



NON-INDIGENOUS HERITAGE MANAGEMENT PLAN

FOR SAND EXTRACTION OPERATIONS
FROM
LOT 218 DP 1044608 AND
LOT 220 DP 149608, SALT ASH

FINAL

July 2016



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LOT 220 DP 149608, SALT ASH

FINAL

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1.0 Introduction

Mackas Sand Pty Ltd (Mackas Sand) operations on Lot 218 and Lot 220 are located approximately 25 kilometres north east of Newcastle near Salt Ash in the Port Stephens local government area (LGA), New South Wales (refer to **Figure 1.1**). Mackas Sand directors have operated sand extraction operations in the area since 1992. Lot 218 and Lot 220 are owned by the Worimi Local Aboriginal Lands Council.

Mackas Sand was granted Project Approval No. 08_0142 (PA 08_0142) on 20 September 2009 by the Minister for Planning under Part 3A of the Environmental Planning and Assessment Act 1979 to operate sand extraction operations at Lot 220 and Lot 218. It is estimated that in excess of 21 million tonnes of sand resource will be extracted from Lot 218 and Lot 220, with Lot 218 having an indefinite extraction life due to the ongoing movement of sand from the adjoining mobile dunes.

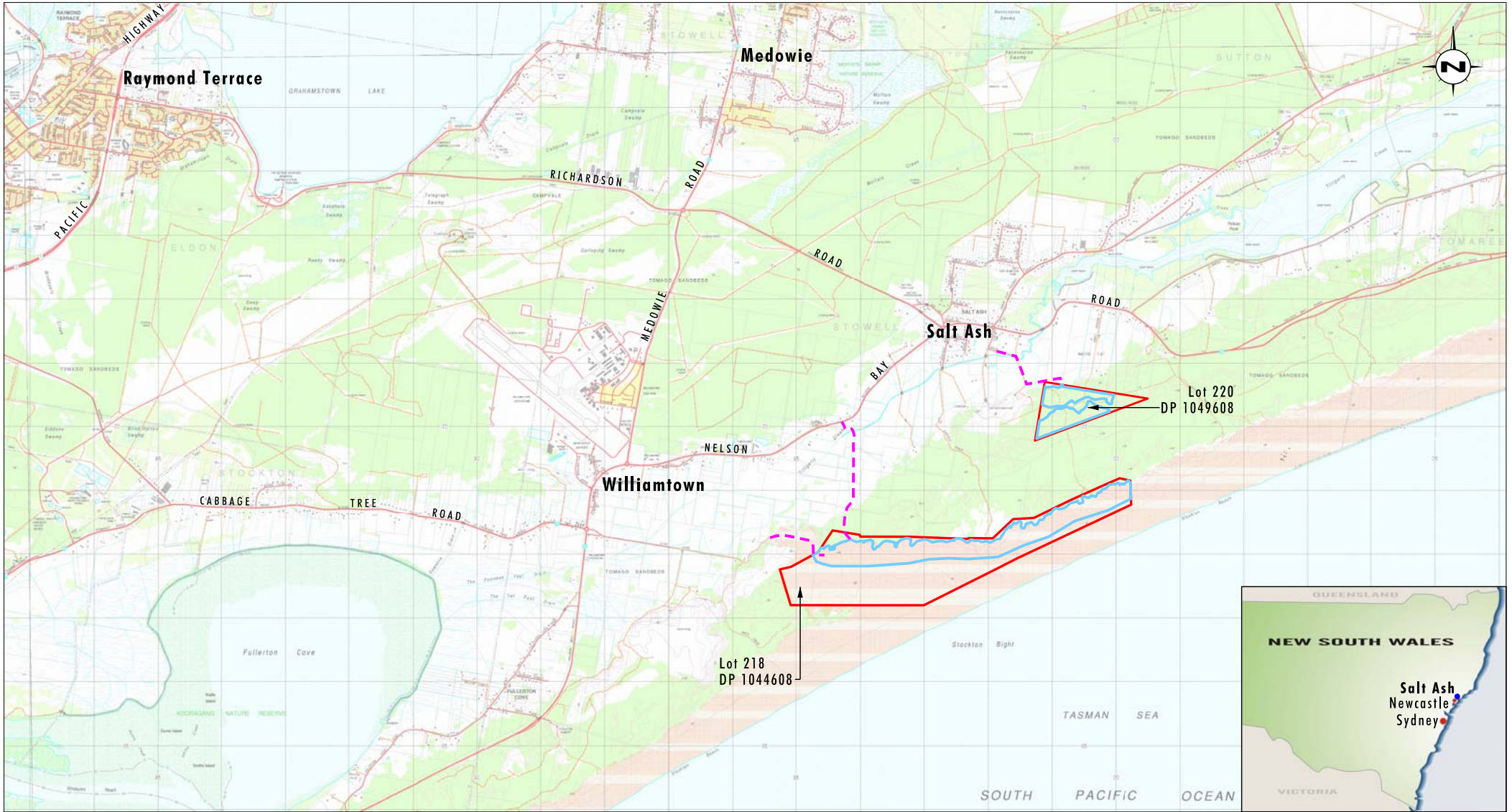
A modification to PA 08_0142 was approved on 30 September 2013 by the NSW Planning Assessment Commission (PAC) under delegation of the Minister for Planning and Infrastructure (now Minister for Planning and Environment-DP&E). The modification (PA 08_0142 MOD1) includes approval to extract within 0.7 metres of the highest predicted groundwater level provided the final landform is at least 1 metre above the highest predicted groundwater level and the approval of an alternate route to access Lot 218. The alternate route connects directly from Lot 218, northward to Nelson Bay Road, as depicted within **Figure 1.1**.

A second modification to PA 08_0142, (MOD2), was approved by the PAC on 16 March 2016. The modification allows for an increase in maximum hourly truck movements (in and out) of Lot 218 via the approved alternate access road.

1.1 Mackas Sand Operations

Key operational features relevant to this Aboriginal Cultural Heritage Management Plan (ACHMP) are:

- The approved hours of extraction being 24 hours a day 7 days a week except for operations within 250 metres of the Hufnagl Residence (R27) when operations are limited to 7.00 am to 6.00 pm Monday to Friday with no operations within 250 metres of R27 outside these times.
- Transportation of sand from Lot 220 along Oakvale Drive between 5.00 am and 10.00 pm Monday to Saturday and 8.00 am to 12.00 pm Sundays and Public Holidays in accordance with provisions of Condition 9 (b) of Schedule 3 of PA 08_0142 as Mackas Sand has agreements with the owners of residences facing Oakvale Drive. Copies of these agreements have been provided to the DPE.
- Transportation of sand from Lot 218 along the Alternate Access Road between 5.00 am and 10.00 pm Monday to Saturday and 8.00 am to 12.00 pm Sundays and Public Holidays in accordance with provisions of Condition 9 (b) of Schedule 3 of PA 08_0142 as Mackas Sand has an agreement with the owners of 2344, 2353 and 2368 Nelson Bay Road. Copies of these agreements have been provided to the DPE.



Source: Department of Lands (2006)

0 1 2 4 km
1:85 000

Legend

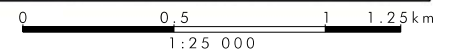
- ▭ Lot Boundaries
- ▭ Approval Areas
- - - Approved Site Access

FIGURE 1.1

Locality Plan



Source: Aerial: Google Earth, 2008

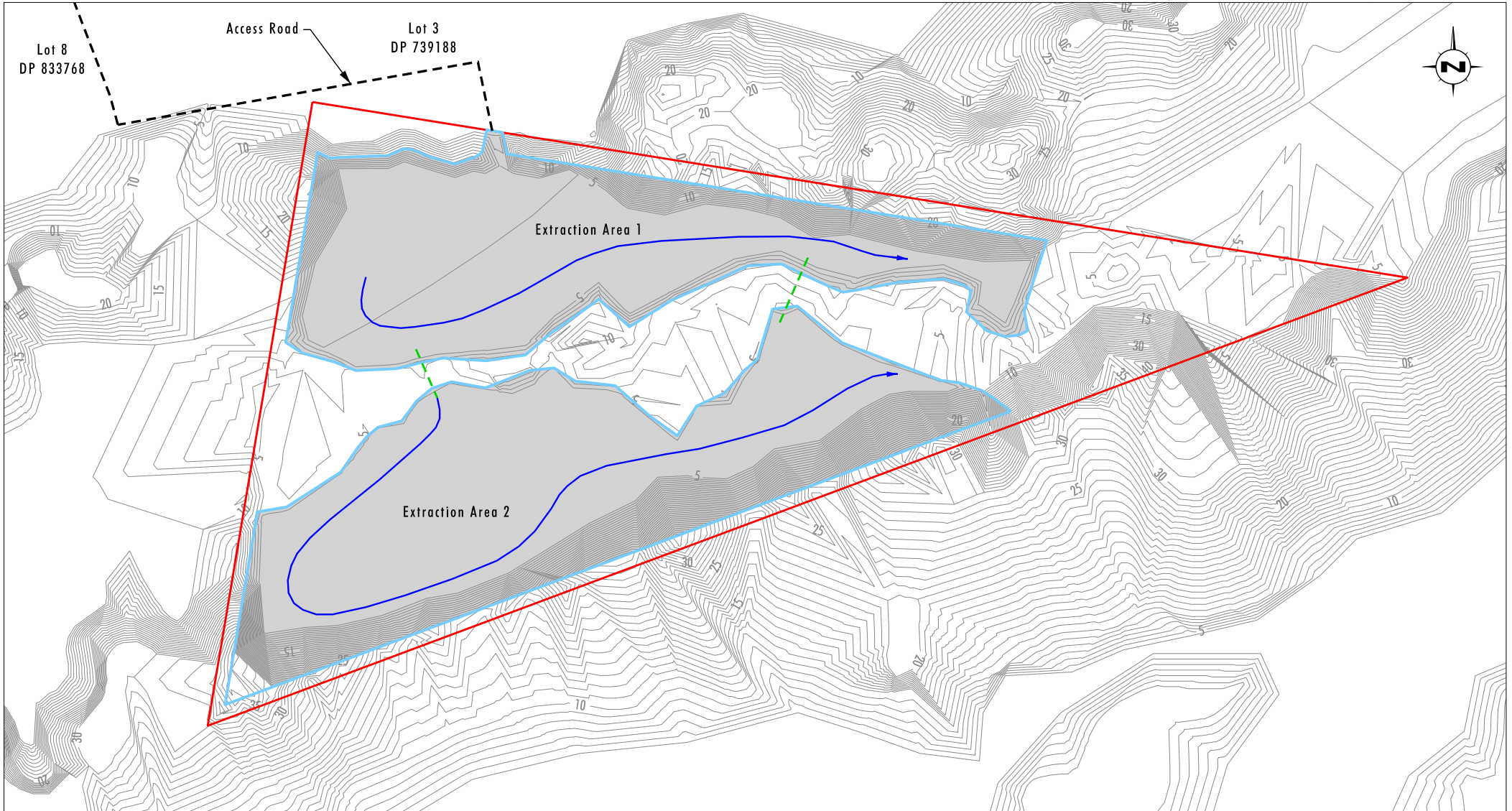


Legend

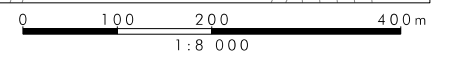
- Lot 218 Boundary
- Lot 218 Extraction Area
- Approved Site Access

FIGURE 1.2

Extraction Area Lot 218



Source: Cadastral: Department of Lands, 2003
 Note: Contour Interval 10m



Legend

- Lot 220 Boundary
- Lot 220 Extraction Area Boundary
- - - Internal Access Roads
- - - Access Road
- Direction of Extraction

FIGURE 1.3

Extraction Area Lot 220

1.2 Project Approval Requirements

Condition 30 of Project Approval 08_0142 requires that Mackas Sand prepares and implements a NIHMP that addresses historical heritage matters identified by the Department of Planning and Environment. Condition 30 is provided in full below:

The proponent shall prepare and implement a non-indigenous Heritage Management Plan for the project to the satisfaction of the Secretary. This plan must:

- a) *be prepared in consultation with the Heritage Branch and Council, and be submitted to the Secretary for approval prior to the disturbance of any heritage item, including the identified tank traps;*
- b) *include:*
 - o *archival recording of the tank traps, in accordance with the requirements and guidelines of the Heritage Branch;*
 - o *a protocol for the investigation, removal and storage of the tanks traps, and their reinstallation following quarrying operations; and*
 - o *a description of the measures that would be implemented if any new heritage objects or items are discovered during the project.*

The Proponent shall implement the approved management plan as approved from time to time by the Secretary.

Mackas Sand has engaged Umwelt (Australia) Pty Limited (Umwelt) to prepare this NIHMP in accordance with Condition 30 of Project Approval 08_0142.

1.3 Background Information

The approval areas consist of two areas of land – Lot 218 in DP 1044608 (with adjoining access across Lot 227 in DP 1097995) and Lot 220 in DP 1049608, (with access across Lot 3 in DP 739188 and Lot 8 in DP 833768) as shown on **Figures 1.2** and **1.3**. Both Lot 218 and Lot 220 are owned by Worimi Local Aboriginal Land Council. These two areas are located within the Stockton Bight dune system approximately 20 to 25 kilometres to the northeast of Newcastle, near Salt Ash. Modification to Project Approval 08_0142 was approved in September 2013 for the construction of an alternate access track to Lot 218 and temporary lowering of extraction depth.

Lot 218 is comprised of approximately 412 hectares of mobile sand dune, of which the approved extraction area and related activities occupy an area of approximately 150 hectares. A small unsealed road of approximately 50 metres in length will be constructed within mobile sands in Lot 227 to provide access to Lot 218. Lot 218 is adjoined by the Worimi Conservation Lands to the north, south and east and the Quality Sands and Ceramics sand quarry to the north-west. This NIHMP applies to the areas of Lot 218 and Lot 227 that will be subject to impact under Project Approval 08_0142.

Lot 220 has an area of approximately 76 hectares and is accessed via an unsealed access road extending from an existing electricity easement across Lot 8 DP 833768 and Lot 3 DP 739188 (refer to Figure 1.3). This approval area adjoins an existing sand extraction operation immediately to the west, operated by Sibelco. An existing Mackas Sand and Soil Pty Ltd operation is also located approximately 750 metres to the west. Rural land holdings and a sand quarry operated by Hunter Quarries adjoin the site to the north and

vegetated sand dunes that form part of the Worimi Conservation Lands adjoin Lot 220 to the east and south.

The approval areas were the subject of a Historical Heritage Review conducted as a component of an Environmental Assessment (EA) (Umwelt 2009a: Appendix 6). The EA incorporates a Statement of Commitments, of which Section 5.4 relates to Historical/non-indigenous heritage and was developed on the basis of mitigation and management recommendations provided in the Historical Heritage Review (Umwelt 2009a).

1.4 Purpose and Scope of the NIHMP

This NIHMP has been prepared in accordance with Condition 30 of Major Project Approval 08_0142 and the Statement of Commitments and Environmental Assessment (including the Historical Heritage Review) submitted to DPE as part of the approval process.

In order to meet the requirements of Condition 30 of the Project Approval 08_0142 and to provide clear guidance to Mackas Sand regarding the management of non-indigenous heritage within the approval areas, the NIHMP incorporates the following information:

- a review of relevant legislation
- a review of the historical context of the approval areas including the results of the Historical Heritage Review of the approval areas (Umwelt 2009: Appendix 6)
- the provision of detailed non-indigenous heritage management strategies
- a clear outline of the roles and responsibilities of the entities involved in the NIHMP and its implementation.

The NIHMP will be in place for the duration of the project (unless otherwise directed by relevant legislation or approvals).

2.0 Legislative Context

The Environmental Planning and Assessment Act 1979 (EP&A Act) and the Heritage Act 1977 (NSW) are the primary statutory controls protecting historic heritage within New South Wales.

2.1 Environmental Planning & Assessment Act 1979

The EP&A Act regulates development activity in New South Wales. The activities approved under Major Project Approval 08_0142 were assessed as a 'Major Project' under Part 3A of the EP&A Act. Under Section 75U of the EP&A Act, it is not necessary to obtain an excavation permit under Section 139 of the Heritage Act or approval under Part 4 of the Act. In addition, Division 8 of part 6 of the Act does not apply to prevent or interfere with the carrying out of an approved project.

Projects approved under Part 3A of the EP&A Act are subject to conditions of approval issued by DPE and (where relevant) non-indigenous heritage is addressed by appropriate conditions. As discussed above, non-indigenous heritage is directly addressed by Condition 30 of Major Project Approval -08-0142.

Furthermore, Section 75J (5) states that conditions of approval for the carrying out of a project may require the proponent to comply with obligations made in a statement of commitments submitted by the proponent as part of the development approval process. The Terms of Approval for Major Project Approval 08_0142 state that except where varied by specific approval conditions, the approved activities should be carried out in accordance with the Statement of Commitments and recommendations provided as part of the EA (Umwelt 2009a). As discussed in **Section 1.1**, **Section 5.4** of the Statement of Commitments established commitments in relation to non-indigenous heritage, which reflected the recommendations provided in the Historical Heritage Review component of the EA (Umwelt 2009a: Appendix 6).

2.2 Heritage Act 1977 (NSW)

As discussed above, the project is defined as a major project and has approval under Part 3A of the EP&A Act. As such, the Minister for Planning is the determining authority and the provisions of the Heritage Act 1977 do not apply.

3.0 Historical and Archaeological Context

The development and implementation of appropriate non-indigenous management strategies requires an understanding of contextual information relevant to non-indigenous heritage within the approval areas. For this reason, information regarding the historical and archaeological context of this management plan is provided below.

3.1 European Historical Context of the Approval areas

This section provides a brief synopsis of the historical context prepared as part of the EA (Umwelt 2009a, Appendix 6) to provide a context for the historical heritage values of the approval areas.

In 1797 Lieutenant John Shortland came ashore along Stockton Bight during a search for escaped convicts and discovered the coal resources responsible for much of the later European settlement in the wider Hunter region (ERM, 2006). Miners and merchants seeking timber soon followed and Governor King decided to establish a permanent settlement at Newcastle. This initial attempt at settlement in the area proved to be unsuccessful and was recalled in approximately 1801. The settlement at Newcastle was re-established in 1804 as a penal colony. The penal settlement was closed in 1823 in favour of a penal colony at Port Macquarie. In 1823 assistant surveyor Henry Dangar laid out the Newcastle town plan, the core of which makes up the current Newcastle CBD.

