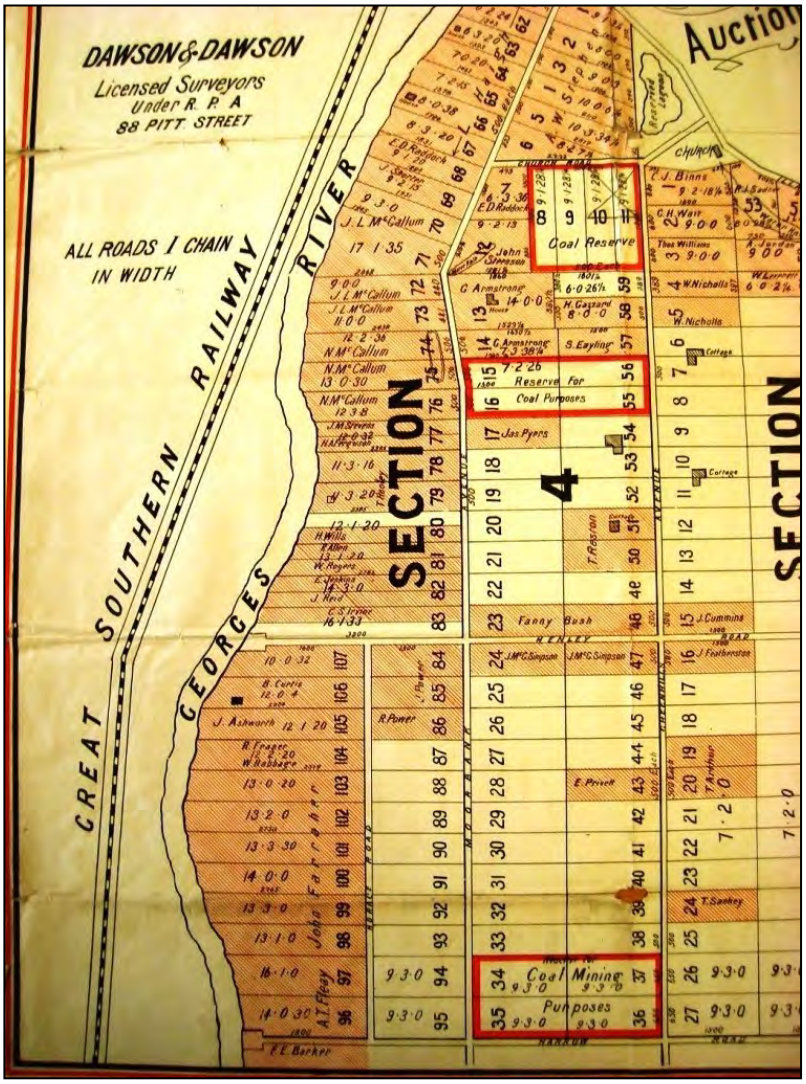


**Figure 2.2** ***Moorebank Farms Estate 2nd Subdivision, c 1888, including the northern part of the current study site [Estate plan, Map Folder 93, LFSP 1352, NLA]***

Following the sale of the Estate, the area retained its agricultural and rural character, although much of the land was still uncleared and would remain so for many years to come. The Municipality of Liverpool Valuation Book for the triennium 1911 to 1913 shows the ownership and, to some extent, the occupation and usage of land within the project area on the eve of its takeover by the Commonwealth for military purposes (Figure 2.3). The Book indicates that there were orchards, vineyards, a dairy and at least one poultry farm in the area, while it also records houses and other structures standing on a number of allotments.

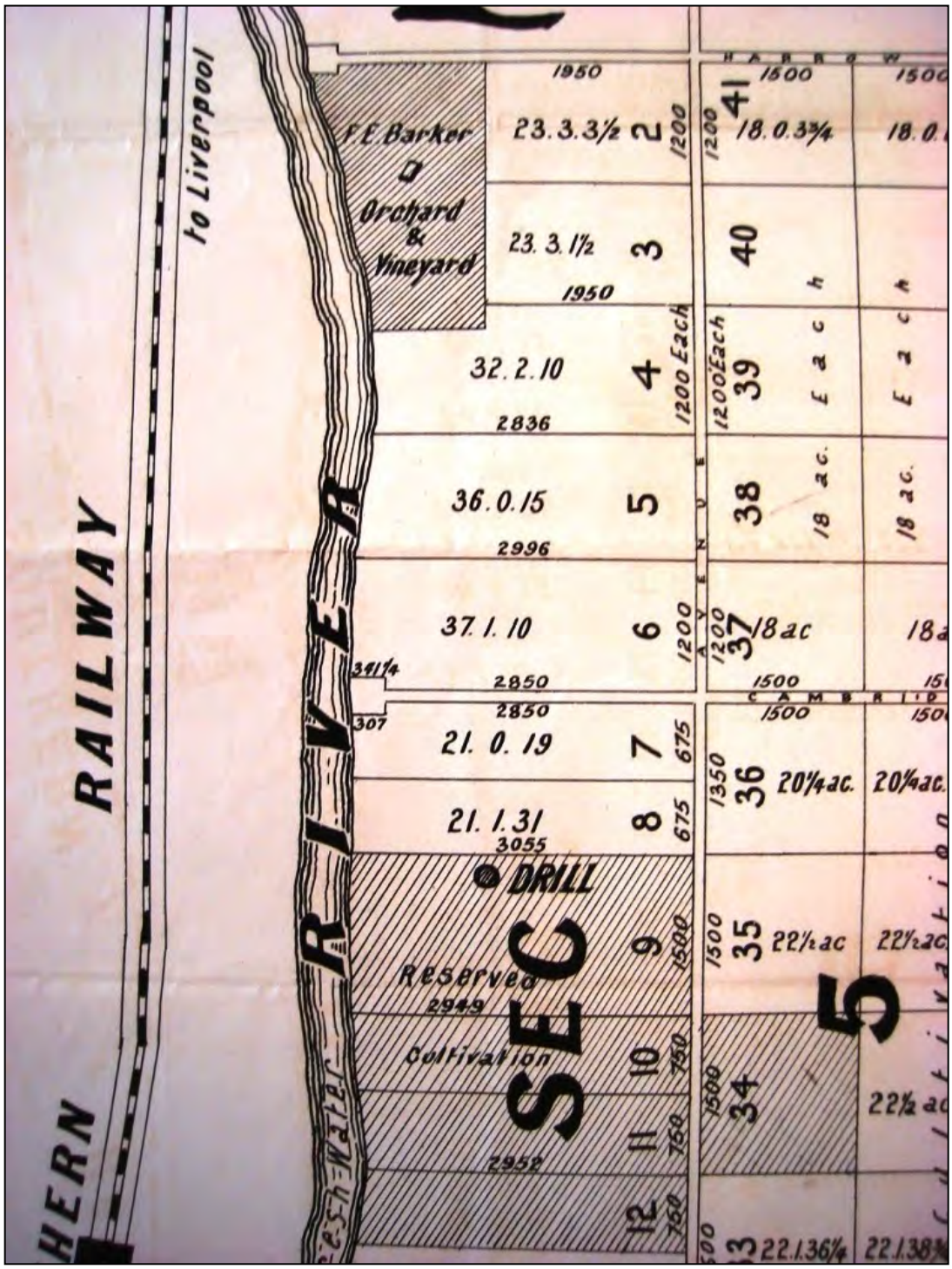


**Figure 2.3** ***Moorebank Farms Estate 3rd plan, c 1888, showing the southern part of the project area including the site of Frederick Barker's orchard and vineyard and the site of the exploratory drilling for coal [Estate plan, Map Folder 93, LFSP 1367, NLA]***

## 2.2 Military Occupation and History

### 2.2.1 Military Use of the Liverpool Area in the 19th Century

The Liverpool area has had a long association with military forces. After Governor Lachlan Macquarie received authorisation from the War Office in October 1811 to establish a Veteran Company in the colony, a detachment of the company was soon stationed in barracks built at Liverpool. The purpose of the Royal Veteran Company, as it became known, was to help keep order in the colony. In March 1812, Lieutenant William Lawson, the company's second-in-command, was appointed to take charge of the Liverpool detachment.[11]

A detachment of the Royal Veteran Company was still based at Liverpool in May 1819, but it does not appear to have remained there for much longer. It appears to have been moved to Windsor and later Newcastle before it was broken up at the beginning of 1830 and disbanded two years later. There is no evidence of any continuity between this early military presence at Liverpool and the later period of military use and occupation, which continues to the present day.[12]

Renewed military interest in, and use of, the Liverpool area arose in the era of locally-raised colonial forces. As the Imperial government reduced its garrison forces in New South Wales from the late 1840s and withdrew them altogether in 1870, the responsibility for the defence of the colony fell to a much greater extent on the colonists themselves. In 1871, immediately after the British withdrawal, the NSW government formed two permanent companies of infantry and one permanent battery of artillery. The new forces underwent training at annual military camps, usually at Easter or in May. The first of the training camps was held at Richmond in April 1873 and the second at Campbell Fields, four miles from Campbelltown and nine from Liverpool, in May 1874.[13]

Later in the same decade, the various Australian colonies appealed to the British government for expert advice on the kinds of military defences they needed and on how to organise and co-ordinate them. In response, the British despatched two military experts to Australia in 1877, Major-General Sir William Jervois and Lieutenant-Colonel Peter Scratchley of the Royal Engineers. Over the next seven years, Jervois and Scratchley produced a series of reports detailing their recommendations for the defence of the Australian colonies.

Proceeding from the premise that the Royal Navy enjoyed total command of the seas, Jervois and Scratchley considered that the main military threat to the colonies would come from enemy raids by sea and that the colonies' defences should thus be organised to fend off such attacks until the Royal Navy arrived to deal with the intruders. As the last line of defence – and the one of most significance for the Liverpool area – they recommended the raising of a mobile field force, complete with field artillery. The role of this force was to deploy to wherever the invaders had breached the coastal defences and to prevent their further advance.[14]

Following their completion, the NSW colonial government started to organise its military forces along the lines recommended in the Jervois and Scratchley reports. The field artillery was staffed by a cadre of full-time soldiers, while infantry, engineers and torpedo forces were composed of partially-paid militia personnel. A little later in the 1880s, a light horse regiment was formed and some further militia infantry units. As with their predecessors, the new forces were obliged to undertake annual military training at Easter camps. Such a camp was held at Windsor in 1884 and, from 1886, they were staged in the

[11] *Sydney Gazette*, 26 October 1811, p. 2; 25 January 1812, p. 1; 14 March 1812, p. 1.
[12] *Sydney Gazette*, 22 May 1819, p. 2; 21 August 1819, p. 1; *Sydney Monitor*, 20 February 1830, p. 2; 24 December 1831, p. 2; *Australian*, 27 January 1832, p. 3; E.W. Dunlop, 'Lawson, William (1774-1850)', *Australian Dictionary of Biography* [*ADB*], vol. 2, pp. 96-7.
[13] Bob Nicholls, *The Colonial Volunteers: The defence forces of the Australian colonies, 1836-1901*, Sydney, Allen and Unwin, 1988, pp. 68-9; *Sydney Morning Herald*, 19 April 1873, p. 7; 25 May 1874, p. 5.
[14] Nicholls, *The Colonial Volunteers*, pp. 79-81.

National Park (later the Royal National Park). The Easter camp was held at Campbelltown in 1891, with the artillery camping overnight 'near Liverpool' on its way from Victoria Barracks at Paddington.[15]

After 1891, the camps lapsed for over five years probably because of the economic depression that afflicted the Australian colonies. Nevertheless, smaller training camps continued to be held, some of which retained the link to Liverpool.

### 2.2.2 First Military Use of Moorebank Estate

The first specific reference to the use of the Moorebank Estate for military purposes dates from May 1894. Over several days, artillery, cavalry, light horse, engineer and medical units carried out manoeuvres in the Liverpool area. On 26 May, a column of troops formed up in the town of Liverpool and marched to the Moorebank Estate where they were inspected by the commandant of the NSW forces, Major-General Sir Edward Hutton, and other senior officers.[16]

The military authorities must have secured permission from local landowners to use the Moorebank Estate for their parade, but it is not known which part of the estate they used nor what prompted them to select the Liverpool area in general for their manoeuvres. Possible reasons include access by road or rail from Sydney, and the expanse of unpopulated and undeveloped land to the south and southeast.

When the annual Easter training camps resumed later in the 1890s, the lack of space available for manoeuvres at other locations, such as land purchased for a cemetery at Rookwood, soon became a problem.[17]

Following the federation of the Australian colonies at the opening of the new century, their separate military and naval forces passed to Commonwealth control on 1 March 1901. In NSW, as in the other colonies, this brought little immediate change to the running and operation of the local military forces, including the system of annual training camps. There was no camp for the NSW-based defence forces as a whole in 1901, though a series of smaller camps were held at locations on Sydney Harbour, at Newcastle and in the National Park south of Sydney. But a major camp was held at Easter 1902, when manoeuvres were conducted over a wide territory that included Rookwood, Parramatta, Penrith and Richmond. For the purposes of these exercises, the forces acting as the enemy camped at Liverpool and a mock conflict between the two sides was staged there.[18]

Economic constraints again precluded the holding of a single camp for the defence forces based in NSW in 1903. In the following year, Liverpool was once more used as the site for a mock engagement between local defence forces and an invading 'enemy' force. The invaders attempted to cross the George's River at Liverpool, but were repulsed and were forced to retreat eastward with the defenders in pursuit. The country over which the action took place was described as 'rough and thickly wooded' and as covered with 'thick scrub'.[19]

### 2.2.3 Liverpool Manoeuvre Area

Bit by bit, the military authorities were coming to view the country east and southeast of Liverpool as ideal for military training purposes, and were consequently using it more and more frequently. At the beginning of September 1905, a 'staff ride' was held over a wide area, including Liverpool, in which a defending force had to beat back an enemy force that had invaded Sydney. It was the next year, 1906, however, in which military attention really came to focus on Liverpool. At Easter, a whole divisional camp was held there, with about 4,000 troops taking part in manoeuvres over an extensive tract of country. The Easter

[15] *Sydney Morning Herald*, 8 April 1884, p. 7; 6 March 1886, p. 13; 5 March 1887, p. 11; 3 April 1891, p. 4; Richmond Cubis, *A History of 'A' Battery: New South Wales Artillery (1871-1899), Royal Australian Artillery (1899-1971)*, Sydney, Elizabethan Press, 1978, p. 46.
[16] *Sydney Morning Herald*, 28 May 1894, p. 6.
[17] *Sydney Morning Herald*, 14 April 1898, p. 4; 5 April 1899, p. 5; 18 April 1900, p. 6.
[18] *Sydney Morning Herald*, 4 April 1901, p. 5; 28 March 1902, p. 6; 31 March 1902, p. 9.
[19] *Sydney Morning Herald*, 4 April 1903, p. 11; 5 April 1904, p. 7.

training camp was again held in the Liverpool area in 1907, though on this occasion manoeuvres were carried out to the west of Liverpool and the George's River.[20]

It is highly likely that the site of the tented encampment for the 1906 Easter camp was on the eastern side of the George's River extending southward from what is now Newbridge Road to the north, with Moorebank Avenue as its eastern boundary. A newspaper article quoted in the 2004 Heritage Assessment (Graham Brookes and Associates 2004) states, of the January 1910 camp, that:

> The camp is pitched upon the paddocks to the left of the railway station, *on ground that has been similarly occupied in recent years* ... [emphasis added].[21]

A map dated to *c.* 1915 and reproduced in the same report shows 'Liverpool Camp' as occupying this site (Figure 2.4). There is good reason to think that this was the same site at which camps dating from 1910 – and, almost certainly too, from 1906 – had been located. The site, in other words, had become from 1906 the customary location for the tented encampments for the military training camps in the Liverpool area.[22]

To enable the forces to carry out their training at the Easter camps of 1906 and 1907, some of the large landowners in the area had placed their land at the disposal of the military authorities. However, other landowners had not done so. After the 1907 camp, the Commandant of the forces in NSW, Brigadier-General J.M. Gordon, complained that the usefulness of the two camps had been 'greatly curtailed by the action of several large landholders refusing to allow the military to cross their property.' Gordon said that he had long stressed the necessity for the military to have available for training exercises suitable country that did not encroach on privately-owned land. He thereupon submitted a plan to the Military Board for a huge tract of land to be resumed for military purposes. Amounting to between 130,000 and 140,000 acres, the land was bounded on the north and west by the George's River, on the east by the South Coast rail line and on the south by a line from Waterfall to Campbelltown. The land, Gordon added, 'was nearly all Crown land' – though this did not apply to Moorebank – and, apart from a few isolated patches, was unoccupied, such that 'artillery shooting could be indulged in with perfect safety.'[23]

In putting forward his proposal, Gordon suggested that ...

> ... a permanent camp should be established on the ground somewhere close handy to Liverpool, where sheds could be erected for the storage of tents and equipment, and water laid on to the various camping grounds.[24]

More details about the proposed permanent camp emerged when the Water and Sewerage Board raised objections to Gordon's scheme. The Board was intending to extend the catchment for Sydney's water supply into the areas that Gordon wanted resumed and it feared that a permanent camp would cause pollution. While Board members were prepared to allow 'periodic' artillery exercises in the area, they could not agree to the establishment of permanent camps. Moving to reassure them, however, the military authorities indicated that they ...

> ... proposed to have a permanent camp on the flats at Moorbank (*sic*), and to utilise the other country in the direction of Woronora River as a range. They would always return to the main camp at night. The land was required for the new field guns which have a range of 10,000 yards, and there was no place except that within easy distance of the metropolis where such a range could be obtained.[25]

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[20] *Sydney Morning Herald*, 24 March 1906, p. 11; 13 April 1906, p. 4; *Military Forces of the Commonwealth, New South Wales: Report on the Annual Continuous Training, 1907*, pp. 7-17, CRS A1194, item 12.30/4550.
[21] *Daily Telegraph*, 7 January 1910, p. 7, quoted in Graham Brooks and Associates P/L, 'Heritage Assessment: Moorebank Defence Site Moorebank', May 2004, p. 10.
[22] 'Plan of the Liverpool Manoeuvre area, c. 1915', figure 2.6 in Brooks, 'Heritage Assessment: Moorebank Defence Site Moorebank', p. 16. The map was held in the Liverpool Regional Museum in 2004, but has been transferred to the Liverpool City Library where it has not so far been located.
[23] *Sydney Morning Herald*, 26 January 1906, p. 7; 28 November 1907, p. 3; *Liverpool Herald*, 3 February 1906, p. 7; *Report on the Annual Continuous Training, 1907-1908*, p. 1, CRS A1194, item 12.30/4550.
[24] *Sydney Morning Herald*, 28 November 1907, p. 3
[25] *Sydney Morning Herald*, 2 August 1907, p. 4.

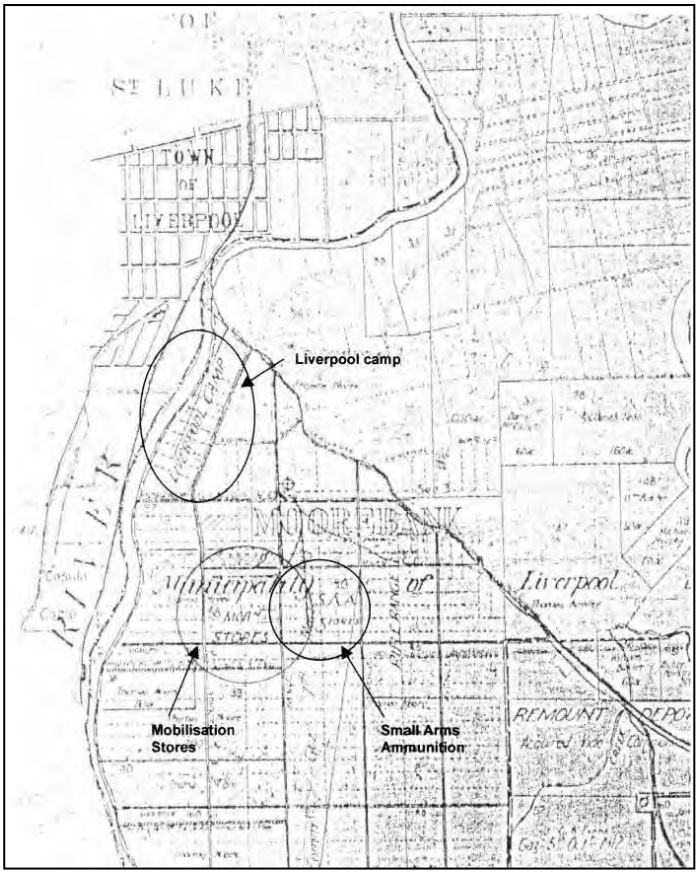



**Figure 2.4** ***Plan of the Moorebank area c. 1915, showing the site of Liverpool Camp [Graham Brooks and Associates, Heritage Assessment: Moorebank Defence Site, 2004]***

This was the origin of the permanent military presence at Moorebank, with Gordon probably having in mind for his permanent camp the site of the tented encampments for the 1906 and 1907 camps. But while the Military Board and soon the Commonwealth government supported Gordon's proposal, it was to be several years before the resumption of the land was effected. In the meantime, however, the military forces began using the Liverpool area for training camps on a regular basis. The 1908 Easter camp for the permanent infantry and artillery and the militia forces was situated 'near the Moorebank Estate', while the light horse regiments trained on the same ground a few weeks later. Camps were held in the general Liverpool area in the ensuing five years, but there is no evidence that the military established a permanent camp or erected any permanent structures at Moorebank in this period.[26]

There was a good reason for the lack of development at Moorebank at this time, and that was of course that the Commonwealth had yet to resume the land. Pressure to do so was increasing. Since Federation, successive Commonwealth governments had recognised the need to improve the nation's defences and, in late 1907, they had commenced moves to introduce compulsory military training. Parliament passed a bill to this effect in 1910 but, before it came into operation, the government invited Lord Kitchener to Australia to provide expert advice on the size and organisation of forces required to defend the country.

