Appendix V – LHRRP Post Closure Environmental Management Plan

LH-EMP-005

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

Post Closure Lucas Heights Resource Recovery Park

ADDRESS: New Illawarra Rd, Lucas Heights NSW 2234

THE LEADER IN RESOURCE RECOVERY

sembcorp
suez environnement
SITA

THE LEADER IN RESOURCE RECOVERY

SITA AUSTRALIA	No: LH-EMP-005
	Date: 16 September 2015
LHRRP POST CLOSURE ENVIRONMENTAL MANAGEMENT PLAN	
Lucas Heights Resource Recovery Park	Approved: DRAFT 4

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ABBREVIATIONS

ANSTO	Australian Nuclear Science and Technology Organisation
ARRT	Advanced Resource Recovery Technology Facility
CRG	Community Reference Group
DoPE	New South Wales Department of Planning & Environment (formerly known as the New South Wales Department of Planning & Infrastructure)
EIS	Environmental Impact Statement
EMR	Environmental Management Representative
EPL	Environmental Protection Licence
ERP	Emergency Response Plan
FGO	Food and garden organics
GO	Garden Organics
IMS	Intergrated Management System
LHCA	Lucas Heights Conservation Area
LHRRP	Lucas Heights Resource Recovery Park
MSW	Municipal Solid Waste
NSW EPA	New South Wales Environment Protection Authority
PIRMP	Pollution Incident Response Management Plan
SICTA	Sydney International Clay Target Association
SITA	SITA Australia
SSC	Sutherland Shire Council
SSPCYC	Sutherland Shire Police Citizens Youth Club
RRP	Resource Recovery Park

SECTION 1
INTRODUCTION

1.1 OVERVIEW

SITA Australia (SITA) is a leader in resource recovery, providing integrated waste management and resource recovery solutions. Its core business is to provide end-to-end waste management solutions including the collection, resource recovery, recycling and disposal of residual waste at over 100 sites and facilities around Australia.

SITA is currently operating a solid waste landfill at Lucas Heights Resource Recovery Park (LHRRP). The LHRRP is licensed to accept solid waste from domestic and commercial sources that are suitable for disposal in a general solid (putrescible) waste landfill. SITA also operates a Garden Organics (GO) facility and Advanced Resource Recovery Treatment (ARRT) facility at the LHRRP.

Following final site closure in 2037, by 31 December 2039, SITA will establish a parkland area available for passive recreation as per the landscape plan developed for LHRRP. The parkland would be approximately 149 ha in area. While Sutherland Shire Council (SSC) would be responsible for maintaining the parkland, SITA would continue to have responsibility for the environmental performance of the disposed waste for a minimum 30 year period after site closure and in accordance with the closure requirements administered by the New South Wales Environment Protection Authority (NSW EPA).

The process of transfer of land, access rights and other important details is described in the Voluntary Planning Agreement (VPA). Additional post closure commitments to SSC in the VPA are set out in section 1.7.4.

1.2 SCOPE

The scope of this Post Closure Environmental Management Plan (EMP) includes the relevant environmental and operational activities associated with the management of leachate, landfill gas, landfill cap and stormwater at the LHRRP site post closure.

Renewable energy generation at the LHRRP is currently managed by Energy Developments Limited (EDL) through contractual arrangements with SITA. If there are any changes to the contractual conditions, this EMP will be updated to reflect the new arrangements.

SITA will monitor the performance of the gas extraction system in terms of gas extraction rates and efficiency and will engage with EDL or other parties who manage the system in order to ensure that the system performance is optimised. If energy generation becomes no longer feasible and gas is still present, then SITA will ensure that flaring or other destruction technologies are employed to meet environmental obligations associated with the site during the post closure period.

THIS DRAFT VERSION OF THE EMP WILL BE UPDATED TO ADDRESS ANY ADDITIONAL REQUIREMENTS FROM THE CONDITIONS OF CONSENT AND EPL (POST DEVELOPMENT CONSENT FOR THE PROJECT).

1.3 PURPOSE

The purpose of this EMP is to adopt and document a "Best Practice Approach" for the environmental management of the LHRRP post closure. The EMP also reflects the intention of the requirements of the *Environmental Guidelines: Solid Waste Landfills* (NSW EPA, 1996).

The EMP provides:

- A basis for the NSW EPA to assess the environmental performance of LHRRP parkland and to review the operational and monitoring activities that are covered by the site's Environment Protection Licence (EPL)
- Assurance to SCC that agreed preventative, mitigation and rectification measures are integrated into the LHRRP parkland operating procedures

1.4 BEST PRACTICE

The purpose of this EMP is to adopt and document a "Best Practice Approach". In addition, the environmental management of the landfill will also reflect the intention of the requirements of the Environmental Guidelines: Solid Waste Landfills which includes references to the environmental goals and benchmark techniques described within the guidelines.

Best Practice is defined as:

"*The best combination of eco-efficient techniques, methods, processes or technology used in a similar industry sector and environmental setting that demonstrably minimises the environmental impact and achieves the desired project goals for the local environmental setting*"

Eco-efficient is defined as:

"*The most effective means of achieving a particular goal or set of goals, taking into consideration environmental, economic and social factors*"

1.5 PREVENTION / MITIGATION / RECTIFICATION

This section describes the operational activities on the site that have, or are likely to have, an impact on the environment and the community and measures to be undertaken to manage those impacts.

Where applicable, the measures have been hierarchically categorised as follows:

- *Preventative measures* - aim to eliminate or reduce any environmental aspect that is likely to cause a negative impact
- *Mitigation measures* - aim to pre-emptively minimise any negative environmental impacts
- *Rectification measures* - aim to retrospectively control any negative environmental impacts

SITA will adopt the appropriate preventative, mitigation and/or rectification measures to address the site goals and objectives as required.

1.6 UPDATES

This EMP is a "living document" and will be updated periodically as new technology emerges and new standards for environmental performance are adopted industry wide. Any proposed updates will be provided to SSC and the NSW EPA for discussion and comment. In addition, this EMP will be made available to the Community Reference Group (CRG).

This document is approved by SSC and any amendments must be approved by SSC.

1.7 LEGAL AND OTHER REQUIREMENTS

1.7.1 NSW Legislation

The procedure for maintaining compliance with legal and regulatory requirements at the LHRRP is outlined in the Legal and Other Requirements Integrated Management System (IMS) Procedure. The procedure designates responsibility for identifying applicable legal and regulatory requirements and ensuring access is maintained on site to applicable legal and regulatory requirements. The following NSW legislation applies to the operations of LHRRP:

- Environmental Planning and Assessment Act, 1979 (EP&A Act 1979)
- Protection of the Environment Operations Act, 1997 (PoEO Act 1997)
- Waste Avoidance and Resource Recovery Act, 2001
- Waste Recycling and Processing Corporation Act, 2010
- Ozone Protection Act, 1989
- National Environment Protection Council (New South Wales) Act, 1995
- Sydney Water Act, 1994
- Water Management Act, 2000
- Soil Conservation Act, 1938
- Public Health Act, 2010
- Work Health and Safety Act, 2011
- Road Transport Act 2013
- Contaminated Land Management Act 1997
- Heritage Act, 1977
- National Parks and Wildlife Act, 1974

Specifically, NSW is covered by the EPA Environmental Guidelines: Solid Waste Guidelines (1996) and Environmental Guidelines: Waste Classification Guidelines (2008).

