
LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN

FORMER KOGARAH WAR MEMORIAL POOL SITE

DRAFT

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1. INTRODUCTION

This Long-term Environmental Management Plan (LTEMP) has been prepared in support of a Development Application (DA2020/0405) made to Georges River Council under Part 4 of the *Environmental Planning and Assessment (EP&A) Act 1979*. This document is a draft example of the LTEMP required following the remediation of the site to set out the principles for environmental management of proposed parkland at 78 Carwar Avenue, Carss Park (the Site). The location of the Site is presented on Figure 1.

This LTEMP has been developed with reference to the requirements of the NSW Office of Environment and Heritage (OEH) (2011) Guidelines for Consultants Reporting on Contaminated Sites and NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme – 2nd Edition and on the information presented in the following reports:

- 'Summary of Site Contamination, Carss Park Pool, 76 Carwar Avenue, Carss Park, NSW 2221', 15 November 2019. Construction Sciences.
- 'Report on Detailed Site (Contamination) Investigation, Proposed Pool and Park Redevelopment, Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park. 14 September 2020. Douglas Partners.(Revision 0)
- Remediation Action Plan, Proposed Pool and Park Redevelopment, Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park. 29 September 2020. Douglas Partners. (Revision 1)
- Notification of the Site to NSW EPA, Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park. 18. September 2020. Douglas Partners.
- Review of Erosion Protection Requirements, Proposed Pool and Park Redevelopment, 78 Carwar Avenue, Carss Park. 13 October 2020. Douglas Partners.
- Site Audit Report. Remediation Action Plan, Kogarah War Memorial Pool, Carss Park NSW. October 2020.

It is noted that this draft LTEMP references specific guidelines, regulations and legislation that were in force at the time of document preparation. These references may be superseded by updated and revised versions prior to formal LTEMP development. In applying the formal LTEMP those responsible must ensure that the relevant guidelines, regulations and legislation that are applied are those that are in force at that time.

2. PURPOSE

Douglas prepared a Remediation Action Plan documenting removal of existing site infrastructure and buildings, cut and fill to achieve park design levels, establishment of a cap across the site (to prevent direct exposure) and implementation of a long term environmental management plan (LTEMP). The selected remediation option of excavation (to design levels) and cap and contain provides the best balance between the benefits and effects of undertaking the remediation. The long-term stability of the containment strategy has been maximised by incorporation of erosion protection measures into the design, including maintenance of the existing engineered foreshore armoury measures. There is a risk of future costs associated with implementation of contingencies to manage tidal inundation affects caused by sea level rise. As the remediation is Category 1 (SEPP 55) requiring a DA consent, the auditor is satisfied that this will be addressed by council during the DA assessment process.

This LTEMP was prepared to document procedures that are required to be implemented following the completion of the remediation and validation to manage identified risks to users of the Site and to ensure that:

- Remediation infrastructure (capping) and subsequent landscaping covering the Site is maintained to ensure that users are not exposed to contaminated fill materials which underlie these coverings; and
- Works that require disturbance of the ground surface of the Site are undertaken in a manner that protects the health of the workers and members of the public and that does not compromise the integrity of the containment infrastructure present.

The principal elements of this LTEMP are to:

- Detail the environmental conditions of the Site (TBA at the time of preparation of formal LTEMP);
- Assign responsibilities for implementation of this LTEMP;
- Protect the health of users of the Site by ensuring maintenance of capping, landscape and grass covering the ground surface to prevent exposure to contaminants that may be present in fill materials;
- Protect the health of maintenance workers at the Site if the capping, landscape or grass covering the ground surface is disturbed by works;
- Ensure that contaminated or potentially contaminated fill materials encountered during maintenance works are disposed of properly or are replaced beneath the capping, landscape or grass covering the ground surface; and
- Maintain records of inspection of the integrity of the hardstand covering and the condition of the grass and landscape covering the ground surface and of maintenance works.

3. SITE DETAILS

The site is located at 78 Carwar Avenue, Carss Park, within Carss Bush Park, and is the location of the former Kogarah War Memorial Pool (also known as the Carss Park Olympic Pool) (Figure 1). It comprises part or all of the following lots:

- Lot 511 DP 752056
- Lot 1 DP 125981
- Lot 376 DP 1118749
- Unreserved Crown Land

The site is adjacent to the foreshore area of Kogarah Bay, located to the east of the site. Engineered foreshore armoury measures have been implemented by council to manage erosion. These include installation of rip/rap boulders and a vegetated embankment which grades up to the level of the site and an elevated walkway. At the northern and southern ends of the foreshore to the east of the site, a seawall and on grade footpath provide erosional mitigation measures to the foreshore in lieu of the rip rap and raised pedestrian walkway, respectively. The foreshore armoury measures have been designed to an RL of 2.5mAHD to account for wave run up (0.5m) and future sea level rise (0.4m).

The site has not been identified as flood prone, although land to the north (within Carss Park Flats) has been identified in the Kogarah Bay Creek Stormwater Overland Flow Risk Management Plan to be below the flood planning level and therefore subject to stormwater flooding related development controls.



Figure 1. Site Location.

3.1 Site Description

A 'work as executed' survey of the site is to be completed and include the location (GPS co-ordinates to within 100 mm of its true position) and height (AHD to within 100 mm of its true level) of the capped soils/marker layer. This record of the location (vertical and horizontal) is to be undertaken during remediation and validation works and provide base levels for the capping material. As a minimum, a survey point in the order of every 15-20 m² and every 5 m along the site boundary would be suitable.

Detailed construction designs validated by the remediation contractor and external Site Auditor will be included in this document.

4. LTEMP IMPLEMENTATION

This LTEMP is required to be implemented as follows:

- Periodic inspections to confirm that remediation infrastructure and landscaping is maintained;
- Restrict groundwater use and construction of buildings/sub-surface structures at the site;
- Inform maintenance personnel of risk management procedures.

4.1 Site Surface

For the purpose of this LTEMP, the covering of the Site is defined as follows:

- Landscape covering is defined as all growing medium or topsoil used to establish the Site level and landscaping, including turf and garden beds which prevent erosion or disturbance of the growing medium or topsoil;
- Hardstand is defined as the materials such concrete, bitumen, or other materials used to establish the sub-grade that cannot be removed readily without the use of tools.
- Foreshore armouring is defined as materials such as sandstone rip-rap and blocks used to protect the foreshore in order to prevent erosion and disturbance of capping material on the foreshore edge of the Site.

4.1.1 Grass Surface Maintenance

Grass covering at the Site must be maintained to prevent contact with contaminated soils and exposure of capping material. Inspections should be undertaken twice annually, to ensure that:

- Grass surfacing is maintained in all garden areas; and
- Growing medium or topsoil underlying the grass surface remains intact and no notable depressions, excavations or other disturbances of the grass and growing medium or topsoil have occurred;

Should vegetation dieback or erosion be observed in areas of the Site covered with grass, this should be repaired within a period no greater than two weeks, following the protocol set out below for minor or major works as appropriate.

4.1.2 Hardstand Maintenance

Hardstand across the Site must maintain integrity to prevent contact with contaminated soils and exposure of capping material. Inspections should be undertaken once annually, to ensure that:

- Cracks within the hardstand are no wider than 5mm at the widest point;
- The hardstand is not showing signs of deterioration.

Should a pothole or cracking wider than 5mm be observed in the hardstand, this should be repaired within a period no greater than two weeks, following the protocol set out below for minor or major works as appropriate.

4.1.3 Foreshore Armouring Maintenance

Foreshore armouring across the Site must maintain integrity to prevent exposure of contaminated soils or erosional influence to capping material. Inspections should be undertaken quarterly and following significant storm events which cause large wave influence to the foreshore, to ensure that:

- Armouring infrastructure is intact, protecting the foreshore and limiting erosional influence;

Should deterioration of the armouring be observed, this should be repaired within a period no greater than two weeks, following the protocol set out below for minor or major works as appropriate.

4.2 Management of Minor and Major Works

For the purpose of this LTEMP:

- Minor works comprise works that require minimal disturbance of the foreshore armouring, hardstand or grass covering the ground surface and comprise activities such as replacement of rocks, pavements, grasses or similar surface cover. As a result of Minor works direct contact with the subgrade is possible.
- Major works comprise larger scale disturbance to the hardstand or grass covering the ground surface and the underlying materials and comprise activities such as:
 - Construction and maintenance of sub-surface services, such as gas, electricity, stormwater, surface drainage, telephone, cabling and water supply;
 - Installation and maintenance of equipment or infrastructure that requires excavation/disturbance of and possible direct contact with the potentially contaminated fill material;
 - Any works during which direct contact with potentially contaminated fill material is possible including groundwater use.

4.3 Responsibilities

The Owner is responsible for the overall implementation and maintenance of this LTEMP and for ensuring that occupiers, tenants and contractors working at the Site have been informed of the requirements of the LTEMP prior to commencement of works.

The supervisor or person-in-charge of works on the Site is responsible for implementing the requirements of the LTEMP during the planning process for any works to be conducted at the site, during the course of any works that fall into the Minor, or Major categories as defined below, and at the completion of any Minor, or Major works. The specific responsibilities of the Owner and the supervisor or person in-charge of the works are outlined in Table 4.1 below.

Table 4.1 Responsibility Matrix

Position and Company/Entity	Responsibilities
The Owner	<ul style="list-style-type: none">▪ Advise persons occupying and working at the Site of the requirements of the LTEMP;▪ Ensure no Major works occur on the site as stipulated in the Site Audit Report;▪ Ensure implementation of the LTEMP requirements including the surface covering inspection programme;▪ Ensure appropriate consents and licences (as required) are obtained for the works;▪ Procure the training and induction of employees and contractors before and during the works, as appropriate and relevant;▪ Provide a copy of the LTEMP to the occupiers, supervisor or person-in-charge of occupier/tenant employees and/or contractor/s who are undertaking the works;▪ Ensure relevant and appropriate project/occupier/tenant staff and contractors comply with the requirements of the LTEMP;▪ Ensure relevant and appropriate project/occupier/tenant staff and contractors clearly understand the requirements of the LTEMP and ensure that compliance with the LTEMP is a condition of any agreement with these parties;▪ Ensure the conditions of the LTEMP are implemented and supplemented, if necessary, by conditions of any relevant planning consent;▪ Obtain advice if the condition of the Site are changed, and, if necessary, arrange for an appropriately qualified party to update the LTEMP, informing other relevant and appropriate parties, including tenants, of the changes;▪ Ensure inspections of the surface of the Site as set out in Section 4.1 and

	<ul style="list-style-type: none"> record the results of the inspections; Ensure the Site is maintained in accordance with the LTEMP; Provide the LTEMP for inclusion on the relevant records maintained by project/occupier/tenant.
The supervisor or person-in-charge of works (Occupier / Tenant / Contractor / Sub-Contractor)	<ul style="list-style-type: none"> Implement the LTEMP to ensure compliance; Complete the registers, databases and records required by the LTEMP; Conduct works in an environmentally responsible manner; Meet relevant WHS regulatory requirements; Implement the works in a safe and responsible manner; Notify the Owner if suspected contaminated fill materials is encountered during works on the Site; Complete non-conformance and corrective action reports as required and undertake follow-up corrective actions, as required; Undertake audits of activities in accordance with the requirements of the LTEMP; Ensure non-conformance and/or complaints are reported to the Owner; Undertake corrective actions in response to requests made by the Owner regarding specific environmental or safety issues; Ensure all works comply with relevant regulatory requirements; Inform the Owner if conditions change significantly from those documented in the LTEMP.

4.4 Document Revision

This LTEMP is required to be reviewed if a change of Site use or redevelopment of the Site occurs. It is the responsibility of the Owner to ensure the LTEMP supplied to any person is the current updated or amended version.

It is the responsibility of the supervisor or person-in-charge of works proposed to be undertaken to ensure they have the current version of the LTEMP.

The up-to-date version of the LTEMP will be available from the Owner.

5. RISK CONTROL MEASURES

5.1 Exposure Pathways

The presence of subsurface contaminants will not affect the safe future use of the Site following remediation and validation as set out in the RAP and Site Audit report. This remediation includes ensuring the grass, hardstand and foreshore armouring covering the ground surface is undisturbed.

However, if these ground surfaces are disturbed through Minor or Major works as defined in Section 4.2, it is possible that a risk of exposure to contaminants may result. In order to develop appropriate measures to control this increased exposure, it is necessary to understand the potential exposure pathways, which comprise inhalation (breathing dust and vapours), dermal (skin) contact and ingestion (swallowing).

A summary of contaminants identified in the fill materials and groundwater under the Site, including their potential health effects and exposure pathways will be identified in the formal LTEMP.

5.2 Control Measures for Current Activities

Measures to control the risk posed by potential contaminants are to be implemented on the Site and specified as part of this LTEMP. The grass, hardstand and foreshore armouring covering the ground surface is required to be maintained in the future to ensure that the risk of exposure to potential contaminants in fill materials at depth is eliminated.

Where rectification works are required to be implemented or where repair/maintenance works are being undertaken, the Owner must ensure that these works are undertaken in accordance with the measures set out in this LTEMP. On completion of such works, the Owner must conduct an inspection to ensure that the hardstand surface and/or the grass and landscape covering of the Site has been adequately reinstated/restored.

The record of inspections of the condition of the surface of the Site is required to be kept and maintained by the Owner.

5.3 Control Measures for Current Activities

Minor Works, involving activities such as replacement of pavements, grasses, landscaping or similar surface or sub-surface coverings, do not require specific controls, providing the works do not disturb the underlying fill materials.

Where Major Works are required to be undertaken additional control measures may be required depending on the scope of the works. Whilst it is not possible to assess the impacts from all future activities, it is possible to consider exposure scenarios likely to be associated with a range of general maintenance and intrusive works. These scenarios will be included in the formal LTEMP.

Major Works that result in the disturbance of the surface cover and exposure to the underlying fill materials require control measures to be implemented and will need further remediation assessments to be undertaken.

5.4 Reporting of Complaints and Incidents

If a complaint is made by a member of the public or by any other person with respect to any environmental management or control issue either during “Minor Works” or during “Major Works” or at any other time, appropriate corrective action is required to be undertaken as soon as practicable where required.

Similarly, if an environmental incident occurs that has given or may give rise to pollution of soil, air or waters, appropriate corrective action is required to be undertaken as soon as practicable.

In addition to the above, environmental incidents are required to be notified to the Insurer as soon as practicable after a complaint has been made or an environmental incident has occurred. If appropriate, and following the Owner’s instructions, notification may need to be made to the applicable regulatory authority.

Records of complaints and incidents are required to be entered into a register to be developed for the Site, but only after corrective action has been taken and the Owner has been notified.