During his visit in early 1910, Kitchener spent two days observing divisional military manoeuvres at Liverpool, staying for two nights in a cottage that is still standing on the eastern side of Moorebank Avenue (no. 208). The cottage is listed in the NSW State Heritage Inventory. The camp for the troops taking part in the manoeuvres was pitched on 'a sandy flat' and was a 'mile-long', with a parade ground adjacent to it. It is likely that the camp was located on the eastern side of the George's River, extending southward from Newbridge Road. This was very probably the same encampment site that previous camps from 1906 onward had used.[27]

As a result of his visit to Australia, Kitchener made a number of recommendations about the requirements for the nation's defence, including an expansion of the proposed system of compulsory military training

[26] *Sydney Morning Herald*, 28 November 1907, p. 3.
[27] *Sydney Morning Herald*, 7 January 1910, p. 7; 10 January 1910, p. 5; 13 January 1910, p. 5.

and the establishment of a military college to train officers. The recommendations were promptly incorporated in an amending Defence Act and, on 1 January 1911, the new system of compulsory military training started. The Royal Military College opened at Duntroon in June of the same year.

**Figure 2.5** ***View looking east from the railway line across the George's River to Liverpool military camp, 1910-11 (Follan Collection, Campbelltown City Library)***

With the expansion of the forces brought about by the introduction of conscription, it was now even more imperative for the defence forces to have their own extensive areas in which to train. In the Liverpool area, formal acquisition of land for military purposes commenced in October 1912 when an area of approximately 883 acres at Holsworthy was gazetted as the site for a remount depot. The function of the depot was to train teams of horses to pull field guns. In March 1913, a much larger tract of land in the area, comprising 16,868 acres, was acquired for military purposes (Figure 2.6). This included all of the land at Moorebank which forms the project area. After Enoggera near Brisbane, the Liverpool acquisition was only the second that the Department of Defence gained for a field training area. Enoggera, however, was too small, and Liverpool remained the only suitable training area that Defence owned until well into the interwar years.[28]

Having secured the Liverpool-Moorebank area for training purposes, the Department of Defence could now contemplate developing the area to suit its needs. About 1912, a Military Isolation Camp was set up on the western side of Moorebank Avenue in the northern portion of the project area (Figure 2.7). The purpose of the camp was to isolate from their comrades any men who came into camp with communicable diseases, such as measles and mumps. The Isolation Camp may have contained no permanent or even built structures, and may have instead consisted simply of tents.[29]

In May 1913, Major-General G.M. Kirkpatrick, the Inspector-General of the Australian Military Forces, drew attention to the urgent need for the establishment of Mobilisation Stores in the area. To that point, he reported, no progress had been made in building them. However, by 1915, after the outbreak of World War 1, such stores had been established on the eastern side of Moorebank Avenue just south of what later became known as Anzac Road. At the same time, Small Arms Ammunition Stores were set up immediately to the east, on the other side of what was then Greenhills Avenue. This marked the

[28] Christa Ludlow and Catherine Snowden, 'History and Significance of the Site of the Remount Depot, Holsworthy', Report to the Defence Housing Authority, July 1993, pp. 48-51; *Commonwealth of Australia Gazette*, no. 16, 7 March 1913, pp. 535-8; Lieutenant-General Sir H.G. Chauvel, *Report for the Inspector-General of the Australian Military Forces*, 31 May 1925, part 1, p. 12, CRS A1194, item 20.15/14731.
[29] 'Plan of the Moorebank area ... c. 1912', figure 2.5 in Brooks, 'Heritage Assessment: Moorebank Defence Site Moorebank', p. 15. The map was held in the Liverpool Regional Museum in 2004, but it too has been transferred to the Liverpool City Library where it has not so far been located.

beginning of the Ordnance Corps' use of the area, though their facilities stood outside the project area. A rifle range was established still further to the east.[30]

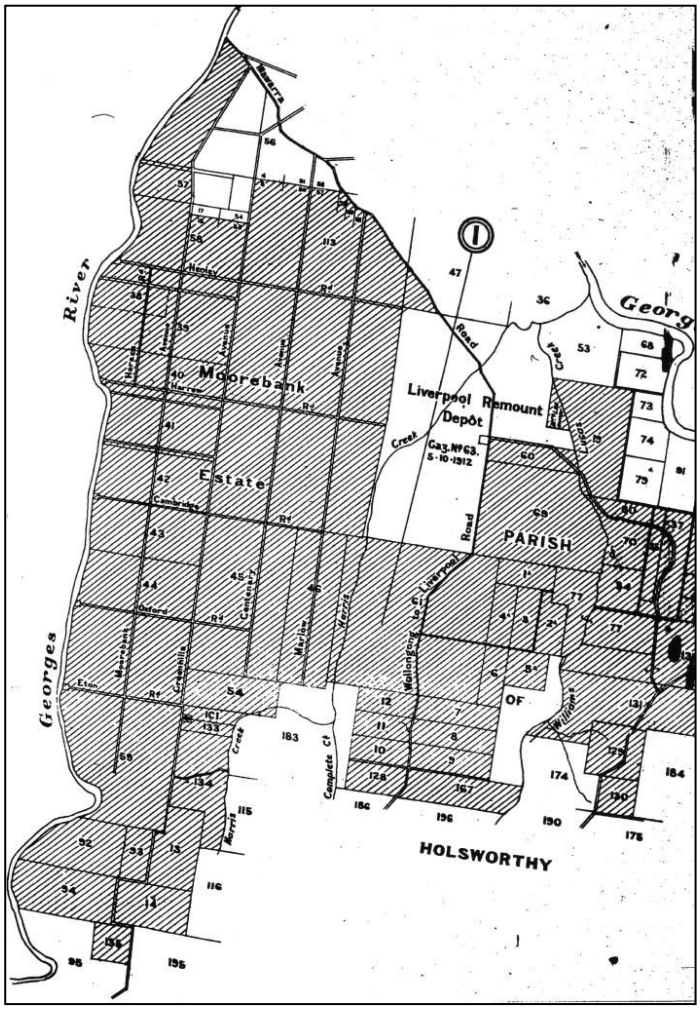



**Figure 2.6** ***Map showing the land acquired by the Commonwealth for military purposes in 1913 [Commonwealth Gazette, 7 March 1913]***

By 1915, too, there was an official Moorebank Parade Ground which adjoined Liverpool Camp. Though its actual site is uncertain, it may well have been the same parade ground that was used for the 1910 camp that Lord Kitchener attended. Whether its designation in 1915, and in succeeding years during the war, is indicative that a formal gravelled parade ground had been established is not known. It may merely have been a relatively level, cleared piece of land next to the camp. Most likely, it was located to the east of the camp and therefore on the other side of Moorebank Avenue. If it were to the south of the camp, it would have been situated inside the project area.[31]

[30] *Annual Report by Major-General G.M. Kirkpatrick, Inspector-General of the Military Forces of the Commonwealth of Australia*, 30 May 1913, p. 26, CRS A1194, item 20.15/6699; figure 2.6 in Brooks, 'Heritage Assessment: Moorebank Defence Site Moorebank', p. 16.
[31] *Sydney Morning Herald*, 9 December 1915, p. 10; 2 April 1917, p. 6; 11 May 1918, p. 7.

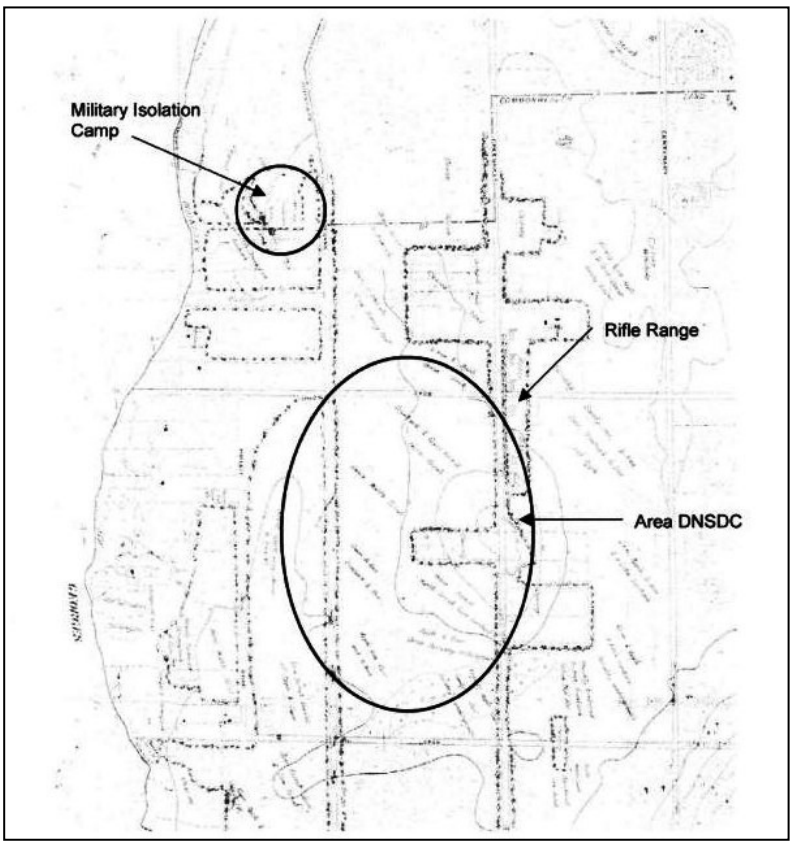



**Figure 2.7** ***Plan of the Moorebank area c. 1912, showing the Military Isolation Camp***
***[Graham Brooks and Associates, Heritage Assessment: Moorebank Defence Site, 2004]***

### 2.2.4 World War 1: Liverpool Camp

During World War 1, Liverpool Camp was the camp at which new recruits to the Australian Imperial Force [AIF] in NSW underwent training before they were despatched for overseas service. Tens of thousands of men passed through the camp in the war years. The camp, of which no overall plan has yet been found, extended southward from what is now Newbridge Road for three to four kilometres along the eastern bank of the George's River. It was situated between the river and Moorebank Avenue. Partial maps and photographs of the area at this time show a host of buildings, most of them presumably of timber construction (Figures 2.8 - 2.11), concentrated at the northern end of the camp. The buildings included a guard room, prison, ordnance store, ammunition stores, officers' mess and kitchen, numerous barrack blocks, kitchens, showers and latrines, a canteen and even a billiard hall and shooting gallery. South beyond the concentration of buildings, the camp was made up of a multitude of tents. In among the tents, however, there was the odd building.

**Figure 2.8** ***Liverpool Military Camp in World War 1, showing what appears to be a few buildings among the tents [Australian War Memorial]***

**Figure 2.9** ***Another view of Liverpool Military Camp in World War 1, showing tents extending along the banks of the Georges River [Australian War Memorial]***

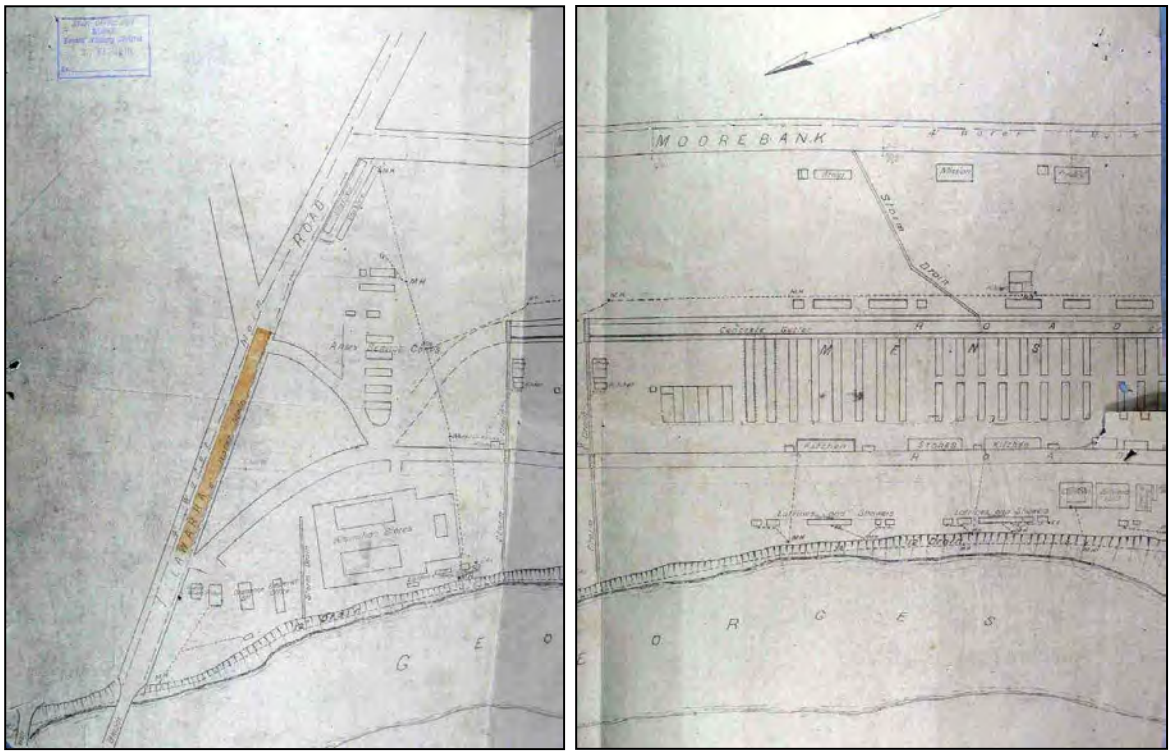



**Figure 2.10** ***Two parts of the same plan showing structures at the Liverpool Military Camp about February 1918 [National Archives of Australia]***

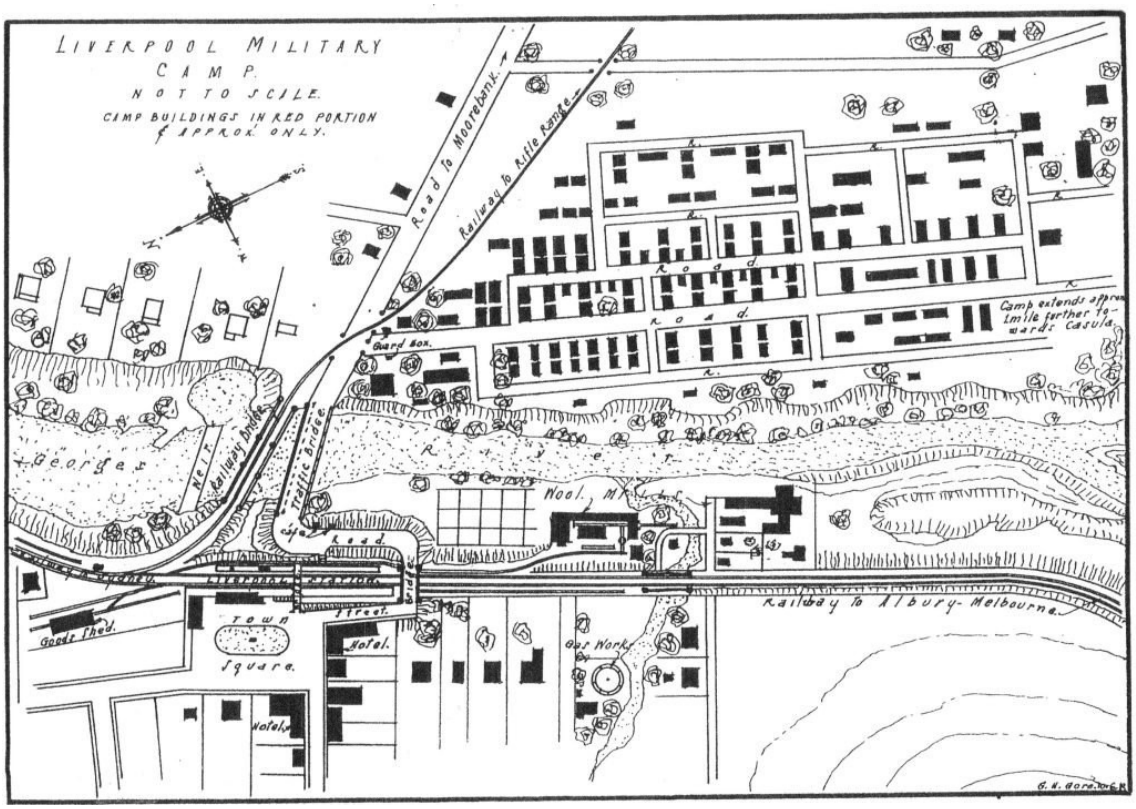



**Figure 2.11** ***A partial map of the Liverpool Military Camp drawn by Sapper Geoffrey H. Gore c. 1919 [Army Engineer Museum, Moorebank]***

East of Liverpool Camp, at the Old Army Camp at Holsworthy, an internment camp was established early in World War 1 for adult males of German origin and of other suspect nationalities. During their incarceration, the internees were used to quarry sandstone and build various structures of stone at their camp. Commencing in February 1917, too, they were employed in the construction of a branch railway line to service Liverpool Camp, the ordnance and ammunition stores, rifle range, Remount Depot, Veterinary Depot and internment camp itself. The line – which lay entirely outside the project area – was completed in January 1918 and included a rail bridge with stone piers that the internees built across Harris Creek at Holsworthy.[32]

Long after the war, the bridge and many of the sandstone buildings that the internees erected were partially or wholly demolished. However, some of the sandstone blocks of which they were constructed have been incorporated in structures now standing at Steele Barracks. The altar wall of the chapel is built of such blocks that were salvaged from a building at the Old Holsworthy Camp, while the facade of the Army Engineer Museum is constructed of stones from the bridge that the internees built over Harris Creek. One of the stones bears the inscription 'January 1917'. It shows some resemblance to another inscription that appears on a stone *in situ* on one of the bridge's piers.[33]


**Figure 2.12** ***Inscription on pier of bridge over Harris Creek(NSW Heritage Office)***


**Figure 2.13** ***Inscription on sandstone block in facade of Army Engineer Museum***

### 2.2.5 The Inter-War Period

After the war, most of the buildings at the Liverpool Camp, not unexpectedly lapsed into a state of infrequent occupation and use. Indeed, in January 1923, the Acting Premier of NSW wrote to the Prime Minister asking if some of the huts at the camp could be used to house inmates of the state's hospitals and mental institutions. The request was refused. In these years, the buildings and the camp overall were used periodically when, as before the war, training camps were held.[34]

Among senior military officers in Australia, there was an acute awareness from their experience of the war that the nation needed to be well prepared in the event of the outbreak of any future hostilities. But political leaders, eager to save money, were not willing to commit significant funds to the military. Year after year throughout the 1920s, the Inspector-General of the Australian Military Forces, Lieutenant-General Sir Harry Chauvel, reported on the lack of readiness of the armed forces and pleaded for funds for training, buildings, arms and equipment. Facilities in the Liverpool-Moorebank area figured prominently in his thinking. In 1920, new Mobilisation Stores were built at Moorebank, probably on the same site on the eastern side of Moorebank Avenue that the stores had previously occupied. NSW was now the only state in which such stores had been established and all requisite equipment, including

[32] P. Neve, 'The Liverpool – Anzac Rifle Range – Holdsworthy Military Line (N.S.W.)', *Australian Railway Historical Society Bulletin*, new series vol XV, no. 322, August 1964, pp. 142, 143; Commonwealth Heritage List [CHL], place IDs 105405 and 105406.
[33] 'Harris Creek Bridge', in NSW Heritage Inventory; *Royal Australian Engineers: Heritage Precinct Guide*, 200?, explanatory notes nos. 7 and 9.
[34] Letter, Acting Premier of NSW to Prime Minister, 25 January 1923; and letter, Prime Minister to Acting Premier of NSW, 21 February 1923, CRS A458, item V356/1.

vehicles, stored in them. Three years later, however, Chauvel reported that the stores were overcrowded and, presumably, required expansion.[35]

Chauvel had further plans for development at Moorebank. He wished to establish there a Central Training Depot whose purpose would be to train non-commissioned officer Instructors for the Army, as well as all new recruits to permanent units. The Depot was opened on a temporary basis in the Liverpool-Moorebank area in August 1921, but closed in February 1922 because of a lack of funds. Its location is unknown. A more successful initiative was the establishment of ordnance facilities at Moorebank. During 1922-23, a magazine, explosives store, laboratory test house and isolation store were completed in the area. Again, the exact location of these buildings is not known. Chauvel also wanted to erect a small ordnance workshop at Moorebank, but this does not seem to have been built at all during the 1920s.[36]

Existing facilities in the Liverpool-Moorebank area were meanwhile becoming rundown. In his 1924 report, Chauvel drew attention to the deterioration of buildings and services at centres for annual military training camps around the country. He urged that steps should be taken immediately to repair buildings and make improvements to drainage, sanitation, kitchens and other facilities, especially in the Liverpool-Moorebank-Holsworthy area. His entreaties appear to have elicited little reaction from the government, though some repairs and renovations were carried out on the Moorebank Explosives Depot in 1927.[37]

Of future significance to Moorebank, however, was the first military engineering course in the Liverpool area, held in 1923. Hutcheson (ref footnote 38) states that this was conducted in what was known as the Hospital Block which was situated across the road from what later became Yulong Oval (i.e. . on the western side of Moorebank Avenue  and north of Bapaume Road). Shortly afterwards, Chauvel noted that, as venues for their training, field engineers needed 'good digging ground and good facilities for bridging.' Moorebank fitted the bill admirably. This was soon even more the case when in 1924-25 the engineers introduced pontoon bridging at their training camps. The proximity of the George's River provided an ideal site for practice and training in bridging of this kind. In 1925-26, an Army School of Field Engineering was held in the Liverpool area, apparently for the first time. The purpose of the school was to establish a uniform system of instruction and training for field engineering units around Australia. After the school finished, Chauvel announced that such schools were henceforth to be held annually.[38]

[35] 'Liverpool Mobilization Stores', CRS A2489, item 1920/4230; Chauvel, *Report of the Inspector-General of the Australian Military Forces*, 31 May 1921, p. 9, CRS A458, item H337/2; Chauvel, *Report for the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1924, p. 9, CRS A1194, item 20.15/11987.