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* is also applicable to the operation of the site.

The *Commonwealth National Greenhouse and Energy Reporting Act 2007* requires reporting of landfill gas emissions.

The *Commonwealth National Environment Protection Council Act 1994* requires reporting of pollutants annually through the National Pollutant Inventory National Environment Protection Measure. This reporting is to the NSW EPA, and supporting legislation including *the PoEO Act 1997* and regulations.

1.7.2 Conditions of Development Consent

THIS SECTION WILL BE UPDATED WITH THE NEW DEVELOPMENT CONSENT

1.7.3 Environment Protection Licence

THIS SECTION WILL BE UPDATED WITH THE NEW EPL REQUIREMENTS

1.7.4 Voluntary Planning Agreement

In recognition of the critical role that the LHRRP plays in managing Sydney's waste, SITA would enter into a Voluntary Planning Agreement (VPA) with SSC in accordance with the requirements of the EP&A Act. The Minister for Planning would consider the VPA along with the DA and Environmental Impact Statement (EIS) and would be the consent authority for the proposal. All SITA entities (SembSITA, WSN Environmental Solutions and SITA Australia) and SSC would be signatories to the VPA.

The VPA commits SITA to providing significant financial resources to SSC and the community to enable it to develop community facilities like the Ridges Sporting Complex and golf course.

Under the VPA, SITA is committing to meet a number of environmental commitments in terms of actions it will take based on the site's environmental performance. This EMP forms part of the VPA.

Within the VPA, SITA has made commitments to maintaining the following assets as per table below.

Asset	Period of care (from 1 January 2040)
Landscaping	2 years
Stormwater infrastructure	5 years
Roads and cycle paths	5 years
Facilities (composting toilets)	15 years
Landfill cap	Minimum 30 years

SECTION 2
SITE DESCRIPTION

2.1 BACKGROUND

2.1.1 Former Activities

The LHRRP site had been used for logging, gravel extraction and trail bike riding. Since establishment of the landfill, the majority of the site was utilised for waste disposal and recycling activities. No liquid, toxic, hazardous or restricted waste, including radioactive waste, has been accepted by the LHRRP. A GO facility and ARRT facility is also established.

2.1.2 Future LHRRP Activities

Upon site closure, the LHRRP would be returned to the community as a parkland facility for passive recreation. The GO facility and the ARRT facility will be decommissioned.

The landfill gas extraction system and gas-to-electricity power station will continue to operate.

Key activities will include:

- Meet the required leachate, landfill gas collection and stormwater sediment controls
- Ensure neighbouring residents are advised of contact personnel to whom any problems may be addressed or to record complaints
- Ensure waste materials are not received at the site for disposal after the landfill has ceased operations
- Continued operation of landfill gas extraction system and gas-to-electricity power station

2.1.3 Surrounding Land Use

Location of the LHRRP is shown in Figure 2.1. Land uses surrounding the landfill are as follows:

Direction	Description
North	• Sydney International Clay Target Association (SICTA)
East	• Mill Creek is immediately adjacent to the boundary with the LHRRP landfill adjacent
South East	• Beyond the landfill is the Sutherland Shire Police Citizens Youth Club (SSPCYC) Mini-Bike club. • Australian Nuclear Science and Technology Organisation (ANSTO) research facilities are located across New Illawarra Road.
South	• Heathcote Road and the Heathcote National Park
West	• Heathcote Road is immediately adjacent to the boundary. • The Holsworthy Military Reserve is on the other side of Heathcote Road.

To the north-east of the LHRRP is a quarry which has been rehabilitated, a former quarry which has been filled with solid waste (Harrington's Quarry), and a former privately operated liquid waste

depot on Commonwealth land, a burial facility for low level radioactive waste, and the former SSC night soil depot. Menai and West Menai residential areas are located approximately 2 kilometres (km) north-east of the site, and Yarrawarrah and Engadine are located approximately 2 km south west of the site. The Lucas Heights Conservation Area (LHCA) is located directly to the north of the LHRRP and comprises mainly bushland. Heathcote National Park is located to the south of the LHRRP.