The early industries in the region included timber, coal mining, salt making, lime burning and shipbuilding. From 1808 shell deposits in the Stockton area and along Fullerton Cove (originally known as Limeburners Bay) were exploited for the production of lime for cement (Suters, 1997). Attempts to establish small farms in the vicinity of the approval areas were unsuccessful as a result of the sandy soils and lack of transportation. To the south of the approval areas Stockton was the subject of formalised settlement from the mid 1830s. A foundry was established in Stockton in 1838, in addition to a textile factory (destroyed by fire in 1851), vitriol works (established 1853) and a tin smelter (established 1872). By 1886, the Stockton Coal Company had also been established (ERM, 2006).

By the late 1870s the Port of Newcastle was handling more than 1 million tonnes of coal a year, supplying both Sydney and Melbourne and exporting to Asia and America. With the growth of Newcastle as a major port and industrial city came the need to protect the port and its surrounding areas, including associated infrastructure and resources. In 1880 Fort Scratchley was established, followed by the Shepherds Hill Battery in 1896. Following the sinking of four light German cruisers near Cocos Island by HMAS Sydney in 1914, there was an increase in the coastal defences of Australia, including an upgrade of the facilities at Fort Scratchley. However, no defences were established along Stockton Bight at this time, with the exception of Fort Wallace to the south of the approval areas.

During the Great Depression the natural resources of Stockton Bight, in particular the availability of sea food, attracted people to the area. One of the first permanent structures on Stockton Bight was a fisherman's hut near Little Beach to the south of the approval areas. This was demolished during World War II when gun pits were constructed by the army (ERM 2006). A small fishing village constructed using corrugated iron and tin, known as Tin City, is located along the beach to the northeast of the approval areas. The earliest hut is thought to have been established during the 1930s. Approximately 12 huts remain today (ERM, 2006).

World War II brought heavy fighting closer to Australia's borders (New Guinea and the Coral Sea) and for the first time mainland Australia was attacked with strikes at Sydney, Broome and Darwin. World War II now involved the Australian civilian community, either indirectly as war workers, or as victims of enemy action.

Strikes against Malaya following Pearl Harbour led to a Japanese advance towards Australia. To deal with the national emergency, the Federal Government, under John Curtin, took full control over the Australian labour force and defence works were pressed ahead including coastal defences, anti-aircraft batteries, anti-tank defences, ditches, anti-aircraft shelters and slit trenches (Fort Drummond, Port Kembla batteries, Lithgow anti-aircraft sites, Anti-tank defences at Belmont). There were plans to demolish major bridges and to evacuate people from strategic areas. Famous landmarks such as Manly and Bondi Beaches became draped in barbed wire (Heritage Branch nd). The rapid expansion in the use of mechanised and armoured vehicles resulted in the construction of coastal tank barriers, aimed at slowing any potential Japanese advance inland, at strategic locations between the coast and the tablelands (NHL listing Yooroonah Tank Barrier).

During World War II Newcastle was an important coal export, steel producing and shipbuilding centre. As a result, the Northern Defence Line was established immediately north of Newcastle, in an area which includes the approval areas. A second defence line was established south of Brisbane. The Northern Defence Line included anti-aircraft artillery and the coastal batteries at Fort Wallace and Fort Scratchley also formed part of the Line in addition to tank traps being placed along Stockton Bight to deter shore invasions. Experimentation and proofing took place within the area of Stockton Bight at Fern Bay Armour Plate Proof Facility to the southwest of the approval areas. In addition, high explosive mortar and artillery projectiles were tested at Stockton Beach Artillery Proof Range. This range was located adjacent to the low water mark and covered approximately 420 hectares (ERM, 2006).

There is insufficient information to establish how many tank barriers were actually built during World War II, either in New South Wales or nationally, as many structures erected during this period were not intended to last beyond the war. As a result, there is no evidence surviving of some of the sites originally established during World War II.

Following World War II, construction of the Hexham and Stockton Bridges in 1952 and 1971 opened up the area to car travel, placing it within 2 hours of Sydney. Consequently, tourism dramatically increased in the area, making it a popular holiday location for people from Sydney and inland cities like Dubbo and Tamworth. The Stockton sand dunes are now popular for both tourism and leisure activities. The presence of the tank traps form part of the attraction of the area for tourism.

3.2 Historical Themes

A historical theme is a research tool, which can be used at the national, state or local level to aid in the identification, assessment, interpretation and management of heritage places (AHC 2001:1). Nine national historical themes have been identified by the Australian Heritage Commission (now DEWHA). The Heritage Division, Office of Environment and Heritage (OEH) has identified 35 historical themes for understanding the heritage of NSW. The development of the project area is broadly reflective of the history of the local region, and can be assessed in the context of the broader historic themes defined by the Heritage Branch and DEWHA. In accordance with the Heritage Division and DEWHA framework of historic themes, the themes tabulated in **Table 3.1** are relevant to the project area and locality.

Table 3.1 Historical Themes

National	National Sub Themes	State Themes	Local Themes/Application
Governing.	Defending Australia.	World War II sites.	Activities associated with defending places from hostile takeover and occupation. Coastal defences.
Developing local, regional and national economies.	Developing primary production.	Pastoralism. Mining. Forestry.	Pastoralism. Development of coal mining. Timber getting. Lime burning.
Building settlements, towns and cities.	Making settlements to serve rural Australia. Remembering significant phases in the development of settlements, towns and cities.	Land tenure. Early settlement.	Land tenure and early settlement including the history of selection.
Working.	Working on the land. Organising workers and workplaces.	Pastoralism	Other industries – timber clearing, lime-burning. Development of coal mining.
Developing Australia's Cultural Life.	Organising recreation. Going to the beach.	Enjoying the natural environment. Tourism.	Stockton Sand Dunes tourism and leisure activities.

3.2.1 Thematic Listings Program

World War I and II sites are one of four themes included in the Thematic Listings Program 2009-2010. The Thematic Listings Program is a Heritage Council strategic initiative to maintain a balanced and credible State Heritage Register that accurately records the most significant places and objects in, and which reflects the cultural richness and diversity of, the State of New South Wales. The World War I and II sites are included to:

...acknowledge the important contribution of servicemen and women during both World Wars and the 70th anniversary of the beginning of WWII (Heritage Branch nd)

Evidence for World War I and II sites in the NSW landscape is widespread but not always well recognised today. The thematic Listings Program aims to ensure that sites of significance to both World Wars are located, identified and assessed for their heritage values (Heritage Branch nd).

3.3 Historical Archaeological Context

This section provides a summary of known non-indigenous heritage items/sites identified during inspection of the approval areas or previously known.

3.3.1 Lot 218

Lot 218 is composed mainly of mobile transgressive sand dunes which lack vegetation. The active transgressive dune in this area has been relatively recently deposited. Based on the analysis of aerial photography, active transgression of the dune within Lot 218 has occurred within the last 50 years. Only the northern and western margins of the lot are vegetated with Coastal Sands Apple Blackbutt Woodland. The Oakfield Track runs into the mid northern margin of the lot and a four wheel drive track runs into the eastern end of the lot, continuing from Lot 220.

An alignment of tank traps has previously been observed within northeast portion of Lot 218 operational area but was not located during site inspections in 2008 by Umwelt (refer to Section 5.2) as the alignment has been buried by the encroaching sand dunes. These tank traps are part of a row of tank traps that originate in Lot 220. Their likely location beneath the encroaching sand dunes can be predicted as the alignment is visible running into the dunes in the northeast portion of Lot 218 from the adjacent bushland (refer to **Plate 3.1** and **Figure 3.1**).

No other heritage items or potential historical archaeological sites were identified during the site inspection of Lot 218.

3.3.2 Lot 220

Lot 220 is located within the vegetated dunes of Stockton Bight. The vegetation is comprised of Coastal Sands Apple Blackbutt Woodland. A number of four wheel drive tracks are located within the lot, with one track traversing the lot in an approximately north to south direction from the northwest corner to the southern boundary of Lot 220 and later intersecting with the eastern part of Lot 218. This track is associated with a discontinuous alignment of tank traps, forming an approximately north to south running barrier, likely to have been constructed during World War II as part of the establishment of the Northern Defence Line (refer to **Figure 3.1**).

The tank trap alignment comprises a single broken line of 218 concrete tetrahedrons generally distributed along the length of the four wheel drive track (refer to **Figure 3.1** and **Plate 3.2**). Although there are two distinct breaks in the alignment of tank traps, likely resulting from prior removal of some of the tetrahedrons, the original linear arrangement of the traps remains in situ. As a result of the likely prior removal of some of the tetrahedrons there are now three distinct groups surviving on Lot 220 (refer to **Figure 3.2**):

- A group of 92 tank traps (TT1 to TT92) are located in the northwest corner of the lot forming an approximate northwest to southeast alignment.
- A group of 24 tank traps (TT93 to TT 116) are located in the centre of the lot orientated approximately northwest to southeast.
- The third group of 102 tank traps (TT117 to TT 218) are located in the south portion of Lot 220 approximately perpendicular to the southern boundary of the lot orientated approximately north to south.

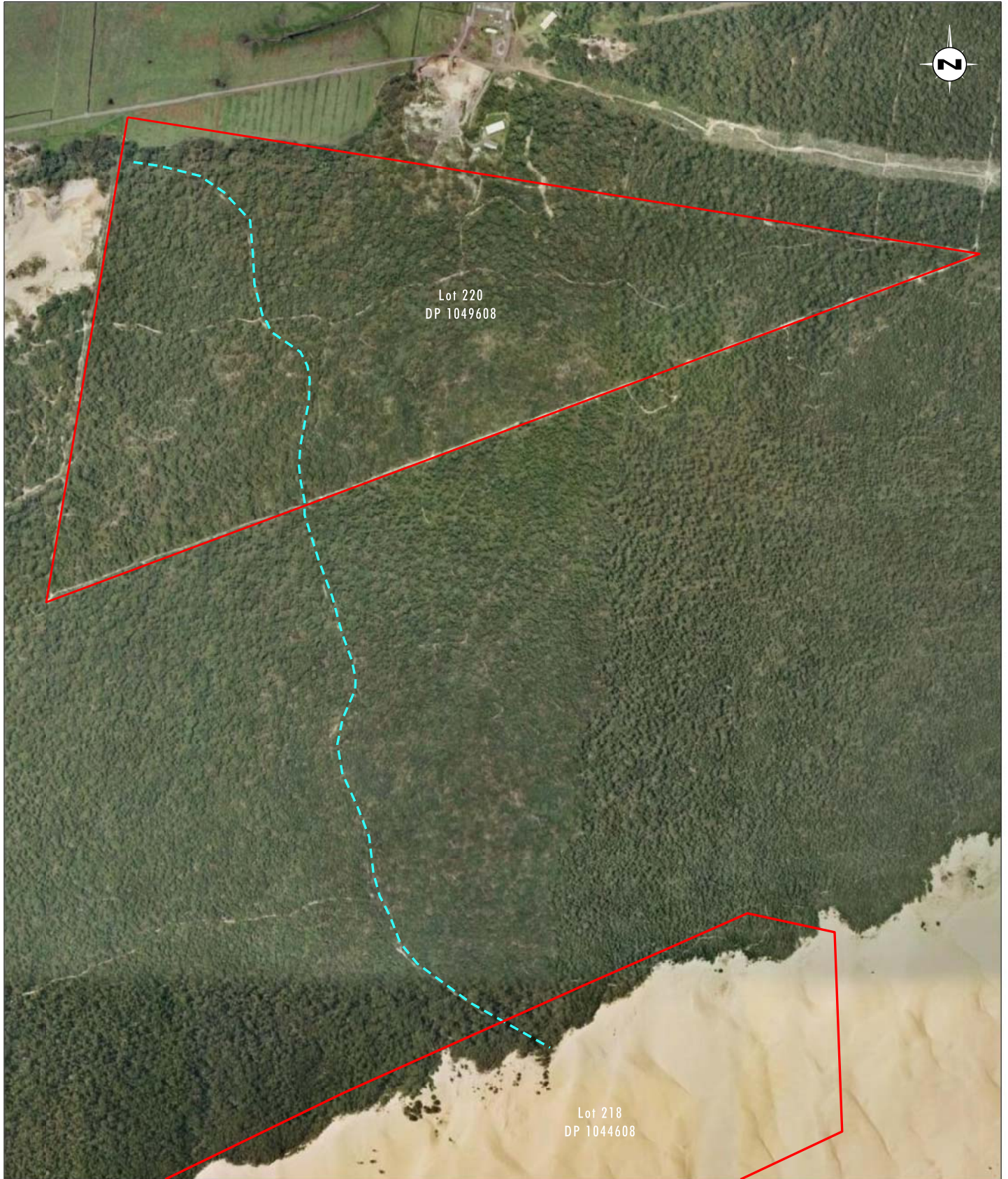
The tetrahedrons are approximately 1.75 metres high and are between 50 and 500 millimetres apart at the base. At the time of installation the tank traps are likely to have been placed so they were almost touching; creating a continuous barrier. They have a metal hoop/hook fixed close to the base of the side facing the track and a reinforcing iron bar which extends approximately 100 millimetres from the peak of each tetrahedron. In places barbed and line wire survives attached to individual tetrahedrons utilising the hoop/hook and bar. This wire also appears to have originally been utilised to link the tank traps together (refer to **Plates 3.3** and **3.4**). The individual tank traps are generally in good condition although there is some damage/concrete decay evident, particularly at the top and bottom corners of the tetrahedrons.

3.4 Summary of Potential Historic Heritage Resource

The alignment of tank traps crossing Lot 220 and the potential for the alignment continuing into the northeast portion of Lot 218 comprises the only identified historical heritage item within the approval areas.

While no other historical heritage items or historical archaeological sites have been identified within the approval areas, there is some potential for other items or sites (possibly associated with the World War II Northern Defence Line) to be located within the approval areas.

Although considered unlikely, vegetation clearing and sand extraction activities may uncover as yet unknown historical heritage items or sites within the approval areas. However, the active transgressive dune that comprises the surface context across the majority of Lot 218 has been deposited over approximately the last 50 years and therefore is unlikely to contain any in situ historical heritage resource other than the continuation of the tank trap alignment in the northeast portion of the approved extraction area on Lot 218 where tank traps may have been buried by windblown sand.



Source: Aerial: Google Earth 2008

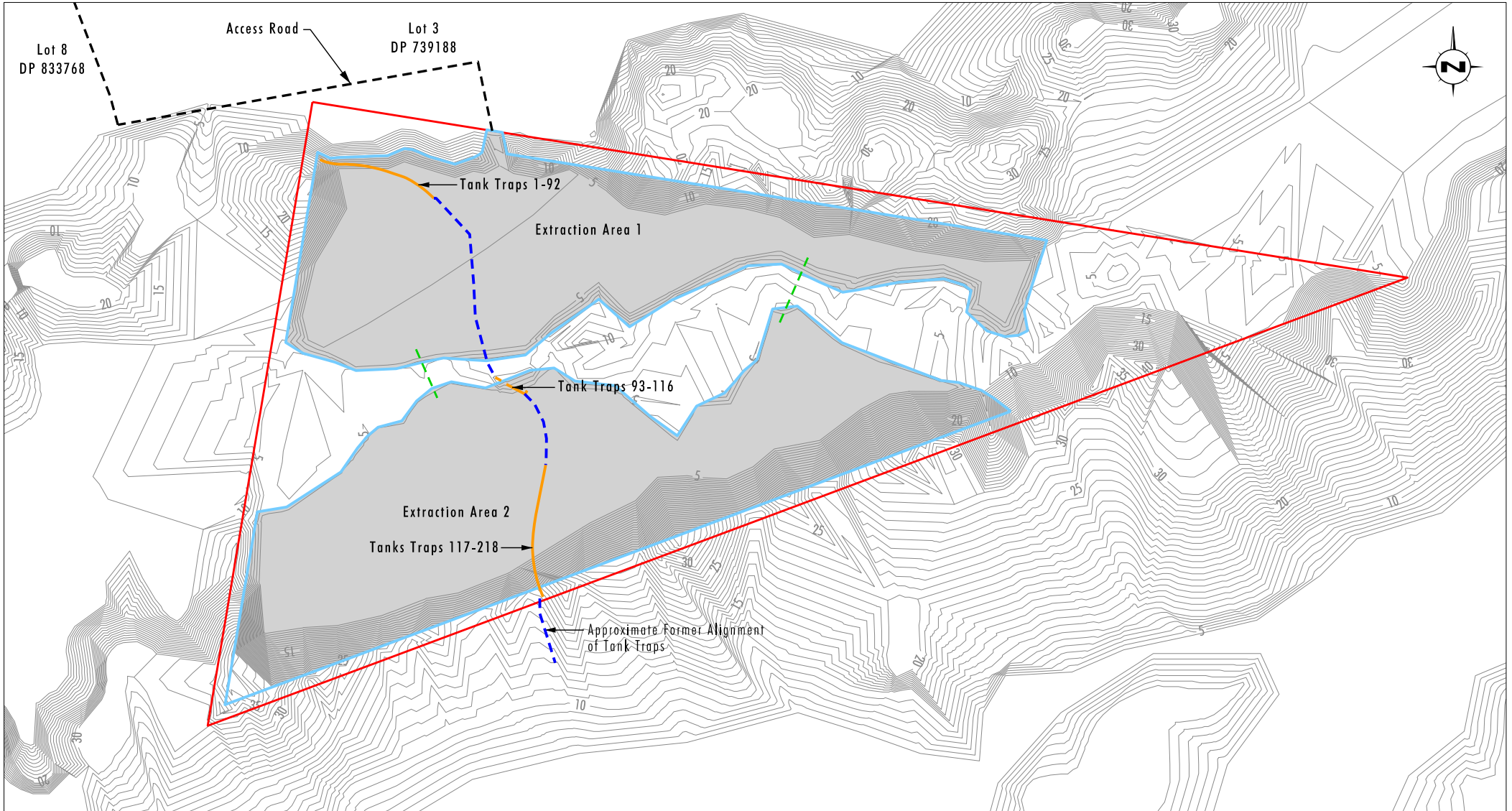
0 100 250 500m
1:10 000

Legend

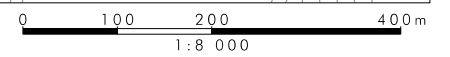
- Lot Boundaries (218 & 220)
- Approximate Discontinuous Tank Trap Alignment alongside Four Wheel Drive Track

FIGURE 3.1

Approximate Alignment of
Tank Traps in Lots 220 and 218



Source: Cadastral: Department of Lands, 2003
 Note: Contour Interval 10m



Legend

- Lot 220 Boundary
- Lot 220 Extraction Area Boundary
- - - Internal Access Roads
- - - Access Road
- Surveyed Locations of Tank Traps

FIGURE 3.2

Surveyed Location of Tank Trap Alignment in Lot 220



PLATE 3.1

View to north showing tank traps running into dunes in northeast portion of Lot 218



PLATE 3.2

View to south showing tank trap alignment alongside four wheel drive track in Lot 220



PLATE 3.3
View to northeast showing barbed and line wire linking tank traps in Lot 220

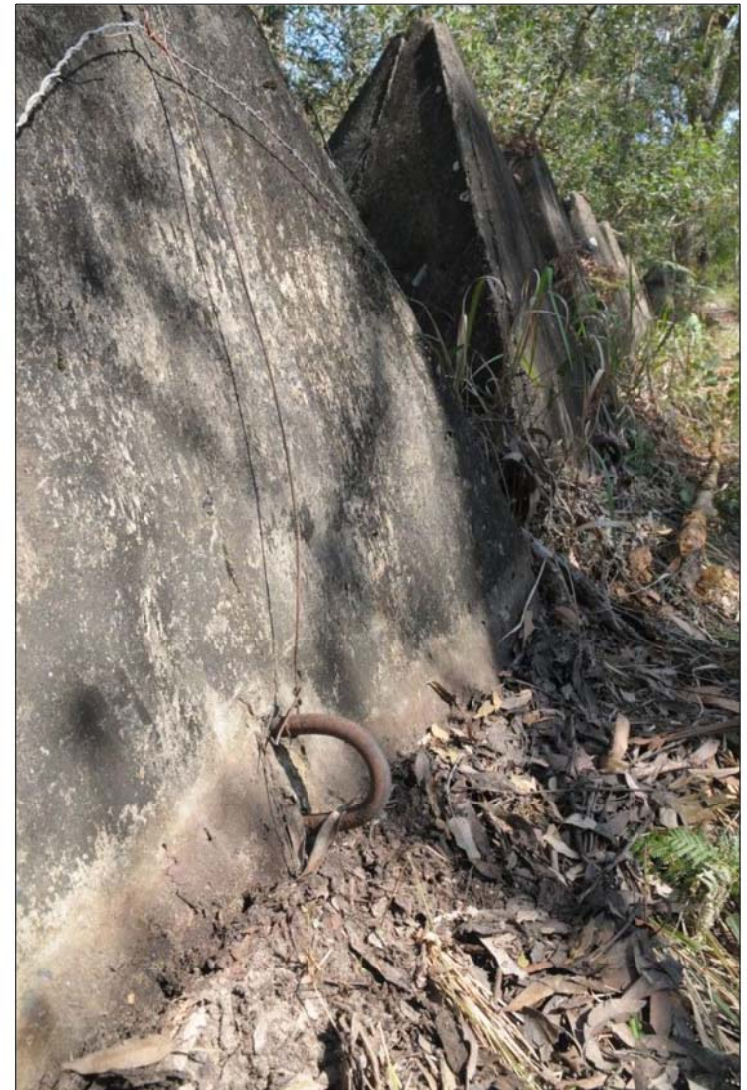


PLATE 3.4
View to southeast showing detail of barbed and line wire attached to tank trap in Lot 220

4.0 Significance Assessment

As discussed in **Section 3.0**, with the exception of the tank traps no other historical heritage items or potential historical archaeological sites have been identified within the approval areas. The tank traps have previously been included in significance assessments of the Stockton Dune System and the Stockton Bight undertaken by Port Stephens Council and ERM of the Stockton Dune System and the Stockton Bight. The previously undertaken significance assessments are briefly discussed below.

4.1 Port Stephens LEP 2013

Port Stephens LEP 2013 identifies the tank traps within Lots 216-219 as being part of the Stockton Dune System, which it has assessed as being of State significance. The tank traps within Lot 220 do not form part of this listing.

The Stockton Dune System, or the tank traps themselves, are not listed on the State Heritage Register (SHR) maintained by the NSW Heritage Council.

4.2 ERM Cultural Heritage Assessment 2006

The ERM 2006 Cultural Heritage Assessment recommended that Stockton Bight

...has national heritage value due to its association with the events of WWII which played a significant role in the evolution of the nation. Structures relating to WWII are evident within the study area in the form of the tank traps that were part of the Northern Defence Line...the in situ tank traps....represent rare aspects of Australia's WWII history (ERM 2006).

The ERM assessment concludes that the Stockton Bight area has

...state significance as it contains structures associated with a significant historical phase, WWII, and is part of a sequence of facilities related to Defence Force activity, which, although they differ in purpose, provide an indication of the role of the area in Australia's WWII efforts (ERM 2006).

5.0 Non-Indigenous Heritage Management Strategies

This section of the management plan establishes strategies for the effective management of non-indigenous heritage within the approval areas. These strategies have been developed in accordance with Condition 30 of Project Approval 08_0142, the Statement of Commitments and recommendations provided as part of EA (incorporating the recommendations of the Historical Heritage Review of the approval areas), the EP&A Act, the Heritage Act 1977 (NSW) and the requirements of DoP (now DPE).

5.1 Impacts

5.1.1 Lot 218

Tank traps are likely the only potential heritage items within Lot 218. As discussed in **Section 3.3.1** an alignment of tank traps has previously been observed within Lot 218 operational area but is now buried beneath the encroaching sand dunes.

Sand extraction at Lot 218 will only remove transgressive sand deposited over approximately the last 50 years. This may include sand that has covered any tank traps that may be present beneath the transgressive sand in the north eastern corner of the Lot 218 extraction area.

5.1.2 Lot 220

The known alignment of tank traps crossing Lot 220 comprises the only identified historic heritage identified at that site.

Sand extraction operations will disturb all three distinct groups of tank traps surviving on Lot 220:

- Tank traps TT1 to TT92 located within Extraction Area 1 (refer to **Figure 3.2**) will be disturbed during proposed quarrying works within Extraction Area 1.
- Tank traps TT93 to TT116 located within Extraction Area 2 (refer to **Figure 3.2**) will be disturbed during proposed quarrying works within Extraction Area 2.
- Tank traps TT117 to TT218 located within Extraction Area 2 (refer to **Figure 3.2**) will be disturbed during proposed quarrying works within Extraction Area 2.

Sand extraction is not proposed in the central low lying vegetation area of Lot 220 between Extraction Area 1 and Extraction Area 2. Although part of the second group of tank traps (TT93 to TT116) is located within the central vegetation area and may remain in situ during sand extraction operations, the proximity of the tank traps to approved sand Extraction Area 2 may result in their disturbance.

5.2 Management Strategies

5.2.1 Lot 218

5.2.1.1 Archival recording

Sand extraction in the northeast corner of Lot 218 may occur to a depth that disturbs the tank traps. If excavations do encounter tank traps, a photographic recording will be prepared by a suitably qualified heritage consultant in accordance with Heritage Council of NSW requirements for archival recording prior to any disturbance. The photographic record would include:

- photographic catalogue sheets, photographic plans and survey plans;
- thumbnail image sheets (contact sheets) processed with archivally stable inks on archivally acceptable photographic paper;
- CD or DVDs containing electronic image files; and
- one set of colour prints processed with archivally stable inks on archivally acceptable photographic paper.

Three copies of the record would be produced comprising:

- One copy for DPE containing full set of prints;
- One copy for the State Library of NSW or Local Council Library containing photocopy of full set of prints; and
- One copy for Mackas Sands containing photocopy of full set of prints.

5.2.1.2 Investigation, Removal, Storage and Reinstallation

Investigation

No tank traps or other historical heritage items or potential historical archaeological sites were identified within Lot 218 operational area during field survey by Umwelt and representatives of Aboriginal stakeholders groups (Worimi Local Aboriginal Land Council, Nur-Run-Gee Pty Ltd and Mur-Roo-Ma Incorporated) in July 2008. However, as discussed in **Section 3.3.1**, there is potential for tank traps buried beneath the encroaching sand dunes.

Sand extraction in the northeast corner of Lot 218 may not occur to a depth that disturbs the tank traps. If excavations do encounter tank traps all works in the immediate area will cease and the location of these remains/items would be surveyed by a qualified surveyor and recorded by a suitably qualified heritage consultant or archaeologist in accordance with Heritage Branch requirements and guidelines. This would include photographic recording. As discussed above, the photographic recording and the survey plans would be compiled into a photographic record of any tank traps present in Lot 218.

Removal and Storage

If appropriate it is proposed to temporarily relocate any tank traps uncovered that may be disturbed during quarrying.

The tank traps will be temporarily relocated adjacent to the northern edge sand extraction area in an area that will not be disturbed by further quarrying (refer to **Figure 1.2**). Tank traps will be temporarily relocated, after survey and photographic recording has been undertaken, in advance of quarrying continuing in the vicinity and will be placed outside the sand extraction area sequentially from the east to the west. No quarrying will take place in proximity to the proposed temporary location of the tank traps. The temporary storage of the tank traps within Lot 218, in close proximity to their original alignment, rather than off site will reduce the potential for damage to occur during their temporary relocation.

The tank traps will be lifted using an excavator or front end loader fitted with a fork lift attachment. The use of a fork lift attachment to lift the tank traps is considered the most appropriate option as the structural integrity of the lifting bars and hooks on the tank traps has potentially been reduced as a result of rusting over the approximately 67 years since the traps were placed in position.

Following completion of quarrying in the northeast portion of Lot 218 any tank traps that have been temporarily relocated will be reinstated (see below).

Reinstallation

Once quarrying in the northeast portion of Lot 218 is completed any tank traps that have been temporarily relocated within Lot 218 will be replaced, utilising the lifting methodology proposed above, into their original surveyed position, thus retaining their original alignment.

The replacement of the traps in their original alignment will ensure that their significance, as identified by ERM (ERM 2006), as part of the Northern Defence Line is retained. The tank traps will continue to illustrate a rare aspect of Australia's World War II history as part of the facilities related to Defence Force activity and provide an indication of the role of the area in Australia's war efforts. In addition, they will continue to provide a role in the tourism industry of Stockton Bight.

5.2.2 Lot 220

5.2.2.1 Archival recording

Prior to disturbance of the tank traps in Lot 220 a photographic recording of the traps and their alignment was prepared in accordance with Heritage Council of NSW requirements for archival recording.

Umwelt, on behalf of Mackas Sands, completed the on site photographic recording of the tank traps located in Lot 220 in December 2009. These photographs and accompanying plans form part of the archival recording of the tank traps located within Lot 220. The final photographic record includes:

- photographic catalogue sheets, photographic plans and survey plans
- thumbnail image sheets (contact sheets) processed with archivally stable inks on archivally acceptable photographic paper
- CD or DVDs containing electronic image files
- one set of colour prints processed with archivally stable inks on archivally acceptable photographic paper

Three copies of the record will be available as follows:

- One copy for DPE containing full set of prints.

- One copy for the State Library of NSW or Local Council Library containing photocopy of full set of prints.
- One copy for Mackas Sands containing photocopy of full set of prints.

5.2.2.2 Investigation, Removal, Storage and Reinstallation

Investigation

The location of each of the 218 tank traps present on Lot 220 was identified during field survey by Umwelt and representatives of Aboriginal stakeholders groups (Worimi Local Aboriginal Land Council, Nur-Run-Gee Pty Ltd and Mur-Roo-Ma Incorporated) in July 2008. The tank traps have subsequently been surveyed by Le Mottee Group surveyors (refer to **Figures 5.1 to 5.3**). As discussed above, the tank traps and their alignment have also been photographically recorded and form part of the photographic record of the tank traps in Lot 220.

Removal and Storage

As discussed in **Section 5.1.2**, sand extraction operations have disturbed one and will likely disturb the two other distinct groups of tank traps surviving on Lot 220. As such it is proposed to temporarily relocate the tank traps prior to sand extraction works commencing. Survey and photographic recording of the tank traps in Lot 220 was undertaken in December 2009 (as discussed above).

The first group of tanks traps (TT1 to TT92) were temporarily relocated from their current location in advance of quarrying in Extraction Area 1 (refer to **Figure 3.2**). The tank traps were temporarily relocated along the alignment of an existing track that traverses the central axis of the vegetation corridor. The vegetation corridor is located between Extraction Area 1 and Extraction Area 2 and will not be disturbed by quarrying. The track within this area runs approximately perpendicular to the existing alignment of the tank traps. Tank traps will be removed in advance of quarrying and placed along the road from the west to the east with tank trap TT92 placed at the edge of the western end of the road and then tank traps TT91 to TT1 placed sequentially from west to east along the track. No quarrying will take place in proximity to the proposed temporary location of the tank traps. No notable damage occurred to the tank traps during the temporary relocation. TT1 to TT92 have been reinstated (see below).

Prior to sand extraction occurring in Extraction Area 2, tank traps TT93 to TT218 (refer to **Figure 3.2**) will be temporarily relocated to the eastern end of the access track within the vegetation area between Extraction Area 1 and Extraction Area 2 utilising the methodology discussed below. Following completion of quarrying in Extraction Area 1, TT93 to TT218 will be reinstated (see below).

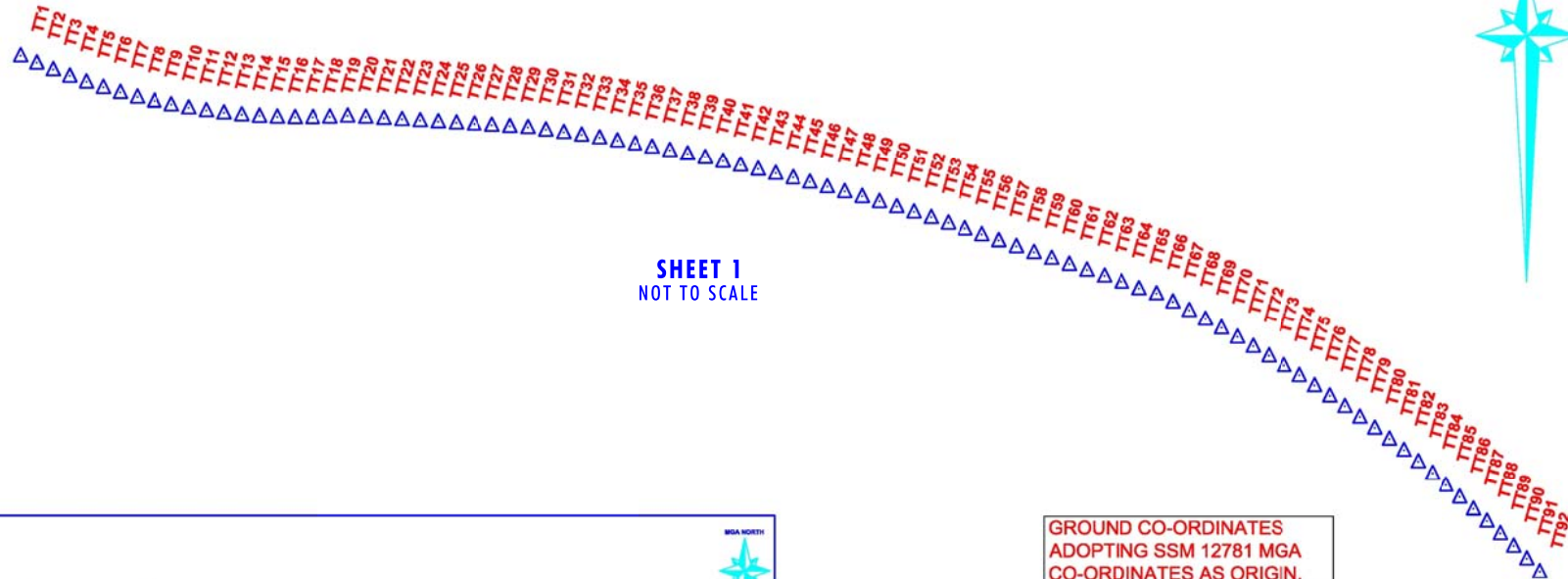
The tank traps will be lifted using an excavator or front end loader fitted with a fork lift attachment. The use of a fork lift attachment to lift the tank traps is considered the most appropriate option as the structural integrity of the lifting bars and hooks on the tank traps has potentially been reduced as a result of rusting over the approximately 67 years since the traps were placed in position.

Reinstallation

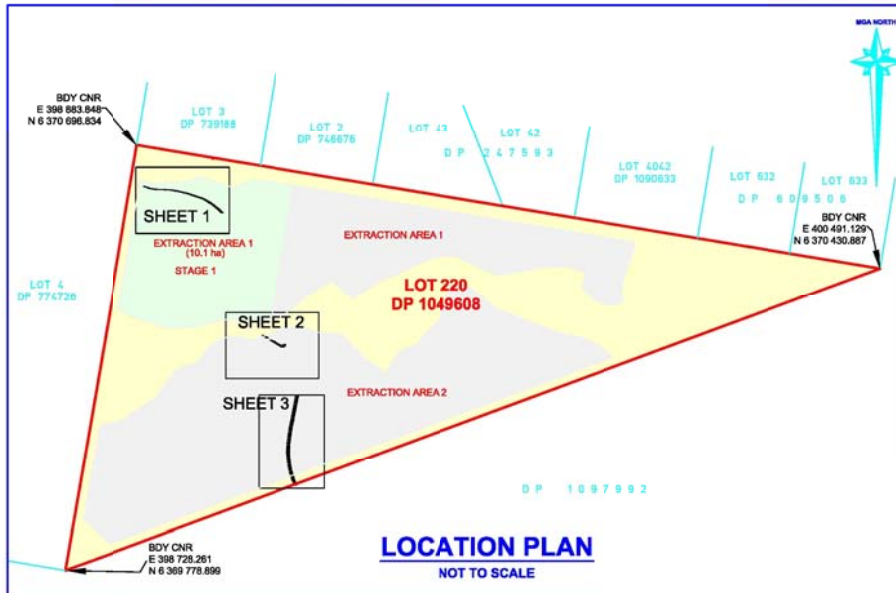
Tank traps TT1 to TT92 have been replaced, along the original alignment of the tank traps as surveyed by Le Mottee Group surveyors utilising the lifting methodology discussed above. The final placement of the tank traps will be confirmed following survey of the alignment.

Once quarrying in the Extraction Area 2 is completed tank traps TT93 to TT218 will be replaced, utilising the lifting methodology discussed above, along the original alignment of the tank traps as surveyed by Le Mottee Group surveyors.

MGA NORTH



SHEET 1
NOT TO SCALE



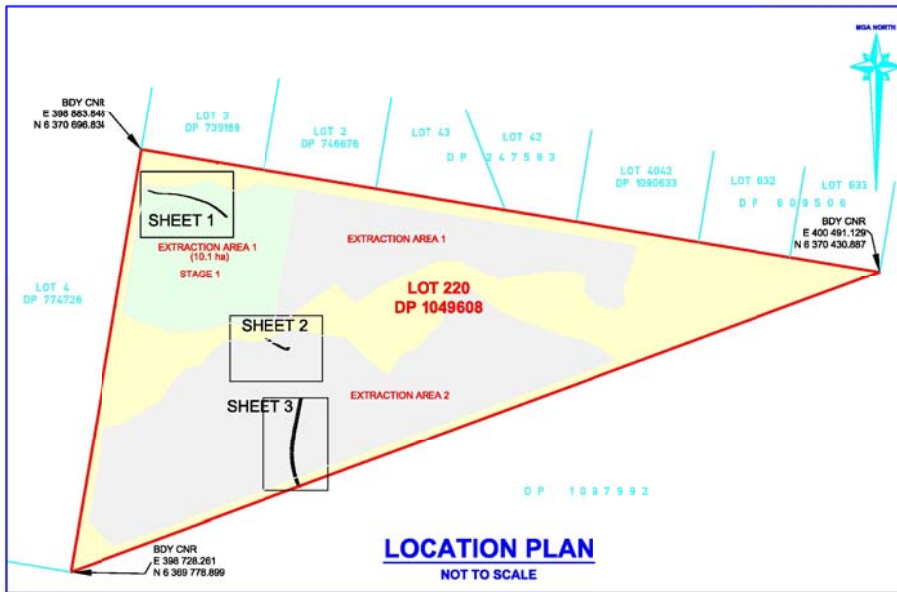
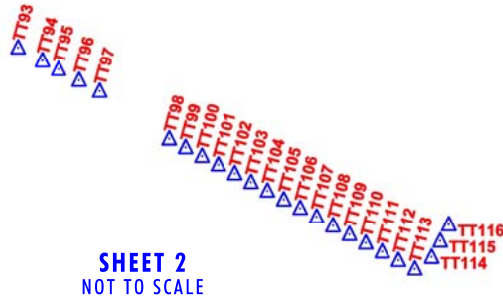
GROUND CO-ORDINATES
ADOPTING SSM 12781 MGA
CO-ORDINATES AS ORIGIN.
CO-ORDINATES AT 25/11/2009
E 395 688.119
N 6 370 100.289
ZONE 56

GROUND CO-ORDINATES TABLE

POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING
TT1	388895.36	6370604.34	TT21	388933.507	6370597.588	TT41	388972.89	6370592.72	TT61	389011.082	6370581.373	TT81	389048.396	6370562.096
TT2	388897.149	6370603.552	TT22	388935.496	6370597.471	TT42	388974.824	6370592.287	TT62	389013.016	6370580.724	TT82	389049.992	6370560.862
TT3	388898.957	6370602.811	TT23	388937.485	6370597.343	TT43	388976.754	6370591.839	TT63	389014.95	6370580.076	TT83	389049.572	6370559.605
TT4	388900.784	6370602.117	TT24	388939.474	6370597.216	TT44	388978.681	6370591.376	TT64	389016.884	6370579.428	TT84	389051.136	6370558.328
TT5	388902.628	6370601.47	TT25	388941.463	6370597.089	TT45	388980.605	6370590.897	TT65	389018.819	6370578.718	TT85	389052.688	6370557.052
TT6	388904.489	6370600.872	TT26	388943.452	6370596.962	TT46	388982.524	6370590.403	TT66	389020.752	6370578.131	TT86	389054.217	6370555.717
TT7	388906.365	6370600.322	TT27	388945.441	6370596.835	TT47	388984.439	6370589.894	TT67	389022.682	6370577.215	TT87	389055.732	6370554.382
TT8	388908.254	6370599.822	TT28	388947.43	6370596.708	TT48	388986.351	6370589.399	TT68	389024.616	6370576.277	TT88	389057.23	6370553.029
TT9	388910.155	6370599.371	TT29	388949.419	6370596.581	TT49	388988.267	6370588.829	TT69	389026.55	6370575.316	TT89	389058.712	6370551.657
TT10	388912.068	6370598.989	TT30	388951.408	6370596.454	TT50	388990.18	6370588.274	TT70	389028.489	6370574.333	TT90	389060.176	6370550.285
TT11	388913.991	6370598.617	TT31	388953.374	6370596.327	TT51	388992.098	6370587.704	TT71	389030.428	6370573.328	TT91	389061.622	6370548.857
TT12	388915.922	6370598.25	TT32	388955.337	6370596.201	TT52	388994.016	6370587.119	TT72	389032.369	6370572.301	TT92	389063.05	6370547.43
TT13	388917.86	6370597.884	TT33	388957.298	6370596.074	TT53	388995.934	6370586.518	TT73	389034.304	6370571.252			
TT14	388919.804	6370597.512	TT34	388959.257	6370595.947	TT54	388997.852	6370585.903	TT74	389036.238	6370570.181			
TT15	388921.753	6370597.141	TT35	388961.213	6370595.821	TT55	388999.77	6370585.272	TT75	389038.172	6370569.09			
TT16	388923.704	6370596.77	TT36	388963.167	6370595.695	TT56	389001.687	6370584.626	TT76	389040.106	6370568.001			
TT17	388925.658	6370596.404	TT37	388965.118	6370595.569	TT57	389003.603	6370583.966	TT77	389042.04	6370566.842			
TT18	388927.613	6370596.032	TT38	388967.065	6370595.443	TT58	389005.518	6370583.318	TT78	389043.974	6370565.687			
TT19	388929.568	6370595.661	TT39	388969.01	6370595.317	TT59	389007.432	6370582.669	TT79	389045.908	6370564.511			
TT20	388931.518	6370595.29	TT40	388970.952	6370595.191	TT60	389009.346	6370582.021	TT80	389047.842	6370563.335			

FIGURE 5.1

Surveyed Locations of
Tank Traps 1 to 92 in Lot 220



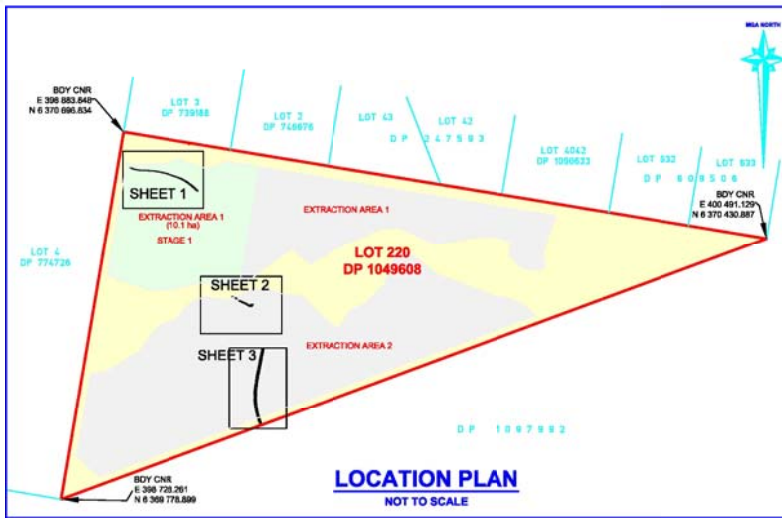
GROUND CO-ORDINATES
ADOPTING SSM 12781 MGA
CO-ORDINATES AS ORIGIN.
CO-ORDINATES AT 25/11/2009
E 395 688.119
N 6 370 100.289
ZONE 56

GROUND CO-ORDINATES TABLE

POINTS	EASTING	NORTHING
TT93	399153.514	6370263.487
TT94	399156.163	6370262.08
TT95	399157.929	6370261.141
TT96	399160.166	6370279.952
TT97	399162.403	6370278.764
TT98	399169.958	6370273.585
TT99	399171.74	6370272.84
TT100	399173.523	6370271.695
TT101	399175.305	6370270.75
TT102	399177.087	6370269.605
TT103	399178.869	6370268.96
TT104	399180.651	6370267.915
TT105	399182.433	6370266.87
TT106	399184.216	6370266.025
TT107	399185.998	6370265.08
TT108	399187.78	6370264.135
TT109	399189.562	6370263.19
TT110	399191.344	6370262.245
TT111	399193.127	6370261.3
TT112	399194.909	6370260.355
TT113	399196.691	6370259.41
TT114	399198.473	6370260.708
TT115	399199.448	6370262.475
TT116	399200.385	6370264.242

FIGURE 5.2

Surveyed Locations of
Tank Traps 93 to 116 in Lot 220



**GROUND CO-ORDINATES
ADOPTING SSM 12781 MGA
CO-ORDINATES AS ORIGIN.
CO-ORDINATES AT 25/11/2009
E 395 688.119
N 6 370 100.289
ZONE 56**

GROUND CO-ORDINATES TABLE

POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING
TT117	399227.869	6370154.699	TT198	399209.589	6370055.15
TT118	399227.476	6370152.637	TT199	399209.366	6370053.228
TT119	399227.084	6370150.736	TT200	399209.143	6370051.304
TT120	399226.692	6370148.725	TT201	399208.921	6370048.379
TT121	399226.299	6370146.744	TT202	399208.698	6370047.452
TT122	399225.907	6370144.733	TT203	399208.476	6370045.523
TT123	399225.514	6370142.731	TT204	399208.254	6370043.584
TT124	399225.122	6370140.3	TT205	399208.032	6370041.663
TT125	399224.729	6370138.819	TT206	399207.811	6370039.732
TT126	399224.337	6370136.838	TT207	399207.589	6370037.8
TT127	399223.944	6370134.857	TT208	399207.367	6370035.866
TT128	399223.552	6370132.875	TT209	399207.145	6370033.935
TT129	399223.159	6370130.834	TT210	399206.923	6370032.003
TT130	399222.767	6370128.913	TT211	399206.701	6370030.071
TT131	399222.374	6370126.932	TT212	399206.479	6370028.14
TT132	399221.982	6370124.951	TT213	399206.257	6370026.209
TT133	399221.589	6370122.999	TT214	399206.035	6370024.28
TT134	399221.197	6370121.028	TT215	399205.813	6370022.351
TT135	399220.804	6370119.037	TT216	399205.591	6370020.424
TT136	399220.412	6370117.028	TT217	399205.369	6370024.499
TT137	399220.019	6370115.045	TT218	399205.147	6370021.575
TT138	399219.627	6370113.053	TT219	399204.925	6370019.653
TT139	399219.234	6370111.052	TT220	399204.703	6370017.734
TT140	399218.842	6370109.131	TT221	399204.481	6370015.817
TT141	399218.449	6370107.12	TT222	399204.259	6370013.902
TT142	399218.057	6370105.139	TT223	399204.037	6370011.987
TT143	399217.664	6370103.137	TT224	399203.815	6370010.072
TT144	399217.272	6370101.176	TT225	399203.593	6370008.157
TT145	399216.879	6370099.196	TT226	399203.371	6370006.242
TT146	399216.487	6370097.214	TT227	399203.149	6369999.327
TT147	399216.094	6370095.233	TT228	399202.927	6369997.403
TT148	399215.702	6370093.251	TT229	399202.705	6369995.488
TT149	399215.309	6370091.27	TT230	399202.483	6369993.573
TT150	399214.917	6370089.299	TT231	399202.261	6369991.658
TT151	399214.524	6370087.338	TT232	399202.039	6369989.743
TT152	399214.132	6370085.327	TT233	399201.817	6369987.828
TT153	399213.739	6370083.345	TT234	399201.595	6369985.913
TT154	399213.347	6370081.364	TT235	399201.373	6369983.998
TT155	399212.954	6370079.333	TT236	399201.151	6369982.083
TT156	399212.562	6370077.402	TT237	399200.929	6369979.168
TT157	399212.169	6370075.637	TT238	399200.707	6369977.253
TT158	399211.777	6370073.913	TT239	399200.485	6369975.338
TT159	399211.384	6370072.199	TT240	399200.263	6369973.423
TT160	399210.992	6370070.424	TT241	399200.041	6369971.508
TT161	399210.600	6370068.528	TT242	399199.819	6369969.593
TT162	399210.208	6370066.625	TT243	399199.597	6369967.678
TT163	399209.816	6370064.72	TT244	399199.375	6369965.763
TT164	399209.424	6370062.812	TT245	399199.153	6369963.848
TT165	399209.032	6370060.9	TT246	399198.931	6369961.933
TT166	399208.640	6370060.986	TT247	399198.709	6369959.018
TT167	399208.248	6370059.079	TT248	399198.487	6369957.103

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**SHEET 3
NOT TO SCALE**

D P 1 0 9 7 9 9 2

FIGURE 5.3

Surveyed Locations of Tank Traps 117 to 218 in Lot 220

The replacement of the traps in their original alignment will ensure that their significance, as identified by ERM (ERM 2006), as part of the Northern Defence Line is retained. The tank traps will continue to illustrate a rare aspect of Australia's World War II history as part of the facilities related to Defence Force activity and provide an indication of the role of the area in Australia's war efforts. In addition, they will continue to provide a role in the tourism industry of Stockton Bight.

5.3 New Heritage Items or Objects

The active transgressive dune that comprises the surface context across the Lot 218 operational area has been deposited over approximately the last 50 years and therefore is unlikely to contain any in situ historical heritage resource other than possible tank traps in the north eastern corner of the approved extraction area.

Mackas Sand and Soil Pty Ltd is currently operating a sand quarry to the east of Lot 220 and no items of potential historic heritage, or other items, have been uncovered during quarrying works. It is considered unlikely that any items of historic heritage will be uncovered within Lot 220, with the exception of the identified tank trap alignment.

However, in the unlikely event that unexpected or significant archaeological remains or as yet unidentified heritage items are discovered (possibly associated with the World War II Northern Defence Line) all works in the immediate area will cease and the Heritage Division, OEH notified, in accordance with Section 146 of the Heritage Act 1977 (NSW).

If appropriate and following consultation with the Heritage Division, the location of these remains/items will be surveyed and the remains/items recorded by a suitably qualified heritage consultant or archaeologist in accordance with Heritage Division requirements and guidelines.

5.4 Non-Indigenous Heritage Inductions

Mackas Sand has organised a Historical Heritage Awareness induction to be incorporated into an induction for Mackas Sand employees and contractors. The induction includes (but not necessarily be limited to) the following:

- the nature and location of the historical heritage resource present within the approval areas (the tank trap alignment in Lot 220), with clear discussion of the likelihood for other sites to be identified during the course of operations (for example the continuation of the tank trap alignment into Lot 218)
- the historical heritage values and significance of the tank trap alignment and any other potential historical heritage resource
- the nature of the management strategies for the historical heritage items within the approval areas
- procedures for contacting the Mackas Sand Project Manager if previously unknown historical heritage items and/or artefacts are uncovered by vegetation clearance or sand extraction
- information related to the relevant legislation for the protection of historical heritage items and the penalties which may arise if items are disturbed/destroyed.

The induction must be completed prior to employees commencing work within the extraction area. Records must be kept by Mackas Sand to demonstrate that all relevant personnel and contractors have participated in and completed the induction.

5.5 Interim NIHMP

An 'Interim' NIHMP was prepared by Umwelt on behalf of Mackas Sands in December 2009 in accordance with the provisions of Condition 8 of Project Approval 08_0142:

With the approval of the Director-General, the proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

The 'Interim' NIHMP was prepared to seek approval from the Director-General to submit the NIHMP on a progressive basis, enabling quarry activities on Lot 220 to continue in a safe and controlled manner prior to finalisation of this NIHMP. Mackas Sand received approval from the DPE (Major Development Assessment, Industry and Mining) on 4 January 2010 to allow quarrying in Lot 220 Extraction Area 1 to commence, in accordance with the management protocols discussed in **Sections 5.2 to 5.4** above, prior to this NIHMP being completed (refer to **Appendices 1 and 2** for 'Interim' NIHMP and subsequent letter of approval from the DPE).

5.6 Aboriginal Cultural Heritage Management Plan

An Aboriginal Cultural Heritage Management Plan (ACHMP) (Umwelt 2009b) has also been prepared, in consultation with the relevant Aboriginal stakeholders, for the extraction of sand resources from Lot 218 and Lot 220. All works will be undertaken in accordance with the ACHMP (Umwelt 2014).

5.7 Site Rehabilitation and Landscape Management Plan

The Lot 220 approval area will be subject to rehabilitation on the basis of a comprehensive Landscape Management Plan has been prepared in consultation with the Office of Environment and Heritage and DPE and approved by DPE. The Landscape Management Plan provides mechanisms for bushfire management and weed and feral pest control. The requirements of the Landscape Management Plan are consistent with the NIHMP.

It is intended that the rehabilitation of the Lot 220 approval area will achieve a final landform that is similar to the surrounding topography in that it will be shaped, where possible, in undulating profiles in keeping with natural landforms of the surrounding environment. Rehabilitation will result in the re-establishment of similar vegetation communities to those currently present within the approval area and the reinstallation of the tank traps along the original surveyed alignment.

5.8 Unexploded Ordnance

An Unexploded Ordnance Management Plan has also been completed for Lot 218. Any excavations conducted on Lot 218 will be consistent with the requirements of the Unexploded Ordnance Management Plan.

5.9 Post-Operations

At the conclusion of operations, Lot 220 and Lot 218 will be subject to final rehabilitation in accordance with the Landscape Management Plan. This NIHMP applies only to the period of operations and will require review at the cessation of operations in relation to any future land use.

6.0 Roles, Responsibilities and Timeframes

Title	Company	Roles and Responsibilities	Timeframe
Mackas Sand Quarry Manager	Mackas Sand	Ensure non-indigenous heritage induction is provided to all employees and contractors as part of the induction process as outlined in Section 5.4	Prior to the commencement of clearance activities within approval areas Ongoing
		Ensure that operations within the Lot 218 approval area are undertaken in accordance with the strategy provided in Section 5.2.1	Ongoing
		Ensure that operations within the Lot 220 approval area are undertaken in accordance with the strategy provided in Section 5.2.3	Archival recording and survey of tank traps to be undertaken prior to the commencement of clearance activities within approval areas Ongoing
		Ensure that all works cease in the vicinity of previously unidentified or unknown historical archaeological remains or historical heritage items exposed by operations and the remains/items are managed in accordance with the strategy provided in Section 5.3	As required

7.0 References

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