[36] Chauvel, *Report of the Inspector-General of the Australian Military Forces*, 31 May 1921, pp. 13, 16, CRS A458, item H337/2; Chauvel, *Report of the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1922, pp. 16, 17, and Part 2, p. 7, AWM 113, item MH1/12 part 1; Chauvel, *Report of the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1923, p. 11, and Part 2, p. 6, AWM113, item MH1/12 part 1; Major John D. Tilbrook, *To the Warrior his Arms: A History of the Ordnance Services in the Australian Army*, Canberra, RAAOC Committee, 1989, p. 102; *Sydney Morning Herald*, 30 March 1927, p. 11.

[37] Chauvel, *Report for the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1924, p. 18, CRS A1194, item 20.15/11987.

[38] Lieutenant Colonel J.M. Hutcheson, 'The School of Military Engineering', *Army Journal*, no. 264, May 1971, p. 43; Chauvel, *Report for the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1924, p. 15, CRS A1194, item 20.15/11987; Chauvel, *Report for the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1925, p. 13, CRS A1194, item 20.15/14731; Chauvel, *Report for the Inspector-General of the Australian Military Forces*, Part 1, 31 May 1926, p. 20, AWM 1, item 20/8.


**Figure 2.14** ***Two parts of the same map showing structures in the Moorebank area in 1929 [1:63,360 Liverpool topographic map 1929 National Library of Australia Bib ID 1853067]***

Apart from training courses for field engineers, Moorebank continued to be the site for the usual compulsory training camps for infantry, artillery and other branches of the army. This remained the case when compulsory training was suspended in the early 1930s and was replaced by a voluntary system. But there was an uneasy relationship at Moorebank between the military's use of the area and local farming and gardening interests. In the latter half of the 1920s, and probably well before, orchardists and market gardeners in the area complained bitterly about military trainees stealing their produce, which included grapes and watermelons. The thefts became so serious that the army offered to mount an armed guard on market gardens at times when military training camps were held.[39]

With a decline in economic circumstances in 1928 and the onset of the Great Depression the following year, new and different activities were proposed and at times undertaken at Moorebank. In March 1930, the NSW government asked the Commonwealth if a portion of the huts at the Liverpool Military Camp could be used to house unemployed people over the coming winter. The request was turned down by the Minister for Defence and the local military commandant, partly because a training camp was to be held at the camp in August. The next year, however, the Commonwealth had relented to the extent that rooms at the military camp at Moorebank were made available for a Voluntary Trades School where unemployed men and boys could receive training in a variety of trades. During 1933, some 200 to 300 unemployed men were put to work cutting trees and grubbing out roots in the Moorebank area. Relief workers were still at work building a road in the area in 1935.[40]

Another new development was the commencement of sandmining on the eastern bank of the George's River and the construction of a light railway to service the operation. Since the early 1920s, S.W. Jackson of the Moorebank Sand Company had sought approval from the Commonwealth to remove sand from the riverbank at the southern extremity of the Liverpool Military Camp. Eventually securing approval, he bought the last section of the existing line to Holsworthy, which had been closed for some years, and took up the rail lines to re-lay them for his light railway track to the sandmining site. Opened on 1 January 1933, the track ran from the Ordnance Stores Siding just south of Anzac Road on the eastern side of Moorebank Avenue, westward across the avenue and then in a south-south-westerly direction across the southern part of the current study site to the bank of the river (Figure 2.15). There was a sand loading stage about halfway along the track and sand loading bins and a siding near its end.[41]

[39] *Sydney Morning Herald*, 28 March 1927, p. 18; 16 March 1928, p. 9.
[40] Letter, Premier of NSW to Prime Minister, 27 March 1930; file note, 'Buildings at Liverpool', 21 July 1930, both in CRS A458, item V356/1; *Sydney Morning Herald*, 18 July 1931, p. 12; 12 July 1933, p. 7; 6 March 1935, p. 13.
[41] Neve, *Australian Railway Historical Society Bulletin*, August 1964, pp. 143, 145, 148.

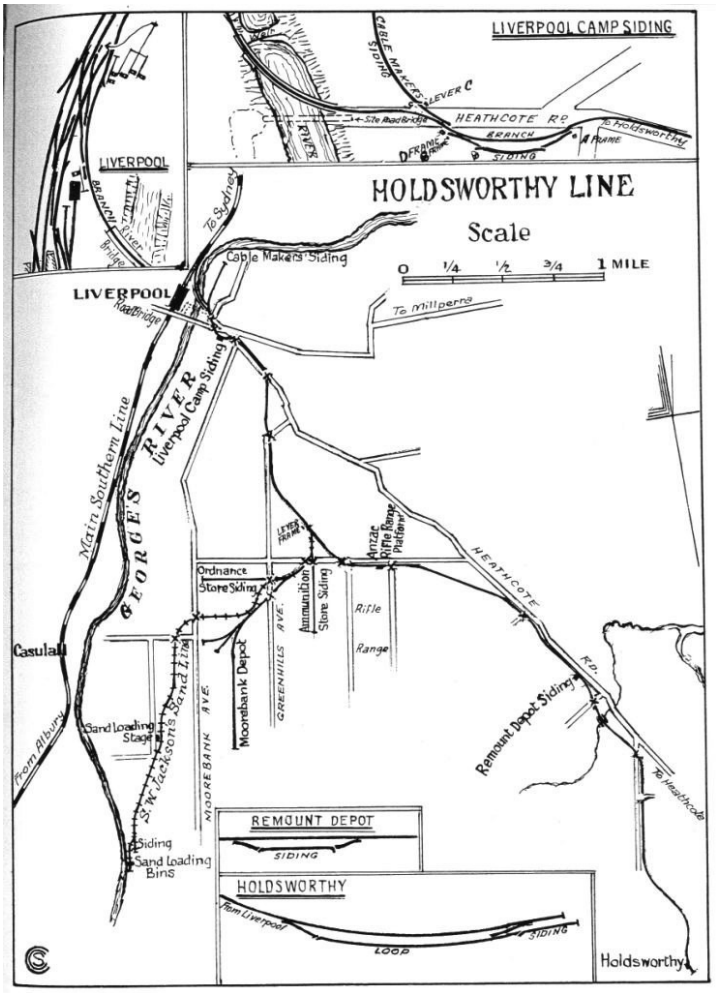



**Figure 2.15** ***Plan showing the Moorebank Sand Company's railway line to the banks of the Georges River [P. Neve, Australian Railway Historical Society Bulletin no. 322, August 1964]***

Although the existence of the light rail and of orchards and market gardens at Moorebank gives the impression of a large settled area, most of it remained uncleared bushland until the late 1930s. One reason for this was that since the first decade of the 20th century, field artillery units had used the area for firing practice. From about 1911 onward, artillery batteries located on an elevated position about two kilometres south of Heathcote Station had fired west and northwest across the Woronora River towards the George's River and Holsworthy. For the artillery practice to be held in October 1932, the army issued a notice advising the public to keep out of an area bounded by Moorebank, Deadman's Creek, the George's River and Eckersley. The army was more specific about the danger area for its practice artillery shoot in October 1935. It was bounded on the north by an east-west line through the ordnance stores at Moorebank, on the east by Deadman's Creek, on the west by the George's River and on the south by an east-west line through the Eckersley Post Office. The risk from falling artillery shells suggests that up to this time there were few, if any, military structures or other installations at Moorebank south of the ordnance stores. Presumably, sandmining operations were suspended during artillery practice times.[42]

The Moorebank Sand Company, in any case, did not see out the decade. By May 1938, it was in financial trouble and its light railway line was not in use. Late in the year, the NSW Government Railways pronounced the line unsafe and forbade any use of it. Jackson's company was declared bankrupt in March 1940 and, in May, its licence to remove sand from the Moorebank military area was revoked. The light rail line was removed later in World War 2 and, in 1964, nothing was said to remain of the line except the junction points at the Ordnance Stores Siding.[43]

[42] Cubis, *A History of 'A' Battery*, pp. 118-9; *Sydney Morning Herald*, 19 October 1932, p. 8; 19 October 1935, p. 18.
[43] Neve, *Australian Railway Historical Society Bulletin*, August 1964, pp. 148, 149.

With a limited return to prosperity in the late 1930s and with gathering signs of war, the Commonwealth began to let tenders for various works at the military camp at Moorebank. In May 1938, the Department of the Interior let a contract worth £1,768 for the erection of two brick stores there. A month later, further tenders were let for repairs and painting to a number of buildings at the camp, while at the end of the year yet more Commonwealth government contracts were awarded for the construction of an ammunition depot and extensions to a road and railway siding. During 1939, the Central Training Depot, which had been closed since February 1922, was re-opened. The trainees were soon described as occupying 'airy and well-built huts' which even had beds with sheets and pillowslips. These initiatives reflect a renewed government commitment to the camp and may indicate that development was starting to spread southward. Such development might have been made possible by artillery units shifting to a new practice firing position at Greenhills, from where they fired south and southeast away from Moorebank.[44]

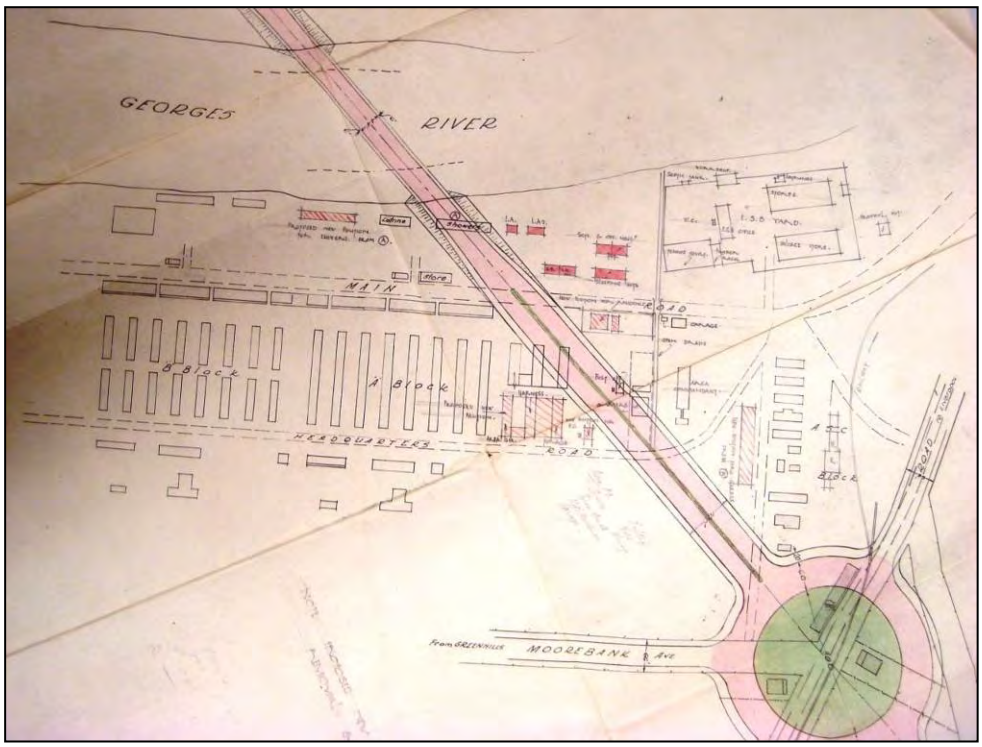



**Figure 2.16** ***Plan showing buildings on the northern part of the Liverpool Military Camp about the end of the 1930s [National Archives of Australia]***

### 2.2.6 World War 2: Engineers at Moorebank

The outbreak of war with Germany on 3 September 1939 gave further impetus to development at Moorebank. After seeking advice from the British government as to the kind of military assistance Australia could give, the Prime Minister, R.G. Menzies, announced on 15 September that an army division, the 6th, would be raised for service either at home or overseas.

Despite the announcement, there were simply far too few trained engineering officers to fill the ranks of the proposed division. The solution arrived at was for the Army to hastily train qualified civilian engineers or engineering students for commissions in the new Australian Imperial Force [AIF]. On 15 September, the very day of the Prime Minister's announcement, an Army school of engineering was temporarily established on the 'Bank Block' at the Liverpool Military Camp; in November, it moved to the Hospital Block, the site of the first military engineering course held in the Liverpool area back in 1923. And in December, the first course to train civilian engineering volunteers for the AIF commenced at the new Army school of engineering. Shortly before the course started, the Commonwealth let two small contracts for repairs to and painting of military quarters in Moorebank and Greenhills Avenues. Whether these

[44] *Sydney Morning Herald*, 24 May 1938, p. 6; 21 June 1938, p. 5; 20 December 1938, p. 5; 19 August 1939, p. 18; 11 January 1940, p. 11; Neve, *Australian Railway Historical Society Bulletin*, August 1964, p. 149; Cubis, *A History of 'A' Battery*, p. 184.

contracts related to the new Army engineering school or other military units based at Moorebank is not known.[45]

While the first training course was still in progress, the school moved eastward to the Anzac Rifle Range in early 1940. In May, the school was established on a permanent basis under the title of the 'Army School of Engineering'. This was changed in September to the 'School of Military Engineering', with its headquarters and anti-aircraft and fortress wing at Chowder Bay on Sydney Harbour and its field engineering wing at Moorebank. Meanwhile, in March, the Commonwealth had let a contract to F. Chambers of Merrylands to build 'training camp buildings for engineers and signal school' at Moorebank. As the contract was for the considerable amount of £4,743, it indicates a fairly substantial building program. These 'wartime buildings' may have been those that were later described as 'mainly unlined wooden huts or fibro igloos.' Late in 1940, the School of Military Engineering [SME] and the School of Signals moved into their new buildings on the site that is still occupied by SME. The School of Signals later moved to Bonegilla.[46]

Apart from the establishment of SME, the School of Signals and the Central Training Depot at Moorebank, there was a build-up of other military units and facilities in the area in the early war years. No. 1 Training School was opened somewhere in the area in late 1939, while a Mechanisation Centre or Depot was established by April 1940. At that time, the Commonwealth let a contract worth £33,775 to F.T. Eastment and Sons of Castlereagh Street, Sydney, for the erection of an ordnance store workshop and vehicle store at the depot. A smaller contract was simultaneously let for the provision of stormwater, sewerage and fire services for the facility. As part of the Australian Army Service Corps, the 8th Division Supply Column was raised in the area in July 1940. It is not clear where these units or facilities were located at Moorebank. They may have been situated on the eastern side of Moorebank Avenue and potentially spread across to the western side of the avenue.[47]

At first, the instruction given at SME was based on outmoded World War 1 models. According to Colonel J.A. McGowan, who was the head of the AIF School of Military Engineering in the Middle East, it consisted of 'four weeks squad drill, six weeks digging trenches and erecting barbed wire fences as for 1914-18 War, and two weeks to cover bridging and all other engineering subjects.' On McGowan's return from the Middle East in April 1942, the Engineer-in-Chief, Major-General Clive Steele, ordered him to take command of SME at Liverpool and turn out 2,000 trained engineering officers as soon as possible. Arriving at the School, McGowan as a temporary measure extended the existing course by eight weeks 'to include instruction in booby traps and anti-personnel mines, water supply roads, accommodation, bridge design, report writing, engineers in opposed landings; and concluded with engineer tactical exercises without troops for the final three weeks.'[48]

McGowan then set about reorganising SME. He introduced courses of 22 weeks' duration for members of the Officer Cadet Training Unit, six-week refresher courses for NCOs, courses of six to eight weeks' duration for senior officers, six-week electrical and mechanical training courses for both officers and NCOs, and six-week mechanical equipment courses for other ranks personnel. In all, SME ran twelve different types of courses throughout the war and trained a total of 7,450 students, both officers and other ranks. At its peak during the war, there were about 1,300 staff and students at SME, the staff numbering 31 officers and 191 other ranks personnel.[49]

In addition to the courses run at SME, the Royal Australian Engineers provided training for its sappers, that is, private soldiers, as opposed to officers, recruited to the corps. This was carried out at the RAE

[45] Ronald McNicoll, *The Royal Australian Engineers 1919 to 1945: Teeth and Tail*, Canberra, Corps Committee of the Royal Australian Engineers, 1982, p. 20; Hutcheson, *Army Journal*, May 1971, p. 45; *Sydney Morning Herald*, 14 November 1939, p. 3.
[46] McNicoll, *The Royal Australian Engineers 1919 to 1945*, p. 23; Hutcheson, *Army Journal*, May 1971, p. 45; *Sydney Morning Herald*, 26 March 1940, p. 7; Brigadier P.J. Greville, *The Royal Australian Engineers 1945 to 1972: Paving the Way*, Loftus NSW, Corps Committee of the Royal Australian Engineers, 2002, p. 204.
[47] *Sydney Morning Herald*, 9 April 1940, p. 6; 25 October 1940, p. 9; Theo Barker, *Craftsmen of the Australian Army: The Story of RAEME*, Bathurst, Crawford House, 1992, p. 22; Lindsay, *Equal to the Task*, p. 101.
[48] Colonel J.A. McGowan, quoted in McNicoll, *The Royal Australian Engineers 1919 to 1945*, pp. 146-7.
[49] McNicoll, *The Royal Australian Engineers 1919 to 1945*, p. 147; Hutcheson, *Army Journal*, May 1971, p. 45.

Training Centre which was established at Kapooka, also on Steele's initiative, in 1942. Developments at the Kapooka training centre would later have some impact on SME.[50]

### 2.2.7 Post-War: Decline and Redevelopment in the 1940s and 1950s

With the ending of the war and the demobilisation of Australian forces, SME's role and responsibilities declined to a low level and its staffing numbers concomitantly dropped. By December 1945 there were nine officers and 77 other ranks. A year later, the RAE Training Centre at Kapooka was disbanded and an RAE Recruit Training Squadron raised in its stead at Moorebank. Placed under the command of SME, it was later titled the Depot Squadron.[51]

It may have been shortly after these developments, and as a result of them, that the CUST Hut was relocated from Kapooka to Moorebank. A site plan dating from November 1956 implies that the building was on site before 1948. Another source, however, states that it was erected 'in approximately 1952'. At the time of the 1956 site plan, the Hut was occupied by the Plant, Roads and Airfield [PRA] Troop, which was part of the school's Military Training Wing. The building was originally open at both ends and apparently had an earthen floor.[52]

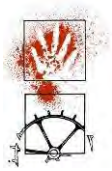
Standing for Cullen Universal Steel Truss, the CUST Hut was invented by an engineering officer, Lieutenant Colonel D.R. (Dan) Cullen, during World War 2. He had served with the 7th Division Engineers in the Middle East where he also designed a series of bridges with rolled steel joists. On his return 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.[53]

The reduced activity at SME did not last long. The rise of Cold War tensions in the latter half of the 1940s meant that Australia had to enhance its state of military preparedness. Perhaps as part of this process, the Engineers Corps embarked at the commencement of 1948 on what became a three-phase rehabilitation and redevelopment of the SME site, the phases to some extent overlapping. A further stimulus to development at SME was the commitment of Australian troops to Korea in mid-1950. Conversely, the lead-up to the introduction of a new conscription scheme in March 1951 had a negative impact on the school. In preparation for the influx of the first conscripts, the staffing of SME (and other Army schools) was reduced in order to provide sufficient Regular Army personnel to operate the scheme.

The first phase of the redevelopment program at SME ran from 1948 to 1953 and involved the following works:[54]

> In 1949, the temporary wartime huts and igloos that 'other ranks' staff and students had occupied at SME were replaced by 'substantial barrack buildings brought in from other sites.' Officer and senior NCOs, meanwhile, continued to occupy other temporary wartime buildings.
>
> In 1950, following the formation of 7 Independent Field Squadron, there was insufficient accommodation at Moorebank to house the new unit. Buildings were thus brought in from 'other sites in the Liverpool area' and re-erected by squadron labour. The squadron's barracks area was extended in 1951 by the Commonwealth Department of Works.

[50] McNicoll, *The Royal Australian Engineers 1919 to 1945*, pp. 145-6.
[51] Hutcheson, *Army Journal*, May 1971, pp. 45-6; Greville, *The Royal Australian Engineers 1945 to 1972*, pp. 189, 190, 191, 192.
[52] 'Layout of Engineer Barracks Casula', attached to 'Development of Engineer Barracks Casula', Appendix G to E-in-C's Liaison Letter, No. 29, 1 December 1956; Greville, *The Royal Australian Engineers 1945 to 1972*, p. 206.
[53] Anon., *Royal Australian Engineers: Heritage Precinct Guide*, *c*. 2005, 'No. 8: The CUST Hut'; McNicoll, *The Royal Australian Engineers 1919 to 1945*, pp. 90, 146; Greville, *The Royal Australian Engineers 1945 to 1972*, p. 439.
[54] Information on the three phases is taken from: 'Development of Engineer Barracks Casula', Appendix G to E-in-C's Liaison Letter, No. 29, 1 December 1956; and Greville, *The Royal Australian Engineers 1945 to 1972*, pp. 204-5.



During 1953, contractors for the Department of Works built a new centralised mess and kitchen for all other ranks personnel in the SME area. At the same time, extensions and improvements were made to the officers' and sergeants' messes.

The second phase of the Moorebank redevelopment program covered the period 1952-53 and consisted of:

In late 1952, after 1 Field Regiment moved from Queensland to Moorebank, contractors for the Department of Works commenced the construction of nine two-storey timber framed and clad barracks buildings. They were completed in 1953. At the same time, plans for a brick headquarters building for 1 Field Squadron and HQ 1 Field Engineer Regiment, as well as another four accommodation blocks, were not carried through after the latter unit was disbanded.

In 1952, work commenced on the erection of imported prefabricated houses to serve as married quarters for officers and other ranks. Completed in early 1953, ten were built for officers on the southern part of the site, and 29 for other ranks on the northern part.

20 Field Park Squadron built a Bridging Hard and Boat Harbour at the wet gap bridging area on the river.

7 Independent Field Squadron erected an ARMCO Hut [building no. 186] and two Sydney Williams huts [buildings nos. 85 and 86] in the Bridging Store area.

1 Field Squadron constructed a light rail line from the Bridging Store area to the wet bridging gap.

It was around this time, too, that dog training and a specialist dog training area were established at Moorebank. During 1953, kennels, classrooms and dog stores were built on a site directly west of Chatham Village adjacent to the Dry Bridging Area. SME conducted the first Dog Handlers Course at the site in 1954, the aim being to train the dogs in mine detection, patrolling and guard duties. The training was discontinued in the 1960s, but revived in 1969 as a consequence of US forces successfully using dogs for patrolling and mine detection in Vietnam. Either at the time it was revived or later, the dog training area was relocated to the northern part of the SME area.[55]

The third phase of redevelopment at Moorebank commenced in 1953 and lasted through to 1957. It coincided with the first major increase in the staffing establishment of SME since the war, coupled with an expansion in the training offered by the school.[56] The third phase comprised:

In 1953, work commenced on the construction of the Trades Training Wing, which was of 'particular importance' in the expanded range of instruction that SME was to undertake. It was completed in 1954 and consisted of an administrative building, engineering workshops, carpentry workshop and thirteen lecture and demonstration rooms. (The Trades Training Wing was later called, successively, the Engineer Services Wing, the Constructional and Mechanical Engineering Wing, and the Construction Wing.)[57]

In 1955, two brick instructional buildings were erected, each with two lecture rooms capable of holding 40 students.

In 1955-56, two brick Q stores for SME and two for 7 Independent Field Squadron were built.

In 1955-56, a brick Administrative Building for 7 Independent Field Squadron was erected adjacent to the RAE Memorial. This building later became the headquarters of the RAE Museum.

In 1955-57, 17 Construction Squadron built a soldiers' club to cater for single and married soldiers and their families. The club, with a floor area of 11,688 square feet, was named the Peeler Club after Lance Corporal Walter Peeler, VC.

[55] Greville, *The Royal Australian Engineers 1945 to 1972*, pp. 202-3.
[56] Hutcheson, *Army Journal*, May 1971, pp. 46-7.
[57] Hutcheson, *Army Journal*, May 1971, p. 46; anon., 'Royal Australian Engineers: History, Customs and Traditions', *c*. 2008, p. 37.

In 1955, buildings nos. 20 and 22, which had been erected during World War 2 and used as barrack accommodation for officers and senior non-commissioned officers, were converted into training buildings. Building no. 20 was transformed into a theatrette and dark room, while building no. 22 became a soils laboratory.

In 1956, an officers' mess was erected but, as it was too small to cater for the numbers of officers attending conferences and making Staff College visits, a steel-framed structure with wooden shutters was added to it. This was gradually upgraded until it became a proper extension to the building.

Though it was not strictly a part of the three-phase redevelopment of the SME site, a memorial to members of the Royal Australian Engineers who had lost their lives in service was designed and erected in the period 1952-56. It was designed by a Melbourne architect, Peter Grenville Gee, who had served as a lieutenant in 2/15 Field Company RAE during the war. Located 'appropriately in the heart of SME' at the intersection of Ripon and Chatham Roads, the memorial was built by sappers of SME, its PRA Troop and especially members of 7 Independent Field Squadron.[58]

Another memorial was built later in the 1950s to commemorate General Steele, virtually the father of the Engineers Corps, who died in 1955, aged 62. In the following year, the Corps Committee decided that an appropriate monument would be the erection of memorial gates at the entrance to SME. The principal feature of the design by two Melbourne architects, Major S.M.C. Evans and Captain L.E.A. Orton, was its representation in half-scale of the Steele Bridge that Steele had designed in 1942 when Australia could no longer obtain Bailey Bridges. The memorial gates were officially opened on 11 October 1958.[59]

A further development in the 1950s was the establishment of a chapel. The absence of a chapel at Moorebank had been felt for many years, and in late 1956 SME sought approval to convert building no. 19 for such a purpose. Approval was granted in 1957, although it is not entirely clear whether building no. 19 was the actual 'hut' that was eventually converted into a chapel. Work on the building started in October 1957 and was sufficiently advanced for the first service to be conducted in it on Christmas Day that year. The chapel was officially opened on 2 March 1958, but it was succeeded a decade later by a new purpose-built chapel. It is not known if any of the fabric from the original chapel was incorporated in its successor.[60]

### 2.2.8 Expansion in the 1960s and 1970s

A second major period of expansion and improvement at SME commenced in 1963. In that year, a Nuclear, Biological and Chemical Warfare Wing was raised, and it expanded gradually over the next few years. Another major stimulus to expansion of SME and its facilities occurred in 1965 with the introduction of a new conscription scheme and the commitment of a battalion of Australian troops to Vietnam. The Depot Squadron was immediately expanded to enable it to train up to 1,200 RAE recruits a year and it used a Reinforcement Troop, also formed in 1965, to prepare soldiers for overseas service.[61]

For specialist training of sappers and non-commissioned officers proceeding to Vietnam, a mock Vietnamese village complete with 'typical huts, a well, tunnels, concealed hides and entrances' was set up at SME by January 1966. Called the Vietnamese Village Training Area, it was located opposite the western end of Jacquinot Court. A little later in the 1960s, two new double-storey barracks were built

[58] Greville, *The Royal Australian Engineers 1945 to 1972*, pp. 212-3; Hutcheson, *Army Journal*, May 1971, p. 48.
[59] Engineer-in-Chief's Liaison Letter No. 35, 1 June 1958, p. 9; 'Unveiling of Memorial to Major-General Sir Clive Selwyn Steele, KBE, DSO, MC, VD ...', Annex H to Engineer-in-Chief's Liaison Letter No. 37, 1958; anon., *Unveiling of the Memorial to Major-General Sir Clive Steele, KBE, DSO, MC, VD*, 11 October 1958; Greville, *The Royal Australian Engineers 1945 to 1972*, p. 213; Hutcheson, *Army Journal*, May 1971, p. 48.
[60] 'Development of Engineer Barracks Casula', Appendix G to E-in-C's Liaison Letter, No. 29, 1 December 1956, p. 46; and Engineer-in-Chief's Liaison Letter No. 35, 1 June 1958, pp. 8-9.
[61] Hutcheson, *Army Journal*, May 1971, pp. 47, 49.

facing the parade ground, accommodation for officers and other ranks was improved, and a Corporals Club was established.[62]

One of the most important developments in this decade was the building of a new chapel in 1968. The chapel was designed by Colonel D.A. Davey and Captain J.M. Brindley and built by SME personnel supervised by the Engineer Services Wing. It was funded by donations from members and friends of the corps. The external walls of the building were constructed of stone hand-cut by convicts in the 1850s for the Bow Bowing Flour Mill at Campbelltown. The stones were donated by the Campbelltown Historical Society, in whose possession they had been. Additional sandstone blocks came from Victoria Barracks in Sydney, while the stones behind the altar were salvaged from old married quarters at Holsworthy that had been built by German internees during World War 1.

At the end of the 1960s, the steel piling and timber wall at the Wet Bridging Area were extended after the site suffered flood damage. A small wharf supported on steel piles was also built. A Corporals' Club was established, and improvements were made to officers' and soldiers' living quarters. The old camp theatre, which had been described in the mid-1950s as a 'sub-standard building ... located in an unsuitable area', was converted into a training facility. Staff and students at SME erected a security fence around the whole perimeter, and a guard house was built to control entry to the compound. The grounds of SME were greatly improved, too, with the planting of lawns, shrubs and shade trees, while in 1971 the RAE Golf Course was established on the site.[63]

In 1972, the former Administrative Building for 7 Independent Field Squadron, which had been erected in 1955-56, was converted in the RAE's corps museum (or Army Engineer Museum). As noted above, the facade of the building is constructed of stones from the bridge that German internees built over Harris Creek in World War 1.[64]

### 2.2.9 Development and Organisational Changes from the 1980s Onward

Another major period of development at SME began, slowly at first, in the mid-1980s. In 1985, the Explosive Ordnance Disposal trade was re-introduced to the School. Two years later, the Engineers designed what became known as the Bicentennial Building (or the 'Corps Room' or, more colloquially, the 'Diorama Building'). It was built by 17 Construction Squadron as a Bicentennial project and was opened on 1 July 1988.[65]

A major rebuild of SME's buildings and facilities was launched in 1989 at a cost of $40 million. As part of the redevelopment, the Directorate of Engineers-Army moved from Canberra in 1991 to be co-located with SME at what was soon called the Engineer Centre. About the same time, the School's theatre was closed and the building was extended to house the SME gymnasium. In 1995, the RAE Doctrine Section of HQ Training Command was established at the Engineer Centre and, in the next year, the Corporals' Club was closed down; the building was subsequently used to accommodate the Mine Warfare and Demolitions Section. With the incorporation of the Royal Australian Survey Corps back into RAE in 1996, the Geomatic Engineering Wing was established at Moorebank in December of that year.[66]

The re-integration of the Survey Corps into RAE led, in 1997, to the construction of the new Museum Building specifically to house the Survey Corps' historic collection. Originally one-third of its current size,

[62] Hutcheson, *Army Journal*, May 1971, p. 47; Greville, *The Royal Australian Engineers 1945 to 1972*, pp. 206, 207.
[63] Greville, *The Royal Australian Engineers 1945 to 1972*, p. 206; 'Development of Engineer Barracks Casula', Appendix G to E-in-C's Liaison Letter, No. 29, 1 December 1956, p. 46; anon. 'Engineer Heritage within Steele Barracks', 2000, p. 10.
[64] Anon., *Royal Australian Engineers: Heritage Precinct Guide*, *c*. 2005, 'No. 7: Army Engineer Museum'; anon. 'Engineer Heritage within Steele Barracks', 2000, p. 7.
[65] Anon. 'Engineer Heritage within Steele Barracks', 2000, p. 7; anon., *Royal Australian Engineers: Heritage Precinct Guide*, *c*. 2005, 'No. 4: Bi-Centenary Building and Equipment Bridges'.
[66] Anon., 'Royal Australian Engineers: History, Customs and Traditions', *c*. 2008, pp. 38-9; excerpt from pamphlet, chapter 5, 'History of Steele Barracks (formerly the School of Military Engineering)', 2000, pp. 2, 3.

the building was substantially extended by 17 Construction Squadron and re-opened on 1 July 2002, the centenary of the foundation of RAE.[67]

Meanwhile, in 1998, the buildings that had long been used for the training of mine-detecting dogs – or Explosive Detection Dogs [EDD], as they were now called – were refurbished. Some important organisational changes soon followed at SME. In mid-1998, the school became a sub-unit of the Combat Arms Training Centre [CATC] at Puckapunyal and, at the end of the year, the Training Research Development Wing was removed from Moorebank to CATC. This latter organisation was responsible for training development across all arms corps. During 1999, the 2nd Training Group, the Eastern Region Cadet Wing and the Education Wing all moved from Ingleburn to SME, with the 2nd Training Group retitled the Regional Training Centre. The import of these changes was that SME was now no longer occupied solely by engineers. Reflecting the changes, the name 'School of Military Engineering' was dropped and was replaced by the title 'Steele Barracks' in honour of General Sir Clive Steele. At the end of the year, the school suffered a further blow to its status as a training entity in its own right when, together with infantry, artillery and armoured units, it was fully integrated into CATC and renamed the Mobility / Survivability Division. The new name did not last long. The title 'School of Military Engineering' was restored on 1 March 2001.[68]

During 2003-5, a Vietnam War Memorial dedicated to RAE personnel who lost their lives in Vietnam was erected at Steele Barracks. The memorial, has its origins in an earlier memorial established in Vietnam more than thirty years ago by 1 Field Squadron at the Australian Task Force's base at Nui Dat.[69]

A very recent innovation at Steele Barracks was the erection in about 2007 of the Strarch hangar.

[67] Anon., *Royal Australian Engineers: Heritage Precinct Guide*, *c*. 2005, 'No. 1: New Museum Building'.
[68] Anon., 'Royal Australian Engineers: History, Customs and Traditions', *c*. 2008, pp. 38-9; excerpt from pamphlet, chapter 5, 'History of Steele Barracks (formerly the School of Military Engineering)', 2000, pp. 3, 4.
[69] Anon., *Royal Australian Engineers Vietnam Memorial: A Short History*, *c*. 2005; Anon., *Royal Australian Engineers: Heritage Precinct Guide*, *c*. 2005, 'No. 3: RAE Vietnam Memorial'; information from the Army Engineer Museum.

# 3. Site Descriptions

## 3.1 Overview of Archaeological Sites at Moorebank

### 3.1.1 Predicted Archaeological (Subsurface) Sensitivity

A review of historical sources relevant to the project area (refer CDFD Aug 2011) revealed a variety of former structures, industries, and past activities within the project area which could potentially have left a (terrestrial) subsurface archaeological record of significance.

These could be grouped into the following phases:

- Nineteenth century tenant and subsequently freehold farming (including the development of orchards and vineyards);
- WW1 camps and training areas, notably the 'Military Isolation Camp';
- Sand mining and transport via light rail (1917 – 1930s); and
- WW2 Barracks, camps and training areas.

Where identifiable from the documentary record, the location of former structures, industries and past activities is shown in Figure 3.1. This potential archaeological record has however been substantially impacted or removed by subsequent Defence related landuse practices, including large-scale earth works, detonation of artillery, a former sewerage treatment works, landscaping, and multiple phases of road and building construction.

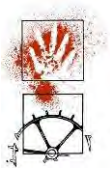
All of the locations of former pre-Defence items, such as tenant farms, homesteads and orchards are now characterised by extensive landsurface modification. Surface archaeological survey of these areas in 2010 did not reveal any evidence of, nor grounds for predicting, the presence of a surviving archaeological deposit. The majority occurred in cleared contexts, where subsequent Defence related development, building and landscaping had transformed the nineteenth century landsurface. A small number of locations were situated in regenerating bushland. These areas were found to have been heavily impacted by quarrying, filling, and the construction of training infrastructure such as pits, trenches and other substantial landscaping. Some areas also where heavily impacted by shelling or the other explosive actions, as evidenced by crater fields visible in 1940s aerial photography.

No *in situ* evidence was found for the former sandmining infrastructure. Two isolated instances of light rail pieces, within highly disturbed contexts may relate to the former sand mining operation, or to later defence rail usage.

The review of documentary sources indicated that greatest potential for archaeological deposits related to the WWI period would be situated in the northern end of the project area, being the area closest to the Liverpool Military Camp. The only item with a relatively definable location, was the 'Isolation Camp' (refer Section 2 and Figure 2.7). A high proportion of the northern project area has been substantially disturbed by multiple phases of construction and demolition, however two small areas remain with potential to include archaeological traces of this camp (refer to description of MHPAD1 for further detail).

The identification of the potential for archaeological deposits relating to the WWII period focused on an assessment of the two clusters of Defence buildings and infrastructure from this time. These were identified from historical mapping and aerial photography. The identification of this time period for some surviving building traces in the southern cluster came late in the assessment. Large portions of these two areas have been subject to multiple phases of construction, demolition, and use as field training areas. According to an analysis of the varying degrees of cumulative impact, evident and predicted across these areas, a number of areas of predicted archaeological deposit, variably graded according to potential, have been identified (refer to the descriptions of MHPAD1 and MHPAD2 for further detail).

Following the demolition of a group of eight WWII P1 type buildings in May of this year (refer Figure 3.8), there is now an unresolved issue as to whether these former building locations should be considered PADs, and/or should be the subject of archaeological test excavation. The eight buildings were previously assessed for the Moorebank IMT project as a component of the built environment in the Aug 2010 CDFD report (CDFD Aug 2010). The current condition and archaeological potential of the former building sites has yet to be assessed. This research design does not address this issue, but notes that its future resolution may have consequences for present program.



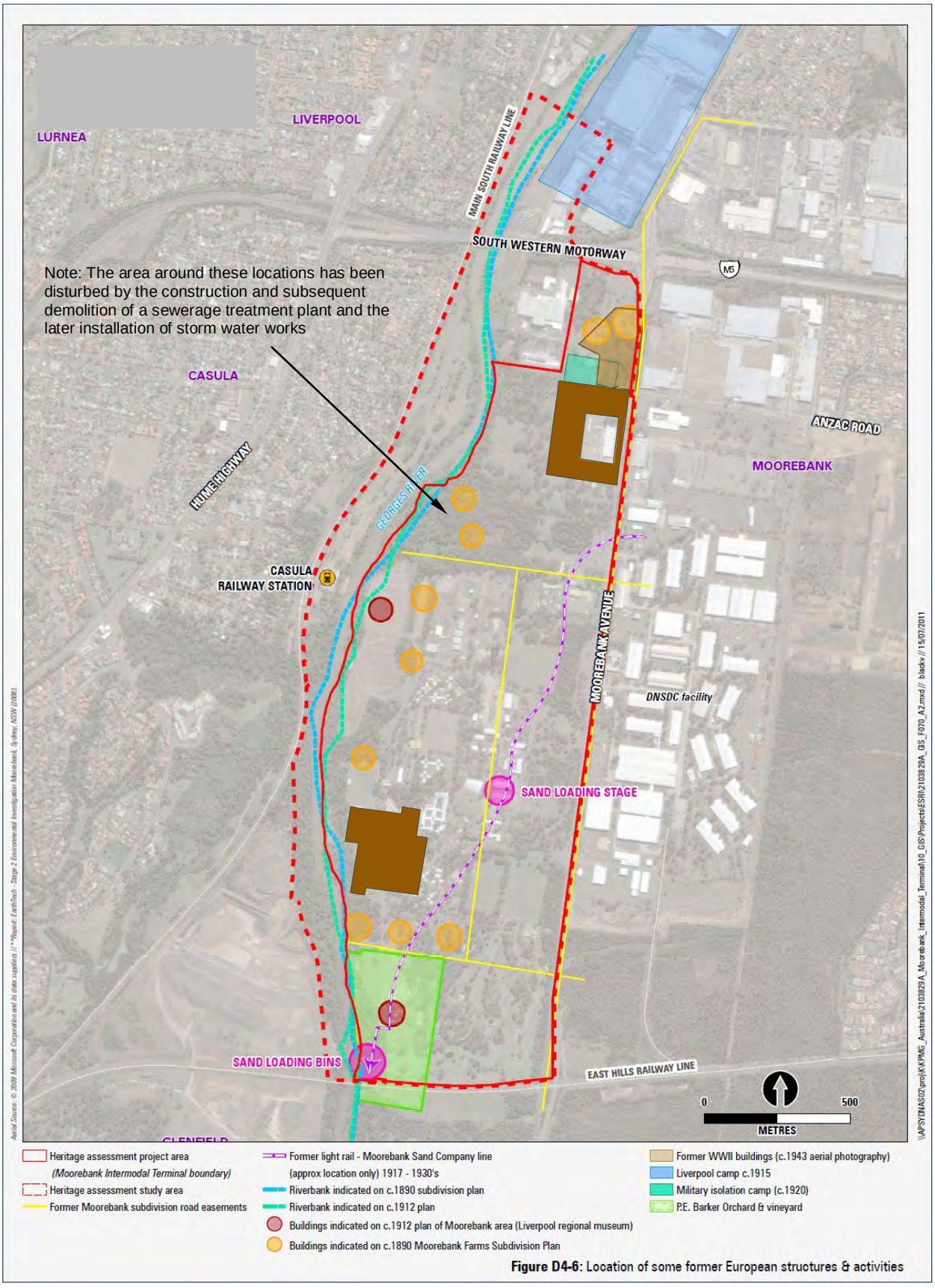



**Figure 3.1 The location of former European structures and activities within the project area, as identified within the documentary record (after Figure 3.5, CDFD Aug 2010)**

### 3.1.2 Summary of the Project Area Archaeological Resource

The following summary is provided to place the two identified PADs within the broader context of the identified archaeological resource across the project area. For information on the built environment please refer to the Aug 2010 CDFD report (CDFD Aug 2010).

Table 3.1 presents a summary of the likely constraints and management strategies associated with each of the European non-built environment recordings within the project area. These strategies are based on the (indicative) significance assessments presented in the Aug 2010 CDFD report (CDFC Aug 2010). The general location of each recording is presented in Figure 1.1.

**Table 3.1 Summary of European archaeological recordings (non-built environment) and indicative management constraints**

| Site code | Site type/ description | Significance assessment within a local context only | Indicative constraint/ management measure |
|---|---|---|---|
| | Dog Cemetery | low | No heritage management action required |
| | Pair of sandstone bordered ditches (military origin) | Nil/low ) | No heritage management action required |
| | Light rail portion (not *in situ*) | Low-moderate (assuming associated with mid C20$^{th}$ sand mining | Archival recording prior to impact, collect and store/interpret if suitable museum/adaptive re-use can be found/designed |
| | Light rail portion (not *in situ*) | Low-moderate (assuming associated with mid C20$^{th}$ sand mining) | Archival recording prior to impact, collect and store/interpret if suitable museum/adaptive re-use can be found/designed |
| | Large above ground concrete slab (military origin) | Low | Archival recording prior to impact, |
| | Commemorative garden (includes plantings, garden beds and memorial plaques) | Moderate-high | Conserve if feasible or re-locate commemorative plaques, associated stone bases, and any significant plantings (such as Gallipoli 'Lone Pines') to new appropriate location, such as a garden area, within the new Defence facility, or another appropriate Moorebank location |
| MHPAD1 (includes Titalka Park) | Potential archaeological deposit (location of WW1 'Isolation Camp' and later WW2 period buildings) | To be determined following assessment of test excavation results<br><br>Refer pre-excavation assessments in Section 4.2 | Conserve if feasible (subject to assessment based on test excavation results) |
| MHPAD2 | Potential archaeological deposit (location of WW2 period buildings) | | [Not assessed in CDFD Aug 2010 report] (subject to assessment based on test excavation results) |

## 3.2 PAD Descriptions

### 3.2.1 MHPAD1

| Boundary points (MGA) | **Eastern Area** (Titalka Park): | | **Western Area**: | |
|---|---|---|---|---|
| | NW(1) | 308048.6242242 | | |
| | NW(2) | 308058.6242252 | | |
| | NE(1) | 308162.6242235 | NW | 307963.6242225 |
| | NE(2) | 308173.6242221 | | |
| | SE | 308163.6242143 | NE | 308001.6242220 |
| | S(1) | 308099.6242151 | | |
| | S(2) | 308095.6242129 | | |
| | SW | 308034.6242143 | SE | 307994.6242146 |
| | | | SW | 307950.6242152 |

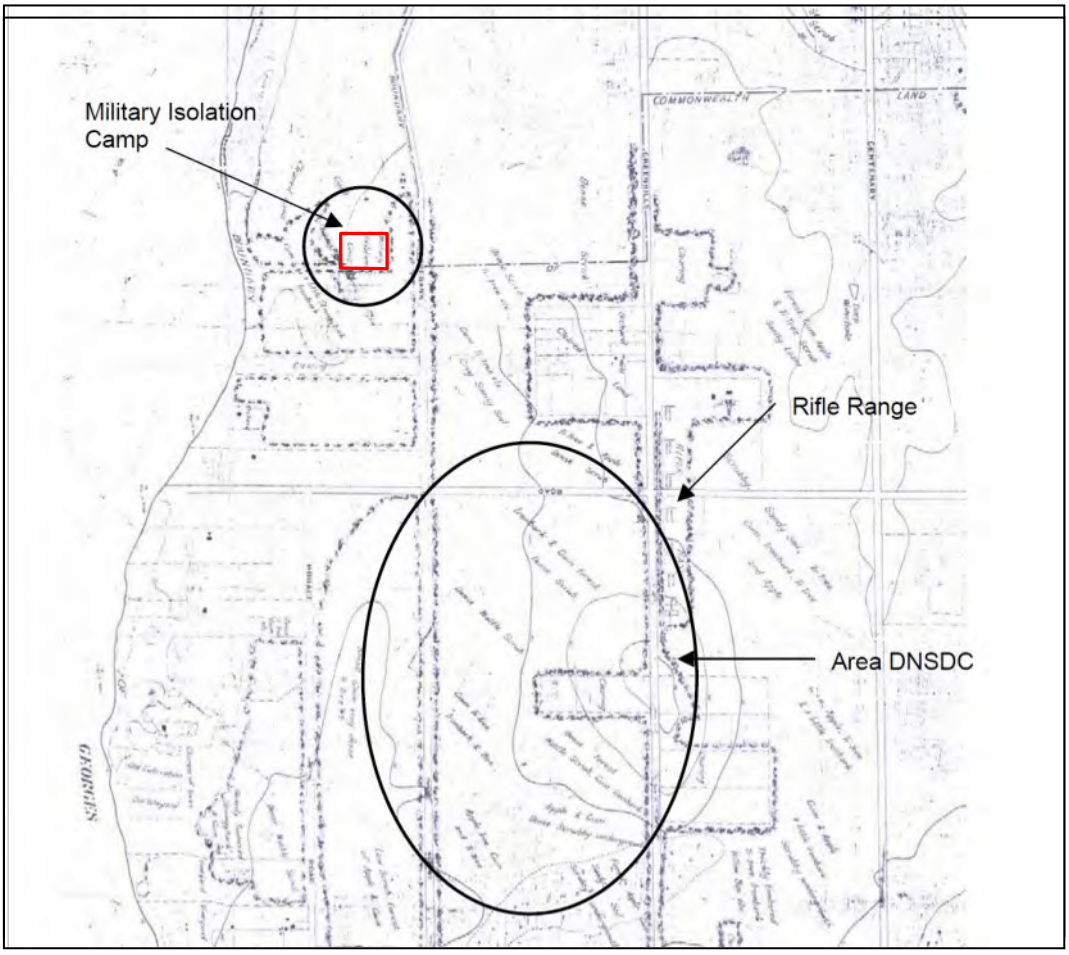
This recording consists of a potential archaeological deposit in which the remains of World War I and II Department of Defence infrastructure and associated activities may be present. The presence of WWII related mains are more likely than for the WWI period. The area of the deposit consists of the current Titalka Park, and a nearby area to the south and west of the Canteen and former tennis courts. These are open space, recreational areas which appear to have been subject to minimal development since the 1940s (Figures 3.2 and 3.8). The Titalka Park occurs within an area of 12 x 115m. The additional area has approximate dimensions 46 x 73m.

Contemporary (May 2012) aerial photo from nearmap.com showing boundary of MHPAD1 (yellow outline)


1943 aerial photo from six.nsw.gov.au showing boundary of MHPAD1 (yellow outline) relative to World War II infrastructure

**Figure 3.2 Comparison of contemporary and 1943 aerial photography of the Titalka Park region and the area of MHPAD1 (yellow boundary).**

A plan of the Moorebank area, dating to around 1912, indicates that the MHPAD1 area includes portions of a 'Military Isolation Camp' (Figure 3). The purpose of the camp is thought to have been an isolation area for the temporary accommodation of any men who came into camp with communicable diseases, such as measles and mumps. The Isolation Camp may have contained no permanent or even built structures, and may have instead consisted simply of tents (O'Keefe 2011). The western portion of the MHPAD1 has primarily been defined to potentially include traces of the Isolation camp.




Contemporary (May 2012) aerial photo (left) from nearmap.com showing boundary of MHPAD1 (yellow outline) and approximate area of Military Isolation Camp c.1912 (red boundary), as determined by 'best – fit' overlay with contemporary mapping.

**Figure 3.3 (Top): Extract of Plan of Moorebank area c.1912, (after Figure 2.5 from GBA 2004, p.15), showing location of 'Military Isolation Camp' (red boundary) (plan formerly in collection of Liverpool Regional Museum, subsequently transferred to Liverpool City Library where it has not so far been located). (Bottom): Comparison with contemporary aerial photograph).**

A 1943 aerial photograph, towards the end of World War II, shows the presence of Defence related infrastructure in the area of MHPAD1 (Figure 3.3). Three P1 type hut buildings are shown on the south side of, and perpendicular to Bapaume Rd (the northern boundary of Titalka Park), and a U shaped building with enclosed rear yard and outbuildings is shown in the north western portion of the future park. A number of smaller buildings and structures are associated with the P1 huts or situated near the southern park perimeter.

A 1958, topographic map of the Moorebank Holsworthy Area shows that by this time, the three P1 hut buildings have been removed, and four similarly proportioned buildings have been installed immediately to the southeast (Figure 3.4). These buildings remain to the present day (Buildings: B44-45, 47 & 48), and display a variety of subsequent modifications and refurbishments to an original 1940s fabric (CDFD Aug. 2011:36). It is possible that the removed P1 hut buildings (previously mentioned) comprise three of these four remaining buildings on the southern boundary of Titalka Park. The U shaped building noted in the 1943 aerial photograph is identified in the 1958 map with the letters M.Q, possibly a reference to married quarters. Immediately adjacent to the western boundary of the present Titalka Park, the 1958 map shows a 'Canteen' building and tennis courts ('T.C'). The former still exists, together with the ground platform for the courts. The zone of ground surface disturbance related to both the canteen building and tennis courts separate the two defined areas of MHPAD1.

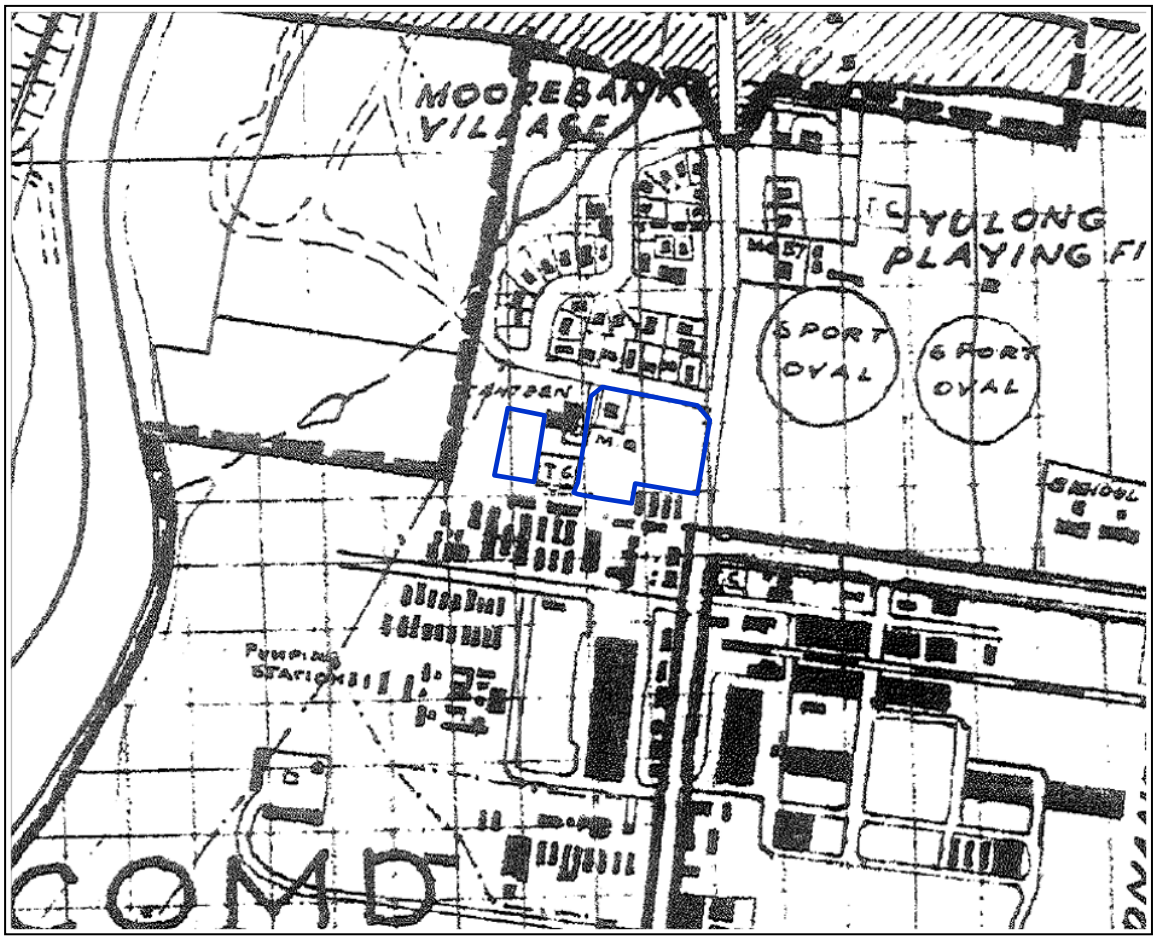



**Figure 3.4 Extract from 1958 topographic map: Moorebank Holsworthy Area CEN938d 1/9/57, Amended 22/4/58 (Australian War Memorial 123, Item 493), showing Defence infrastructure within the defined MHPAD1 area (Blue boundary) (CE C Commd Dec 1958).**

At the time of survey (2011), Titalka Park consisted of an open area park with broadly spaced and aligned planted shade trees (Eucalyptus) and continuous grass turf (Figures 3.5 – 3.7). The area is fully fenced along its eastern (Moorebank Avenue) and northern (Bapaume Road) perimeter, and appears to be used for low impact recreation by Defence personnel. No standing structures remain within the MHPAD1 area although a number of buildings, including variously modified P1 type hut buildings dating

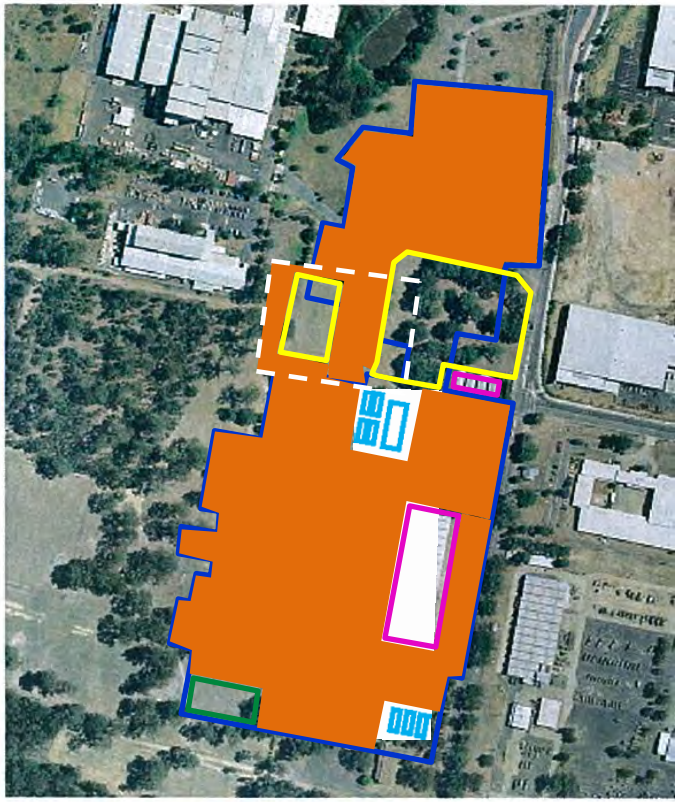
from the 1940s, were present adjacent to the southern boundary of the park and PAD area. Apart from a remnant concrete floor near the southern boundary of the park (Figure 3.7), no clear surface remains of former structures are evident.

Immediately southwest of the Canteen building, the smaller, western portion of the HMPAD1, consists of a relatively flat, open and grassed area, with a step-down, or sloped embankment to the west. The latter is a natural landform feature, marking the edge of a Tertiary aged terrace which forms the high and level ground across most of the Moorebank IMT project area. Apart from a pole supporting flood lights, there are no structures evident.

**Figure 3.5 Looking SW across Titalka Park towards buildings beyond the southern boundary of the park.**

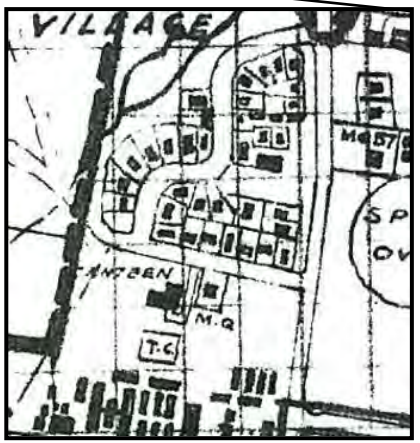
**Figure 3.6 Looking E across the northern portion of Titalka Park.**

**Figure 3.7 Looking S across a remnant concrete floor on the southern margin of Titalka Park.**




Base image: 2008from www.six.nsw.gov.au


Base image: 1945 aerial photograph from www.six.nsw.gov.au




Base image: 1958 topographic map showing post WWII development of the Moorebank Village, (Moorebank Holsworthy Area CEN938d 1/9/57, Amended 22/4/58 Aus War Memorial 123, Item 493)

**Figure 3.8 Interpretation of archaeological potential across MH PAD1**

**Key incl. Archaeological Potential**

- *High* (least disturbance evident or inferred)
- *Moderate* (some disturbance evident or inferred due to proximity of later development)
- *Low* (considerable disturbance evident or inferred due to proximity of later development)
- *Nil (high degree of disturbance from later development)*
- Approx. location of WW1 Isolation camp
- Extent of WW2 built environment
- WW2 building extant at time of survey, (demolished in 2012)
- Modified WW2 building still extant

### 3.2.2 MHPAD2

Occurs within the following points (MGA):

**Eastern Area** (Titalka Park):

| | |
|---|---|
| NW | 307214.6240688 |
| NE | 307481.6240645 |
| SE | 307485.6240347 |
| SW | 307485.6240347 |

This recording consists of a potential archaeological deposit in which the remains of World War II Department of Defence infrastructure and associated activities may be present.

A 1943 aerial photograph, dating towards the end of World War II, shows the presence of Defence related infrastructure in the area of MHPAD2 (Figure 3.9). The deposit is situated at the eastern end of Chatham Avenue within the SME (Figure 3.10). The deposit is situated within a former locus of WW2 buildings, most of which appear to have been P1 type buildings. These were situated within an area of approximately 270 x 250m. Subsequent development has impacted a large proportion of this original area (Figure 3.10). The remaining portions of archaeological potential occur in open space areas which appear to have been variously used by Defence for field training and sporting activities.

Greatest potential occurs within areas that are distant from areas of post WWII construction and high impact training grounds. The largest area of least impact (defined as 'high potential') is a central northern remnant (refer Figure 3.10) where some masonry remains (probably footings) are evident on the ground surface. To the south of this area, field training impacts include excavation and surface erosion which will have impacted potentially occurring archaeological deposits. Areas in proximity of post WWII construction areas, depending on distance and likely impact, have been variously assessed as having moderate or low potential.

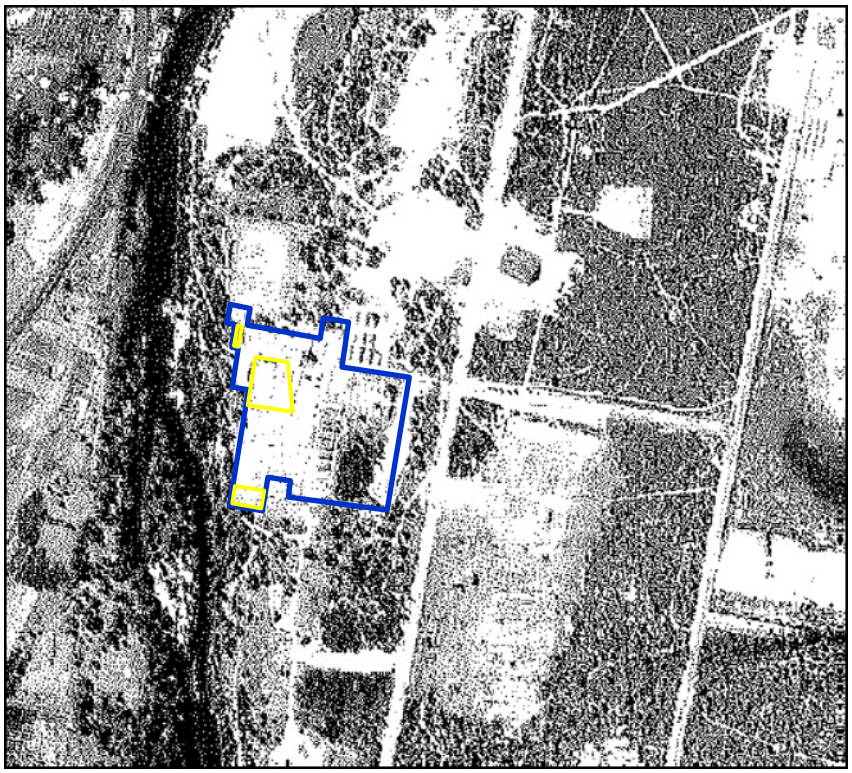


**Figure 3.9 Extract from 1949 aerial photography showing the locus of WW2 buildings and infrastructure within which the MHPAD2 recording is situated. The blue boundary Marks surviving buildings in 1956, and the yellow boundary, indicates the current surviving high potential deposits.**


Base image from www.nearmap.com, dated 9 May 2012


Base map: extract from Nov 1956 Layout of Engineer Barracks Casula

**Figure 3.10 Interpretation of archaeological potential across MH PAD2**

**Archaeological Potential**

- *High* (least disturbance evident or inferred)
- *Moderate* (some disturbance evident or inferred due to proximity of later development)
- *Low* (considerable disturbance evident or inferred due to proximity of later development)
- *Nil (high degree of disturbance from later development)*
- Extent of WW2 built environment

At the time of survey (2011), the MH PAD2 area consisted of an open grassed area, with some excavation and erosion scalds evident in the Southern western portion (Figures 3.11-3.13). No standing structures remain within the high potential portions of the PAD.

**Figure 3.11 Looking SE across the south western portion of MHPAD2. Note possible footing remains aligned in foreground**

**Figure 3.12 Looking S across western portion of MHPAD2, note footing remains in foreground**

**Figure 3.13 Detail of surface evidence of footings, also shown in Figure above**

# 4. Significance Assessment

## 4.1 Historical Themes

The national, state and local historical themes relevant to the potential archaeological deposits at Moorebank are summarised below in Table 4.1.

**Table 4.1 Summary of historical themes applicable to archaeological research potential at MHPAD1 and MHPAD2.**

| Australian Theme | NSW Theme | Local Theme(s) |
|---|---|---|
| Peopling Australia | Migration | Early nineteenth century land grants |
| Developing local, regional and national economies | Environment – cultural landscape | Subdivision of the Moorebank Estate<br>Development of the Moorebank Defence area |
| | Events | WWI and WWII use of the Moorebank Defence site |
| | Health | Isolation camp |
| Building settlements, towns and cities | Accommodation | WWI isolation camp, WWII barracks (P1 buildings) |
| Educating | Education | Military training |
| Governing | Defence | Military training, WWI and WWII camps/barracks |
| Developing Australia's cultural life | Domestic life | Military camps/barracks |

## 4.2 Assessment Criteria

The NSW Heritage Branch has defined a methodology and set of criteria for the assessment of cultural heritage significance for items and places, where these do not include Aboriginal heritage from the pre-contact period (NSW Heritage Office & DUAP 1996, NSW Heritage Office 2000). The assessments provided in this report follow the Heritage Branch methodology and their guidelines for assessing archaeological sites and relics (Heritage Branch Department of Planning 2009).

It is noted that the heritage significance of a potential archaeological deposit cannot be reliably assessed in the absence of subsurface data. As such, the following assessment is largely dependent upon the results of the test excavations proposed in this document.

### 4.2.1 Significance Assessment of MHPAD1

**Criterion (a)** *an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).*

As outlined above in Table 4.1, deposits at MHPAD1 may contain evidence relating to early land grants, the subsequent subdivision of the Moorebank estate and its development as a Defence complex, and the various phases of military camps and barracks known to exist in this area during the first half of the twentieth century.

The existence, nature and state of preservation of such evidence are not clear at this stage. However, potential exists for the site to contribute to an understanding of the layout and operation of the Moorebank Defence area.

As such, the deposits at MHPAD1 have the potential to be important in terms of the development of the local cultural landscape and the history of health, education, accommodation and domestic life at Moorebank.

MHPAD1 has the potential to be of local significance against criterion a.

**Criterion (b)** *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).*

The deposits at MHPAD1 are predicted to contain evidence relating to World War II barracks and possibly the isolation camp dating circa to World War I. Both these items had a strong association with Australian military forces. What is unclear is whether evidence for these items remains and, whether or not the isolation camp and barracks could be considered to have a strong or special association with the life or works of military personnel at Moorebank.

Prior to excavation, the significance of MHPAD1 against this criterion is unclear.

**Criterion (c)** *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).*

Potential exists for the deposits at MHPAD1 to contain evidence relating to:

- various phases of military training during the early twentieth century; and
- distinctive ways of organising space in relation to domestic life and health concerns at Moorebank.

Evidence relating to these themes would be important within the context of the development of different weaponry, associated changes in field strategies, training and engineering, as well as the development of architectural styles and forms of spatial organisation characteristic of the military (e.g. P1 buildings and isolation camps).

The subsurface deposits at MHPAD1 have the potential to be of local significance against criterion c in terms of their evidence for patterns of early twentieth century military organisation and architecture.

**Criterion (d)** *an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.*

While potential exists for the deposits at MHPAD1 to have a strong or special association with military personnel at Moorebank, the nature of such an association is not for social, cultural or spiritual reasons. Any archaeological evidence at this site is likely to be of importance more in terms of historical associations than social associations.

It is considered unlikely that the potential archaeological deposits at MHPAD1 have heritage significance against this criterion.

**Criterion (e)** *an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).*

The deposits at MHPAD1 have the potential to contain evidence relating to the various phases of military camps and barracks known to exist in this area during the first half of the twentieth century and, more limited potential, for evidence relating to early land grants, subsequent subdivisions and the development of the Moorebank Defence area. Physical evidence present at this site may include structural features, relatively intact occupation layers, open artefact scatters and/or individual artefacts that provide insights into site chronology and use. As such, potential exists for these deposits to contribute to our understanding of local history. Moreover, excavation of these deposits may well provide new insights into the nature of the barracks known to have been there during World War II; at this stage there is only limited documentary information available regarding these structures.

MHPAD1 is of local significance against criterion e due to its potential to contribute to our understanding of the function and layout of this portion of Moorebank during the early twentieth century.

**Criterion (f)** *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).*

MHPAD1 has been identified as having potential to contain evidence of P1 buildings and, to a lesser extent, evidence of a military isolation camp.

While extant P1 huts are a relatively rare site type, given that there were once thousands of these structures built across NSW, and Australia as a whole, archaeological remains of these structures are likely to be relatively common at State and National levels. Nevertheless, at the local level of the Moorebank Defence area, there are no extant P1 buildings in their original World War II locations and MHPAD1 is one of only two known locations with potential for archaeological remains of P1 buildings in their original site context.

Isolation camps are a site type that is less well understood and for which we have more limited documentary evidence. Certainly in terms of archaeological evidence they are likely to be relatively rare due to their ephemeral nature and the potential for site disturbance or destruction through subsequent land uses. If evidence exists for the isolation camp at Moorebank, it has the potential to be of local and/or State significance.

The deposits associated with MHPAD1 definitely have the potential to be of local significance against criterion f; the potential for significance at a State level is less definitive.

**Criterion (g)** *an item is important in demonstrating the principal characteristics of a class of NSW's*

- *cultural or natural places; or*
- *cultural or natural environments.*

*(or a class of the local area's*

- *cultural or natural places; or*
- *cultural or natural environments.)*

The significance of MHPAD1 against this criterion is particularly difficult to predict prior to archaeological excavation. It is unclear whether the site contains well-preserved evidence, or whether any archaeological evidence exists for the earliest phases of use.

In the event that relatively intact archaeological remains are found to be present for the World War II occupation, and/or any of the prior phases of use, the site is likely to be of local significance against criterion g.

### 4.2.2 Significance Assessment of MHPAD2

**Criterion (a)** *an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).*

Deposits at MHPAD2 may contain evidence relating to early land grants, the subsequent subdivision of the Moorebank estate and its development as a Defence complex. However, the most likely phase to be evidenced at this site are the World War II barracks.

The existence, nature and state of preservation of such evidence are not clear at this stage. However, given the presence of surface features that appear likely to relate to the period in question, potential exists for the site to contribute to an understanding of the World War II layout and operation of the Moorebank Defence area. As such, the deposits at MHPAD2 have the potential to be important in terms of the development of the local cultural landscape and the history of accommodation and domestic life at Moorebank.

MHPAD2 is likely to be of local significance against criterion a.

**Criterion (b)** *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).*

The deposits at MHPAD2 are predicted to contain evidence relating to World War II barracks. The P1 building type, thought to have once occupied this site, have a strong association with Australian military forces. What is unclear is the nature of any evidence for these structures and, whether or not the barracks could be considered to have a strong or special association with the life or works of military personnel at Moorebank.

Prior to excavation, the significance of MHPAD2 against this criterion is unclear.

**Criterion (c)** *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).*

Potential exists for the deposits at MHPAD2 to contain evidence relating to:

- various phases of military training during the early twentieth century; and
- distinctive ways of organising space in relation to domestic life at Moorebank.

Evidence relating to these themes would be important within the context of the development of different weaponry, associated changes in field strategies, training and engineering, as well as the development of architectural styles and forms of spatial organisation characteristic of the military (e.g. P1 buildings).

The subsurface deposits at MHPAD2 have the potential to be of local significance against criterion c.

**Criterion (d)** *an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.*

While potential exists for the deposits at MHPAD2 to have a strong or special association with military personnel at Moorebank, the nature of such an association is not for social, cultural or spiritual reasons. Any archaeological evidence at this site is likely to be of importance more in terms of historical associations than social associations.

It is considered unlikely that the potential archaeological deposits at MHPAD1 have heritage significance against this criterion.

**Criterion (e)** *an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).*

The deposits at MHPAD2 have the potential to contain evidence relating to World War II barracks thought to have existed in this area and, more limited potential, for evidence relating to early land grants, subsequent subdivisions and the early development of the Moorebank Defence area. Physical evidence present at this site may include structural features, relatively intact occupation layers, open artefact scatters and/or individual artefacts that provide insights into site chronology and use. As such, potential exists for these deposits to contribute to our understanding of local history. Moreover, excavation of these deposits may well provide new insights into the nature of the barracks on this portion of the Moorebank site.

MHPAD1 is of local significance against criterion e due to its potential to contribute to our understanding of the function and layout of this portion of Moorebank during the early to mid twentieth century.

**Criterion (f)** *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).*

MHPAD2 has been identified as having potential to contain evidence of P1 buildings.

While extant P1 huts are a relatively rare site type, given that there were once thousands of these structures built across NSW, and Australia as a whole, archaeological remains of these structures are

likely to be relatively common at State and National levels. Nevertheless, at the local level of the Moorebank Defence area, there are no extant P1 buildings in their original World War II locations and MHPAD2 is one of only two known locations with potential for archaeological remains of P1 buildings in their original site context.

The deposits associated with MHPAD2 definitely have the potential to be of local significance against criterion f.

**Criterion (g)** *an item is important in demonstrating the principal characteristics of a class of NSW's*

- *cultural or natural places; or*
- *cultural or natural environments.*

  *(or a class of the local area's*
- *cultural or natural places; or*
- *cultural or natural environments.)*

The significance of MHPAD2 against this criterion is particularly difficult to predict prior to archaeological excavation. It is unclear whether the site contains well-preserved evidence, or whether any archaeological evidence exists for earlier phases of use.

In the event that relatively intact archaeological remains are found to be present for the World War II occupation, and/or any of the prior phases of use, the site is likely to be of local significance against criterion g.

## 4.3 Research Potential

### 4.3.1 MHPAD1

Moorebank is documented as having European settlement from the early 1800s onwards. Military use of the site is documented from the late nineteenth century and, MHPAD1 is thought to have been the site of a military isolation camp circa World War I and barracks circa World War II.

Archaeological excavation at MHPAD1 has the potential to yield information relating to different phases and types of military occupation/use during the early twentieth century. Such evidence has the potential to contribute to an understanding of Moorebank's history in the context of themes such as twentieth century events, Defence training and education, barrack life and health within the military.

MHPAD1 is assessed as being of moderate archaeological potential; it is of local significance against criterion e and has at least reasonable potential to be of significance against criteria a, c, f and possibly g.

### 4.3.2 MHPAD2

Moorebank is documented as having European settlement from the early 1800s onwards. Military use of the site is documented from the late nineteenth century and, MHPAD2 is thought to have been the site of World War II barracks.

Archaeological excavation at MHPAD2 has the potential to yield information relating to military activity during the mid-twentieth century. Such evidence has the potential to contribute to an understanding of Moorebank's history in the context of twentieth century events, Defence training and education, and barrack life.

MHPAD2 is assessed as being of moderate archaeological potential; it is of local significance against criterion e and has at least reasonable potential to be of significance against criteria a, c, f and possibly g.

# 5. Excavation Aims and Objectives

## 5.1 Information Sought Through Test Excavation

The following is an indication of the information sought through test excavation:

- The heritage significance, if any, of the deposits at MHPAD1 and MHPAD2;
- The structural history of the site, including the materials and construction methods used, the location and purpose of the structure(s), especially for those features not currently known or adequately identified;
- The historical sequence of European land use, in particular its use by the Department of Defence through the first half of the twentieth century;
- Material culture, artefacts (ceramic, glassware, metal and masonry remains) that may provide:
    - An indication of the various uses of the site and/or details of the day-to-day lives of the people who worked or resided in the area; and
    - An insight into the origins of the material culture at the site and/or material possessions of the people who may have once worked or resided in the area.

## 5.2 Objectives and Research Questions

The primary objectives of the proposed test excavation program are to:

- Conduct an investigation of sufficient scope, to gain a representative sample of the likely archaeological resource present.
- Determine the nature and significance of any European archaeological evidence within the PAD areas;
- Where necessary, determine appropriate strategies for the management of cultural heritage values related to any confirmed archaeological evidence, relative to the proposed Moorebank IMT development.

The test excavation program will be directed at the following research questions

- Do traces of the known WWII buildings remain? Document and characterise to a level commensurate with the constraints of the testing regime and objectives.
- Do traces of the WWI Isolation Camp remain? Document and characterise to a level commensurate with the constraints of the testing regime and objectives.
- What was the function of the U-shaped building in the north western portion of Titalka Park. Does the archaeological record conform the documentary evidence for residential (married) quarters?
- Are there subsurface deposits associated with the building footings observed at MHPAD2?
- If present, how intact are the deposits at MHPAD2 and what is their probable extent?
- Do traces of Defence (or earlier) related structures or activities remain, which are not currently known from the documentary record?

- Does the archaeological evidence have the potential to provide significant information which goes beyond, or falls outside of, that already known or which could reasonably be predicted, based on current knowledge and documentation of the period?

## 5.3 Justification for the Need for Test Excavation

The proposed Moorebank Intermodal Terminal is unlikely to provide opportunities for the in situ conservation of archaeological deposits or heritage within the development footprint. With this in mind, it is proposed to undertake *test excavations* at MHPAD1 and MHPAD2 to:

- Minimise the loss of cultural heritage values;
- Recover a sample of the archaeological record, if present;
- Determine if this area of apparently minimal re-development since the 1940s, retains significant archaeological remains; and
- Where present, characterise the archaeological resource to a degree sufficient for the drafting of appropriate management strategies;

# 6. Test Excavation Methodology

The test excavation program will employ both mechanical and by-hand methodologies. Mechanical excavation will be used at MHPAD1 to cut exploratory transects and broad area excavations with the aim of exposing and tracing archaeological features. By-hand excavation will be employed to further investigate all identified features, as appropriate or warranted by the nature or fragility of the feature. By-hand excavation will also be employed at MHPAD2, where there is clearer surface evidence for the presence of archaeological features, to confirm the presence and probable extent of subsurface deposits associated with the P1 buildings that were once located there.

Excavation and or spoil processing, may cease or not be attempted, in any particular area where qualified advice indicates a potential health risk or hazard to field workers. Examples include contaminated ground (such as from asbestos or hydrocarbons) and unexploded ordnance.

## 6.1 Mechanical Excavation Methodology

A mechanical excavator with a straight edged bucket will be used to strip a series of exploratory transects or broad area excavations across the site. These will be achieved by the excavation of a series of abutting scrapes (width of the bucket), up to the desired width and length. The width of each initial excavation transect will be 1000 mm. Transects may be discontinuous, depending on obstacles/hazards encountered, and their total length will vary according to the area requiring testing, and the nature of any subsequent features encountered. Following the conduct of an initial transect, the area of excavation may be extended in selected areas, according to an on-site appreciation of the deposit and/or features encountered. Indicative locations for initial transect excavations are provided in Figure 6.1. The actual position may vary according to the need to avoid tree roots, underground services or other obstacles.

May 2012 aerial photo from nearmap.com


1943 aerial photo from six.nsw.gov.au showing World War II infrastructure

**Figure 6.1 Indicative location of initial (mechanical) excavation transects (blue), within MHPAD1 (yellow boundary), relative to contemporary and 1943 aerial photography.**

Mechanical excavation will involve the conduct of a series of shallow scrapes, each up to 50 mm deep, to an intended net spit depth. The initial spit depth will be 50 mm. The surface of each scrape will be inspected prior to the further excavation or completion of the spit. The final depth of each spit will vary according to the nature of the deposit and features exposed.

- Following excavation of each transect spit, the excavated area will be inspected for the presence of cultural material and archaeological features such as post holes, building remains and rubbish pits, which will be flagged for more detailed investigation/excavation following completion of mechanical excavation.

- In the event that *in situ* artefacts or building remains are encountered, machine excavation will be restricted such that no further machine activity occurs within an appropriate radius (nominally 1m) of this location until the extent of *in situ* deposits has been ascertained.

- Areas of interest will be cleaned by hand with trowels/brushes as necessary (refer to hand excavation methodology below).

- All identified features will be photographed and mapped in detail, with site plans and levels linked to the site datum.

- All artefacts revealed by excavation will be recorded and their locations cross referenced to the site plan; any loose items (i.e. dislodged by the machine) will be collected and bagged accordingly[70].

- A visual inspection of the excavated spoil will also be conducted in order to check for additional archaeological material; any artefactual material identified in the spoil be collected and bagged accordingly.

- General notes and photographic records will be kept for all works regardless of whether archaeological remains are encountered.

- Once a test traverse has been cleared to a depth of 50 mm and any necessary by-hand excavation areas have been isolated, or completed, a subsequent cut of 50 mm will be made using the same procedure outlined above. This will be repeated, with recording and hand excavation conducted as required, until sterile deposits are encountered or the objectives of the testing program are achieved in that area. Further excavation may not be proceeded with in areas of exposed *in situ* features, such as building foundations.

- The excavated area will be backfilled with the excavated spoil and, as necessary, imported soil.

## 6.2 By-Hand Excavation Methodology

A by-hand excavation methodology will be used:

- Adjacent surface features at MHPAD2 (Figure 6.2). In this instance, excavation trenches adjacent a given feature will not exceed 2 m x 1 m, the aim being simply to clean up features for recording and confirm the presence of subsurface deposits;

- Where surface features indicate the possible location of in situ and/or intact relics (such as the remnant concrete platform at the southern end of Titalka Park); and

- Where the mechanical methodology reveals features or in situ and/or intact relics which warrant (according to their nature or fragility) by-hand excavation.

At MHPAD2 excavation will be targeted adjacent at least two of the extant surface features (probably P1 building footings) in the main area of high archaeological potential (Figure 6.2), and at the interface of what appears to be a pathway and the footings of a P1 building in the area of moderate potential to the south.

Once the nature of deposits in these two central areas has been ascertained, this information will be used to guide management decisions regarding the remainder of areas identified as being moderate to high archaeological potential at MHPAD2.

[70] The final decision with regard to whether materials are retained for post-excavation analysis will lie with the specialist engaged to advise on early twentieth century military artefacts.


Base image from www.nearmap.com, dated 9 May 2012

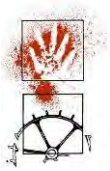

Base map: extract from Nov 1956 Layout of Engineer Barracks Casula

**Figure 6.2 Indicative locations of test excavations (red squares) proposed at MH PAD2**

**Archaeological Potential**

- *High* (least disturbance evident or inferred)
- *Moderate* (some disturbance evident or inferred due to proximity of later development)
- *Low* (considerable disturbance evident or inferred due to proximity of later development)
- *Nil (high degree of disturbance from later development)*
- Extent of WW2 built environment

Indicative test excavation locations



The by-hand excavation methodology will be as follows:

- Survey and map the micro-topography and all other features within the investigation area using an automatic level and photographic recording;
- Survey and map any other relevant features in the immediate vicinity of the investigation area using an automatic level in conjunction with a tape and compass survey and photographic recording;
- Collect surface/loose artefacts within the investigation area;
- Conduct test excavation by hand across:
    - Archaeological features, including intact structural features, activity areas/surfaces, middens, pits and post holes;
    - Depending on stratigraphic conditions, it is expected that excavation will not exceed 30 cm deep below natural ground level; and
- Record, through photographs and drawings, all archaeological features encountered

Detailed excavation procedures to be employed are outlined in Attachment A. The following is a summary of the key elements:

- Where excavation commences without a preceding mechanical scrape, grass (where present) will be removed by hand from the surface of the investigation area;
- Subsequent test excavation in the targeted areas will consist of arbitrarily defined units, such as:
    - Context 1 – Surface;
    - Context 2 – the turf layer to a depth of approximately 5 cm;
    - Context 3 – the friable root layer to about a depth of 10-15 cm;
    - Context 4 – soil layer(s) to about a depth of 15-25 cm; and
    - Where discernible, stratified floor deposits will be investigated separately;
- A Harris Matrix will be prepared that details the stratigraphic relationship between all excavation contexts, features and other archaeological deposits
- Excavation will be undertaken using trowels and handpicks;
- All excavated deposits will be sieved through a 4 x 4 mm mesh, with use of a top 10 x 10 mm mesh where appropriate (subject to any safety constraints); and
- The excavated area will be backfilled with the excavated spoil and, as necessary, imported soil.

## 6.3 Additional Information

### 6.3.1 Scope of Field Program

The scope of the test excavation methodologies will be tailored according to a total anticipated field program of up to five days. Excavations will cease in any given area when the presence of archaeological deposits of heritage significance (e.g. relatively intact deposits or deposits that have the potential to yield information unavailable elsewhere) have been identified.

Where feasible, the probable extent of such deposits will be determined and further impacts to that area, including excavation, will be avoided until an appropriate management strategy has been developed in consultation with the DP&I.

### 6.3.2 Protocol for Aboriginal Objects

The following steps will be carried out in the event that Aboriginal objects are encountered in the course of archaeological test excavations at Moorebank. No Salvage will occur, this protocol if for the conduct of archaeological testing.

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    b. Parsons Brinckerhoff and the development proponent will be informed of the find(s).

2. Immediately notify the following authorities or personnel of the discovery:

    a. The Heritage Branch of the Department of Planning and Infrastructure;

    b. An archaeologist or Aboriginal Heritage Officer from the Office of the Environment and Heritage (OEH), Environment Protection and Regulation Group, Metropolitan Branch (02 9995 5000), or call the OEH Environment Line: 131555 (excluding mobiles); and

    c. Representative(s) from the registered Aboriginal stakeholders (as appropriate).

3. Facilitate, in co-operation with the appropriate authorities and stakeholders:

    a. The recording and assessment of the finds. This will include determining if the find(s) are from a new or previously recorded site, and lodgement of an OEH site card for all new recordings;

    b. Fulfilling any legal constraints arising from the find(s). This will include complying with OEH directions, and HMP requirements in the case of a previously recorded site; and

    c. The development and conduct of appropriate management strategies. Strategies will depend on stakeholder requirements and the assessed significance of the find(s).

4. Where the management of find(s) involves the salvage excavation or collection of artefacts, this material will be curated according to the provisions of any relevant CMP, or as directed by OEH.

5. Where the find(s) are determined to have cultural heritage value according to the criteria specified in the *Heritage Act 2004*, any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from OEH.

### 6.3.3 Protocols for Human Remains

In the event that human remains are encountered in the course of test excavations at MHPAD1, the protocols outlined in Attachment B will be followed. No Salvage will occur, this protocol if for the conduct of archaeological testing.

### 6.3.4 Analysis and Curation of Recovered Materials

Artefacts recovered from the site will be bagged, labeled, recorded and analysed in accordance with the detailed procedures shown in Attachment A1, consistent with Heritage Branch standards and guidelines (NSW HODUAP 1996, and appropriate updates). Analysis of the artefacts will be conducted at the NOHC offices in Canberra. The assemblage will subsequently be placed in secure storage at an appropriate repository, to be advised by the Department of Defence.

### 6.3.5 Report Production

A report on the results of the archaeological test program will be prepared by the excavation director and will include description of all historical finds, descriptions of actions taken; and, where appropriate, recording, analysis, assessment and interpretation of the archaeological evidence. The report will form a component of the Moorebank IMT EIS cultural heritage assessment and be subject to review by statutory authorities according to the State and Commonwealth EIS processes.

Reporting will comply with standards and requirements of the NSW Heritage Council (NSW HODUAP 1996, and appropriate updates), or as negotiated between the Council and the proponent.

### 6.3.6 Personnel

The excavation director for this project will be Dr. Rebecca Parkes; CV details are currently held with the Heritage Branch of OEH. Additional information regarding Rebecca's qualifications for directing test excavations on State significant sites accompanies this document.

Military artefact specialist David Pearson will also be involved in both the excavation program and the post-excavation artefact analysis. David has worked in the digital preservation field for the last 10 years and in cultural institutions for over 18 years. For six years he worked at the Australian War Memorial, four of those years as an assistant Curator of Military Heraldry and Technology. During this time he completed his honours degree in archaeology from the Australian National University, Canberra. His thesis concerned creating a methodology to forensically reconstruct the culture biography of a Second World War German artillery piece captured at the Battle of El Alamein. Since then, David has continued to write a number of articles in academic journals on both conflict archaeological and digital preservation issues. He has also published a number of articles about military artefacts in more popular journals. David has also contributed to archaeological fieldwork on a number of diverse Australian Historical Archaeological sites; include a number of months as a site supervisor at Lake Innes, NSW. A CV for Mr Pearson can be provided upon request.

# 7.0 References


Commonwealth Department of Finance and Deregulation (CDFD) Aug. 2011 Moorebank Intermodal Terminal – Existing Aboriginal and European Heritage. Prepared by Parsons Brinckerhoff, Sydney.

Commonwealth Department of Finance and Deregulation (CDFD) Dec. 2011 *Moorebank Intermodal Terminal Preliminary Project Environmental Overview in Support of the Application*. Prepared by Parsons Brinckerhoff.

Commonwealth Department of Finance and Deregulation (CDFD) Feb 2012 *Moorebank Intermodal Terminal Project, Detailed Business Case,* Prepared by KPMG and Parsons Brinckerhoff, Sydney.

Graham Brooks and Associates Pty Ltd (GBA) 2004 Moorebank Defence Site, Moorebank. Heritage Assessment. Report to Department of Defence Property Disposals Task Force.

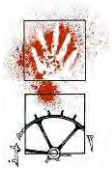
Heritage Branch, Department of Planning 2009 Assessing Significance for Historical Archaeological Sites and 'Relics'. Heritage Branch of the Department of Planning. Sydney.

Navin Officer Heritage Consultants 2011 Moorebank Intermodal Freight Terminal Scoping Study, Cultural Heritage Desktop Review, Summary compilation of known and potential constraints. An interim report to Parsons Brinckerhoff, Sydney.

NSW Heritage Office 2000 *Assessing Heritage Significance.* Update for NSW Heritage Manual, (Final Approved Text August 2000). NSW Heritage Office, Sydney.

NSW Heritage Office and Department of Urban Affairs and Planning 1996 *NSW Heritage Manual.* NSW Heritage Office, Sydney. [Refer also to subsequent updates including NSW HO 2000].

O'Keefe, Brendan 2011 History of Steele Barracks, Moorebank NSW, Report prepared for NOHC, as part of the EIS assessment of the Moorebank IMT project proposal. [To be included as historical background within the forthcoming EIS. Refer also Attachment A of this proposal].



# **Attachment A:** Archaeological Procedures Manual

# 1. Introduction

This manual provides a set of notes and guidelines on excavation and recording prepared for work to be undertaken as part of subsurface testing excavations at site MHPAD1 – Moorebank Intermodal Freight Terminal, New South Wales. The manual sets out general principles of excavation and explains the recording systems and some of the terms used. It is not designed for rigid adherence, as its application in the field will depend upon on several factors, for example, the numbers, experience and skill of field personnel, technical resources, time availability and field conditions.

## 1.1 Excavation Units

***Context***
This is the smallest unit of excavation. The term is applied to any unit of excavated deposit. A context can be a unit of stratigraphy (a lens, layer, pit fill, etc.) or it can be an arbitrary unit within a larger natural layer. A context may therefore be bounded by the sides of an excavation square or by the walls of a room. A context should not cut across layer boundaries (that is, should not include more than one depositional unit). A context may be:

- Stratigraphically defined by soil colour, texture, etc., and may be the make-up of a floor, an occupation layer, wall collapse, a wall, a pit, the fill of a pit (note that the fill and the pit are two distinct things) or a surface (i.e. an interface between layers); or

- Arbitrarily defined as a regular parcel of deposit (sometimes called a spit or an excavation unit).

Contexts are numbered in a single running series for the whole excavation, as assigned by the Excavation Director. There will be a context catalogue containing a single running series of numbers for each excavation. These numbers do not imply a stratigraphic or other order of relationship. The context provides the spatial and stratigraphic provenance for all finds and samples – all excavated material must be cross-referenced to a context.

***Grid Square*** (usually referred to as a Square)

The direction of "Grid North" will be indicated at the beginning of excavations and is to be the basis for orientations in notes and diagrams. A North-South/East-West (NS-EW) 1 x 1m grid square will usually be the major spatial unit within the overall site grid. Test excavation areas will be identified within the overall site grid. For recording and processing, squares are referred to by an alphanumeric name using capital letters (for example, B2). When it is necessary to identify a grid square the convention is that the SW corner is used as the starting point – just as when using a topographic map (shown graphically on the next page).

***Quadrats***

Where appropriate, quadrats will be used as the minor spatial units within the site grid. Quadrats are subdivisions within a grid square. There are four quadrats in a grid square, each measuring 50 x 50cm. Quadrats are identified by lower-case alphabetical letters (that is, a, b, c, d). These letters are always used in conjunction with the appropriate grid square label (for example, B2-d).

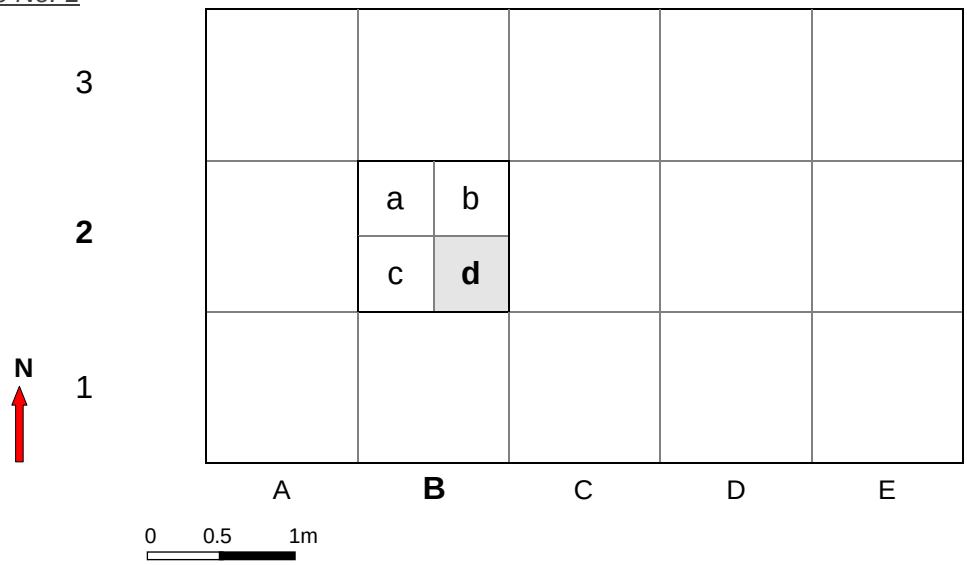
***Room/Feature***

If features are located which allow the sufficient definition of architectural units or rooms, these may be used as the boundaries for further excavation where appropriate. A room may of course contain several different contexts, cut across several grid squares, and may be divided into several quadrats. The use of a special identifier for rooms makes it easier to group excavated material from each architectural unit. Rooms are identified by letters (that is, A … Z, AA … ZZ, etc.).

*Example*

If an area being excavated is at site number '1', grid square 'B2', and quadrat 'd' then it is written as 1-B2-d. This area is shown on the grid below in bold type. If a room has been identified then the capital letter(s) referring to it are included in the descriptor (for example, 1-A-B2-d).

*Site No. 1*




In the above example, if the area being excavated has been allocated the context number 9, then the descriptor becomes 1-B2-d-9.

### 1.2 Measurements

| | |
|---|---|
| Field measurements: | metres to nearest 1cm |
| Levels: | centimetres to nearest 1cm |
| Artefacts: | millimetres to nearest 1mm |
| Weight of bulk finds: | grams to nearest 1g |
| Weight of individual finds: | grams to nearest 0.1g |
| Standard scale: | formal plans 1:20 |
| | formal section 1:10 |
| | artefacts 1:1 |

## 2. In the Field

If in doubt ask the Excavation Director.

Who does what will depend on the numbers of people available. Everyone will have to spend time at both heavy and fine digging, at sieving, and at aspects of recording. In addition, the character of the site will necessitate backfilling by hand. The strategy of excavation will vary. At the beginning – during the removal of any turf and topsoil a more robust (though not less careful) approach will be needed. When undisturbed deposits are excavated, a slower pace and finer skills are needed.

Recording is as important as excavating. Always ensure that records are kept up-to-date and that excavation does not run too far ahead of processing. Clean up any loose spoil before leaving your area – as even light rain will make it difficult to distinguish spoil from undisturbed deposits. It is also good practice to never loosen more deposit than can be cleaned up in less than a minute.

In all excavation neatness and cleanliness (of the site, records, tools, etc.) is essential. All excavated sections must be vertical, straight, and their integrity preserved; for instance never sit or stand on the

edge of an excavated section, light footwear is essential and crouching when trowelling and brushing impacts less on excavated surfaces than kneeling or lounging.

Remember – you are not writing memos to yourself, but a formal record for other people to use. What is obvious to you needs clear explanation for others. (Note: all recording is to be done using a pen – blue or black biro – not a pencil.)

### 2.1 Basic steps

Together with the Excavation Director define the area and nature of new context. If appropriate, define internal divisions within the area of the context.

i. Fill in basic information on the CONTEXT FIELD RECORD sheet.

ii. Ensure that levels have been taken, appropriate photographs taken and any plans of the surface drawn. Ensure that records of such are complete.

iii. Begin excavation – tentatively at first. A smaller test may be made in one part of the area before extending the excavation over the whole context. (Note: nearly all excavation will be by trowel, brush, and hand-shovel). Continue to make appropriate additions to the CONTEXT FIELD RECORD as work progresses.

iv. As the excavation proceeds the location of artefacts recovered should be noted on the CONTEXT FIELD RECORD sheet.

v. Soil from the excavation should be sieved and artefacts recovered placed in the labelled bag for the area and context of excavation. Remember that, if you are excavating with care, most artefacts will be recovered during excavation, sieving is a 'back-up', not a 'cure-all'.

vi. Photographs showing the progress of excavation may be taken, especially if structural features are being exposed. This will necessitate cleaning for photography and the removal of all extraneous equipment and especially people.

vii. When the context is finished, clean it up beautifully. Ensure that all sections and baulks are straight and vertical (use string and plumb-bobs to get it right). Photographs and final levels should be taken, appropriate plans drawn, all soil sieved and all finds given to the site recorder, and all notes written up – before beginning work on the next context.

### 2.2 Bags and Labels

All finds – whether collected in the course of excavation or from the sieves – must be appropriately bagged and labelled.

The descriptor provided on the bag and label must correspond with the descriptor on the CONTEXT FIELD RECORD sheet. A new bag and label for the next context will not be provided to the excavator until the previous context has been fully completed (including documentation). The artefacts contained in these bags will be subject to further detailed off-site analysis and recording at the completion of the excavation.

### 2.3 Excavation recording and later analysis

There are several components in excavation recording and the later analysis of finds and determining stratigraphic sequences. Those relating to the excavation are:

- CONTEXT CATALOGUE – a simple list of context numbers, filled in as they are assigned, recording the location (grid square and quadrat) together with a brief description of and comments on the context. This catalogue is held and maintained by the Excavation Director;

- CONTEXT FIELD RECORD – this provides a uniform system so that basic data on each excavation unit (context) is recorded in the same way. A copy of this record and a detailed

description of it are at Attachment B1. This record is to be completed by the excavator(s) of a context;

- PHOTOGRAPHIC RECORD – running list of all photographs taken in the field. Among other details, for each photograph it records the site, type of camera and film type, development details, film and frame number, context, grid square and quarter, and a description of the subject. This record will be held and maintained by the Excavation Director; and

- PLANS, ELEVATIONS AND SECTIONS – measured plans, elevations and sections provide greater precision than sketches on the context field record sheets and are part of the final documentation for the site. Anyone may be called on to draw plans, elevations and sections for any of the features at a site.

The recording components relating to post-excavation are:

- ARTEFACT CATALOGUES – record the types and details of all artefacts recovered from the excavations. The main categories are Ceramics, Glass, Metals, Building Material and Miscellaneous – each of which is divided into more detailed sub-categories. A list of the categories and sub-categories to be used is at Attachment B2. The categories shown in this attachment should be used to classify material both in the field and during later analysis. (Recording sheets for these categories together with detailed descriptions of each of the categories will be available for artefact analysis post-excavation); and

- MATRIX DIAGRAMS – using information from the Context Field Records these diagrams may be developed post-excavation to show stratigraphic sequences at each site.

## 3. Concluding Remarks

As mentioned at the outset, this manual provides general principles of excavation and explains the recording systems and some of the terms used. Each site is different and presents its own problems, the solutions for which may only be apparent on-site. However, the key points to remember from the above are:

- All excavated material must be cross-referenced to a context;

- Recording is as important as excavating. Always ensure that records are kept up-to-date and that excavation does not run too far ahead of processing;

- You are not writing memos to yourself, but a formal record for other people to use. What is obvious to you needs clear explanation for others; in addition, neatness and legibility are important;

- In all excavation neatness and cleanliness (of the site, records, tools, etc.) is essential; and

- If in doubt ask!

(Reduced copy)

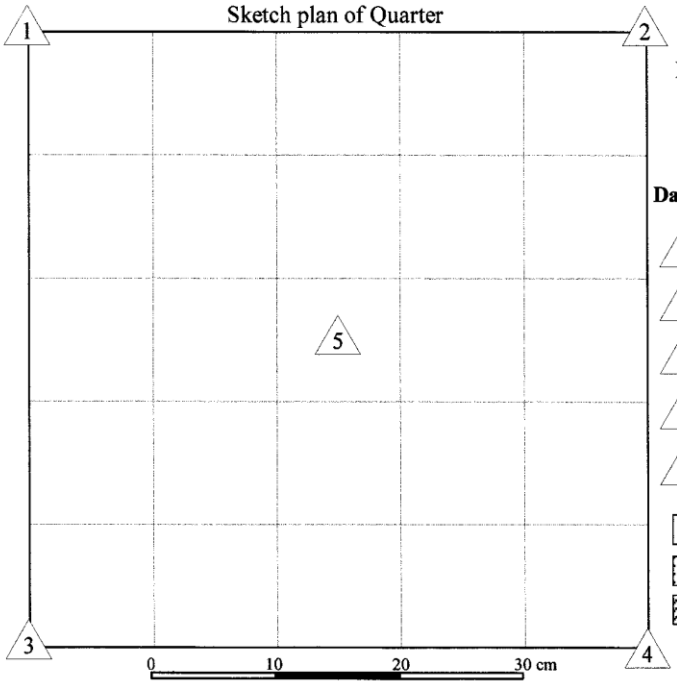
**Form No. 1**

***MHPAD1***

## CONTEXT FIELD RECORD

| **Site No.:** ..... **Site Name:** ..... | **Square** | **Quarter** | **Context No.** |
|---|---|---|---|
| **Excavator:** ..... **Date:** / / | | | |

Sketch plan of Quarter




Dumpy readings △ cm

| | **Start** Reduced Level (+/-) |
|---|---|
| **Datum** ..... | *n.a.* |
| 1 | ..... |
| 2 | ..... |
| 3 | ..... |
| 4 | ..... |
| 5 | ..... |

Arrow indicates North

Dumpy readings △ cm

| | **End** Reduced Level (+/-) | Depth *n.a.* |
|---|---|---|
| **Datum** ..... | *n.a.* | |
| 1 | ..... | ..... |
| 2 | ..... | ..... |
| 3 | ..... | ..... |
| 4 | ..... | ..... |
| 5 | ..... | ..... |

R Rock M Metal ☐
Brick G Glass ☐
Charc. C Ceram. ☐

**Artefacts, samples and discard** (as shown on sketch plan):

| | | |
|---|---|---|
| 1 ..... | 6 ..... | 11 ..... |
| 2 ..... | 7 ..... | 12 ..... |
| 3 ..... | 8 ..... | 13 ..... |
| 4 ..... | 9 ..... | 14 ..... |
| 5 ..... | 10 ..... | 15 ..... |

**Soil**: Colour: ..... Munsell No(s): .....
Texture: ..... Compaction: ..... Ph Level: .....

**Excavation method**: ..... **Sieve size**: .....

**Stratigraphic relationships** (Context Nos.)

Under: .....
Equals/Same as: .....
Above: .....

| | | | | |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

Cut By: .....
Cuts: .....
Abuts: .....

**Description of Context and Comments/Interpretation** (if there is insufficient space then use the back of this form):

.....
.....
.....
.....
.....

***THE CONTEXT FIELD RECORD***

The following provides a description of the requirements of the Context Field Record sheet.

**Site No.:** As allocated by the Excavation Director.

**Site Name:** As nominated by the Excavation Director.

**Excavator:** Initial(s) and Surname of excavator.

**Date:** Day/month/year.

**Square:** Alphanumeric reference to the 1 x 1m grid square.

**Quadrat:** Lower case letter identifying the quarter (either a, b, c, or d).

**Context:** Context number as allocated by the Excavation Director.

**Sketch plan:** Ensure plans are neat and legible, and that individual features are clearly labelled. Show features using the key at the lower right hand of the plan, and individual numbered finds (to be briefly described in the section below the sketch plan). Do not forget to include an arrow in the circle at the lower left of the plan to indicate north.

**Dumpy readings:** There is space for up to 5 measurements of height (each corner and the centre) at the start and conclusion of work. If more are needed, then record them in additional notes. Record heights in the appropriate place before and after excavation. The 'end' levels of one context will usually be the 'start' levels of another – but do not simply transfer the readings. A dumpy will be set up each day and will be used to standardise all site measurements. A reading will be taken on the datum before the heights are taken for any quarter – both before and after excavation. These readings are to be entered on the Context sheet. You will need to 'reduce' the level, or calculate the absolute height of your 5 points. A reduced level is simply your reading minus the datum reading. You should then calculate the depth of your excavation and enter it into the space provided.

**Artefacts, samples and discard:** Individual finds (e.g. coins, buttons, etc.) samples (e.g. charcoal sample, etc.) and discarded material (e.g. large amounts of brick debris, etc.) should be numbered on the sketch plan and brief details of each given in the space provided.

**Soil:**

- Colour/Munsell No: Your own description in words and the formal Munsell colour code (e.g. 10 YR 5/6 Reddish brown).
- Texture: What the sediment is like (light crumbly, hard, rubbly, etc.).
- Compaction: Has the soil been compacted through some process (e.g. once having a wall built on top of it, etc.).
- Ph Level: the results of a Ph test (e.g. 5.5).

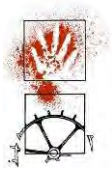
**Excavation method**: How was this context dug (shovel, trowel, etc.).

**Sieve size:** Indicate sieve size (e.g. 5mm) and whether dry or wet sieving was done, or whether the soil could not be sieved and why.

**Stratigraphic relationships:** Shows the relationship of this context to others. The bold type box in the centre of the matrix should contain the same number as shown in the Context box at the top right-hand side of the Context sheet. The remaining boxes should show the numbers of the contexts immediately around your context.

**Under:** Enter the code number of contexts that are physically above your context.

**Equals/ Same as:** Enter the code number of contexts that are stratigraphically the same or which appear to be the same as contexts in arbitrarily separated excavation units.





**Above:** Enter the code number of contexts that are physically below your context.

**Cut by:** Enter the code number of contexts that cut through your context (e.g. a pit dug from above it).

**Cuts:** Enter the code number for contexts cut by your context (e.g. lower, earlier contexts through which a pit is dug).

**Abuts:** Enter the code number of contexts that adjoin, touch or border on your context.

**Description of context & Comments/ Interpretation** What the context is and what it looks like. First consider the sediment matrix and then look at its contents. You need to consider the current status of the context (i.e. its integrity). Is there any evidence of disturbance (human, animal, insect, or tree roots)? Consider the likely origin, identification or mode of deposition of the context (collapsed wall, ash dump, pit fill, etc.). Is the material primary (material in original context of construction, use or discard), secondary (natural collapse and infill, post-depositional) or tertiary (deliberately re-deposited during the period of occupation, e.g. cleaning out of occupation debris, floor make-up, etc)? Comment, if appropriate, whether any material in the context has a fresh appearance or is weathered or abraded. Finally, what do you think gave rise to the context – how did it come about?

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# LIST OF ARTEFACT CATEGORY EXAMPLES

(in alphabetical order)

| Major Categories | Sub-Categories |
|---|---|
| **Building Material** | Brick<br>Mortar<br>Render<br>Concrete<br>Asphalt<br>Sandstone<br>Other natural stone<br>Asbestos<br>Iron sheet (flat/corrugated/plated etc)<br>Wood |
| **Ceramic** | Earthenware<br>Porcelain<br>Stoneware<br>Terracotta |
| **Glass** | Container (e.g. bottles)<br>Flat (e.g. window)<br>Tableware (e.g. bowls, dishes)<br>Insulator |
| **Metal** | Container (e.g. tins)<br>Nails, screws, etc.<br>Wire<br>Structural (includes architectural, door/window fittings)<br>Tools<br>Machinery part(s)<br>Transport & storage (e.g. horse equipment, carriage components, barrel hoops)<br>ammunition (ordnance)<br>firearm (part(s)) |
| **Miscellaneous** | Ammunition<br>Bones<br>Charcoal<br>Clothing (includes buttons, buckles, other uniform traces, etc.)<br>Coins<br>Footwear<br>Leather<br>Personal adornment (e.g. jewellery and beads)<br>Rubber<br>Seeds and other botanical material<br>Smoking pipes<br>Toys etc. |
| **Samples** | Brick debris<br>Pollen<br>Soil<br>Imported gravel<br>Other material |

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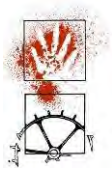
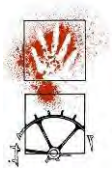


## **Attachment B:** Protocol for the discovery of human remains



## Protocol to be followed in the event that suspected human remains are encountered in the course of archaeological test excavations at Moorebank

No Salvage will occur, this protocol if for the conduct of archaeological testing.

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. Parsons Brinckerhoff and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context (Be aware that the site may be considered a crime scene containing forensic information). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following people of the discovery:

    a) The local Police (this is required by law);

    b) Department of Planning and Infrastrucure

    c) An archaeologist or Aboriginal Heritage Officer from the Office of the Environment and Heritage (OEH), Environment Protection and Regulation Group, Metropolitan Branch (02 9995 5000), or call the OEH Environment Line: 131555 (excluding mobiles);

    d) An archaeologist or appropriate staff member from the Heritage Branch, Office of the Environment and Heritage (OEH) (02 98738500); and

    e) Representative(s) from the registered Aboriginal stakeholders (as appropriate).

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Excavation works in the area of the find(s) may not resume until written approval is received from the relevant statutory authority: from the Police or Coroner in the event of an investigation, or from OEH in the case of Aboriginal or Non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.

In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage Council, then all or some of the following steps *may* be conducted:

6. Facilitate, in co-operation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

7. If the specialist identifies the remains as non-human then, where appropriate, the protocol for the discovery/recording of Non-Aboriginal or Aboriginal artefacts should be followed.

8. If the specialist determines that the remains are human, then the proceeding course of action may be of three types:

a. The remains are of an Aboriginal or non-Aboriginal person who died less than 100 years ago. All further decisions and responsibilities regarding the remains and find location rest with the Police and/or the State Coroner.

b. The remains are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

    i. Ascertain the requirements of the Heritage Branch (OEH), the proponent, the project archaeologist, and the views of any relevant community stakeholders;

    ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

        1. Avoiding further disturbance to the find and conserving the remains in situ (this option may require relocating the development and this may not be possible in some contexts);

        2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

        3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

        4. Recovering samples for dating and other analyses; and/or

        5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

c. The remains are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

    i. Ascertain the requirements of the relevant Aboriginal stakeholders, the OEH, the proponent, and the project archaeologist;

    ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

        1. Avoiding further disturbance to the find and conserving the remains in situ, (this option may require relocating the development and this may not be possible in some contexts);

        2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

        3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

        4. Recovering samples for dating and other analyses; and/or

        5. Subsequent reburial at another place and in an appropriate manner determined by the Aboriginal stakeholders and the OEH.

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# Addendum to:

## Research Design

# Archaeological Test Excavation Program European Heritage

## Moorebank Intermodal Terminal

*Navin Officer Heritage Consultants* *3 September 2012*

### The Purpose of this Document

This document is an addendum to the Research Design for the Archaeological Test Excavation Program, European Heritage and presents the additional information requested by Department of Planning and Infrastructure (DP&I).

At a meeting held with DP&I on 29 August 2012 the European heritage assessment and test excavation program were discussed in terms of the scope of works and information required by DP&I. As a result of that meeting it is understood that:

- DP&I do not need to further review the NOHC Research Design for the Archaeological Test Excavation Program, European Heritage;
- DP&I have requested additional information in the form of a table that outlines identified heritage items (built and non-built) at Moorebank including: site type, period of construction/use; archaeological potential, details of whether or not the site is to be tested in the current program and if not, why not – mapping to support this table was also recommended;
- Of particular interest to DP&I was the existence of any additional areas of archaeological potential that are not the target of the current investigations at MHPADs1-3; and
- A more detailed assessment of European heritage at Moorebank including: the results of the current test excavations, implications for the other identified sites, individual site assessments and overall site significance, and further information regarding historical research and phases of site use/disturbance will be submitted in support of the EA application.

### European Heritage at Moorebank

Twenty six European heritage recordings have been identified within the Moorebank Intermodal Terminal study area. These items are summarised below in Table 1; they comprise a mixture of built and non-built items, areas of potential archaeological deposit and locations identified through historical research. This latter group corresponds to locations documented on nineteenth and early twentieth century maps; these locations were inspected during a field survey and have been assessed to have negligible research potential due to the extent of subsequent site disturbance.

The locations of all European recordings are shown on the map in Figure 1, which also illustrates the main areas of gross disturbance at Moorebank.

Descriptions of MHPAD1 and MHPAD2 are provided in the Research Design previously submitted to DP&I, a brief description MHPAD3 is provided at the end of this addendum. Relevant details of modifications to the excavation methodology proposed at MHPAD3 are also provided.

**Table 1 Summary of European recordings and archaeological potential at Moorebank according to chronological phase.**

| Site code | Site type/ description | Age period | Inside proposed construction footprint? Y/N | Degree of disturbance to site | Summary of Archaeological potential | Is deposit/location physically accessible? |
|---|---|---|---|---|---|---|
| **Pre Defence Occupation Phase** | | | | | | |
| 19CFarm-1 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High - two phases of Defence construction and demolition have occurred in this area since 19C occupation | nil | Yes |
| 19CFarm-2 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High - two phases of Defence construction and demolition have occurred in this area since 19C occupation | low | Yes |
| 19CFarm -3 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | N | High degree of disturbance from construction and subsequent demolition of former sewerage treatment plant | nil | Yes |
| 19CFarm -4 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High degree of disturbance from construction and subsequent demolition of adjacent former sewerage treatment plant | low | Yes |

| Site code | Site type/ description | Age period | Inside proposed construction footprint? Y/N | Degree of disturbance to site | Summary of Archaeological potential | Is deposit/location physically accessible? |
|---|---|---|---|---|---|---|
| 19CFarm -5 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High degree of disturbance from Defence related excavations and landscaping, include removal of original land surface | nil | Not applicable |
| 19CFarm -6 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High degree of disturbance from Defence related excavations and landscaping | nil | Yes |
| 19CFarm -7 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | Despite the presence of tree cover, this area has been highly disturbed by Defence training earthworks | nil | Yes |
| 19CFarm -8 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | N | Despite the presence of tree cover, this area has been highly disturbed by Defence training earthworks | nil | Yes |
| 19CFarm -9 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High degree of disturbance from Defence related landuse, infrastructure and landscaping | low | Yes |
| 19CFarm-10 | Former building shown on 1890 Moorebank Farms Subdivision plan | 1840s to c.1912 | Y | High degree of disturbance from previous construction and demolition of Defence residential housing | nil | Yes |

| Site code | Site type/ description | Age period | Inside proposed construction footprint? Y/N | Degree of disturbance to site | Summary of Archaeological potential | Is deposit/location physically accessible? |
|---|---|---|---|---|---|---|
| Orchard | Former orchard 'PE Barker Orchard' shown on 1888 plan | 1840s to c.1912 | Y | High to moderate degree of Defence related construction, landscaping and earthworks | nil | Yes |
| 1912-1 | Former building shown on 1912 plan | 1840s to c.1912 | Y | High degree of Defence related disturbance involving complete removal of original land surface | nil | Not applicable |
| 1912-2 | Former building shown on 1912 plan | 1840s to c.1912 | Y | High degree of disturbance from construction of buildings | nil | Yes |
| **WW1 and WW2 Defence Phases** | | | | | | |
| SM-1 | Former loading stage - Sand mining and transport via light rail | 1917 – 1930s | Y | High degree of disturbance from Defence related construction and landscaping | nil | Yes |
| SM-2 | Former siding and sand loading bins - Sand mining and transport via light rail | 1917 – 1930s | N | Moderate degree of disturbance from Defence training earthworks and possibly also from adjacent rail construction | low | Yes |
| MH3 | Piece of light rail portion (not *in situ*) | 1917-1930 | Y | Within area highly disturbed by landscaping for training infrastructure | Low - not considered to be in situ | Yes |
| MH4 | Piece of light rail portion Consisting of two joined lengths (not *in situ*) | 1917-1930 | N | Within area highly disturbed by landscaping for training infrastructure | Low - not considered to be in situ | Yes |

| Site code | Site type/ description | Age period | Inside proposed construction footprint? Y/N | Degree of disturbance to site | Summary of Archaeological potential | Is deposit/location physically accessible? |
|---|---|---|---|---|---|---|
| MHPAD1 | Potential archaeological deposit – Titalka Park (location of former group of WW2 buildings and WW1 isolation camp) | Pre WW1 up to and including the 1950s | Y | WW2 buildings have been demolished. Subsequently developed as a park | high | Yes |
| MHPAD2 | Potential archaeological deposit (location of WW2 period buildings) | 1940s till demolished, probably in the 1950s | Y | WW2 buildings have been demolished. PAD consists of remnant areas of undeveloped open space | Moderate to high | Yes |
| MHPAD3 | Remnant paved and garden areas in the vicinity of the former Drill Hall group of buildings (former buildings B36 – 40) | 1940s up to present | Y | All structures were demolished this year, however adjacent paved areas and garden beds remain partially intact | Moderate to high | Yes |
| **All remaining WW2 period structures** | | | | | | |
| Cust Hut | Cust Hut | Relocated from Kapooka to Moorebank, possibly pre 1948, another sources suggests construction c. 1952 | Y | Building intact and in good condition | Building thought to have originally had an earthen floor which was subsequently overlain with a concrete slab. Archaeological deposit may remain under the current slab. | No, any potential archaeological excavation would occur as a salvage strategy in the event that the building is demolished and/or removed |

| Site code | Site type/ description | Age period | Inside proposed construction footprint? Y/N | Degree of disturbance to site | Summary of Archaeological potential | Is deposit/location physically accessible? |
|---|---|---|---|---|---|---|
| B7-B9 & B103 | P1 style buildings now serving as Defence administration buildings | 1940s onwards | Y | Buildings have been substantially modified. Buildings have been re-positioned and their current location does not relate to their WW2 history or function | Nil – the deposits under and around these structures do not relate to any significant phase of this building's use | Not applicable |
| **Post WW2 Defence Phases** | | | | | | |
| MH1 | Dog Cemetery | 1960s onwards | Y | Undisturbed at time of survey | Site significance does not warrant archaeological excavation | Yes |
| MH2 | Pair of shallow linear drainage ditches, roughly bordered with rough sandstone cobbles (military origin) | 20th Century | N | Essentially a surface feature, remaining cobbles have been displaced | Low - site significance does not warrant archaeological excavation | Yes |
| MH5 | Large above ground concrete slab (military origin) | 20th Century | Y | Above ground, in tact feature. | Site significance does not warrant archaeological excavation | Yes |
| MH6 | Commemorative garden | Form the second half of twentieth century | Y | Undisturbed at time of survey – surface features and plantings | low | Yes |

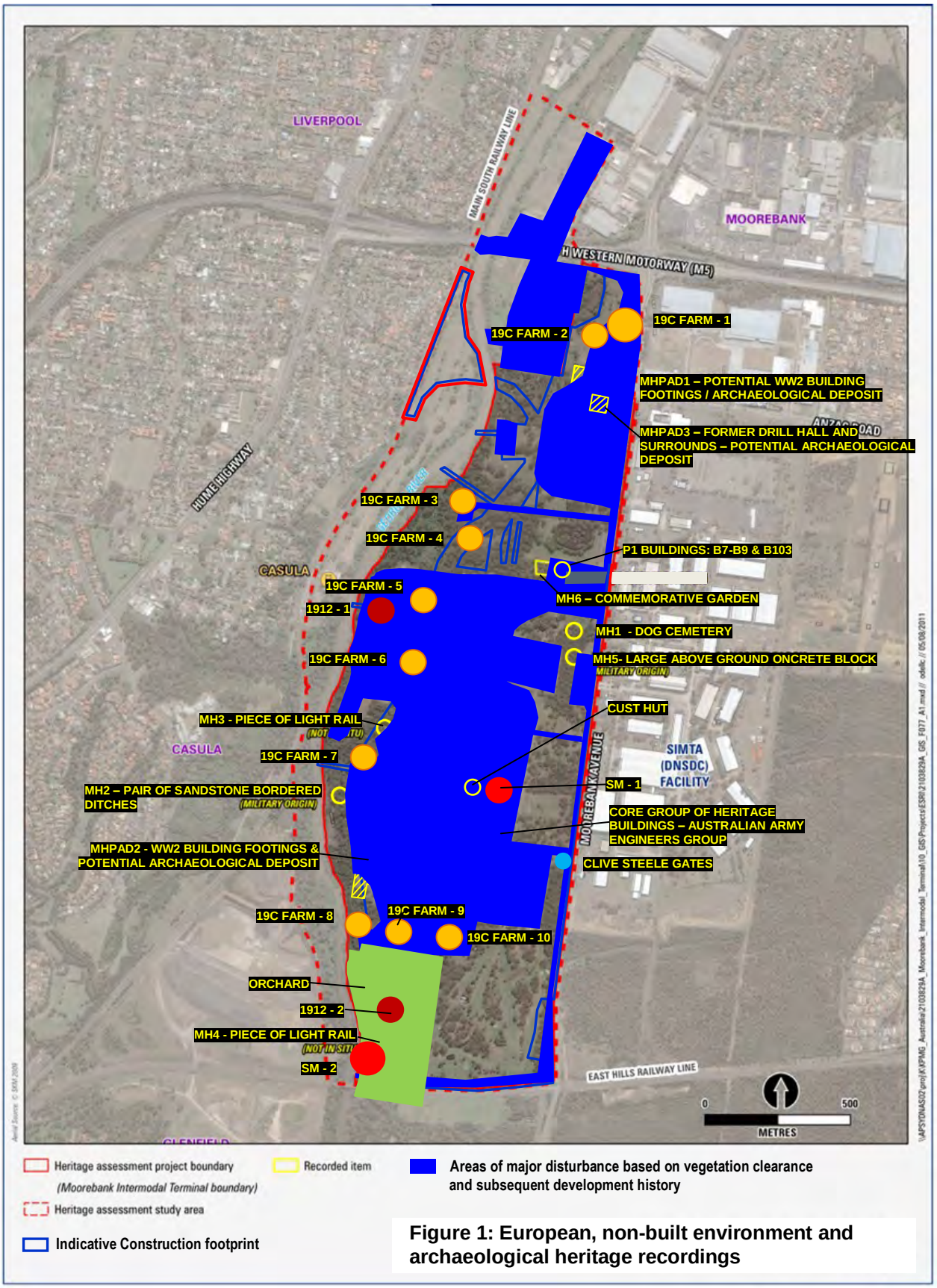


**Figure 1: European, non-built environment and archaeological heritage recordings**

## MHPAD3 Site Description

Due to the demolition methods employed, there appears to be no remaining archaeological potential within the immediate footprints of the former buildings. In most cases, subsurface ground disturbance has also extended to adjacent areas and former paving. There is one exception however, in the area of the former Drill Hall (Building B40). The ground and deposits surrounding this former building site remain intact. A capping of surviving asphalt paving protects potential archaeological deposits on the northern, eastern and western sides. The garden bed and entrance path at the southern end of the building site is also undisturbed. Similarly, a garden bed and asphalt area also survives at the southern end of the site of a former P1 type building, that was situated immediately to the west of Drill Hall (part of the B36 – 39 building group). These remnant areas around the former Drill Hall site have been identified as Moorebank Historical PAD3 (MHPAD3).

It is proposed to conduct test excavations in two areas within MHPAD3 (Figure 2), to test the nature and significance of any archaeological material that may be present. The results of this investigation will also assist in the interpretation of results from MHPADs 1 and 2, which also include the sites of former P1 type buildings.

**Figure 2** Indicative locations of test excavations (red squares and rectangle) proposed at MH PAD3

## Information Sought Through Test Excavation

The following is an indication of the information sought through test excavation at MHPAD3:

- The structural history of the site, including the materials and construction methods used;
- The historical sequence of European land use, in particular its use by the Department of Defence through the first half of the twentieth century;
- Material culture, artefacts (ceramic, glassware, metal and masonry remains) that may provide:
    - An indication of the various uses of the site and/or details of the day-to-day lives of the people who worked or resided in the area; and
    - An insight into the origins of the material culture at the site and/or material possessions of the people who may have once worked or resided in the area.

## Justification for the Need for Test Excavation

The proposed Moorebank Intermodal Terminal is unlikely to provide opportunities for the in situ conservation of archaeological deposits or heritage within the development footprint. With this in mind, it is proposed to undertake *test excavations* at MHPAD3 to:

- Minimise the loss of cultural heritage values;
- Recover a sample of the archaeological record, if present;
- Determine if this area of apparently minimal re-development since the 1940s, retains significant archaeological remains; and
- Where present, characterise the archaeological resource to a degree sufficient for the drafting of appropriate management strategies.

## Excavation Methodology

The excavation methodology proposed at MHPAD3 follows the same principles detailed in the previously submitted Research Design. Excavation will comprise two hand excavation pits (1 x 1 m) within areas of intact gardens and a one metre wide trench beneath a section of intact asphalt paving (Figure 2). A concrete saw and mechanical excavator will be used to assist with removal of a one metre wide strip of asphalt. A carefully monitored machine methodology will also be employed for initial excavation within this trench: Depending upon the nature of deposits within the trench, a by-hand excavation technique will be adopted where necessary.