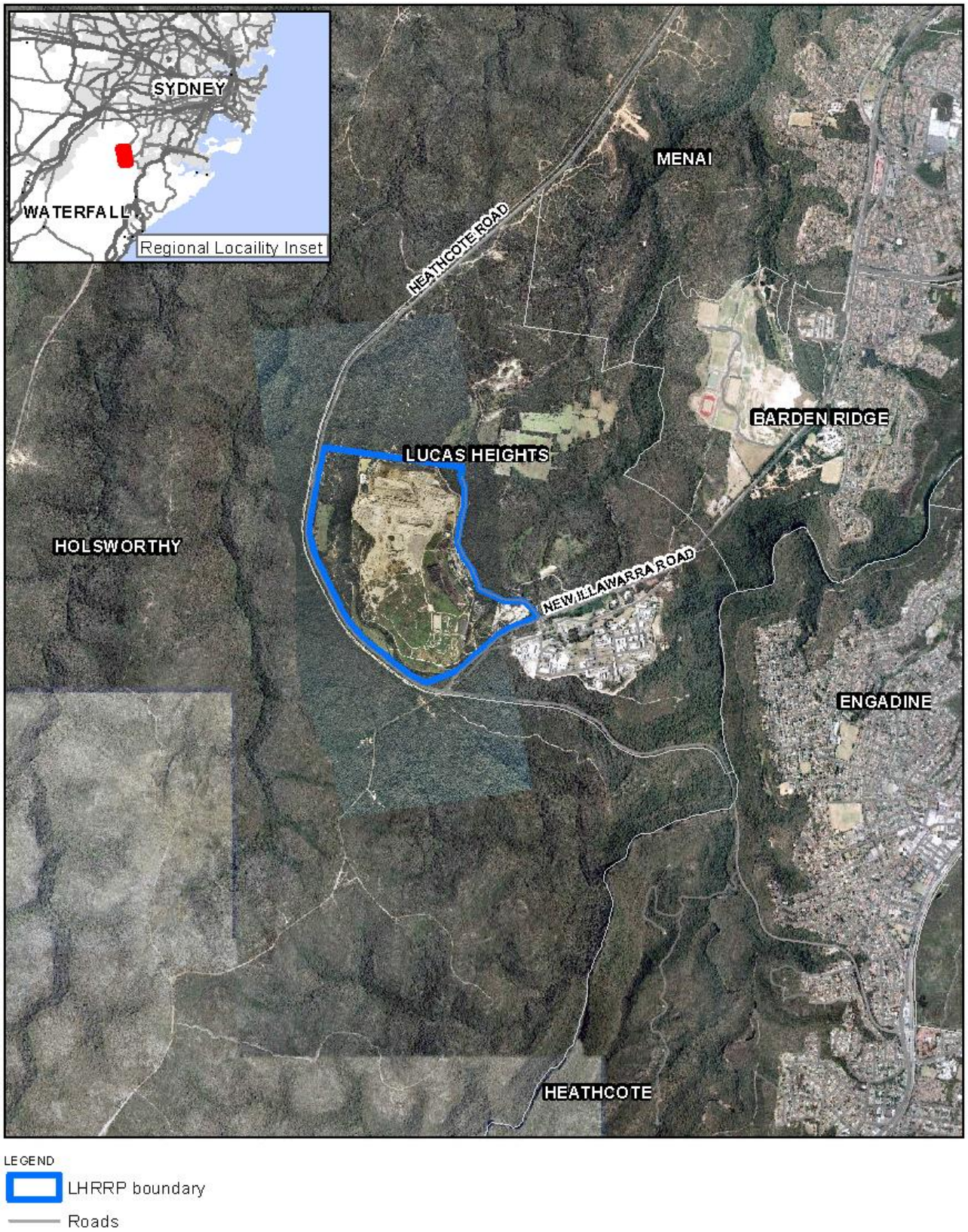

Figure 2.1 LHRRP location

2.2 ENVIRONMENTAL CHARACTERISTICS

2.2.1 Zoning and Surrounding Land Use

Under the Sutherland Local Environmental Plan 2015 (SLEP), LHRRP is located in the following zones:

- SP1 – Special activities (Waste Recycling)
- RE1 – Public Recreation

The following outlines the objectives and permitted uses of each zone.

Under the SLEP, the LHRRP proposal can be defined as the following:

waste or resource management facility *means any of the following:*

(a) a resource recovery facility,

(b) a waste disposal facility,

(c) a waste or resource transfer station,

(d) a building or place that is a combination of any of the things referred to in paragraphs (a)–(c).

The following definitions are relevant to the definition of a waste or resource management facility as outlined above:

resource recovery facility *means a building or place used for the recovery of resources from waste, including works or activities such as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from gases and water treatment, but not including re-manufacture or disposal of the material by landfill or incineration*

waste disposal facility *means a building or place used for the disposal of waste by landfill, incineration or other means, including such works or activities as recycling, resource recovery and other resource management activities, energy generation from gases, leachate management, odour control and the winning of extractive material to generate a void for disposal of waste or to cover waste after its disposal.*

waste or resource transfer *station means a building or place used for the collection and transfer of waste material or resources, including the receipt, sorting, compacting, temporary storage and distribution of waste or resources and the loading or unloading of waste or resources onto or from road or rail transport.*

The reprofiling of the landfill would occur on both the SP1 – Special Activities and RE1 – Public Recreation zones. Reprofiling of the landfill (waste disposal facility) does not meet the definition of waste recycling (or any other permitted uses) and therefore is not permissible on the SP1 and RE1 zones.

The proposed ARRT and GO facilities are located in the RE1 – Public Recreation zone. Both of these uses can be defined as a resource recovery facility, however this use is not permitted within the RE1 zone.

A planning proposal has been prepared and would run in parallel with the State Significant Development Application. The planning proposal seeks to include new local provisions on the

LHRRP site within the SLEP which would allow the proposal (a waste or resource management facility) to be undertaken on the proposal site. To permit development of a waste or resource management facility, the consent authority must be satisfied that the objectives of the local provision for the site are met, these objectives are as follows:

(a) To improve the resource recovery capabilities of the Lucas Height Resource Recovery Park,

(b) To increase the waste disposal capacity of the Lucas Heights Resource Recovery Park to meet the needs of Sydney,

(c) To ensure that quality open space for recreation purposes is achieved following the closure of the Resource Recovery Park,

(d) To ensure landfill is of a type and degree of compaction that is capable of supporting the future use of the land for recreation purposes,

(e) To minimise the environmental impacts of the continued operation of the Lucas Heights Resource Recovery Park on local residents and the environment.

LHRRP activities are considered to be consistent with these objectives as they would improve the resource recovery capabilities and increase the waste disposal capacity of the LHRRP. The impacts of the proposal on the environment have been assessed through the environmental impact statement (EIS). The EIS concluded that there would be minimal additional impacts associated with the proposal.

The proposal would permit the future use of the land for recreation purposes, which would have occurred when the existing LHRRP facility ceases operating. Once capped and landscaped, the final landfill surface support future recreation land uses. A master plan has been developed for the future use of the site and this plan identifies a number of passive recreation land uses such as picnic areas (with facilities), grassed areas available for picnics and other passive uses and also a shared path for pedestrians and cyclists.

Sutherland Shire Council granted approval in 2009 for the SSPCYC Mini-Bike club to be located at the southern end of the LHRRP site.

2.2.2 Topography

The LHRRP represents a gently undulating plateau, 200-1000 metres (m) in width, dissected by two ridges. The ridges run parallel to Heathcote Road and form a shallow valle. The gradients of the LHRRP are typical of a dissected plateau, with the slopes becoming steeper close to Mill Creek. Mill Creek itself has a slope of approximately 2% as it travels through the site.

2.2.3 Climate

A warm temperate climate with strong maritime influence is experienced in the Lucas Heights area. Mean daily temperatures range from 26.0 ^{0}C to 17.0 ^{0}C in February and from 15.8 ^{0}C to 6.6 ^{0}C in July. Frost is not experienced in this area.

Seasonal variations occur in rainfall with a greater proportion being received during summer months. A generally even rainfall distribution is experienced over the region with a mean annual rainfall of 1015 millimetres (mm).

2.2.4 Geology and Soils

The geology of the LHRRP is mainly Hawkesbury Sandstone, which is commonly found in the region. A lens of clay / shale, several meters thick, occurs near the LHRRP. There is an area of clay/shale on the north-eastern corner of the site in the Little Forest area, and also along the eastern side of adjoining SITA land. A clay quarry formerly operated on the eastern boundary of the LHCA. The shale is weathered, grey, silty clay with many fine sandy particles.

The soil in the LHRRP has been disturbed due to ongoing waste disposal and clay/shale extraction, and also because of gravel quarrying that took place here prior to these activities.

Ridges and Plateau Crests

The ridges and plateau crests on the site have lateritic podzolic soils which have a moderate depth of 0.5 to 1.5 m. These soils are bleached and stony sandy clay loams, setting hard when exposed. They have a fine sandy clay loam texture with coherent structure, showing no distinct arrangements of soil particles.

Crests and Plateau Ridges

Yellowish brown sandy clay of a maximum of 1 m in depth underlies topsoils on crests and plateau ridges. This clay has strong pedal structure, which means it contains soil aggregates or peds. Ironstone is commonly found in elevated positions.

Plateau Ridges

The dominant subsoils on the plateau ridges are Yellow Earths, which are earthy, porous, yellowish brown sandy clay loams.

Northern Extremity

The northern extremity of the site has soils ranging from loose, coarse quartz sand to earthy, yellowish brown sandy clay loam, to pale strongly pedal light clay. The soil depth is less than 1 metre; however, in the valley flats the depositional sand can be greater than 1 m (Soil Conservation Service, 1990 cited in Waste Service NSW, 1997).

Fill

The LHRRP has received both putrescible and non-putrescible waste, mainly consisting of household, commercial and some industrial waste since 1986 (Woodward, 1996).

2.2.5 Surface Hydrology and Groundwater

Surface Water

Most of the site lies within the Mill Creek catchment. Mill Creek originates from the LHRRP and flows north along the western boundary towards Georges River. The gradients of the LHRRP are typical of a dissected plateau, with the slopes becoming steeper close to Mill Creek. Mill Creek itself has a slope of approximately 2% as it travels through the site. Seeps and springs derived from groundwater provide baseflow for the perennial rivers and streams. .

The majority of the site, the landfilled portion, constitutes runoff to Mill Creek. An area around the administration facilities is a tributary to Bardens Creek.

The LHRRP is within the Mill Creek catchment, with Mill Creek flowing north along the western boundary of the site towards Georges River. Incisions of the uplifted Woronora Plateau along the trends of the major joint sites have developed surface drainage of the site. The surface drainage comprises a series of deeply incised, sub-parallel valleys draining north-east to the Georges River. Broad, relatively flat sandstone ridges separate the valleys.

Baseflow for the perennial rivers and streams are generally sourced from seeps and springs derived from groundwater. The creeks are believed to be generally effluent, i.e. groundwater contributes to creek flow. However, under some conditions, it is likely that the creeks become locally influent over part of their length. Therefore, the surface and groundwater systems are intimately related and cannot be considered in isolation.

Groundwater

The Hawkesbury Sandstone is generally well-cemented by authigenic quartz and siderite and is infilled with varying proportions of clay. The unweathered sandstone has a very low primary or intergranular permeability. The formation has a complex aquifer system due to sub-vertical joints and sub-horizontal bedding planes and the lithology associated with variable weathering. There is 20 to 25 m of low permeability medium and high strength sandstone above the fracture zone (Douglas Partners, 1994).

Perched water tables, ‘leaky’ aquifers and pressurised zones are a feature of the hydrogeological environment due to the discontinuous shale and clay layers (Knight, 1992). Weathering has produced spatially and vertically variable aquifer material which influences the groundwater flow paths and hydraulic conductivity in different layers and areas.

2.2.6 Flora and Fauna

Flora

The LHRRP is surrounded by areas of natural vegetation which have been disturbed to varying degrees. Adjacent to the site to the north-west, is the site occupied by the SICTA. The vegetation on the SICTA site comprises the Scribbly Gum / Red Bloodwood woodland community and the Mallee / Heathland community. There is an area of cleared land within the SICTA site, where facilities for clay target shooting have been constructed. To the north, adjacent to the LHRRP, is the LHCA, which contains mainly vegetation which is common to sandstone soils in the region and the eastern part of the site contains significant vegetation on shale soils. Several trail bike tracks dissect the vegetation within the LHCA. On the eastern side of the site, to the east of Little Forest Road, there are former waste disposal areas which have been rehabilitated, as well as vegetation common to sandstone soils, which form the upper reaches of the Bardens Creek catchment. Remnant vegetation screens the LHRRP from Heathcote Road to the south.

Over 90% of the original vegetation has been cleared from the LHRRP site. The vegetation at the LHRRP site, prior to its use for waste disposal, was likely to have been a continuation of the vegetation existing within the LHCA. The vegetation that remains on the site is mainly fragments of Scribbly Gum/Red Bloodwood woodland along the boundaries of the site. An area of approximately 3 ha of Shale/Sandstone Transition Forest (Transition Forest) on shale soils occurs in the north-east corner of the site, continuing from the LHCA. The Transition Forest was listed on Part 3 of Schedule 1 of the *Threatened Species Conservation Act 1995* (TSC Act) as an endangered ecological community in September 1998.

Kevin Mills & Associates (1994) identifies several distinct vegetation areas at the site. They include:

- A natural area of bushland bordering the landfill area;
- An older regeneration area along the far eastern end of the landfill site;
- A more recent regeneration area along the southern edge of the landfill site; and
- The broad regeneration area over the completed landfill.

Presence of Significant Flora

Very little of the site has been unaffected by landfill activities. The presence of significant species such as *Melaleuca deanei* and *Darwinia diminuta* is the result of propagation and planting undertaken at the site. Both *Melaleuca deanei* and *Darwinia diminuta* are classified as Rare or Threatened Australian Plant species under the Briggs and Leigh (1988) classification system, however, the legal status of these species is "Protected". These species are not listed in schedules of the *TSC Act 1995*. Neither of these species were recorded at the site in a search of the NPWS Atlas of NSW Wildlife database (NPWS, June 1997).

The Transition Forest is an endangered ecological community under the Threatened Species Conservation Act (Cth). As mentioned previously, approximately 3 ha of this community can be found in the north-eastern part of the site.

Fauna

Mammals are not likely to be common in the areas where landfilling activities are currently taking place. Mammals are more likely to occur in vegetation near the northern boundary of the site close to the LHCA, however, the site is fenced and access is restricted for some species. The Fox *Vulpes vulpes,* Rabbit *Oryctolagus cuniculus,* Swamp Wallaby *Wallabia bicolor*, Bush Rat *Rattus fuscipes*, Black Rat *Rattus rattus*, House Mouse *Mus musculus* and Feral Cat *Felis catus* are likely to be found at the site.

Kevin Mills & Associates (1991) stated that arboreal mammals were uncommon in the area, which is consistent with other sandstone regions. It is unlikely that arboreal mammals would use the remnant woodland located near the boundary of the site, near the main roads. Arboreal mammals could occur in the woodland and open forest located near the northern boundary of the LHRRP, or are likely to venture into this vegetated area from the LHCA.

The birds at the LHRRP are likely to be mainly woodland birds, with some forest birds utilising the habitat provided by the open forest to the north of the site.

Snakes and lizards can also be expected to be found at the site. Evidence of a Lace Monitor *Varanus varius* was seen in the LHCA, near the fence of the LHRRP.
Frogs were recorded within the LHRRP (Waste Service NSW, 1997). These frogs were not identified by the study.

Presence of Significant Species

No significant species have been recorded or observed at the LHRRP. Given the extensive disturbance at the site, it is highly unlikely that threatened fauna occur at the site.

2.2.7 Physical Constraints

The LHCA to the north of the site and downstream of Mill Creek has an increased level of protection and monitoring will be undertaken to ensure any off-site impacts from the LHRRP, including leachate, are identified and mitigated.

2.3 SITE FACILITIES AND SERVICES

Figure 2.2 shows the site layout post closure.

Figure 2.2 Site Layout

2.3.1 Site access roads

The LHRRP parkland will be accessed via Heathcote Road entrance or Little Forest Road entrance.

2.3.2 Drainage

Drainage on site consists of a number of surface water diversion drains, catch drains and temporary sedimentation ponds.

2.3.3 Trees

Tree groves in the parkland would be 50 m in width with an informal grass layer below the trees to ensure that clear sight lines are maintained through the groves and under the canopies of the proposed tree vegetation. This would provide an appropriate design in respect to accepted Crime Prevention through Environmental Design guidelines for the use of public open space.

2.3.4 Road layout, car parking and pedestrian parks

The road to the south of Mills Creek would be replaced with a pedestrian path to provide greater ecological and pedestrian opportunities for this area of the site.

2.3.5 Facilities

Toilets would be located at strategic locations through the park.

2.3.6 Bridges

Two pedestrian bridges are allocated to facilitate access to the southern side of Mill Creek.

2.3.7 Mill Creek and ponds

Mill Creek and ponds would be adjusted to suit the proposed post settled landform extents.

SECTION 3
SITE MANAGEMENT STRUCTURE

3.1 SITE MANAGEMENT STRUCTURE

3.1.1 SITA Management Systems

SITA manages its environmental and Work Health and Safety (WH&S) performance on site through its Corporate Information Management System (IMS). The SITA IMS is structured on the requirements of AS/NZS 4801:2001 and AS/NZS 14001:2004 and contains policies, procedures, management plans, emergency response plans (ERP), standard operating procedures (SOPs) and forms.

This EMP is a key component of the SITA IMS.

3.1.2 Change in management over time

The development of the LHRRP site for the proposed use as a recreational facility involves the development of the site and to be made available to the public on 2039. During this period and as required, SITA will maintain responsibility for the management of the proposed landfill activities and finishing works in terms of environmental management. SITA will also maintain responsibility for environmental management of aspects relating to the landfilling activities and post closure environmental management responsibilities relating to the landfill after 2039.

SITA would continue to have responsibility for the environmental performance of the disposed waste for a minimum 30 year period after site closure and in accordance with the closure requirements administered by the NSW EPA. This would include both the monitoring and management of landfill gas, groundwater quality and leachate.

The current management structure of the LHRRP landfill is described below.

Site manager	Overall responsibility for the management of operational issues on site.
Compliance officers	Establishment and management of environmental monitoring contract, wet weather monitoring and ad-hoc sampling as required and interpretation and management of monitoring data. Quarterly reporting to CRG, SSC and the NSW EPA as required
Site supervisor	Supervision of site activities, ensuring that necessary water environmental controls are maintained and operated to achieve the environmental objectives.
Site personnel	Day to day implementation of environmental controls and visual monitoring as required

3.1.3 Management roles from the Planning instruments

Based on the existing conditions issued by the Minister for Urban Affairs and Planning it is expected that the new conditions of consent will still require that the following management structure is continued for the LHRRP:

- Environmental Management Representative (EMR)
- Environmental Management Technical Group (EMTG)
- Community Reference Group (CRG)
- Compliance officer

Environmental Management Representative

SITA will employ or contract qualified environmental services throughout the duration of the landfilling activities at the LHRRP. The Landfill Manager is the nominated EMR and is supported by compliance officers.

The EMR is responsible for overseeing the environmental management of the project and supervision of environmental services. The EMR has the authority to stop work if an adverse impact on the environment has occurred or is likely to occur.

The EMR will:

- Be responsible for the presentation or certification of all EMP's and procedures
- Be responsible for considering and advising on matters specified in the conditions of this consent and compliance with such matters
- Oversee the receipt and response to complaints about the environmental performance of the project
- Facilitate an introduction and training program for all persons involved with construction, landfilling and rehabilitation activities
- Be present on site during any critical construction or operational activities as defined in the relevant EMP

Environmental Management Technical Group

The EMTG, which will include SSC, SITA and the NSW EPA and will have regular meetings during the initial parkland establishment period.

Community Reference Group

A CRG has been established for LHRRP, comprising of SITA representatives and the community. The CRG will meet on a quarterly basis to discuss matters of concern associated with the environmental impact of the development and to promote mutually satisfactory solutions. The group is kept informed of proposed works at the LHRRP.

Compliance officer

SITA will employ or nominate a compliance officer for the LHRRP.

The compliance officer will:

- Be in charge of establishment and management of environmental monitoring contract, wet weather monitoring and ad-hoc sampling as required and interpretation and management of monitoring data
- Report on a quarterly basis to CRG, SSC and the NSW EPA as required

SECTION 4
STAFFING AND TRAINING REQUIREMENTS

4.1 STAFFING AND TRAINING REQUIREMENTS

SITA is responsible for the provision of sufficient staff on site to meet all the requirements described in this EMP. It is also the SITA's responsibility to provide adequate training to all staff performing critical tasks such as inspection and direction of incoming wastes, operation of compaction or earthworks equipment and environmental management on site.

The Induction, Training and Competency Procedure provides instruction to ensure that staff are trained and competent to perform their required duties in a safe and environmentally sound manner and that appropriate training records are retained. Appropriate environmental and WH&S training shall also be given to suppliers and contractors to ensure their performance meets SITA requirements.

Environmental and WH&S Due Diligence training is also provided to employees and nominated contractors. It is designed to provide employees and contractors with information about their environmental and WH&S responsibilities.

The training is focused on the following issues:

- Environmental legislation - NSW
- Environmental aspects and impacts of the operational activities
- SITA Policies
- Environmental management
- Environmental due diligence

The LHRRP Training Matrix identifies the internal training needs (Induction, Environmental Due Diligence, IMS Awareness, IMS Procedures and SOPs) and the external training needs (first aid etc.) for on site staff. Contractors are required to provide ongoing training which is discussed at the monthly contractor meetings.

SECTION 5
REPORTING

5.1 RECORDS AND REPORTING

5.1.1 Monitoring Results

Environmental monitoring data are stored in electronic format on the SITA computer network. Summaries of monitoring data from LHRRP are available.

The monitoring results are reviewed and communicated on a monthly basis at the site meetings. This provides an ongoing mechanism for assessing the environmental performance over time. Monitoring results are also provided to the CRG meetings and SSC on a quarterly basis.

An annual return with the results from surface water, groundwater, surface gas, subsurface gas and leachate monitoring is provided to the NSW EPA within eight weeks of the licence renewal date. The report includes all monitoring results, the number of complaints and details of non-compliance against the EPL.

As required by the Protection of the Environment Legislation Amendment Act 2011, monitoring results required by the licence will be posted on the company website within 14 days (or made available on request).

The records of all complaints received will recorded. The records include details of the following:

- Date and time of the complaint
- Method by which complaint was made
- Personal details of the complainant which were provided by complainant or, if no details were provided, a note to that effect
- Nature of the complaint
- The action taken by the licensee, including any follow-up contact with the complainant
- If no action was taken by the licensee, the reasons why no action was taken

The record of each complaint must be kept for at least four years after the complaint was received and must be made available to any authorised officer of the NSW EPA on request.

SITA provide a number of feedback mechanisms for complaints.

Community members can register complaints via the SITA free-call 24-hour odour hotline in writing or through the SITA website

SITA, its employees and the contractor's employees must notify the NSW EPA of incidents causing or threatening material harm to the environment as soon as possible. Notifications must be made by telephoning the EPA pollution hotline on 131 555. Written details of the notification to the NSW EPA must be made within seven days of the date of the incident.

5.1.2 Reporting Template

In addition to report to the NSW EPA. SITA will also report to SSC in accordance with the Post Closure Reporting Template. The Post Closure Reporting Template is attached in Appendix H.

SECTION 6
ENVIRONMENTAL AUDITING AND REVIEW

6.1 ENVIRONMENTAL REVIEW

SITA evaluates the success of its environmental management approach on a regular basis. While individual components of the monitoring programme will be reviewed at set intervals as required by the NSW EPA, an overall evaluation of the environmental performance of the LHRRP is conducted on an annual basis in accordance with SITA's Environmental and WH&S Risk Assessment IMS Procedure. SITA's Statement of Environmental and WH&S Responsibilities and Accountabilities also provides the responsibilities for all SITA staff and contractors.

The Environmental and WH&S Risk Assessment Procedure aims to effectively identify and assess the current controls for WH&S hazards and environmental impacts and aspects and assists in the following objectives:

- To quantitatively evaluate the significance of the environmental impacts associated with waste disposal activities
- To formulate and periodically review environmental objectives, targets and programs for the LHRRP
- To evaluate the effectiveness of existing environmental management practices to ensure compliance with current environmental legislation and guidelines
- To assist in the continual improvement and optimisation of the site's existing environmental management practices
- To provide confidence to the general public, community groups and regulatory agencies that waste disposal operations are being effectively managed in a way that minimises environmental impacts

6.2 MANAGEMENT SYSTEM AUDITS

The SITA Audit Procedure provides detailed instruction on weekly inspections and management system audits conducted on a regular basis to verify that site's operations comply with the requirements of this EMP. The results of the audits are recorded and recommendations for improvement are communicated to the relevant management personnel as well as to the Contractor.

6.3 COMPLAINT INVESTIGATION AND RECTIFICATION PROCESS

SITA is committed to best practice, prevention, mitigation and rectification of the operation and management of the LHRRP and post closure management obligations.

SITA and SSC have established an Agreed Methodology for establishing complaints. It will be reviewed every two years and at the request of any party, but any changes to the Agreed Methodology will only be made by agreement between the parties.

The Complaint Investigation and Rectification Process is included in Appendix I.

SECTION 7
SITE OPERATIONS

7.1 OPERATIONAL CONDITIONS

SITA is certified as meeting a range of national and international certifications including ISO 14001 Environmental Management, ISO 9001 Quality Management and AS 4801 Occupational Health & Safety Management. As part of obtaining these accreditations, SITA is subject to a range of internal and external audits.

In addition to the above accreditations, SITA also has an interlinked system to govern the operations of each site as discussed in sections previously. This includes:

- Standard operating procedures (SOPs)
- Operational Environmental Management Plans
- Frequent meetings with stakeholders (including SSC, NSW EPA, refer to SECTION 3 for details)
- Environmental reporting programs (refer to SECTION 5 for details)
- Complaint handling programs (refer to SECTION 6 for details)
- Environmental monitoring programs (refer to SECTION 9 for details)

All these safeguards are in-place to evaluate the effectiveness of existing environmental and operational practices to ensure SITA operates in compliance with the licence conditions applicable at each site.

Detailed Landscape Plan is provided in the 2015 EIS.

7.2 SITE SUPERVISION AND CONTROL

The parkland would be maintained by SCC but SITA would continue to have responsibility for the environmental performance of the disposed waste for a minimum 30 year period after site closure and in accordance with the closure requirements administered by the NSW EPA.

The site supervisor will:

- Maintain LHRRP environmental controls
- Keep a logbook for recording activities and incidents that occur during the operation
- Provide site notices and incident reports covering all environmental related activities on site

7.3 STAFFING

The LHRRP post closure activities will be supported by appropriately staffed by qualified and experienced personnel.

At a minimum, staff training will be undertaken to ensure that:

- Staff are appropriately trained in their nominated roles to undertake task required of them

- All those that operate gas testing, water sampling or water testing apparatus are familiar with required testing and sample retention protocols to a standard approved by the NSW EPA under the EPL

7.4 EQUIPMENT

Sufficient and appropriate machinery, plant and equipment will be maintained to meet the requirements of the EMP. This will include, but is not limited to, equipment for:

- Stormwater treatment (if required)
- Leachate collection and treatment
- Landfill gas collection and destruction

All equipment will conform to the relevant Australian Standards.

All machinery and equipment will be maintained in proper working order in accordance with the manufacturers' requirements. In the event of machinery or equipment failure replacement plant or equipment will be organised as soon as practicable to ensure the requirements of the EMP are fully complied with at all times.

7.5 COMMUNITY COMPLAINTS

A free call telephone line through SITA's customer service department operates 24 hours a day 7 days per week. Complaints about the LHRRP parkland can be registered on this line. The details of all complaints received and actions taken in response to the complaints are kept on the SITA database. Complainants receive a detailed response within 24 hours of the complaint being lodged if requested.

Complaints received via the NSW EPA environment line or SSC that are subsequently reported to SITA are investigated and responded to within the allocated time frame.

The complaints register is available for inspection upon request by the NSW Department of Planning & Environment (DoPE), the NSW EPA and SSC.

7.6 FIRE CONTROL

In the event of a fire occurring at the site, prompt action will be taken to extinguish the fire. The NSW fire brigade will be immediately notified of all fires irrespective expect those that are promptly extinguished. Full cooperation will be given to the fire brigade in fighting fires on the site.

Fires associated with waste are not expected during the post closure period as all waste is contained within the landfill. SITA would be responsible for managing any fires associated with the landfill mass. Post 2039, SSC and ANSTO will be responsible for fire control to parkland and surrounds.

SECTION 8
MANAGEMENT

8.1 OVERVIEW

SITA will be responsible for the management of leachate, landfill gas and the landfill cap and have some responsibilities for stormwater following the closure of the landfill, capping and landscaping. The operations will also be in accordance with the Post Closure Environmental Protection Licence.

8.2 SURFACE WATER MANAGEMENT

8.2.1 Environmental Goals and Principles

A stormwater monitoring and maintenance program will be developed to describe details requirements such as inspection locations, inspection frequencies and corrective actions.

Erosion and sediment control measures will be maintained until the site is stabilised.

8.2.2 Management Strategy

Ongoing stormwater maintenance at the site shall include:

- Activate the stormwater treatment plant if required
- Periodic removal of accumulated sediment
- Sediment dams and sediment traps will be designed and operated so that sedimentation can occur
- Surface water dams will be de-silted in accordance with the LHRRP EIS Surface Water Assessment (GHD, 2015). The sediment control “settling” zone needs to be maintained below at 10 ML
- Maintain vegetation in drains to ensure adequate flow
- Remove any built up litter from surface water drains
- Repairing any erosion or scoured vegetation as required
- Clearing obstructions as required
- Repair of structure and associated facilities as required
- Removal of sediment from storage ponds after 5 years (prior to handover) if required

Should failures in the stormwater infrastructure be identified the following options for rectification works should be considered:

- If ponding is occurring, regrade the surface or identified drain, diversion bank or check dam
- If erosion has resulted in exposed soil and bare areas the vegetation will need to be replaced. This may include additional topsoil material to ensure that there are sufficient nutrients for vegetation to re-establish
- If rock lined drainage channels have been eroded the rock will need to be replaced or upgraded
- De-silting of drainage structures may also be required following a significant rainfall event or prolonged use
- Re-evaluate frequency of inspections

8.2.3 Activities/Frequency

The on site soil and water management infrastructure consists of erosion control measures, surface water collection and transport, sedimentation dams, truck and wheel wash facilities and a treatment plant.

The main activities and frequencies for surface water management are:

- Check for water ponding in completed areas – *after significant rain*
- Report on surface water monitoring – *as required by EPL*
- Operate and maintain the stormwater treatment plant – *as required*
- De-silt sediment ponds – *as required*

8.2.4 Performance Indicators/Targets

Within the initial 5 years, the following performance indicators / targets apply to surface water:

- The landfill capping provides acceptable surface water drainage
- Have a pH value between 5.5 and 8.5
- Contain more than 6 milligrams per litre (mg/L) of dissolved oxygen
- Have a conductivity less than 1,500 micro Siemens per centimetre (µS/cm)
- Contain less than 2.5 mg/L of total ammonia (NH_3 -N) (both $NH_{3(aq)}$ and NH_4^+)
- Contain less than 50 mg/L Total Suspended Solids (TSS) (except during wet weather overflow events)

8.3 LEACHATE MANAGEMENT

8.3.1 Environmental Goals and Principles

The LHRRP landfill has been re-profiled to increase stormwater runoff and assist in reducing leachate generation. Re-profiling the final landform to increase its slopes to reduce infiltration and thereby leachate generation represents a sensible reduction in environmental risk. Leachate management on site is aimed at:

- Prevention of groundwater pollution by leachate
- Prevention of surface water pollution by leachate
- Prevention of the degradation of local amenity in particular Mill Creek and the Georges River
- No offensive odours

A leachate monitoring and maintenance program will be developed to describe details requirements such as inspection locations, inspection frequencies and corrective actions. The following principles are adopted in leachate management:

- Maintain leachate infrastructure on site to minimise the potential for surface water and groundwater pollution by leachate

8.3.2 Management Strategy

Ongoing leachate maintenance at the site includes:

- Ongoing leachate monitoring until leachate volume monitoring and or leachate and water quality monitoring suggests that risks are no longer significant
- Maintaining the integrity of the final capping profile
- Maintaining the surface drainage works to ensure drainage of stormwater
- Monitoring of the leachate management system including the monitoring of leachate storage ponds
- Aeration of leachate dams if required
- Periodic removal of accumulated sediment in the storage ponds
- Periodic clearing of excessive vegetation in the storage ponds
- Maintenance of leachate management structures and associated facilities as required

8.3.3 Activities/Frequency

- Ensure adequate storage within leachate lagoons – *as required (after rain)*
- Maintenance of automated leachate storage and transfer devices – *ongoing*
- Monitoring compliance with Environment Protection Licence – *three monthly*
- Monitoring compliance with Sydney Water Trade Waste Agreement for discharged treated leachate from Lucas Heights 1 leachate treatment plant – *as agreed with Sydney Water*
- Site inspections for leachate seepage – *as required (after rain)*
- Any leachate seepage detected to be contained and controlled - *as required*

8.3.4 Performance Indicators/Targets

- Waste stabilisation occurring as evidenced by changes in the composition of the leachate
- No overflow from leachate dams
- No deterioration of surface water and groundwater quality
- No leachate seepage from the landfill mass

Groundwater monitoring bores assist in determining any impacts on groundwater from landfill operations, and also to provide information to assist in leachate management. The target is to maintain or improve the existing surface water and have no impact on the groundwater quality.

8.4 LANDFILL GAS MANAGEMENT

8.4.1 Environmental Goals and Principles

Decomposition of organic material in a landfill generates landfill gas, which typically consists of 45-60% methane, 40-60% carbon dioxide and traces of other organic compounds (less than 1%). If not controlled, the organic compounds can cause odour nuisance, offsite gas migration and escaping landfill gas can reduce the oxygen content in soil to limit plant growth.

The goals of on site landfill gas management include:

- Preventing landfill gas emissions into the atmosphere
- Preventing subsurface off-site migration
- Minimizing odorous emissions associated with landfill gas
- Recovery of energy from the gas
- Preventing loss of amenity to the local community

- No offensive odours
- Extract gas on an ongoing basis

8.4.2 Management Strategy

During the post closure period the primary objectives are:

- To control landfill gas emission
- Maximise landfill gas extraction and destruction

A gas monitoring and maintenance program will be developed for the post closure period to describe detailed requirements such as inspection locations, inspection frequencies and corrective actions.

Aspects of the landfill gas management system and collection strategy include:

Preventative Measures

- Landfill gas extraction wells are installed in the completed areas to control gas migration
- Overlap of the radius of influence is allowed for extraction wells located at the border perimeter of the landfill, to assist effective control of offsite gas migration
- Inter-well spacing is equal to or less than twice the estimated radius of influence
- Landfill gas condensate is collected and recirculated into the landfill or collected and treated
- Leachate is extracted via dual extraction wells and directed via flow lines to adjacent leachate risers and into the leachate collection system
- Collected gas is transferred to the power station located at the south-eastern edge of the site and transformed to electricity with flaring of excess landfill gas as required
- Review capacity for gas collection and destruction (including flaring)
- Maximise gas extraction irrespective of quality
- Monitor the performance of the gas extraction system in terms of gas extraction rates and efficiency

Mitigation Measures

- Prepare and regularly review emergency plan and emergency procedures
- Continual implementation of a regular program for monitoring landfill gas
- If energy generation becomes no longer feasible and gas is still present, then SITA will ensure that flaring or other destruction technologies are employed to meet environmental obligations associated with the site during the post closure period

Rectification measures

- Implement emergency plan and emergency procedures in the case of fire or other incident

8.4.3 Activities/Frequency

The following activities are undertaken at the following frequencies:

- Inspection of the gas collection system - *quarterly for two years, six monthly for three years then yearly thereafter*
- Maintenance of the gas collection system – *as required*
- Surface gas emission monitoring – *quarterly for two years, six monthly for three years then yearly thereafter*

- Subsurface gas monitoring - *quarterly for two years, six monthly for three years then yearly thereafter*
- Accumulation gas monitoring - *quarterly for two years, six monthly for three years then yearly thereafter*

8.4.4 Performance Indicators/Targets

- Continue monitoring program until gas concentration levels in all perimeter gas wells have fallen to less than 1% methane (v/v) and less than 1.5% carbon dioxide for a period of 24 months (reflecting Benchmark 29 of the NSW EPA *Environmental Guidelines: Solid Waste Landfills:* Surface Gas Emission Monitoring)
- No detectable surface emissions of landfill gas above 500ppm (the NSW EPA *Environmental Guidelines: Solid Waste Landfills:* Surface Gas Emission Monitoring)
- Thermal oxidation (flaring or electricity generation) should have greater than 98% destruction efficiency for non-methane organic compounds prior to atmospheric emission

8.5 FINAL CAPPING LAYER, LANDSCAPING AND SITE AMENITIES

8.5.1 Environmental Goals and Principles

Site capping and revegetation should ensure that the final surface provides a barrier to the migration of water into the waste, controls emissions to water and atmosphere, promotes sound land management and conservation, and prevents hazards and protects amenity.

Management goals include:

- Maintenance of facilities, roads and pathways in accordance with section 1.7.4
- Maintain landfill cap and integrity
- Maintain revegetation and landscaping

8.5.2 Management Strategy

The soil cover should be inspected regularly for the following:

- Rills - cracks or small channels measuring up to 15 cm wide by 10 cm deep
- Gullies - cracks or small channels measuring greater than 15 cm wide by 10 cm deep
- Increased exposure of erosion control monuments
- Intrusion by humans or animals
- Trails showing human or animal activity
- Damage from vehicular traffic such as ruts and tire marks

The vegetation should be inspected for the following:

- Burned areas
- Overall vigour
- Excessive grazing
- Disease or pests
- Weed infestations

Inspections and repairs should not be initiated when conditions exist that could damage the cover system. Such conditions include excessive soil moisture following a precipitation event and excessive dry soil and windy conditions.

Should settlement or changes in the cap be identified the following corrective action options should be considered:

- Assessment of the non-compliant grade by a suitably qualified person to determine whether rectification works are required to ensure the integrity of the capping layer (consider potential surface water flow, drainage, erosion control, vegetation cover, etc.)
- Import appropriate material to fill the settled area and regrade/revegetate to the standard required (i.e. reinstate the affected area of capping in accordance with the capping design specification)
- Regrade the depressed area using cut and fill methods and revegetate
- Re-evaluate frequency of inspections (to be determined by an appropriately qualified person)

Should erosion be identified on the cap, the following corrective actions to rectify the erosion should be considered:

- Reinstate the area where the erosion has been identified using imported material or material available on site, and revegetate
- Determine the cause of the erosion and implement remedial actions, where appropriate, to prevent further or repeated erosion. For example, assess upstream stormwater drainage to ensure that this is not impacting on the level of erosion at the location for which the non-compliance was recorded
- Any capping remedial works are to consider placement requirements with respect to level of compaction and suitability of the material
- Re-evaluate frequency of inspections (to be determined by an appropriately qualified person)

Should the absence of vegetation or vegetation dieback be identified on an area of the cap the following indicative corrective action options should be considered:

- Determine the cause of the non-compliance (lack of water etc.) and implement remedial actions accordingly
- Recap the area of exposed soil with suitable topsoil or material or growing medium if required and revegetate to ensure plant growth is sustained
- Revegetate the area of exposed soil with either seed or tube stock depending on the location and surrounding vegetation
- Re-evaluate frequency of inspections (to be determined by an appropriately qualified person)

In addition, the following mitigation for vegetation and weeds should be implemented:

- Exposed soil should be sown with native seed immediately to prevent colonisation by weeds
- Revegetation should use locally soured native species
- Use of propagated individuals of *Allocasuarina diminuta* subsp. *Mimica* from the site sould be incorporated into the landscaping plan
- Ongoing management of noxious weeds according to legislative requireemnts
- Revegetation areas, including planted *Allocasuarina diminuta* subsp. *Mimica*, should be monitored and managed

8.5.3 Activities/Frequency

The following activities are undertaken:

- Cover inspection – *quarterly for two years, six monthly for three years then yearly thereafter and following a significant rainfall event*
- Erosion monitoring - *quarterly for two years, six monthly for three years then yearly thereafter and following a significant rainfall event*
- Vegetation monitoring - *quarterly for two years, six monthly for three years then yearly thereafter and following a significant rainfall event*

A significant rainfall event is classified as either >50 mm in a 24 hour period, or a cumulative rainfall of greater than 100 mm over 1 week, measured at the nearest weather station. It is recommended that where ongoing wet weather is experienced, a more conservative approach be adopted with regards to triggering an inspection.

8.5.4 Performance Indicators/Targets

- The landfill capping assessed over some years and found to be stable with acceptable surface water drainage

8.6 EMERGENCY PREPAREDNESS

8.6.1 Environmental Goals and Principles

An Emergency Response Plan (ERP) for the LHRRP has been developed. The plan describes the general policy and approach that should be followed when dealing with an emergency or incident, such as fire, spill of liquids, leachate escape, explosion of liquid fuels, vehicular accidents, personal injury, and emergency at ANSTO or civil disturbances (e.g. bomb threat). The ERP is aimed at:

- Minimising risk to any staff working at the landfilling area, other site staff and the public
- Controlling any incident to minimise injury to persons and damage to equipment, property and the environment

This ERP will be in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 1 *Industry Emergency Planning Guidelines*.

The emergency preparedness management strategy is based on the following principle:

- By updating the ERP and undertaking appropriate emergency preparedness measures the potential for an emergency to occur is reduced and if an emergency does occur, the risk to persons, equipment and buildings on site and on surrounding properties is minimised

8.6.2 Management Strategy

During the post closure period, the site will not be manned by SITA personnel on a permanent basis. Consequently a new ERP will be prepared for this period.

Fires

- Fire management of the LHRRP parkland site will be undertaken in accordance with the LHRRP ERP
- In the event of a fire occurring at the site, prompt action will be taken to extinguish the fire. The NSW fire brigade will be immediately notified of all fires irrespective expect those that are promptly extinguished. Full cooperation will be given to the fire brigade in fighting fires on the site

8.7 GROUNDWATER

8.7.1 Environmental Goals and Principles

The goals for groundwater are:

- No significant impact on groundwater quality
- No significant impact on the community

8.7.2 Management Strategy

Due to the inherent risk post-closure ongoing leachate management will occur until such time as the leachate volume monitoring and or leachate and water quality monitoring suggest that risks are no longer significant.

If emergence of impacts occurs during operation or post closure then further investigation and potentially remedial measures would be required and would include:

- Additional investigations to isolate the source of impact and characterise the significance of the impact relative to key target criteria for the protection of surrounding sensitive systems.
- