Transport Roads & Traffic Authority

NSW GOVERNMENT

REVIEW OF ENVIRONMENTAL FACTORS

ANZAC Bridge Maintenance Project temporary site compound, 5-7 Bank Street Pyrmont

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Roads and Traffic Authority

ANZAC Bridge temporary maintenance compound

Review of environmental factors
July 2011

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Executive summary

The proposal

The proposal involves the establishment of a temporary maintenance compound for essential investigations, maintenance and safety works on the ANZAC Bridge. The temporary maintenance compound would be located beneath the ANZAC Bridge eastern A-frame tower adjacent to Blackwattle Bay and would be accessed from Bank Street, Pyrmont. It would be in use for around 30 months.

The compound would cover an area of around 3123 m^2 and would require removal of a limited amount of vegetation including five trees and groundcover of mixed grasses and weeds. The surface of the temporary maintenance compound would be sealed and include a car park for approximately 10 vehicles and a manoeuvring area for delivery vehicles. Additional parking for up to 30 vehicles would be provided within a secure area on the approach to the old Glebe Island Bridge. Material storage areas, workshops, worker amenity blocks and office accommodation would be installed, including two storey temporary buildings along Bank Street. Four personnel and material hoists would be established around the base of the eastern A-frame tower and would be used to safely transport personnel, materials and equipment to the ANZAC Bridge road deck to carry out proposed essential maintenance and safety works (see Appendix A).

The future use of the temporary maintenance compound would be subject to further environmental impact assessment. This work would comprise essential maintenance and safety works on the ANZAC Bridge particularly involving improvements to;

- Access for maintenance workers to the bridge underdeck, pylons and towers.
- The bridge's cable stays; and
- The pedestrian and cycle path fence.

Need for the proposal

The proposal is needed to enable early establishment of a temporary maintenance compound for the future undertaking of essential maintenance and safety works on the ANZAC Bridge. The proposal would enable the timely and cost efficient delivery of the future essential maintenance and safety works. These works have been identified as required on the ANZAC Bridge in preparation for the 100th Anniversary of the landing at Gallipoli at Anzac Cove.

The future works would include maintenance of the bridge stay cables, installation of new fences and provision of new permanent accesses. These works do not form part of the proposal assessed in this review of environmental factors (REF) and would be subject to further environmental impact assessment and community consultation.

Options considered

A number of site options were examined in relation to the location of the proposed temporary maintenance compound. The options which were examined included:

- Option 1 - Bank Street temporary maintenance compound beneath the ANZAC Bridge eastern A-frame tower with a smaller compound on James Craig Road used for deliveries and storage of materials.
- Option 2 - James Craig Road (Glebe Island) temporary maintenance compound with a smaller compound located at Bank Street.

- Option 3 – "Do nothing option" – was considered but did not meet the objectives of establishing a temporary maintenance compound for the proposed essential maintenance and safety works to the ANZAC Bridge.

Against a range of criteria, Option 1 was considered to be the preferred option.

Statutory and planning framework

As the proposal is for the construction and initial operation of a temporary maintenance compound associated with the proposed ANZAC Bridge essential maintenance and safety works. It would be carried out on behalf of the RTA and can be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Under the provisions of *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP), consultation with nominated authorities is required. Consultation letters were sent to the City of Sydney Council and Sydney Harbour Foreshore Authority as required by the ISEPP. Responses were received from both organisations and consideration of the issues raised is documented in the REF.

Community and stakeholder consultation

Community and stakeholder consultation has been undertaken. The RTA has identified 55 key stakeholder/community organisations and provided them with notification of the proposed works.

Approximately 500 residences within the immediate area have also been notified of the proposed temporary maintenance compound and the draft REF has been available for public review.

Briefings have been provided to Bicycle NSW, the Council of Ultimo/Pyrmont Associations, the Chinese Youth League, the Pyrmont Progress Association, the City of Sydney Council and the Returned and Services League (RSL) NSW branch. These organisations have not raised any issues directly associated with the proposed temporary maintenance compound.

Environmental impacts

The potential environmental impacts considered as part of this REF include the following:

- Traffic and access.
- Flora and fauna.
- Noise and vibration.
- Landforms, geology and soils.
- Contaminated land.
- Heritage.
- Aboriginal heritage.
- Air quality.
- Water quality and hydrology.
- Waste.
- Visual amenity.
- Climate change and greenhouse gasses.

- Socio economic effects.
- Demand on resources.
- Hazards and risk.
- Cumulative impacts.

The main issues for the proposal are noise, construction traffic and the management of existing contamination at the site.

Appropriate mitigation and management measures would be provided to address impacts resulting from the construction and initial operation of the proposed temporary maintenance compound. These measures would be included in the environmental management plan.

Justification and conclusion

The proposed temporary maintenance compound beneath the eastern A-frame tower at ANZAC Bridge (at 3 Bank Street, Pyrmont) is subject to assessment under Part 5 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. The proposal as described in the REF best meets the project objectives but would still result in some impacts in terms of traffic, access and noise. Contamination would also need to be managed. Mitigation measures as detailed in this REF would ameliorate or minimise these expected impacts.

The benefits of the proposal are derived from the assistance it would provide to essential maintenance and safety works on ANZAC Bridge.

The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for approval to be sought for the proposal under Part 3A of the EP&A Act. The proposal is unlikely to significantly affect threatened species, populations or ecological communities or their habitats, within the meaning of the *Threatened Species Conservation Act 1995* or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. The proposal is also unlikely to affect Commonwealth land or have a significant impact on any matters of national environmental significance.

Contents

Appendices

Terms and acronyms used in this REF

AHIMS	Aboriginal Heritage Information Management System
AHMS	Aboriginal Heritage Management Solutions
Blue Book	Managing Urban Stormwater: Soils and Construction
BSA	Bridge Solutions Alliance
BTEX	Acronym for benzene, toluene, ethylbenzene and xylenes
CEMP	Construction environmental management plan
DSEWPC	Commonwealth Government Department of Sustainability, Environment, Water, Population and Communities
EIA	Environmental impact assessment
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
MD SEPP	State Environmental Planning Policy (Major Development) 2005
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation
PAH	Polycyclic aromatic hydrocarbons
RCA	Robert Carr and Associates
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
Sydney LEP	Sydney Local Environmental Plan 2005
TBT	Tributylin
TRH	Total recoverable hydrocarbons
TSC Act	*Threatened Species Conservation Act 1995*

1 Introduction

1.1 Proposal identification

The Roads and Traffic Authority of NSW (RTA) is investigating necessary maintenance and safety works on the ANZAC Bridge, located in Pyrmont immediately west of the Sydney central business district (see Figures 1 and 2) and adjacent to Blackwattle Bay.

Bridge Solutions Alliance (BSA) is undertaking the investigations on behalf of the RTA. The BSA is a project team brought together under an alliance contract framework. The alliance partners are:

- Roads and Traffic Authority.
- Baulderstone.
- Freyssinet Australia.
- Sage Automation.

BSA proposes to establish a temporary maintenance compound beneath the ANZAC Bridge eastern A-frame tower. The temporary compound would initially be utilised for investigations and preparation for essential maintenance and safety works to the ANZAC Bridge. Plans of the proposed temporary maintenance compound are included as Appendix A.

This Review of Environmental Factors (REF) relates only to the establishment and preliminary use of the temporary compound. Essential maintenance and safety works to the ANZAC Bridge, including the use of the compound for those works over a total period of about 30 months, will be subject to separate environment assessment and approval.

The establishment of the maintenance compound is expected to take approximately two months and be undertaken from July 2011 to September 2011.

1.2 Purpose of the report

This REF has been prepared by BSA on behalf of the RTA Directorate of Infrastructure Services in the RTA Sydney Region. For the purposes of these works, the RTA is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed temporary maintenance compound is located in the City of Sydney Council Local Government Area.

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail protective measures to be implemented.

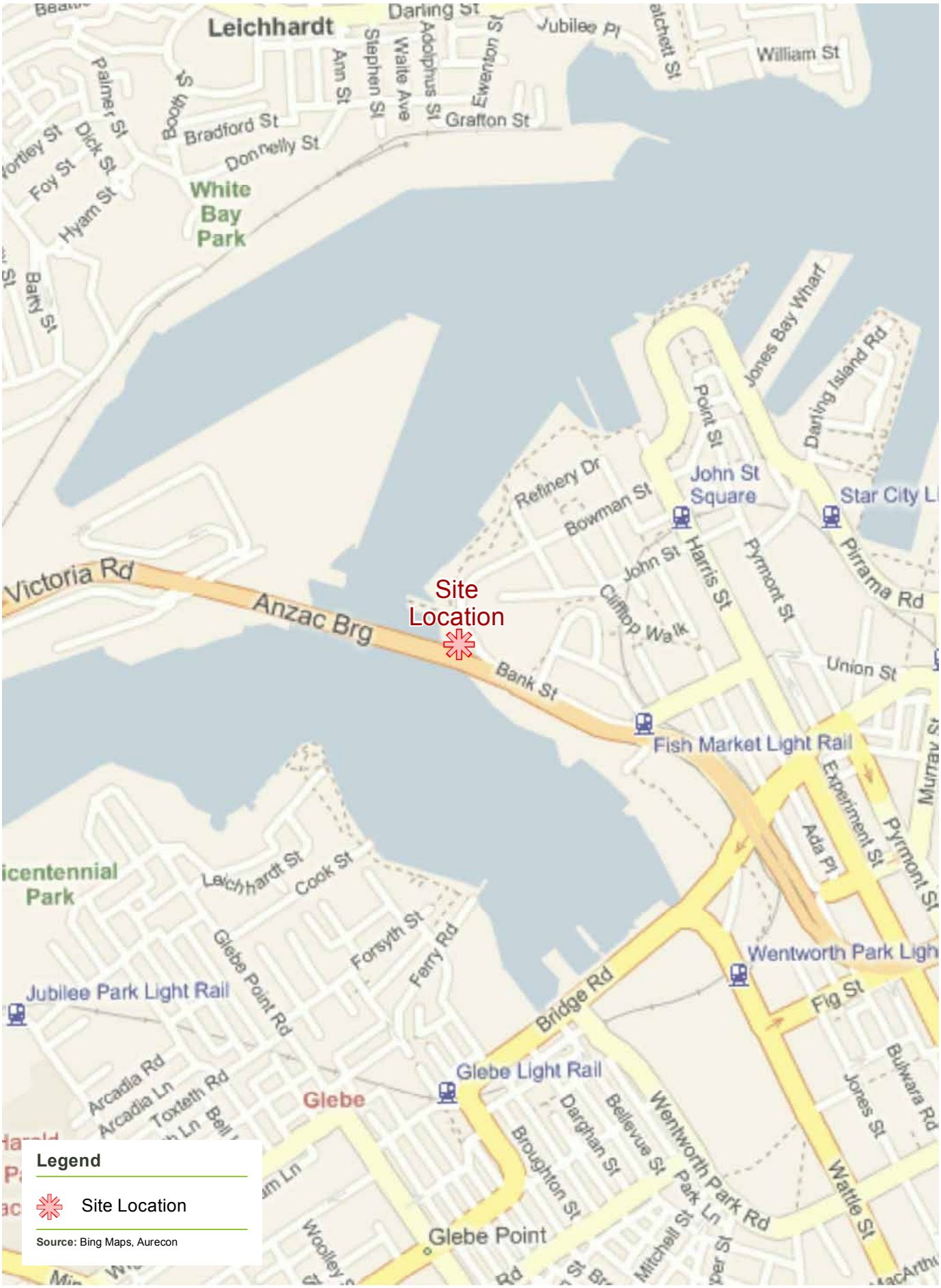
The description of the proposed works and associated environmental impacts have been undertaken in context of clause 228 of the *Environmental Planning and Assessment Regulation 2000*, the *Threatened Species Conservation Act 1995* (TSC Act), *the Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of section 111 of the EP&A Act, namely that the RTA examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for approval to be sought under Part 3A of the EP&A Act. Note that while Part 3A will be repealed on commencement of the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011*, the requirement to make a decision

regarding the significance of environmental impacts and similar approval provisions will remain.

- The significance of any impact on threatened species as defined by the TSC Act and/or FM Act, in section 5A of the EP&A Act and therefore the requirement for a Species Impact Statement.
- The potential for the proposal to significantly impact a matter of national environmental significance or Commonwealth land and the need to make a referral to the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPC), (formerly the Department of the Environment, Water, Heritage and the Arts) for a decision by the Commonwealth Minister on whether assessment and approval is required under the EPBC Act.



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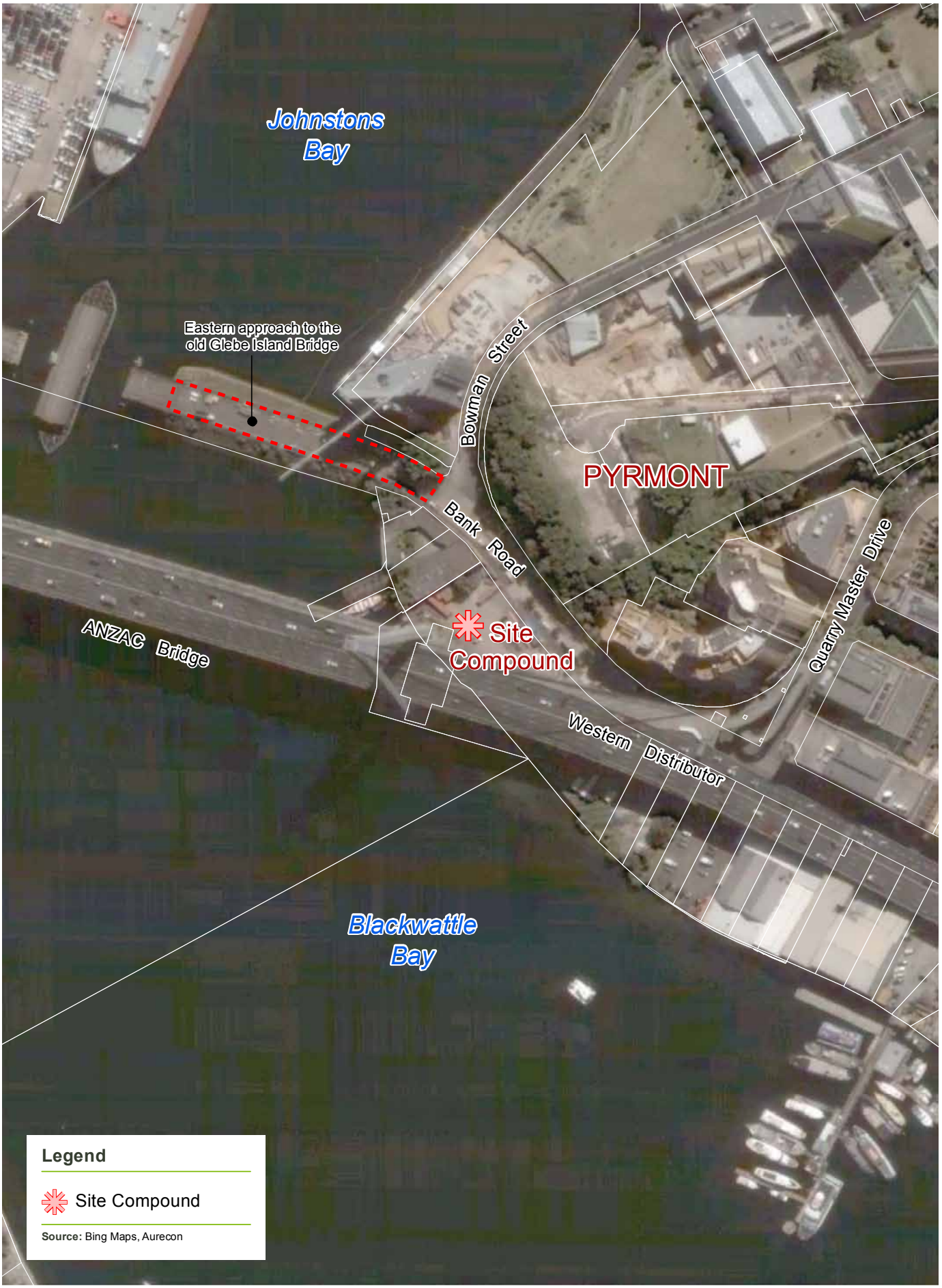
ANZAC Bridge Construction Compound **Review of Environmental Factors**

Projection: GDA 1994 MGA Zone 56

FIGURE 1: Location



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ANZAC Bridge Construction Compound **Review of Environmental Factors**

Projection: GDA 1994 MGA Zone 56

FIGURE 2: Compound Location

2 Need and options considered

2.1 Strategic need for the proposal

The ANZAC Bridge (formerly Glebe Island Bridge) was completed in 1995 and is the largest cable stayed bridge (main span) in Australia. A program of essential maintenance and safety works is required as wind and rain is causing the stay cables to vibrate, this in turn is leading to oscillation of the stay cables. Ongoing oscillation can cause fatigue and reduce the life and performance of the stay cables in supporting the ANZAC Bridge.

There are also several other components of the essential maintenance and safety works, including new fences and new permanent access provisions, required to increase the service life of the bridge and to improve safety for maintenance workers and to the public.

A temporary maintenance compound is required to store materials and commence basic maintenance related activities such as ground based fabrication of required maintenance components in preparation for the future maintenance activities which would be undertaken on the ANZAC Bridge (subject to separate environmental approval and documentation).

The early establishment of the compound and the setup of the temporary access material hoists prior to approval of the maintenance works would enable the maintenance works to be initiated and completed within minimal timeframes. This would also reduce cost and risk to the maintenance project.

The timing of the proposal is to satisfy a requirement to have the proposed maintenance and safety works on the ANZAC Bridge completed by the centenary of the ANZAC landings at Gallipoli in 2015.

2.2 Proposal objectives

The proposal has the following objectives:

- To establish a temporary maintenance compound.
- To ensure the establishment and initial operation of the temporary maintenance compound is completed in a manner which minimises environmental impacts including those on the surrounding community.

2.3 Site options and selection

2.3.1 Methodology for selection of preferred option

An options assessment was undertaken to select the site for the temporary maintenance compound. The options were evaluated in a subjective assessment against a range of criteria, including:

- Cost.
- Availability to start/lead time.
- Approvals.
- Security.
- Community and stakeholders.
- Visibility.
- Local amenities.

- Parking.
- Size.
- Access to site.
- Workforce location.
- Services (electricity etc.).
- Risks and benefits.

2.3.2 Identified options

Three options were assessed in relation to the proposed temporary maintenance compound. Each option is outlined in Table 2-1 (below):

Table 2-1 – Temporary maintenance compound options

Option	Description
Option 1 – Bank Street temporary maintenance compound	Establish a temporary maintenance compound within land at the base of the ANZAC Bridge to locate the workforce and store and manufacture materials; and establish a smaller compound at James Craig Road (Glebe Island) for storage of materials.
Option 2 – James Craig Road and Bank Street compound	Establish a temporary maintenance compound at James Craig Road (Glebe Island) to locate the workforce and store materials; and establish a smaller compound at Bank Street for storage of materials and to provide access to ANZAC Bridge.
Option 3 – 'Do Nothing' option	Do not establish a temporary maintenance compound.

2.3.3 Analysis of options

Option 1: The Bank Street site
The following was noted in relation to Option 1;

- Provides direct worker and materials access to the ANZAC Bridge
- Is available for use by the RTA on a lease from NSW Maritime
- Is located close to amenities
- Has reduced security risk when compared with other options
- Is the least cost option
- Has increased availability for off street parking

A smaller compound at James Craig Road is currently used for storage and deliveries and has been subject to a Minor Works REF assessment. This would continue to be used during the establishment of the temporary maintenance compound.

Option 2: Increased size compound at James Craig Road and smaller Bank Street compound
The following was noted in relation to Option 2;

- Does not provide direct access to the ANZAC Bridge
- Is limited in the activities that would be able to be completed within the narrow confines of the James Craig Road site
- Higher cost alternative
- Less available off street parking

Option 3, the "Do nothing" option

The Do Nothing option would only be preferred in circumstances where the costs and environmental impacts of proceeding would outweigh the identified benefits. That was not the case and accordingly this option was discarded. The Do Nothing option does not meet the project objectives.

The Do Nothing option would not support future essential maintenance and safety works to the ANZAC Bridge. This would prevent efficient and safe maintenance access and would ultimately affect the service life of the ANZAC Bridge

2.3.4 Preferred option

Considered against the key criteria of cost, establishment time, impact on stakeholders and working environment, it was determined that Option 1- with the main temporary maintenance compound established at Bank Street, and a smaller compound at James Craig Road - is the preferred option.

Option 1 was preferred because it is most suited to the required purpose with the provision of direct access to the bridge, better security, more off street parking and proximity to amenities. Option 1 can be established quickly, is cost effective and allows effects on the residents and others to be appropriately managed.

For these reasons it was considered that Option 1 best meets the proposal objectives described in section 2.2.

3 Description of the proposal

The RTA is proposing to establish a temporary maintenance compound under the eastern A-frame tower of the ANZAC Bridge.

The proposed temporary maintenance compound would be located on NSW Maritime land on Bank Street at Pyrmont. The site is under the shadow of the bridge and comprises vacant land with an area of 3123m^2 around the base of the eastern A-frame tower (see Figures 1 and 2 and Appendix A). The site is not currently accessible to the public.

It is proposed that establishment of the temporary maintenance compound and preliminary activities such as ground based fabrication of components would commence in late July 2011, with completion in September 2011.

Subject to a separate assessment and approval, the full operation of the compound area for the essential maintenance and safety project is proposed to commence in September 2011 and continue for approximately 30 months including the de-mobilisation phase.

3.1 The proposal

The proposed temporary maintenance compound is designed to provide office accommodation, workshops and amenity facilities for the ANZAC Bridge essential maintenance and safety project workforce (estimated at up to around 100 people although a maximum of 30 construction staff is estimated to be initially required during the compound set up). It would include

- Installation of two storey temporary offices mounted on temporary footings adjacent to Bank Street and the north western site boundary.
- Installation of single storey building including meeting room, kitchen, first aid area and toilet adjacent to the north western site boundary.
- Installation of two storey combined maintenance and worker amenity block including change room and open canteen area. This facility would be located adjacent to Bank Street and the eastern site boundary.
- Installation of maintenance workshop space provided by two 40 foot equivalent open sided containers connected by a temporary dome roof to create a semi-enclosed workshop area. This area would be used for the fabrication of components required during the proposed essential maintenance and safety works. Adjacent containers would provide secure storage space.
- Provision of parking for approximately ten light vehicles within the compound area. The internal driveway and paths within the proposed temporary maintenance compound would be concrete or sealed with sprayed bitumen.
- Installation of two personnel and materials hoists located directly beneath the northern extent of the ANZAC Bridge road deck and two located directly beneath the southern side of the ANZAC Bridge road deck. A total of four hoists would be provided.
- Provision of a storage area for inert materials such as steel directly around the base of the A-frame tower in the lower area of the compound.
- Construction of a vehicle ramp to provide vehicle access between the upper and lower levels of the proposed temporary maintenance compound.
- Removal of five trees from the site.
- Removal of existing brick stub wall.
- Installation of new gate to compound area from Bank Street, adjacent to the Sydney Harbour Foreshore Authority land to the northwest. During establishment of the compound, vehicles would be able to access the site via the NSW Maritime land to the

east and then exit through the compound site existing gate. Following establishment of the compound, the new gate would be the sole point of access and egress.
- Installation of a boom gate with secure access to the eastern approach to the old Glebe Island Bridge to ensure only designated staff park within that area.
- The use of the eastern approach to the old Glebe Island Bridge for parking where required. The gates to the eastern approach would be locked after hours.

The fitting of additional materials to the ANZAC Bridge is not part of the proposal the subject of this REF. The initial fabrication of components is proposed and this would include (but would not be limited to) activities such as:

- Unloading delivery trucks with a forklift.
- Cutting steel.
- Welding.
- Grinding.
- Painting.
- Storage of semi-fabricated components within the proposed temporary maintenance compound.

Compound establishment and these preliminary activities would be undertaken during the standard working hours outlined below:

- Monday to Friday: 7am to 6pm.
- Saturday 8am to 1pm.
- No work on Sunday and Public Holidays.

Limited access to the temporary maintenance compound may be required outside standard hours for office based project design and management work.

During the establishment of the proposed temporary maintenance compound, it is anticipated that there would be up to 30 construction staff working on site. Once established, these staff would be engaged in fabricating the components required for the proposed essential maintenance and safety works.

Staff would either park on the eastern approach to the old Glebe Island Bridge or within the proposed temporary maintenance compound.

3.2 Existing road and infrastructure

The proposed temporary maintenance compound is to be established to support essential maintenance and safety works on the ANZAC Bridge. It is to be located under the ANZAC Bridge deck and wraps around the base of the eastern A-frame tower. Apart from the ANZAC Bridge, there is no RTA infrastructure associated or affected by the proposal.

The existing compound site has two distinct levels. An elevated area adjoins Bank Street and the NSW Maritime land to the east, then a lower area surrounding the eastern A-frame tower of the ANZAC Bridge. The ground is primarily covered with crushed brick and concrete, with some grassed areas and a number of semi-mature Casuarina trees.

Road access to the temporary maintenance compound would be via gates in the perimeter fence line to Bank Street. Bank Street is a two lane road signposted at 50 km/h with on-street car parking on both sides of the road. Bank Street has a regular yet low volume of traffic, mostly composed of cars. The road is predominately used by residents accessing the residential areas of Pyrmont to the north of the temporary maintenance compound.

Directly opposite the site is a large construction site that uses Bank Street for material deliveries, with delivery trucks parking on Bank Street facing east and having material hoisted by crane into the construction site.

There are no intersections on Bank Street in close proximity to the site, although the eastern approach to the old Glebe Island Bridge is used by the RTA as a storage area for mobile variable message signs. This area is accessed via a gate to Bank Street to the north west of the proposed temporary maintenance compound.

3.3 Design parameters

3.3.1 Design criteria

The proposal has been developed to comply with the following requirements and standards

- Building Code of Australia
- *Occupational Health and Safety Act 2000*
- Australian Standard 1428.2 *Design for access and mobility – enhanced and additional requirements – buildings and facilities*
- Australian Standard 2890.1 *Parking facilities – off-street parking*
- Australian Standard 4282 *Control of the obtrusive effects of outdoor lighting*
- Australian Standard 1418 *Cranes, hoists and winches*

3.3.2 Engineering constraints

There are a number of engineering constraints that limit the extent of the proposed temporary maintenance compound. Bank Street and the adjacent building at 1 Bank Street limit the northern and western boundaries respectively, while the waters of Blackwattle Bay limit the southern boundary. The eastern side of the proposed temporary maintenance compound would be defined by the fencing separating the remainder of the adjacent NSW Maritime land.

The location of the four personnel/material hoists is determined by the need to tie-in to the bridge structure and the requirement for the hoists to be located directly beneath the hoist landing platforms at the outer edge of the ANZAC Bridge road deck level. Due to the outward splay of the lower part of the A-frame tower, the hoists cannot be located directly adjacent to the base of the A-frame and must directly beneath the edge of the road deck.

The location and slope of the vehicle ramp between the upper and lower sections of the compound also influences compound layout options.

3.3.3 Major design features

The major design features of the proposal were introduced at section 3.1. Further detail is provided below:

- Two storey temporary offices located adjacent to Bank Street and the northwestern site boundary. These offices would be erected on temporary footings and would include offices. Access to the upper level would be via an external staircase and associated balcony. The structure would be supported by a steel fame and would be cladded with colourbond panels.
- Single storey building adjacent to the northwestern site boundary. This would include a meeting room, kitchen, first aid area and toilet. This building would be cladded with colourbond panels.

- Two storey combined maintenance and worker amenity block located adjacent to Bank Street and the eastern site boundary. This would include a change room and open canteen area. It be supported by a steel fame and would be cladded with colourbond panels.
- Maintenance workshop space provided by two 40 foot equivalent open sided containers connected by a temporary dome roof to create a semi-enclosed workshop area.
- Personnel/material hoists. There would be four hoists, two to the south of the A-frame tower and two to the north. All would be accessed from the lower level of the site. Each hoist would site on a concrete base and consist of a steel frame and cladded structure with a roof and concealed engine area. Each hoist would move up and down a rigid steel mast.
- Vehicle access ramp, providing access between the upper and lower compound areas for a four-wheel drive forklift.
- Stacked parking for ten vehicles. Spaces would be marked on a sealed hardstand area.

3.4 Construction activities

3.4.1 Work methodology

It is anticipated that the construction methodology detailed below would be followed during the construction of the proposed temporary maintenance compound. The methodology may change during the detailed design stage and the following order of works is general only:

- Implementation of environmental protection measures.
- Demolition of existing double brick stub wall (approximately 10 metres by 3.2 metres adjacent to the Sydney Harbour Foreshore Authority building at 1 Bank Street).
- Erection of new perimeter fence and gates (including across Bank Street side of adjacent NSW Maritime land).
- Removal of redundant wooden telegraph poles.
- Boom gate installation to eastern approach of old Glebe Island Bridge.
- Tree removal.
- Erection of internal fences to separate compound area from adjacent NSW Maritime land.
- Relocation of existing ANZAC Bridge flood lighting.
- Levelling of ground/grading.
- Cutting of ramp/minor earthworks to provide access to the lower level of the temporary maintenance compound and the base of the A-frame tower by site personnel.
- Cutting into existing embankment to create space on the lower level for the northern two hoists. Associated installation of concrete pads and retaining wall.
- Construction of capping layer composed of concrete or spray sealed bitumen.
- Installation of subsurface and surface drainage and associated erosion and sedimentation measures.
- Construction of concrete slabs for storage/workshop areas.
- Construction of concrete footings (as required) for site buildings.
- Construction of asphalt access road.
- Delivery and erection of site buildings including decks/outside areas (portable buildings)

and storage (shipping containers).

- Installation of flood lighting.
- Line marking, barriers, and ancillary works.
- Service connections including water, sewer, electricity, telecommunications (including excavation to services in adjacent Bank Street).
- Installation of temporary material and personnel hoists to the outside face of the A-frame tower at the road deck level.

Construction works would require various environmental protection measures to be put in place including sediment fences, localised sandbagging, use of water for dust suppression during construction, and cleaning of vehicles to prevent dust/mud generation being tracked onto public roads. Any stockpiling of materials such as soil or fuels would be undertaken in an appropriately bunded area.

Establishment works would be undertaken during standard hours as stated in section 3.1.

3.4.2 Plant and equipment

Equipment, which is likely to be used during the construction of the compound, includes (but is not limited to):

- Backhoe.
- Bobcat
- Excavator.
- Generator (270 KVa, used during initial operation of the proposed site compound).
- Bulldozer.
- Trucks (aggregate delivery and concrete).
- Dumper truck.
- Concrete pump.
- Cranes.
- Paving machine.
- Rollers (smooth drum vibrating and non-vibrating).
- Utes.
- Hammer attachments to excavators.
- Diamond cutting saws.
- Various other small items of equipment.

3.4.3 Earthworks

There would be some minor earthworks required during the construction of the temporary maintenance compound. These would include cutting an access ramp so vehicles can access the lower compound and the southern personnel and materials hoists. Material which is removed from site during excavation for the ramp, drainage and site levelling would be classified and disposed of at an appropriately licensed facility.

The remaining earthworks within the temporary maintenance compound area would be limited to levelling of the surface by the placement of engineered fill material into surface depressions, and excavations for drainage line installation and construction of temporary office footings.

Within NSW Maritime's adjacent compound, the RTA would complete minor works, involving filling existing surface depressions to create a level surface for the future use of the adjacent land.

3.4.4 Source and quantity of materials

The materials used for the construction of the compound would include (but not be limited to) the materials outlined in Table 3-1 (below), along with the estimated quantities:

Table 3-1 Estimated materials and quantities

Material	Estimated quantity
Crushed stone/gravel.	50 tonnes
Concrete.	70m^3
Road base.	900 tonnes
Asphalt.	300 tonnes
Pre-fabricated site buildings.	11 (No.)
Storage containers.	6 (No.)
Various chemicals and liquid fuels.	Diesel, petrol and form-oil.
Fencing.	345 metres (excluding silt fencing)
Cables, pipe work and other ancillary materials.	Electrical: - Ducting = 1200 metres - Pits = 9 No. - Cabling = 4000 metres - Distribution Boards = 8 No. Water: - Polypipe = 300 metres Sewer: - PVC = 200 metres SW Drainage: - 150 metres

3.4.5 Traffic management and access

During the construction process, access would be via an existing access gate from Bank Street to the adjacent NSW Maritime land. Gates in the boundary fence would be used for access from the NSW Maritime land into the proposed temporary maintenance compound. Trucks would be able to exit the site via the existing access gates to Bank Street. This access would only be available during the initial construction period while the proposed temporary maintenance compound is being prepared for surface sealing.

During the remainder of the construction period (e.g. site setup and office fit out etc.) trucks would only be able to access the site via the existing access gates directly from Bank Street.

The delivery of materials to the proposed temporary maintenance compound would be undertaken during the standard hours identified in Section 3.1. It is anticipated that there would be no more than 30 vehicles per day, for a maximum of five continuous days for delivery of materials to the proposed temporary maintenance compound. This would be likely to occur early in the construction period when engineering fill material may be brought to the site to provide fill for a level surface and during concreting of the surface. During the remainder of the construction period, it is anticipated that there would be no more than ten trucks per day delivering materials.

Oversized equipment

In the event that oversized equipment needs to be delivered or removed from the site as part of this proposal, the equipment would be delivered between 5:00am and 7:00am, or removed from site between 7:00pm and 9:00pm, to minimise the potential impacts to traffic on Bank Street and within the immediate surrounding area.

Parking

During the construction of the proposed temporary maintenance compound, it is anticipated that there would be a maximum of 30 construction personnel working at one time. It is proposed that the construction staff would park on the eastern approach to the old Glebe Island Bridge, or at designated locations within the compound.

These parking arrangements would continue for the maximum 30 staff engaged once construction has been completed and while the initial fabrication is occurring.

3.5 Ancillary facilities

A boom gate and fence extension would be installed behind the existing gate access from Bank Street on the eastern approach to the old Glebe Island Bridge for construction staff parking.

The boom gate would be set back from the existing gate, with the extension fence installed to prevent access between the existing gate and the proposed boom gate. The proposed boom gate would be electrically powered if an appropriate source can be located nearby, otherwise the boom gate would be manually operated.

3.6 Public utility adjustment

There is a high voltage electricity cable within a large easement on the site. The temporary maintenance compound has been designed to work around the known utility locations.

The existing ANZAC Bridge electrical supply is required to be relocated as a result of the construction of the proposed temporary maintenance compound. The proposed electrical supply would be supplied from the existing substation and RTA distribution boards at the eastern end of the adjacent NSW Maritime land. The proposed electrical supply cable (consisting of multiple cable ducts in the trench) would be excavated into the ground adjacent to the existing Bank Street fence line.

The proposed temporary maintenance compound would require connection to services including, telecom, and water and wastewater services. Depending on the location of services at the compound site, there may be a requirement to connect to existing services within the Bank Street road corridor.

Further service location activities would be carried out on the site prior to commencing construction of the compound.

3.7 Property acquisition

The proposed temporary maintenance compound would be located on land owned by NSW Maritime and would be leased by the RTA for the duration of the proposed ANZAC Bridge essential maintenance and safety works.

The specific land parcels to be leased by the RTA from NSW Maritime is Part of Lot 19 and 20 in DP 803159.

The RTA has negotiated with NSW Maritime for the lease of the land and would complete some minor works such as ancillary fencing of the adjacent NSW Maritime land. If any additional work is required it would be subject to separate assessment and approval.

3.8 Compound decommissioning

The proposed temporary maintenance compound would be decommissioned at the conclusion of the proposed essential maintenance and safety works.

Site decommissioning would involve removing all maintenance materials, equipment and plant remaining in the temporary maintenance compound, removing the temporary workshops, the temporary office accommodation and removing temporary maintenance compound fencing.

This would be carried out in a similar manner to the construction of the compound and would involve day work, unless there are oversized vehicle loads, which are required (by the relevant RTA regulations) to operate during night periods.

Discussions are underway with the land owners to determine if the concrete and asphalt sealing is to be removed or if it could remain onsite for future use after the RTA have ceased to occupy the site. Should it be removed, appropriate management of the underlying exposed soils would be implemented and the material removed would be taken to an appropriate facility.

4 Statutory and planning framework

4.1 State Environmental Planning Policies

4.1.1 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for the construction and initial operation of a temporary maintenance compound associated with the ANZAC Bridge investigations and (if required) essential maintenance and safety works. These activities would be carried out by BSA on behalf of the RTA and would only be for the purposes of bridge maintenance. They would have no independent purpose and can therefore be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by *State Environmental Planning Policy No. 14 - Coastal Wetlands* or *State Environmental Planning Policy No.26-Littoral Rainforests*.

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in chapter 5 of this REF.

4.1.2 State Environmental Planning Policy (Major Development) 2005

The proposal is located on land to which the provisions of *State Environmental Planning Policy (Major Development) 2005* (Major Development (MD SEPP) apply.

Clause 6(1)(a) of the MD SEPP indicates development is a project to which Part 3A of the EP&A Act applies if, in the opinion of the Minister for Planning, it is described in Schedule 2 of the SEPP. Clause 10 of Schedule 2 includes development on Sydney Harbour Foreshore sites shown on Map 9 to Schedule 2 that have a capital investment value of more $5 million. The eastern tower of the ANZAC Bridge and the proposed temporary maintenance compound are located on land shown in Map 9, however they only have a capital investment value of around $1.7 million and are therefore captured by clause 6(1)(a) of the MD SEPP.

4.1.3 Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

Since 1 July 2009, regional environmental plans (REPs) have not been part of the hierarchy of environmental planning instruments in NSW. All remaining REPs (that were not repealed as part of the reform) are now deemed SEPPs.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 establishes a set of planning principles which include a range of matters for consideration by consent and determining authorities assessing development within the Foreshores and Waterways Area identified by the plan.

These are aimed at ensuring better and consistent development decisions and include specific issues within the broad headings of:

- Biodiversity, ecology and environment protection.
- Public access to, and use of, foreshores and waterways.
- Maintenance of a working harbour.
- Interrelationship of waterways and foreshore uses.
- Foreshore and waterways scenic quality.
- Maintenance, protection and enhancement of views.
- Boat storage facilities.

Where relevant, the planning principles and requirements of the REP, which are applicable to the proposed temporary maintenance compound, have been addressed in the REF (refer chapter 6). It is important to note that a number of the provisions relate to the construction of permanent development features and the protection and enhancement of matters such as public foreshore access, views and environmental factors. The proposal is a temporary compound to facilitate investigations and essential maintenance of the ANZAC Bridge. Accordingly, it would not compromise longer term planning principles set out within the REP.

4.2 City of Sydney Local Environmental Plan 2005

The proposal is located within the City of Sydney Local Government Area and the *Sydney Local Environmental Plan (LEP) 2005* (Sydney LEP) is applicable to development on the proposal site. Under the provisions of the Sydney LEP, the site is zoned as "Public Recreation".

Under the Sydney LEP, only development consistent with zone objectives is permissible. The proposal is not consistent with the general objectives of the Public Recreation zone, however as previously noted in section 4.1.1, the provisions of the ISEPP remove otherwise applicable consent requirements and prohibitions. It should also be noted that the proposal involves the establishment of a temporary maintenance compound for essential investigations, maintenance and safety works on the ANZAC Bridge. In the longer term, it would not compromise the objectives set for the Public Recreation zone.

4.3 Draft Sydney Local Environmental Plan 2011

The City of Sydney has placed the draft Sydney Local Environmental Plan 2011 on public exhibition (draft Sydney LEP). The draft Sydney LEP is a comprehensive LEP prepared in accordance with the Standard Instrument (Local Environmental Plans) Order 2006.

Under the draft Sydney LEP, the proposal site is zoned RE1 Public Recreation. Within that zone, development for the purposes of roads is permitted with development consent. As noted in section 4.1.1, the provisions of the ISEPP would operate to remove any such consent requirement.

4.4 Other relevant legislation

4.4.1 Heritage Act 1977

The *Heritage Act 1977* regulates natural, cultural and built heritage in NSW. The Act allows for heritage items or places to be listed on the State Heritage Register, and for interim heritage orders to be made to protect heritage items or places. Approval must be obtained from the Heritage Council or local council before work can be done which might damage a listed item or place.

An excavation permit is required to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. A permit is also required to disturb or excavate any land on which the person has discovered or exposed a relic. However, Section 134(4) of the *Heritage Act 1977* makes provision for the issuing of an exception in certain prescribed circumstances.

Archaeological and Heritage Management Solutions (AHMS) were engaged to provide a heritage assessment and as part of that heritage assessment, AHMS searched the NSW Heritage database to determine if there are any heritage items within the temporary maintenance compound or in the immediate vicinity of the temporary maintenance compound.

No items listed in the NSW Heritage Register were identified in the database searches although the ANZAC Bridge is listed on the RTA's s.170 Heritage and Conservation Register.

The heritage assessment also found that items of heritage significance, and archaeological relics, would not likely be affected by the proposal. The heritage assessment is included at Appendix B).

4.4.2 National Parks and Wildlife Act 1974

The harming or desecrating of Aboriginal objects or places is an offence under section 86 of the *National Parks and Wildlife Act 1979*. Under section 90, an Aboriginal heritage impact permit may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or persons.

The Office of Environment and Heritage has published the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010). The due diligence process outlined at section 8 of that publication has been followed for the proposal and it has been determined that an application for an Aboriginal Heritage Impact Permit is not required in this case.

Aboriginal objects or places are not likely to be affected by the proposal (refer section 5.3 and 6.7).

4.4.3 Threatened Species Conservation Act 1995

Consideration of the requirements of the *Threatened Species Conservation Act 1995* has been given in assessing the proposed temporary maintenance compound. Specifically, consideration has been given to the potential for any threatened or endangered species to be present at the temporary maintenance compound.

Database searches have been undertaken to identify any potentially threatened or endangered species or communities that may be present within the temporary maintenance compound (included in Appendix C). There are no records of listed threatened species or endangered ecological communities at or in the vicinity of the site. Impacts on listed species and communities are therefore not expected – refer section 6.3.2.

4.4.4 Fisheries Management Act 1994

The *Fisheries Management Act 1994* provides for the identification of endangered marine fish species. A search of the Department of Primary Industries Priorities and Action Statement Database reveals that there are six species which are identified as either critically endangered, presumed extinct, endangered or vulnerable which occur within the Sydney Metropolitan area. These species are identified in Appendix D.

4.4.5 Noxious Weeds Act 1993

The *Noxious Weeds Act 1993* makes provision for the declaration and control of noxious weeds within NSW. Declarations are made the Minister for Department of Trade and Investment, Regional Infrastructure and Services on the advice of the NSW Weeds Advisory Council.

A plant identified as a juvenile *Lantana sp.* has been identified as growing within the proposed temporary maintenance compound. Lantana is identified as a Class 4 noxious weed under the Weeds Act and appropriate suppression of the plant would therefore be required.

4.4.6 Road Transport (Mass, Loading and Access) Regulation 2005

The Road Transport (Mass, Loading and Access) Regulation 2005 provides specific requirements for the loading and travel of vehicles, including requirements for oversized vehicles (which may potentially be required).

4.5 Commonwealth legislation

4.5.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These matters are identified in Appendix E and are considered in chapter 6 of this REF.

The assessment of the proposal's impact on matters of National Environmental Significance and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of National Environmental Significance. Accordingly, the proposal has not been referred to the Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPC).

4.6 Confirmation of statutory position

The proposal does not require approval from the Minister for Planning or development consent

from Council and is therefore subject to environmental impact assessment under the provisions of Part 5 of the EP&A Act.

5 Stakeholder and community consultation

5.1 Consultation strategy

The RTA has prepared a consultation strategy for the proposal. The key objectives of the consultation strategy are:

- Announcement of the proposed maintenance project.
- Inform the community and stakeholders of the proposed scope and timing of bridge investigation works.
- Establish relationships with key stakeholders and community members likely to experience impacts from the work.
- Commence stakeholder and community awareness activities in preparation for essential investigations, maintenance and safety work on ANZAC Bridge.
- Communicate to motorists, residents, pedestrians, cyclists, business owners, waterway users and other community and stakeholder members regarding the impacts likely to affect them.
- Inform the broader community and stakeholders of the progress of the project.

The consultation strategy has identified 18 different stakeholder/community groups consisting of 55 stakeholder and community organisations to be consulted. These organisations are identified in Appendix F

5.2 Community involvement

A detailed fact sheet and notification containing information on the proposed temporary maintenance compound has been provided to 500 residences located within the community surrounding the Bank Street site.

The fact sheet is available on the RTA project website and advised that the draft REF was available for review on request by the public within the BSA office. The draft REF was available for review for a period of two weeks from Wednesday 15 June 2011 to Wednesday 29 June 2011. Additionally, the fact sheet advised recipients of the project information telephone number.

No requests were made to review the REF and only two telephone calls were received in response to the notification and fact sheet. Both of the callers requested information that was contained within the fact sheet. No issues were raised.

In addition, 55 identified stakeholder and community organisations were notified by letter detailing the proposed essential maintenance and safety works to the ANZAC Bridge and the proposed temporary maintenance compound. An example of this letter is attached in Appendix F.

BSA has engaged in further consultation meetings with:

- Bicycles NSW.
- Council of Ultimo/Pyrmont Association.
- Chinese Youth League.
- Pyrmont Progress Association.

These organisations were consulted in relation to the proposed essential maintenance and safety works on the ANZAC Bridge. These groups raised no issues in relation to the proposed temporary maintenance compound.

Given the significance of the ANZAC Bridge as a monument to fallen soldiers, BSA (on behalf of the RTA) has also engaged in special consultation with the Returned and Services League (RSL) NSW branch, including briefing RSL executive members on the work which is proposed to be undertaken.

The RSL has been supportive of the proposed essential maintenance and safety works to the ANZAC Bridge and has not raised any specific concerns regarding the proposed temporary maintenance compound.

5.3 Aboriginal community involvement

The proposal has been considered against the requirements of the RTA *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (2008) (PACHCI). This procedure is generally consistent with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). An outline of the procedure is presented in Table 5 1.

Table 5-1 RTA Procedure for Aboriginal Cultural Heritage Consultation and Investigation

Stage	Description
Stage 1	An internal RTA assessment to determine whether a project is likely to affect Aboriginal cultural heritage.
Stage 2	A preliminary external assessment with limited stakeholder consultation to determine whether a project requires Part 6 approval from the DECCW under the National Parks and Wildlife Act 1974.
Stage 3	If approval is required, Aboriginal community consultation and investigation.
Stage 4	Cultural and archaeological assessments undertaken with the involvement of the Aboriginal community.
Stage 5	Implementation of the assessment process.

This PACHCI report (attached as Appendix G) has concluded that there is no need to proceed to Stage 2 of the PACHCI process as:

- The proposed area has been previously heavily disturbed and developed
- The area contains no natural vegetation.
- The Aboriginal Heritage Information Management System (AHIMS) report from the Office of Environment and Heritage has identified that no known Aboriginal sites or objects are located within the immediate area.
- No impacts are expected on natural ground.

5.4 ISEPP consultation

The consultation requirements at clauses 13-16 of the ISEPP have been reviewed and it is considered that formal consultation with the City of Sydney City Council and the Sydney Harbour Foreshore Authority is required. Infrastructure SEPP consultation requirements are reviewed in Table 5-.2

Table 5-2 Infrastructure SEPP consultation requirements

Consultation trigger	Application to proposal
Clause 13(1)(a) will have substantial impact on stormwater management services provided by a council	Storm water management services provided by council would not be substantially affected by the proposal.
Clause 13(1)(b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area	The proposal would generate traffic. Consultation appropriate.
Clause 13(1)(c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council	The proposal would not have a substantial impact on a council owned sewerage system.
Clause 13(1)(d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council	Water use associated with the proposal would be minimal.
Clause 13(1)(e) involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential	The proposal would not affect public places under Council control.
Clause 13(1)(f) involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the *Roads Act 1993* (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath)	The proposal would have some impact on council managed pavements. Consultation appropriate.
Clause 14 is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area	There are a number of heritage items in the locality. Direct or indirect impacts on these items are not expected.
Clause 15 will change flood patterns other than to a minor extent	Flooding patterns would not be altered by the proposal.
Clause 16(2)(a) development adjacent to land reserved under the *National Parks and Wildlife Act 1974*	The site is not located adjacent to reserved land.
Clause 16(2)(b) development adjacent to a marine park declared under the *Marine Parks Act 1997*	The site is not located near a marine park.
Clause 16(2)(c) development adjacent to an aquatic reserve declared under the *Fisheries Management Act 1994*	The site is not located near an aquatic reserve.
Clause 16(2)(d) development in the foreshore area within the	The site is located in the foreshore area as defined by the *Sydney Harbour*

Consultation trigger	Application to proposal
meaning of the *Sydney Harbour Foreshore Authority Act 1998*	*Foreshore Authority Act 1998.* Consultation required.
Clause 16(2)(e) development comprising a fixed or floating structure in or over navigable waters	The site is not located in or over navigable waters.
Clause 16(2)(f) development for the purposes of an educational establishment, health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land	The proposal does not involve any of the named purposes.

Consultation letters were sent under the provisions of ISEPP (Clause 13 (b) and (f)) to the City of Sydney Council, and ISEPP (Clause 16 (d)) to Sydney Harbour Foreshore Authority (SHFA). These ISEPP consultation letters were sent on 5 April 2011 and consultation closed on 6 May 2011. The letters are contained in Appendix H and the main issues raised by agencies in their responses are summarised below.

A response letter was received from SHFA on 4 May 2011 and advised that SHFA have no in principal objection to the proposed works but would like to be advised of any works that may impact on the adjacent SHFA property at 1 Bank Street (Appendix I). A response letter was then sent advising SHFA of the works in the vicinity of the premises at 1 Bank Street (Appendix J).

The City of Sydney Council has identified in their response (Appendix K) a range of issues related to construction of the temporary maintenance compound. A meeting was requested with the City of Sydney Council to discuss and closeout these issues. Council have responded by letter (Appendix L) declining the offer of a meeting. Issues raised in their initial response have been considered within this REF and are referred to below in Table 5-3.

Table 5-3 – Council concerns and location within REF

Council Concern	Location within REF
Construction traffic management plans	Section 6.1
Demolition, excavation and construction management	N/A
Contamination	Section 6.5
Archaeological discoveries during excavation	Section 6.6 and 6.7
Barricade permits	N/A
Application for hoardings and scaffolding on a public place	N/A
Street tree protection	N/A
Hours of work	Section 3.1
Lighting of site outside of standard construction hours	Section 6.11
Use of appliances of a highly intrusive nature	Section 3 and 6.3
Covering of loads	Section 6.4
Hazardous and industrial waste	Section 6.5 and 6.10
Vehicle cleaning	Section 6.4
No obstruction to a public way	N/A
Use of mobile cranes	N/A
Loading and unloading during construction	Section 3 and 6.3

5.5 Government agency and stakeholder involvement

The City of Sydney Council was identified as one of the key stakeholders to be consulted. A meeting was held with representatives of the Council. Council raised concerns with the potential for noise impacts on nearby residents associated with the proposed essential maintenance and safety works. They were informed that a noise assessment would be undertaken for the as part of the environmental impact assessment for those works. Council did not raise any issues specifically related to the proposed temporary maintenance compound.

5.6 Ongoing consultation

The surrounding community would be advised of:

- The proposed construction commencement date
- Project information telephone number
- Website address
- Further project updates and notifications

6 Environmental assessment

6.1 Traffic and access

6.1.1 Existing environment

Bank Street borders the northern side of the proposed temporary maintenance compound (see Figures 1 and 2 and Appendix A). Bank Street is a local road with two traffic lanes and two lanes of metered parking spaces. At the location of the proposed construction compound, Bank Street is sign posted at 50 km/h and has a generally low volume of vehicles.

To the north of the site, Bank Street becomes Bowman Street, which provides access to residential tower buildings in Pyrmont. As a continuation of Bank Street, Bowman Street has a regular, yet light traffic load.

To the east of the proposed temporary maintenance compound, Bank Street intersects with both Miller Street and the Fish Market access road in an off-set four way intersection. Further to the south east of the intersection, Bank Street intersects with Pyrmont Bridge Road and the east and west bound on and off-loading ramps to the Western Distributor.

The eastern approach to the old Glebe Island Bridge is located to the north west of the proposed temporary maintenance compound. This approach is fenced off from public access and is used by the RTA for the storage of mobile variable message signs and similar equipment. The eastern approach to the old Glebe Island Bridge is only accessible through a locked gate from Bank Street.

6.1.2 Potential impacts

Off street parking would be provided for construction personnel on the eastern approach to the old Glebe Island Bridge, or alternatively within the temporary maintenance compound. This would minimise impacts on existing public parking. The eastern approach to the old Glebe Island Bridge has adequate parking space for 30 vehicles.

The proposal would generate approximately 30 additional light vehicle movements from the old Glebe Island Bridge eastern approach at the start and end of each day.

Construction equipment and supplies would be delivered to the site throughout the construction period. Construction vehicles would initially use the western gate in the adjacent NSW Maritime compound and proceed to the BSA temporary maintenance compound via a set of gates in eastern boundary fence. Construction vehicles would exit the site via the existing gates to Bank Street.

It is estimated that during the initial phase of the construction there would be a maximum of 30 trucks per day delivering materials to site. This would be for approximately five consecutive days at the commencement of the work and would occur during standard hours. During the remainder of the construction period, it is estimated that there would be up to 10 truck movements per day to the site.

There are likely to be minor delays to traffic on Bank Street while delivery vehicles manoeuvre into and out of the temporary maintenance compound.

No public car parking spaces on Bank Street would be removed to facilitate access to the proposed temporary maintenance compound. When vehicles are entering or exiting the site, traffic control would be implemented to temporarily stop traffic on Bank Street. Delays due to entering and existing vehicles would be of minimal duration and would not have a major impact

on the Bank Street traffic flow. The movement of vehicles entering and exiting the site would be co–ordinated with the construction site on the northern side of Bank Street where construction delivery vehicles park in Bank Street and have deliveries lifted directly from the vehicle to the construction site.

Traffic flow may also be affected if BSA has to connect services to the proposed temporary maintenance compound. This would involve works in the Bank Street road corridor.

6.1.3 Safeguards and management measures

- A Traffic Management Plan would be prepared to address management of traffic at the temporary maintenance compound and on Bank Street during the establishment and operational phases.
- The following traffic control measures would be implemented:
  - No parking spaces on Bank Street are to be removed.
  - No impact to existing access arrangements.
  - Residents are to be notified, at least five days prior to commencement of construction, of the planned construction commencement and any potential changes to traffic on Bank Street.
  - Appropriate traffic control measures are to be used on Bank Street when vehicles enter or exit the proposed temporary maintenance compound.

6.2 Noise and vibration

6.2.1 Existing environment

The existing noise environment at the temporary maintenance compound and in Bank Street is dominated by traffic noise from the ANZAC Bridge. During the night, traffic noise from ANZAC Bridge remains a distinctive noise source but is less dominant due to lower night time traffic volumes.

Other day time noise sources in the vicinity of the site include traffic on Bank Street, construction activities from nearby residential apartment building construction and vessel traffic on Blackwattle Bay and Rozelle Bay. ANZAC Bridge traffic noise masks these day time noise sources so that they are generally inaudible, apart from occasional individual noise events. At night time, there is clearly audible noise from the Poulous Brothers seafood supply warehouse adjacent to the proposed temporary maintenance compound. This is likely to be an extractor fan or freezer unit in operation.

The nearest sensitive receiver to the proposed temporary maintenance compound is the residential apartment building located approximately 40 metres to the northeast. There are 250 apartments within this building.

Other apartment buildings are located within the general Pyrmont area however these buildings are not directly visible from the proposed temporary maintenance compound and are generally shielded.

There are residential receivers located to the south of the proposed temporary maintenance compound across Blackwattle Bay. The nearest of these receivers is at Glebe Point approximately 300 metres from the proposed temporary maintenance compound. Noise from the ANZAC Bridge at this location is a generally low level continuous daytime source. During night time periods, the traffic on ANZAC Bridge and approaches becomes a distinctive noise source due to the reduced noise emissions from other sources.

A childcare centre is located approximately 150 metres to the east of the proposed temporary

maintenance compound on Bank Street. This centre fronts Bank Street and is located predominately within a building with little direct exposure to noise from either the ANZAC Bridge or from Bank Street traffic.

A residential apartment building is located approximately 100 metres to the northwest of the proposed temporary maintenance compound, directly adjacent to the eastern approach of the old Glebe Island Bridge. At this location, there are a range of noise sources which can be dependent on wind direction. The eastern approach to the old Glebe Island Bridge is a potential source of noise to this area, as the RTA uses the eastern approach as a storage area for mobile variable message signs. Additional noise sources include the traffic from the ANZAC Bridge, the vessel maintenance centre to the west of the apartments and noise sources from maritime operations on Johnstons Bay.

6.2.2 Criteria

The *Interim Construction Noise Guideline* (DECCW 2009) provides two methods for assessing noise impacts – a quantitative approach and a qualitative approach. The quantitative method of noise assessment involves a rigorous measurement based approach to determining the potential impacts of noise. This method is usually used when a proposal involves the construction of large public infrastructure projects or commercial developments.

The qualitative approach to noise assessment is generally used when a proposal would be undertaken in a relatively short time period and with works that would have a limited impact on residents' amenity.

Given the nature and duration of the works proposed to be undertaken in establishing the temporary maintenance compound and its location, the qualitative approach was considered appropriate and has been applied.

A quantitative noise assessment in accordance with chapter 5 of the *Interim Construction Noise Guideline* is being prepared for operation of the compound and the undertaking of essential maintenance works on the ANZAC Bridge. The results will be documented in a separate REF covering those works.

6.2.3 Potential impacts

During the day when construction works would be undertaken, there are unlikely to be any direct impacts on the adjacent residential apartments compared to the existing noise levels experienced (predominantly as a result of traffic on the ANZAC bridge).

Table 6-1 (below) sets out potential noise sources and establishes a series of operating conditions for each piece of construction equipment.

Table 6-1 Potential noise sources and operating conditions

Noise Source	Questions relating to noise levels heard at residences			Is examination of work practises required?
	Is noise loud, in relative terms, or relative to other noises in the area?	*Does the noise include tones or impulses?*	*Does the noise occur at times that interfere with sleep or comfort?*	
Backhoe	No	Yes – reversing alarms	No	No
Generator (270 Kva)	No	No	No	No

Excavator	No	Yes – reversing alarms	No	No
Bulldozer	No	Yes – reversing alarms	No	No
Trucks (delivery of materials and equipment)	No (unless delivery required out of standard hours)	Yes – reversing alarms	Yes (if delivery is required out of standard hours)	Yes
Dumper truck	No	Yes – reversing alarms	No	No
Concrete pump	No	No	No	No
Cranes	No	No	No	No
Paving machine	No	No	No	No
Rollers (smooth drum)	No	Yes – reversing alarms	No	No
Utes	No	No	No	No
Hammer attachments to excavators	Yes	Yes	No	No
Diamond cutting saws	Yes	No	No	No
Various other small items of equipment	No	No	No	No

The above table indicates that there are unlikely to be any activities during the construction of the proposed temporary maintenance compound that would have a major impact on the noise environment.

As is noted in Table 6-1, there is the potential for impacts associated deliveries to the site occurring outside standard hours. For this reason, deliveries outside standard hours would be limited to loads that are subject to time of travel traffic management restrictions.

Construction works would be undertaken within the standard working hours as outlined below:

- Monday to Friday – 7:00am to 6:00pm.
- Saturday – 8:00am to 1:00pm.
- Sundays and Public Holidays – no work.

Due to the existing high daytime noise level experienced in the surrounding area, the construction of the proposed temporary maintenance compound is unlikely to result in a substantial increase in noise levels to surrounding residences during the daytime hours.

It is not expected that there would be any works during the construction of the temporary maintenance compound that would cause vibration exceeding relevant structural and human comfort criteria.

6.2.4 Safeguards and management measures

The following safeguards would be adopted;

- Construction works are to be carried out during standard construction hours:
  - Monday to Friday – 7:00am to 6:00pm.
  - Saturday – 8:00am to 1:00pm.
  - Sundays and Public Holidays – no work.
- Any work that is performed outside normal work hours or on Sundays or public

holidays is to minimise noise impacts and comply with Practise Note 7 of the RTA Environmental Noise Management Manual.

- Noise impacts are to be minimised in accordance with Practice Note 7 in the RTA's Environmental Noise Management Manual and RTA's Environmental fact sheet No. 2- Noise management and Night Works.
- Relevant construction noise management measures identified in Section 5 of the RTA Environmental Noise Control Manual would be adopted, including:
  - Limiting works to standard construction hours.
  - Considering respite periods where only low noise/vibration-producing construction activities would occur.
  - Performing noisy work during less sensitive time periods where possible.
  - Selecting (where possible) low-noise plant and equipment.
  - Ensuring equipment has quality mufflers installed.
  - Using quieter and lower vibration emitting construction methods where possible.
  - Only having necessary equipment on site.
  - Where possible, concentrating noisy activities at one location and moving to another as quickly as possible.
  - Restricting vehicle movements outside standard construction hours.
  - Ensuring equipment is well maintained and fitted with adequately maintained silencers, which meet the design specifications.
  - Using the minimum necessary equipment size and power.
  - Implementing worksite induction training, educating staff on noise sensitive issues and the need to make as little noise as possible.
  - Considering alternatives, such as manually adjustable or ambient noise sensitive types ("smart" reversing alarms) and closed circuit TV systems.
  - Considering alternative site management strategies, in accordance with the Occupational Health and Safety Plan, with the concurrence of the Occupational Health and Safety Officer.
  - Scheduling works (where possible) to install the site sheds prior to commencing the rest of the rest of the temporary maintenance compound (to use the site sheds as a noise barrier)
- A 24 hour complaints telephone line would be established and the number would be made available to public, particularly potentially affected residents.
- Potentially affected residents would be contacted at least five days prior to the commencement of works and would be informed of the type of proposed works, working hours and the period of construction.
- Vibration monitoring would be conducted in response to any vibration related complaints.

6.3 Flora and fauna

6.3.1 Existing environment

The site was filled during the construction of the ANZAC Bridge and has since been repeatedly disturbed. As a result, there is a limited range of flora and fauna habitat at the proposed compound site.

There are four *Casuarina* sp. trees on the embankment south east of the ANZAC Bridge tower, one *Casuarina* sp., on the corner of the embankment north east of the ANZAC Bridge tower and one large *Casuarina* sp. tree adjacent to the northern boundary site wall.

On the embankment to the north of the A-frame tower is scattered vegetation consisting of grasses, predominantly Crimson Fountain Grass (*Pennisetum setaceum*).

Along the Bank Street fence line there is an area of mixed weeds and grasses with Crimson Fountain Grass (*Pennisetum setaceum*) being the dominant grass present. One *Lantana camara* plant, which is listed as a noxious weed and also a Weed of National Significance, was also identified. There are two unidentified small trees growing through the Bank Street fence line.

One *Frangipani* sp. tree is located to the east of the western most gates into the adjacent NSW Maritime compound.

The site was inspected on 11 April 2011 by the project team and database searches of the NSW Threatened Species Website and NSW National Parks and Wildlife Service Atlas of NSW Wildlife were completed on 31 May 2011 (attached in Appendix C).

The NSW Threatened Species Search result identifies that there are 104 threatened species and ecological communities found within the Pittwater (Part B) CMA sub-region, which is where the proposed temporary maintenance compound is located in the threatened species mapping system. None of the species listed in the search result have been identified at the site of the proposed temporary maintenance compound.

A search of the Atlas of NSW Wildlife returned no records within one kilometre of the site. The nearest records (about 1.2 km to the south) are for the Grey-headed Flying Fox (*Pteropus poliocephalus*). The site does not offer roosting habitat or food resources for this species.

The EPBC Protected Matters Report (Appendix E) identifies that there are 18 threatened species and 33 migratory species that are listed in the EPBC Act and potentially occur at the site and surrounding area. None of the species listed in the search result have been identified at the site of the proposed temporary maintenance compound and these species would not be reliant on the site for habitat.

Marine Environment

The existing marine environment in the adjacent Blackwattle Bay is typical of bay in an inner city urban environment. The bays adjacent to the proposed temporary maintenance compound are used for recreational fishing. Commercial fishing was banned in 2006 due to elevated levels of dioxins recorded in fish and crustaceans.

Immediately adjacent to the proposed temporary maintenance compound, the intertidal area is composed of a concrete retaining wall that was built during the construction of the ANZAC Bridge, and large rocks which have been placed around the retaining wall. These rocks are inundated according to the tidal height and cycle, supporting fauna species such as small crabs and bivalves. Marine algae cover some of the rocks, while no seaweeds were observed in the intertidal area.

There is a general lack of estuarine vegetation in Blackwattle Bay and Rozelle Bay and this is likely due to the frequent disturbance of bay sediments as a result of boat traffic and high levels of stormwater discharge.

The NSW Threatened Species Search result (Appendix C) identifies that there are four threatened marine species found within the Pittwater (Part B) CMA sub-region (listed as marine species, or animals which make use of marine environments).

A Department of Primary Industries database search returned records for six *Fisheries Management Act 1994* listed species within the Sydney Harbour catchment management area. These species are identified as either critically endangered, presumed extinct, endangered or vulnerable (Appendix D). A review of distribution, habitat and ecology profiles for these species indicates that they are unlikely at the site or in adjacent waters.

The EPBC Protected Matters Report (Appendix E) identifies that four threatened marine reptiles (all turtles) and numerous threatened or migratory birds have the potential to occur in the area. If present, these species would not be reliant upon habitat offered by the proposed compound site location or the adjacent waters.

6.3.2 Potential impacts

The *Casuarina* on the embankment north east of the ANZAC Bridge tower and the *Casuarina* on the northern boundary wall would be removed as part of the proposal. These trees cannot be retained due to the limited space available for buildings and manoeuvring areas.

The group of four *Casuarinas* located to the south east of the ANZAC Bridge tower would be retained. These trees are outside the temporary maintenance compound boundary.

The mixed grasses on the embankment to the north of the ANZAC Bridge tower would be removed to allow for the construction of a retaining wall to separate the upper and lower levels of the compound and provide safe landing platforms for the northern two hoists.

The mixed grasses and weeds along the Bank Street compound fence line would be removed to allow for the fencing and the installation of a new compound power supply cable which would be located in a trench parallel to the existing fence line. The replacement of the existing fence with the new palisade fence at this location would also require removal of the two unidentified small trees growing through the existing fence line. Excavation along the fence line would likely affect the root zones of trees in this area, and therefore removal is preferable.

The removal of the identified flora species at the site would have minimal ecological impact. These flora species at the subject site have not been identified as being threatened or endangered. They are isolated and provide limited habitat resources.

With the exception of transient bird species, no fauna species are known to inhabit the site of the proposed temporary maintenance compound.

Marine environment

The lower part of the proposed compound site drains directly to Blackwattle Bay while the upper level drains to the existing Bank Street stormwater system. As part of the proposal a sub-surface drain would be installed on the lower level to collect stormwater and allow it to percolate into the underlying material.

During construction, the disturbance of soil would create the potential for the mobilisation of sediment and the discharge of sediment-laden water to local waterways. Sediment laden-runoff can result in increased turbidity in receiving waterways. Turbidity affects aquatic plant growth, can affect the ability of sight feeding predators to locate food and can disrupt respiration in fish.

The potential for accidental spills and leaks are a further issue. The proposed safeguards and management measures address this risk, as well as the risk of sediment discharge.

Having regard to the marine habitat present, as well as the other influences on water quality in the area, it is expected that the proposal would have a negligible impact on the adjacent marine environment.

Contamination investigations at the site (refer section 6.5) identified some areas with elevated levels of polycyclic aromatic hydrocarbons (PAH) and noted that these compounds could be leaching into surface water and groundwater and then entering Blackwattle Bay. The proposed

capping of the site would largely remove these exposure routes.

6.3.3 Legislative considerations

EP&A Act, TSC Act and EPBC Act

As noted above, no threatened species, populations or ecological communities listed by TSC Act and/or EPBC Act schedules are likely to occur at or in the immediate vicinity of the site.

On this basis, assessments of significance for threatened species pursuant to section 5A of the EP&A Act (the 7-part test) and EPBC Act guidelines were not considered necessary and were not conducted.
In this context it is noted that the DECCW threatened species assessment guidelines (DECC, 2007) provide that:

A species does not have to be considered as part of the assessment of significance if adequate surveys or studies have been carried out that clearly show that the species:

- does not occur in the study area, or
- will not use on-site habitats on occasion,
- or will not be influenced by off-site impacts of the proposal.

National Parks and Wildlife Act 1974

Native fauna species that may traverse the site would be protected species under the *National Parks and Wildlife Act 1974*. They are however likely to be urban tolerant species. It is unlikely they would solely reliant upon those habitats at the site such that the removal or further disturbance of these would threaten their local or regional occurrence.

6.3.4 Safeguards and management measures

- Erosion and sediment control measures would be implemented and maintained in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) (Landcom, 2004) to:
  - Prevent sediment moving off-site.
  - Reduce water velocity and capture sediment on site.
  - Minimise material transported from site to surrounding pavements.
  - Divert clean water around the site.
- Trees to be retained would be identified on site and on the construction drawings prior to the commencement of works.
- Declared noxious weeds are to be managed according to requirements under the *Noxious Weeds Act 1993*.
- The *Noxious Weeds Act 1993* specifies that Class 4 weeds must be controlled such that "the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the Local Control Authority (in this case City of Sydney) and the plant may not be sold, propagated or knowingly distributed".
- The City of Sydney Weed Control Class 4 Management Plan requires complete removal for individual specimens and small infestations on land of up to 100 m^2.

6.4 Landforms, geology and soils

6.4.1 Existing environment

The temporary maintenance compound would be constructed beneath and directly adjacent to the eastern A-frame tower of the ANZAC Bridge. The construction of the ANZAC Bridge

involved a small area of land reclamation and the importation of fill of unknown origin to the site.

The area of the temporary maintenance compound has been progressively filled over many years, with the most recent having been a surface layer of crushed concrete and building waste to reduce dust emissions from the underlying materials. There are some small areas of exposed soils within the proposed temporary maintenance compound, predominately in the lower compound area where the exposed soils are clayey sands.

Acid sulfate soils mapping (DLWC 1995) categorises the site as disturbed terrain. Assessment of risk in areas of disturbed terrain depends on the nature of the existing disturbance and the elevation of the site. Adjacent areas in Blackwattle Bay are categorised as having a high probability of acid sulfate soils.

6.4.2 Potential impacts

Construction of the temporary maintenance compound requires excavation of an estimated 600 m^3 of soil and fill material. This would allow the installation of the vehicle access ramps between the upper and lower compounds, service connections, drainage and general levelling and grading of the hardstand areas.

During construction, the disturbance of soil would create the potential for the mobilisation of sediment and the discharge of sediment-laden water to local waterways.

6.4.3 Safeguards and management measures

- Erosion and sediment control measures would be implemented and maintained in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) (Landcom 2004) to:
  - Prevent sediment moving off-site.
  - Reduce water velocity and capture sediment on site.
  - Minimise material transported from site to surrounding pavements.
  - Divert clean water around the site.
- Erosion and sediment control measures would be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept.
- Disturbed areas would be progressively stabilised.
- Waste material would be classified and disposed of in accordance with the *Waste Classification Guidelines* (DECCW 2008)

6.5 Contaminated land

6.5.1 Existing environment

Robert Carr and Associates (RCA) were engaged by BSA in May and June 2011 to undertake a 'Limited phase 2 environmental site investigation'. This was undertaken during May and June 2011. The report is attached as Appendix M.

The proposed temporary maintenance compound is located on land which has undergone significant historical disturbance, including approximately half of the proposed temporary maintenance compound (the lower compound area) being reclaimed from Blackwattle Bay during the construction of the ANZAC Bridge. The proposed temporary maintenance compound, and the adjacent NSW Maritime land, has been heavily disturbed, including being capped with fill consisting of clayey sand with concrete/brick/tile cobbles and fine to course gravel. It is understood that upper layer of fill was deposited to reduce dust mobilisation from the underlying materials and soils.

The contamination consultants completed a review of a previous contamination report, which was commissioned by NSW Maritime and made available to BSA. The findings of the previous report, which was completed by Noel Arnold and Associates, indicate that there is a strong potential for contamination to be present at the site in the fill material, especially polycyclic aromatic hydrocarbons (PAH). Noel Arnold and Associates recommended that this material be excavated and undergo additional waste classification prior to disposal.

RCA understanding is that the additional waste classification work has not been completed (RCA, 2011).

6.5.2 Field testing

Test pitting was undertaken at nine locations across the proposed temporary maintenance compound to a maximum depth of 0.9 metres. Soil samples were collected at depths from 0-0.3 metres with four test pits having additional samples taken from 0.6 – 0.9 metres.

Test pits were dug using a small excavator and samples were taken from either the base of the test pit or alternately from within the centre of the excavator bucket to avoid cross contamination.

The soil samples were transported with appropriate chain of custody documentation and QA samples to a NATA accredited laboratory for analysis.

6.5.3 Site guidelines

Following consideration of the National Environment Protection Measure (NEPM) for the Assessment of Site Contamination, 1999, relevant legislative requirements and the proposed future use of the site, following guidelines were adopted as appropriate for site assessment:

- Health Investigation Level (HIL) 'E' Parks, recreational open space and playing fields, including secondary schools
- HIL 'F' Commercial/industrial, no poultry, no fruit or vegetable consumption, no groundwater consumption: includes premises such as shops and offices as well as factories and industrial sites. Thirty years is the assumed duration of exposure.

6.5.4 Results

The results of the field testing found that:

- All samples analysed for benzene, toluene, ethylbenzene and xylenes (BTEX) reported concentrations below the laboratory limit of detection, and therefore below site guidelines;
- All samples of total recoverable hydrocarbons (TRH) C6 – C10 reported concentrations below the laboratory limit of detection, and therefore below the site guidelines;
- All samples analysed for TRH C10 – C36 reported concentrations below the site guidelines;
- All samples analysed for polycyclic aromatic hydrocarbons (PAH) reported concentrations below the site guideline, with the exception of:
  - Test Pit (TP)17a which reported elevated concentrations of benzo(a) pyrene; and
  - TP10a, 12b and 14a which reported elevated concentrations of benzo(a) pyrene and total PAH;

- All samples analysed for metals reported concentrations below the primary HIL E guidelines;
- All samples analysed for Organochlorin Pesticides (OCPs) reported concentrations below the laboratory limit of detection and therefore below the primary HIL E site guidelines;
- All samples analysed for Poly Chlorinated Biphenyls (PCBs) reported concentrations below the laboratory limit of detection and therefore below the primary HIL E site guidelines;
- All samples analysed for Tributyltin (TBT) reported concentrations below the laboratory level of detection, which is <1mg/g. There are currently no guidelines for TBT in soil, however the absence of detectable concentrations is considered to indicate a low risk to human health or the environment.

6.5.5 Discussion

The specialist report indicated that there is significant PAH contamination at test pit locations TP10a, TP14a and TP12b. These samples were all taken from a fill layer that includes construction materials within a clayey sand matrix. The contamination is considered to be randomly distributed and it is possible that there are higher concentrations than have been detected.

The identified contamination is semi-volatile and biodegradable, however PAH are not so amendable to these processes and the depth of sample at TP12B would restrict the biodegradation process.

The assessment found that in its current condition there is unlikely to be significant exposure to human health and that while the proposed use of the site as a maintenance compound may increase exposure through soil contact, sealing the maintenance compound with concrete would remove the exposure pathway.

The specialist report identifies the risk to the environment as a result of contamination in the soil in the current state as low. The concentrations identified within the shallow fill may be leaching into the groundwater or into the surface water and Blackwattle Bay however the concentrations from this material are unlikely to be significantly impacting on the quality of the receiving waters. The report concludes that the proposed capping of the site would remove both of these exposure routes.

6.5.6 Potential Impacts

The key potential impact is the generation of dust during the construction of the proposed temporary maintenance compound. Dust may be generated during the construction of the proposed vehicle ramp to the lower compound area, levelling of the proposed temporary maintenance compound, excavation of the trench for the electricity supply which is to be re-routed, the installation of drainage structures and construction of footings for the temporary workshops and office space. All of these activities have the potential to generate dust as well as generation of potentially contaminated spoil.

As identified by RCA, there is a potential risk to human health, including site workers and adjacent works and residential occupants during the construction of the proposed temporary maintenance compound through the generation of dust from construction activities.

Surface water runoff may also potentially enter Blackwattle Bay and add contaminants to the marine environment.

By sealing the compound site surface, this potential contamination pathway would be

substantially addressed, if not entirely, removed. It is proposed to seal the majority of the proposed temporary maintenance compound with either concrete or spray sealed bitumen, both of which would reduce the potential for water to infiltrate through contaminated soils and enter Blackwattle Bay.

6.5.7 Safeguards and management measures

Prior to commencing construction, a construction and operation environmental management plan would be prepared to address potential contamination impacts and outline management measures including:

- Minimisation of dust generation through the selection of appropriate plant and construction methodology for the proposed construction activity.
- Control of dust emissions through the use of water sprays.
- Limiting construction activities likely to generate dust during periods of high winds.
- OH&S controls for any works being undertaken prior to sealing of the site and any works beneath the seal on the site when complete. These would include, but not necessarily be restricted to;
  - use of appropriate personal protective equipment
  - safe work method statements
  - dust mitigation
  - restriction of contact with potentially contaminated soils
  - strict hygiene standards prior to eating or drinking;
- Stockpiling material excavated during the construction for further waste classification prior to disposal to an appropriate off site waste facility. Currently all samples of the fill material are classified as restricted solid waste with the exception of those from TP10a, TP12b and TP14a which are classified as hazardous waste. If, following analysis of leachable concentrations material is still classified as hazardous, a specialist contractor would be engaged to remove and treat the waste prior to disposal.
- Sealing of the proposed temporary maintenance compound with either concrete or spray sealed bitumen to reduce exposed soils and potential for dust mobilisation.

6.6 Non-Aboriginal heritage

6.6.1 Existing environment

A heritage impact assessment was prepared by Archaeological and Heritage Management Solutions Pty Ltd (AHMS) (May 2011) to assess the potential impacts on any heritage items within the vicinity of the proposed temporary maintenance compound. This report is attached as Appendix B.

The specialist report identifies that the site of the proposed temporary maintenance compound is not listed on the State Heritage Register, the NSW Heritage Inventory, the Sydney Harbour Foreshore S170 Register, the NSW National Trust Register or the Sydney City Council Local Environmental Plan (LEP) 2005.

The ANZAC Bridge is listed as an item of state significance on the RTA's section 170 Heritage and Conservation Register. The s.170 register's statement of significance makes reference to the design of the ANZAC Bridge and it being an icon within the inner city area, as well as the fact that it is a contemporary solution to the long-term problem in cutting travel time for commuters while forming an essential part of Sydney's road network.

The report notes that the former face of Saunders Quarry is listed as item 100 on the Heritage

Schedule of Sydney City Council LEP 2005 and within the NSW Heritage Inventory. This item is located on the northern side of Bank Street, near Distillery Drive, well beyond the proposal area.

A sandstone seawall which is located to the south of the site is noted in the *Pyrmont Industrial Archaeology – Heritage Study* (Don Godden and Associates 1989) as being an item of high heritage significance and has a recommendation for retention. This is located outside of the proposed temporary maintenance compound.

Along the northern boundary is a remanent stub wall, 3.2 metres in height and 10.5 metres long. The wall is double skin brick with a light orange/pink façade on the external face and a darker brown brick on the internal face. Two eight-pane window frames with no glass are present in the stub wall. The wall forms a continuous facade with the building on the adjoining property to the north, although no date of construction of the wall is available.

The old Glebe Island Bridge is also listed as an item state significance within the RTA's s.170 register, as the historical structure was important to the growth of Sydney. The old Glebe Island and Pyrmont Bridges are rare examples of electrically operated swing bridges.

6.6.2 Potential impacts

The specialist report addresses the potential impacts on the stub wall as this is the only identified item located within the proposed temporary maintenance compound. The report makes an assessment of the heritage significance of the stub wall against the standard NSW Heritage evaluation criteria. The conclusion reached is that the stub wall has no heritage significance and the demolition of the stub wall would have no impact on the heritage significance of the area or the buildings adjoining the property.

The former quarry face is located on the northern side of the Bank Street, near Distillery Drive, and there would be no impact on it as a result of the construction of the proposed temporary maintenance compound.

The proposal would not affect the identified sandstone seawall. The temporary maintenance compound is located on the embankment above the seawall and would be contained by fencing set back from the seawall.

Heritage consultants Godden Mackay Logan have provided advice that the construction of the proposed temporary maintenance compound and the installation of the temporary hoists would not have an impact on the heritage significance to the ANZAC Bridge (see Appendix N). This is due to the fact that compared to the bulk of the ANZAC Bridge, the hoist and mast system is relatively small and would not substantially impact on the views of the ANZAC Bridge. The proposed hoist and mast system is visually slender and includes no shade cloth or hoarding around the outside of the mast. The system would be removed at the completion of the essential maintenance works and all fixing holes would be repaired.

There would be no impacts to the heritage significance of the old Glebe Island Bridge because there would be no alterations to the fabric of that structure.

The BSA are proposing to install a boom gate, fence extension and painted parking spaces on the eastern approach to the old Glebe Island Bridge, to control access to and from Bank Street. As this part of the eastern approach is within the road reserve and does not comprise part of the bridge structure impacts on the setting of the item would be minimal.

6.6.3 Safeguards and management measures

The following safeguards and management measures would be implemented.

- The temporary maintenance compound is to be fenced to contain the site and avoid any items that have not been assessed.
- Site personnel are to be advised during induction of the requirement to maintain works within the nominated temporary maintenance compound.
- If archaeological remains or relics as defined by the *Heritage Act 1977* are uncovered during the works, all works must cease in the vicinity of the material/find and the RTA's Senior Regional Environmental Officer contacted immediately. Works would not re-commence until appropriate clearances have been obtained.

6.7 Aboriginal heritage

6.7.1 Consultation

The RTA has undertaken an investigation in accordance with Stage 1 of the RTA Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). This report (attached as Appendix G) has concluded that there is no need to proceed to Stage 2 of the PACHCI process because:

- The proposed area has been previously heavily disturbed and developed
- The area contains no natural vegetation.
- The Office of Environment and Heritage AHIMS report has identified that no known Aboriginal sites or objects that are located within the immediate area.
- No impacts are expected on natural ground.

6.7.2 Existing environment

The proposed compound site is located on land that has been heavily disturbed, as half the site is on land reclaimed during construction of the ANZAC Bridge.

As noted in the Stage 1 report of the PACHCI and the attached AHIMS search results, there are no known Aboriginal sites or objects located within the immediate area. There are three items located within 1 km of the proposed site.

There are no declared Aboriginal places within the City of Sydney local government area.

6.7.3 Potential impacts

Given the extensive previous disturbance to the ground surface and the absence of any identified Aboriginal heritage items or sites at or immediately adjacent to the site, it is not expected that there would be any impacts to Aboriginal heritage as a result of the construction of the proposed temporary maintenance compound.

6.7.4 Safeguards and management measures

As noted, impacts on Aboriginal heritage are considered unlikely. However, potential impacts would be minimised by the implementation of the following control measures.

- Should Aboriginal items be uncovered during the construction process, all works would cease immediately and the RTA's Aboriginal Cultural Heritage Advisor and Sydney Region environment staff would be contacted. Works would not recommence until

appropriate clearance has been received.

6.8 Air quality

6.8.1 Existing environment

The air quality at the proposed temporary maintenance compound is regarded as being typical of a site near to a major road within central Sydney. Contributors to the existing air quality include:

- High levels of vehicle traffic (~128,000 vehicles per day, AADT) on the ANZAC Bridge (including heavy vehicles and buses).
- Vessels operating on Blackwattle and Rozelle Bays.
- Vessel maintenance activities at Sydney City Marine.
- Minor levels of dust from the existing site surface cover.
- Emissions from surround construction sites, including exhaust and dust.

6.8.2 Potential impacts

The main air quality impacts of the proposal would be associated with exhaust fumes from the operation of machinery, idling equipment and vehicles travelling both to the site and operating at the site. Transportation routes to and from the temporary maintenance compound may also experience short-term increases in exhaust emissions as a result of additional vehicle trips for the transportation of materials and personnel.

There is the potential for dust to be mobilised during the construction of the proposed temporary maintenance compound. The total amount of dust would depend on the silt and moisture content of the soil, wind conditions and the specific activities being undertaken.

As previously noted in Section 6.5, the underlying fill material has been identified as being potentially contaminated with potential risks to human health (see Section 6.5 for further details). Potential contaminated dust generation is likely to be a short term risk until concrete and spray sealed bitumen has been used to cap the site and prevent dust mobilisation. Fences would be used to contain the site and prevent access to, and disturbance of, any surfaces left unsealed.

6.8.3 Safeguards and management measures

Potential impacts would be minimised by the implementation of the following control measures.

- Spraying water on exposed soils at the site to prevent dust becoming air borne.
- Ceasing work in wind conditions where dust is observed to become air borne.
- Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
- Vegetation or other materials are not to be burnt on site.
- Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.
- Maintenance of plant and equipment in accordance with manufacturer's specifications.
- Regular inspection of plant and equipment to ascertain that fitted emission controls are operating efficiently.
- Concrete and spray sealed bitumen would be used to cap the site and reduce dust

emissions.

- Fences would be used to restrict access to any unsealed surfaces.
- Any soil or mud deposited on public roads would be removed immediately and disposed of appropriately.

6.9 Water quality and hydrology

6.9.1 Existing environment

The site is located directly adjacent to Blackwattle Bay. There are no channels across the proposed temporary maintenance compound with the location being a largely level site, which has undergone significant historical disturbance. The existing site has no formal stormwater drainage, although there is a stormwater drain, which passes beneath the proposed temporary maintenance compound, draining into Blackwattle Bay.

Any rainwater which falls on the site appears to infiltrate through the crushed recycled concrete surface cover and is likely to percolate through the underlying fill and into the clayey soils. It would then likely migrate towards Blackwattle Bay.

Immediately adjacent to the base of the ANZAC Bridge A-frame tower, clayey soils are exposed at the surface and rainwater is not draining away, and has pooled into a small shallow surface water pool.

The contamination specialists RCA have identified that there is the potential that surface water is infiltrating into the soil and migrating towards Blackwattle Bay, although they have noted that the environmental risk is likely to be low at the sampled concentrations.

6.9.2 Potential impacts

During the construction of the temporary maintenance compound, there are potential water quality impacts that could occur if the construction area is not appropriately managed to prevent the off-site migration of soils from the proposed temporary maintenance compound.

If soil is not appropriately managed, sediment laden water could potentially enter Blackwattle Bay, depositing sediments within the water column and on the bed of Blackwattle Bay.

During the establishment of the proposed temporary maintenance compound, there would be an increase in hard surfaces that would reduce infiltration of water through to the underlying fill and soils. This would reduce the potential for contamination of Blackwattle Bay through the removal of potential pathways.

The construction works have the potential to impact on the surrounding waterways during the refuelling of plant and equipment and in the unlikely event of a machinery failure such as breakage of a hydraulic line.

The catchment area for runoff is small and there is unlikely to be a high level of run off from the lower compound area. This is further enhanced by the fact that the lower compound is largely located beneath the ANZAC Bridge road deck, which captures a proportion of the rainfall, which would otherwise fall to the lower compound area.

6.9.3 Safeguards and management measures

- Stormwater runoff from the upper level of the temporary maintenance compound would be diverted towards Bank Street.
- Erosion fencing would be established along the site boundaries (with a bund across the access gate) to reduce sediment laden water entering Bank Street.
- Inspections of the temporary maintenance compound would be undertaken to prevent materials being left in locations where they could potentially enter the waterways.
- On the lower level of the proposed temporary maintenance compound around the base of the A-frame tower, the surface would be spray sealed with bitumen and would be graded away from Blackwattle Bay.
- Stormwater would be collected in a subsurface filter drain located along the intersection of the batter and the lower level compound. The drain would consist of a pipe, filter material to surface level, and geofabric membrane. The collected water would be allowed to infiltrate into the underlying soils, as is currently the occurring, with the drain and filter material acting as an attenuation measure.
- All fuels, chemicals and liquids are to be stored in an impervious bunded area located greater than 40 metres from Blackwattle Bay.
- Refuelling of plant and equipment is to occur at a re-fuelling point located well away from Blackwattle Bay. This would include an appropriately sized temporary drip tray at a flat location.
- An emergency spill kit is to be kept and maintained on site at all times. All staff are to be made aware of the location of the spill kit and key staff (e.g. supervisors and storemen) are to be trained in its use.
- If a spill occurs, the RTA's Environmental Incident Classification and Management Procedure is to be followed and the RTA Contract Manager and Environmental Officer notified as soon as practicable.

6.10 Waste

Construction activities likely to generate waste include vegetation removal, excavation and construction of the proposed temporary maintenance compound. Specifically, waste that may be generated as a result of the construction includes:

- Spoil from excavation (contaminated).
- Vegetation.
- Weeds
- Concrete.
- Metals.
- Litter and paper wastes.

Poor storage and handling of waste has the potential to increase the health and safety risk for construction workers and the community. Poor waste management also has the potential to adversely impact on the environment through the accidental spillage of waste material, the proliferation of vermin, and unsightly visual impacts.

During the construction phase, the maintenance of all construction equipment would be undertaken offsite. There would be minimal waste generated from office activities. The major sources of waste from the construction of the site would be spoil material from the excavation of the access ramps, drainage trenches and pad areas.

During the initial operation of the proposed temporary maintenance compound, prior to maintenance works commencing on ANZAC Bridge, the main sources of waste would be likely

to include:

- Metals.
- Timber.
- Plastics.
- Litter and paper wastes.

6.10.1 Safeguards and management measures

- Resource management hierarchy principles in accordance with the *Waste Avoidance and Resource Recovery Act 2001* are to be followed such as:
  - Avoiding unnecessary resource consumption as a priority.
  - Resource recovery (including reuse of materials, reprocessing, recycling and energy recovery).
  - Disposal (undertaken as a last resort).
- Bulk project waste (e.g. spoil) sent to a site not owned by the RTA (excluding licensed landfills) for land disposal is to have prior formal written approval from the landowner, in accordance with *RTA Environmental Direction No. 20 – Legal Off-site disposal of Bulk RTA Project Wastes.*
- There is to be no disposal or re-use of construction waste onto other land.
- Waste is not to be burnt on site.
- Waste material is not to be left on site once the works have been completed.
- Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
- A facility for collecting and treating and disposing of concrete waste would be installed on site. The installation would be consistent with the Concrete Wastes Guide (EPA 1995).

6.11 Visual amenity

6.11.1 Existing environment

The ANZAC Bridge represents an iconic part of the Sydney skyline with the design dominated by the two large concrete A-frame towers and the cable stayed road deck. The A-frames are 128 metres in height and are visible from much of Sydney, representing a key component to the visual environment of the inner west of Sydney.

The existing visual environment of the temporary maintenance compound beneath the ANZAC Bridge is typical of an area that has been previously used for the storage of general disused maritime hardware. A number of damaged dragon boats are on a trailer that is due to be moved prior to the construction of the proposed site compound commencing.

6.11.2 Potential impacts

The potential visual impacts of the construction of the proposed temporary maintenance compound have been considered in accordance with the requirements of the RTA *Guideline for landscape character and visual impact assessment* (EIA-N04). The result of this process is that the RTA Urban Design team has advised that a formal landscape and visual impact character assessment is not required. The following impact assessment has been completed to describe the potential visual impacts of the proposed temporary maintenance compound.

Beneath the ANZAC Bridge there would be a change in the nature of the Bank St site. The site

would become a construction area, with the associated components such as workshops, material storage areas, two storey site offices and delivery vehicles and forklifts etc.

Over the last 10 years, Pyrmont has been undergoing significant changes with a considerable number of construction sites in the area. The proposed temporary maintenance compound would not be out of context with other construction sites, including the construction site located on the opposite side of Bank Street. The palisade fencing, which is to be installed along the Bank Street frontage, may be fitted with an extension panel and all permitter fencing would have shade cloth installed, effectively preventing easy visibility of the interior of the temporary maintenance compound.

The component of the works that would be clearly visible to many people, including users of the ANZAC Bridge, is the material and personnel hoists and work platforms on the sides of the A-frame tower. Likewise, the upper levels of the site office and workshops would be visible from Bank Street. These features would be prominent but are not permanent.

The personnel and material hoists would interrupt the existing visual lines of the lower section of the ANZAC Bridge A-frame towers and would be visible from a number of locations, including to bridge users, especially pedestrians and cyclists on the bridge's northern pedestrian/cycleway. However, in the context of the bulk and scale of the ANZAC Bridge, the addition of the material and personnel hoists and works platforms is considered relatively minor, especially given they will be temporary features.

A further visual impact may be associated with the increase in construction and delivery vehicles using Bank Street. This would be a temporary effect.

6.11.3 Safeguards and management measures

- The construction of the proposed temporary maintenance compound is to be carried out consistent with the principles outlined in the RTA *Guidelines for visual impact assessment and landscape character assessment* (EIA-N04).
- To reduce any impacts to the existing visual environment, shade cloth would be fitted to the palisade fencing on the Bank Street frontage.

6.12 Climate change and greenhouse gas emissions

6.12.1 Policy setting

Climate change is one of the great environmental and economic challenges facing the world. Scientific evidence confirms that human activity has increased the concentration of greenhouse gases (GHG), such as carbon dioxide, in the atmosphere, and that increased concentrations of GHG has been linked to a warming of the Earth's atmosphere and changes in weather patterns.

The NSW Government requires government agencies to be carbon neutral by 2020. This means the RTA must achieve zero net greenhouse emissions by 2020.

The RTA has prepared a document "The RTA Climate Change Action Plan" which identifies how the RTA will:

- Reduce the RTA's carbon footprint.
- Help reduce the carbon footprint of road transport.
- Adapt the RTA road transport system to the impacts of climate change.
- Manage the RTA's transition to a low carbon economy.

The RTA have identified that the process for achieving carbon neutrality is to avoid, reduce and offset. Where possible, avoid activities that create emissions. If an activity can't be avoided, then reduce the energy needed for that activity and maximise the use of low carbon energy. Once emissions are reduced as much as possible the remaining emissions can be addressed by offsets.

6.12.2 Potential impacts

Climate change

There are a range of potential impacts which may occur as a result of human induced climate change. The impacts which have been identified by the RTA as potentially having an impact on the existing RTA operations and business model include:

- A predicted sea level rise of 0.4 metres above 1990 levels by 2050 and 0.9 metres by 2100.
- More frequent intense low pressure systems off the east coast of Australia, resulting in increased storm surge and heavy rainfall events.
- Increased risk of flooding, inundation of low lying areas, accelerated erosion and threats to infrastructure (Office of Environment and Heritage, 2009 in RTA 2010).

The impacts of climate change may be managed by adapting design standards where considered necessary to reduce the vulnerability of infrastructure to predicted effects. In this case the proposal is for a temporary facility and adaption strategies are not required.

Greenhouse gas

Greenhouse gas emissions attributable to the proposal would include:

- Fuel used by vehicles, generators and other equipment.
- Embodied energy in materials, such as concrete.
- Upstream emissions from fuel and electricity supply. For all uses of energy, there are a number of sources of upstream emissions associated with supply. For transport fuels, these include emissions associated with extraction, production and transport of the specified fuel. For electricity use, these include both the emissions from the extraction, production and transport of fuels used in the production of the purchased electricity; and also emissions associated with the electricity lost in transmission and distribution on the way to the consumer.

The likely greenhouse gas emissions associated with the proposal have not been quantified. However, given the nature, scale and short duration of the proposal they are expected to be relatively minor.

6.12.3 Mitigation measures

- Minimisation of fuel consumption and electrical use through switching off equipment when not in use.
- Ensuring that site lighting is switched off when not required.
- Switching off plant engines instead of leaving to idle.
- Utilising long life and low energy lights within office and workshop spaces.

6.13 Socio economic effects

6.13.1 Existing environment

According to the City of Sydney (2011) the area's wharves and factories, which were once a critical part of Sydney's industrial waterfront, have been subject to number of recent developments. These include prestige apartments, office spaces and waterfront restaurants. The

district's established public housing infrastructure has been retained.

To the north of the proposed site compound is a construction site where new residential apartments are being erected. To the east of the compound site on the opposite side of Bank Street is an existing apartment building with approximately 250 apartments many of which address Bank Street and the area of the proposed temporary maintenance compound.

Until recently the site was used to store containers and old marine hardware; however these materials have now been moved to adjacent NSW Maritime land to the east of the compound site.

The site is not currently accessible to the general public and is fenced off to general access from Bank Street. Currently, a section of the lower compound between the base of the A-frame tower and the waters of Blackwattle Bay is utilised by dragon boat and outrigger recreational paddlers, however these users are due to be re-located to the adjacent NSW Maritime land to the east of the site.

Lighting

Existing lighting at the site of the proposed compound is dominated by the lighting of the ANZAC Bridge. The ANZAC Bridge lighting arrangement has three lighting towers and sets of angled floodlights on both the north and south sides of the ANZAC Bridge. On the east and west sides of the A-frame tower, is a further bank of lights illuminating the underside of the ANZAC Bridge and lower part of the A-frame tower.

There is some light reflected from the underside of the deck of the bridge and some local personnel lighting around on the western side of the base of the bridge A-frame to allow the dragon boat crews to access their launching area in the dark.

Additional lighting near the compound site comes from light spill from the existing street lights along Bank Street and lights from the residential apartments on the north side of Bank Street.

6.13.2 Potential impacts

During the construction period, there may some days where out-of-hours deliveries of equipment and supplies are required. During these times, light spill and noise from deliveries may be an issue to the residential apartments along Bank Street.

There may also be some inconvenience associated with increased traffic on Bank Street.

The proposal would not adversely affect key social infrastructure and is not expected to have a major impact on business operations in the area.

Light spill

The three lighting towers on the north side of the ANZAC Bridge would be relocated, along with appropriately altered light angles. If the lights are not appropriately angled and/or hooded, there is the potential for the overall effect of the lighting of the ANZAC Bridge to be altered. It is expected that appropriate lighting tower locations and angles would be determined prior to construction commencing to provide a similar effect and so as to not to create a public disturbance through changes in the lighting environment.

There would be minimal flood lighting required during the construction of the compound site, as the majority of the construction activities would be carried out during the day. Some oversize

equipment may need to be delivered to site at night or in the early morning and there may need to be some flood lighting used during those deliveries.

Flood lighting would be installed throughout the proposed site compound to provide suitable illumination of the compound during night works during the maintenance works period (subject to a separate REF). A potential impact of installing site flood lighting is that there is potential 'light spill' off site. If any lights are inappropriately located or hooded, there is the potential for direct lighting impacts to residents where lights are shining into residential properties, including those located across Blackwattle Bay in Glebe. An indirect impact may occur from general light spill from within the proposed temporary maintenance compound.

Light spill has the potential to affect residential amenity and can cause sleep disturbance, although this is generally restricted to direct lighting impacts.

6.13.3 Safeguards and management measures

No site specific management measures have been identified to specifically address general social impacts during construction and the initial operation of the proposed temporary maintenance compound.

Light Spill

To reduce any impacts from flood lighting, the RTA will would carry out the following mitigation measures:

- Locate flood lights (where possible) so that the illuminated area is retained onsite and angled away from nearby residential properties.
- Flood lights would be hooded to control potential indirect light spill.
- Flood lights would be turned off if not in use.
- Flood lights would be reduced in power to the minimum level to safely illuminate the temporary maintenance compound.
- Lighting would conform to Australian Standard 4282 *Control of the obtrusive effects of outdoor lighting*

6.14 Demand on resources

The construction of the proposed temporary maintenance compound would not involve a high level of resource use, as the area covered by the site is relatively small.

Resources that are likely to be required would include:

- Crushed stone/gravel.
- Concrete.
- Road base.
- Crushed concrete and building rubble.
- Asphalt.
- Pre-fabricated site buildings.
- Storage containers.
- Various chemicals and liquid fuels.
- Fencing.
- Cables, pipe work and other ancillary materials.

These materials are readily available from commercial sources and the use of them in the establishment of the proposed temporary maintenance compound would not restrict the supply of these materials to other potential consumers.

6.15 Hazards and risk

Construction of the proposed temporary maintenance compound has the potential to introduce new hazards and risks to the site. There is an increased environmental risk (i.e. fuel spills and sedimentation) associated with the carrying out works in close proximity to Sydney Harbour. The proximity of the temporary maintenance compound to Sydney Harbour has been consideration throughout the design process and it has been concluded that environmental risk can be reduced and managed to an appropriate level.

The proposed temporary maintenance compound is required so that maintenance works can be carried out on the ANZAC Bridge. By completing the separately proposed maintenance works, environmental hazards would ultimately be reduced through appropriate maintenance of the ANZAC Bridge.

6.16 Cumulative impacts

The construction of the proposed temporary maintenance compound would combine with other projects that are being carried out within the local area to have cumulative impact on the surrounding environment.

However, the proposal would have a limited effect on elements of the environment most susceptible to the accumulation of impacts. In particular, it is noted that impacts on threatened species and ecological communities, Aboriginal heritage and non-Aboriginal heritage are either not expected or relatively minor. Potential impacts on water quality have been identified as minor.

The closest development is a residential flat building being built on the northern side of Bank Street. The most likely effect associated with this development would be cumulative construction traffic impacts.

Although specific details are not available, it is known that the City of Sydney Council is considering creating a public park on the NSW Maritime land directly adjacent to the proposed temporary maintenance compound. As the compound is temporary, longer term issues associated with the interaction between potentially incompatible land uses would not result.

The National Maritime Museum, trading as the Sydney Heritage Fleet, have lodged a Preliminary Environmental Assessment (PEA) under Part 3A of the EP&A Act for the proposed relocation of the Sydney Heritage Fleet from the existing facility at Rozelle to a site which includes the proposed temporary maintenance compound at 5-7 Bank Street Pyrmont. The proposed construction start date of this work is unknown, and it may be possible for some of the water based works to be carried out prior to the end of the use of the proposed temporary maintenance compound. Sydney Heritage Fleet would be required to address cumulative issues associated with their use of the site in their environmental assessment.

7 Environmental management

7.1 Environmental management plans (or system)

A Construction Environmental Management Plan (CEMP) would be developed in accordance with the specifications set out in the RTA's Environmental Protection (Management Plan) – QA Specifications G36. The CEMP would incorporate additional site specific requirements, outlined below, which are not covered by G36. The CEMP would be reviewed by the RTA.

7.2 Summary of safeguards and management measures

Environmental safeguards outlined in this document have been incorporated into the design phase of the proposed temporary maintenance compound and would be implemented during the construction and operation. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. All safeguards described in this REF and the decision report would be incorporated into BSA's construction environmental management plan (CEMP). These are summarised in Table 7-1.

Table 7-1: Summary of site specific environmental safeguards

No.	Impact	Environmental safeguards
1	Traffic and access	• A Traffic Management Plan would be prepared to address management of traffic at the temporary maintenance compound and on Bank Street during the establishment and operational phases. • The following traffic control measures would be implemented: - No parking spaces on Bank Street are to be removed. - No impact to existing access arrangements. - Residents are to be notified, at least five days prior to commencement of construction, of the planned construction commencement and any potential changes to traffic on Bank Street. - Appropriate traffic control measures are to be used on Bank Street when vehicles enter or exit the proposed temporary maintenance compound.
2	Flora and fauna	• Erosion and sediment control measures would be implemented and maintained in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) (Landcom 2004) to: - Prevent sediment moving off-site. - Reduce water velocity and capture sediment on site. - Minimise material transported from site to surrounding pavements. - Divert clean water around the site. • Trees to be retained would be identified on site

No.	Impact	Environmental safeguards
		and on the construction drawings prior to the commencement of works. • Declared noxious weeds are to be managed according to requirements under the *Noxious Weeds Act 1993*. • The *Noxious Weeds Act 1993* specifies that Class 4 weeds must be controlled such that "the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the Local Control Authority (in this case City of Sydney) and the plant may not be sold, propagated or knowingly distributed". • The City of Sydney Weed Control Class 4 Management Plan requires complete removal for individual specimens and small infestations on land of up to 100 m^2.
3	Noise and vibration	• Construction works are to be carried out during standard construction hours: - Monday to Friday – 7:00am to 6:00pm. - Saturday – 8:00am to 1:00pm. - Sundays and Public Holidays – no work. • Any work that is performed outside normal work hours or on Sundays or public holidays is to minimise noise impacts and comply with Practise Note 7 of the RTA Environmental Noise Management Manual. • Noise impacts are to be minimised in accordance with Practice Note 7 in the RTA's Environmental Noise Management Manual and RTA's Environmental fact sheet No. 2- Noise management and Night Works. • Relevant construction noise management measures identified in Section 5 of the RTA Environmental Noise Control Manual would be adopted, including: - Limiting works to standard construction hours: - Considering respite periods where only low noise/vibration-producing construction activities would occur. - Performing noisy work during less sensitive time periods where possible. - Selecting (where possible) low-noise plant and equipment. - Ensuring equipment has quality mufflers installed. - Using quieter and lower vibration emitting construction methods where possible. - Only having necessary equipment on site. - Where possible, concentrating noisy activities

No.	Impact	Environmental safeguards
		at one location and moving to another as quickly as possible. - Restricting vehicle movements outside standard construction hours. - Ensuring equipment is well maintained and fitted with adequately maintained silencers, which meet the design specifications. - Using the minimum necessary equipment size and power. - Implementing worksite induction training, educating staff on noise sensitive issues and the need to make as little noise as possible. - Considering alternatives, such as manually adjustable or ambient noise sensitive types ("smart" reversing alarms) and closed circuit TV systems. - Considering alternative site management strategies, in accordance with the Occupational Health and Safety Plan, with the concurrence of the Occupational Health and Safety Officer. - Scheduling works (where possible) to install the site sheds prior to commencing the rest of the rest of the temporary maintenance compound (to use the site sheds as a noise barrier) • A 24 hour complaints telephone line would be established and the number would be made available to public, particularly potentially affected residents. • Potentially affected residents would be contacted at least five days prior to the commencement of works and would be informed of the type of proposed works, working hours and the period of construction. • Vibration monitoring would be conducted in response to any vibration related complaints.
4	Landform, geology and soils	• Erosion and sediment control measures would be implemented and maintained in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book) (Landcom 2004) to: - Prevent sediment moving off-site. - Reduce water velocity and capture sediment on site. - Minimise material transported from site to surrounding pavements. - Divert clean water around the site. • Erosion and sediment control measures would be checked and maintained on a regular basis (including clearing of sediment from behind

No.	Impact	Environmental safeguards
		barriers) and records kept. • Disturbed areas would be progressively stabilised. Waste material would be classified and disposed of in accordance with the *Waste Classification Guidelines* (DECCW 2008)
5	Contaminated land	Prior to commencing construction, a construction and operation environmental management plan would be prepared to address potential contamination impacts and outline management measures including: • Minimisation of dust generation through the selection of appropriate plant and construction methodology for the proposed construction activity. • Control of dust emissions through the use of water sprays. • Limiting construction activities likely to generate dust during periods of high winds. • OH&S controls for any works being undertaken prior to sealing of the site and any works beneath the seal on the site when complete. These would include, but not necessarily be restricted to; - use of appropriate personal protective equipment - safe work method statements - dust mitigation - restriction of contact with potentially contaminated soils - strict hygiene standards prior to eating or drinking; • Stockpiling material excavated during the construction for further waste classification prior to disposal to an appropriate off site waste facility. Currently all samples of the fill material are classified as restricted solid waste with the exception of those from TP10a, TP12b and TP14a which are classified as hazardous waste. If, following analysis of leachable concentrations material is still classified as hazardous, a specialist contractor would be engaged to remove and treat the waste prior to disposal. Sealing of the proposed temporary maintenance compound with either concrete or spray sealed bitumen to reduce exposed soils and potential for dust mobilisation
6	Non-Aboriginal Heritage	• The temporary maintenance compound is to be fenced to contain the site and avoid any items that have not been assessed. • Site personnel are to be advised during induction

No.	Impact	Environmental safeguards
		of the requirement to maintain works within the nominated temporary maintenance compound. • If archaeological remains or relics as defined by the *Heritage Act 1977* are uncovered during the works, all works must cease in the vicinity of the material/find and the RTA's Senior Regional Environmental Officer contacted immediately. Works would not re-commence until appropriate clearances have been obtained.
7	Aboriginal heritage	• Should Aboriginal items be uncovered during the construction process, all works would cease immediately and the RTA's Aboriginal Cultural Heritage Advisor and Sydney Region environment staff would be contacted. Works would not recommence until appropriate clearance has been received.
7	Air quality	• Spraying water on exposed soils at the site to prevent dust becoming air borne. • Ceasing work in wind conditions where dust is observed to become air borne. • Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely. • Vegetation or other materials are not to be burnt on site. • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation. • Maintenance of plant and equipment in accordance with manufacturer's specifications. • Regular inspection of plant and equipment to ascertain that fitted emission controls are operating efficiently. • Concrete and spray sealed bitumen would be used to cap the site and reduce dust emissions. • Fences would be used to restrict access to any unsealed surfaces. • Any soil or mud deposited on public roads would be removed immediately and disposed of appropriately.
9	Water quality and hydrology	• Stormwater runoff from the upper level of the temporary maintenance compound would be diverted towards Bank Street. • Erosion fencing would be established along the site boundaries (with a bund across the access gate) to reduce sediment laden water entering Bank Street.

No.	Impact	Environmental safeguards
		• Inspections of the temporary maintenance compound would be undertaken to prevent materials being left in locations where they could potentially enter the waterways. • On the lower level of the proposed temporary maintenance compound around the base of the A-frame tower, the surface would be spray sealed with bitumen and would be graded away from Blackwattle Bay. • Stormwater would be collected in a subsurface filter drain located along the intersection of the batter and the lower level compound. The drain would consist of a pipe, filter material to surface level, and geofabric membrane. The collected water would be allowed to infiltrate into the underlying soils, as is currently the occurring, with the drain and filter material acting as an attenuation measure. • All fuels, chemicals and liquids are to be stored in an impervious bunded area located greater than 40 metres from Blackwattle Bay. • Refuelling of plant and equipment is to occur at a re-fuelling point located well away from Blackwattle Bay. This would include an appropriately sized temporary drip tray at a flat location. • An emergency spill kit is to be kept and maintained on site at all times. All staff are to be made aware of the location of the spill kit and key staff (eg supervisors and storemen) are to be trained in its use. • If a spill occurs, the RTA's Environmental Incident Classification and Management Procedure is to be followed and the RTA Contract Manager and Environmental Officer notified as soon as practicable.
10	Waste	• Resource management hierarchy principles in accordance with the Waste Avoidance & Resource Recovery Act 2001 are to be followed such as: - Avoiding unnecessary resource consumption as a priority. - Resource recovery (including reuse of materials, reprocessing, recycling and energy recovery). - Disposal (undertaken as a last resort). • Bulk project waste (e.g. spoil) sent to a site not owned by the RTA (excluding licensed landfills) for land disposal is to have prior formal written approval from the landowner, in accordance with

No.	Impact	Environmental safeguards
		RTA Environmental Direction No. 20 – Legal Off-site disposal of Bulk RTA Project Wastes. • There is to be no disposal or re-use of construction waste onto other land. • Waste is not to be burnt on site. • Waste material is not to be left on site once the works have been completed. • A facility for collecting and treating and disposing of concrete waste would be installed on site. The installation would be consistent with the Concrete Wastes Guide (EPA 1995). • Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day
11	Visual amenity	• The construction of the proposed temporary maintenance compound is to be carried out consistent with the principles outlined in the RTA *Guidelines for visual impact assessment and landscape character assessment* (EIA-N04). • To reduce any impacts to the existing visual environment, shade cloth would be fitted to the palisade fencing on the Bank Street frontage.
12	Climate change and greenhouse gas	• Minimisation of fuel consumption and electrical use through switching off equipment when not in use. • Ensuring that site lighting is switched off when not required. • Switching off plant engines instead of leaving to idle. • Utilising long life and low energy lights within office and workshop spaces.
12	Socioeconomic	To reduce any impacts from flood lighting, the RTA will would carry out the following mitigation measures: • Locate flood lights (where possible) so that the illuminated area is retained onsite and angled away from nearby residential properties. • Flood lights would be hooded to control potential indirect light spill. • Flood lights would be turned off if not in use. • Flood lights would be reduced in power to the minimum level to safely illuminate the temporary maintenance compound. • Lighting would conform to Australian Standard 4282 *Control of the obtrusive effects of outdoor lighting*

No.	Impact	Environmental safeguards

7.3 Licensing and approvals

Table 7-2 (below) summaries the licenses, permits, approvals and notifications that may be required to be completed prior to construction commencing (or prior to certain elements of the construction being commenced).

Table 7-2: Summary of licensing and approval required.

Requirement	Timing
Land owners consent to remove trees at the temporary maintenance compound and on adjacent NSW Maritime land.	Prior to construction commencing/removal of trees within the temporary maintenance compound. . This approval has been received from NSW Maritime.
Road Opening permit application-City of Sydney Council.	Prior to any works occurring in the Bank Street road reserve (a minimum of 2 working days prior to works in the road reserve).

8 Conclusion

8.1 Justification

The proposed temporary maintenance compound is required so that essential maintenance and safety works can be carried out on the ANZAC Bridge, subject to separate environmental approval.

The essential maintenance and safety works are required to ensure that the ANZAC Bridge is maintained as a safe and reliable piece of infrastructure for all bridge users and that the design life of the ANZAC Bridge does not markedly decrease.

A temporary maintenance compound is required to store materials and commence basic maintenance related activities such as ground based fabrication of required maintenance components in preparation for the future maintenance activities which would be undertaken on the ANZAC Bridge (and is subject to separate environmental approval and documentation).

The early establishment of the compound and the setup of the temporary access material hoists prior to approval of the maintenance works would enable the maintenance works to be initiated and completed within the minimal timeframes. This would also reduce cost and risk to the maintenance project.

The timing of the proposal is to satisfy a requirement to have the proposed maintenance and safety works on the ANZAC Bridge completed by the centenary of the ANZAC landings at Gallipoli in 2015.

8.2 Ecologically sustainable development

8.2.1 Precautionary principle

The precautionary principle states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (Principle 15 of the Rio Declaration on Environment and Development).

The threat of serious or irreversible environmental damage is one of the essential preconditions to the engagement of the precautionary principle. As no threat of serious or irreversible environmental damage has been identified, the precautionary principle does not operate.

8.2.2 Intergenerational equity

The construction of the proposed temporary maintenance compound is consistent with the concept of intergenerational equity as the temporary maintenance compound would be used for essential maintenance and safety works to the ANZAC Bridge.

Should the temporary maintenance compound not be established, and essential maintenance and safety works not be carried out, the service life of the ANZAC Bridge may deteriorate with the ultimate result that the bridge could become unusable.

8.2.3 Conservation of biological diversity and ecological integrity

The proposed temporary maintenance compound would involve the removal of some vegetation; however this would not present a risk to biological diversity. As previously identified, the vegetation that would be removed is common *Casuarina* sp. and the area is not of high ecological value.

8.2.4 Improved valuation, pricing and incentive mechanisms

The principle of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a project, including air, water, land and living things. While it is often difficult to place a reliable monetary value on the residual, environmental and social effects of the project, the value placed on environmental resources within and around the project is evident in the extent of environmental investigations, planning and design of impact mitigation measures to prevent adverse environmental impacts.

8.3 Conclusion

The proposed temporary maintenance compound beneath the eastern A-frame tower at ANZAC Bridge (at 3 Bank Street, Pyrmont) is subject to assessment under Part 5 of the EP&A Act. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. The proposal as described in the REF best meets the project objectives but would still result in some impacts on in terms of traffic, access and noise. Contamination would also need to be managed. Mitigation measures as detailed in this REF would ameliorate or minimise these expected impacts.

The benefits of the proposal are derived from the assistance it would provide to essential maintenance and safety works on ANZAC Bridge.

The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for approval to be sought for the proposal under Part 3A of the EP&A Act. The proposal is unlikely to significantly affect threatened species, populations or ecological communities or their habitats, within the meaning of the *Threatened Species Conservation Act 1995* or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. The proposal is also unlikely to affect Commonwealth land or have a significant impact on any matters of national environmental significance.

9 Certification

This review of environmental factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Nick Hearfield
Environmental Planner
Date: 21/07/2011

Digitally signed by Stuart Hill
Date: 2011.07.28 14:44:13 +10'00'

Stuart Hill
Environmental Planner
Date: 21/07/2011

I have examined this review of environmental factors and the certification by Nick Hearfield and accept the review of environmental factors on behalf of the RTA.

Stephen Sherwin
RTA Interface Manager
Date: 28/07/2011

10 References

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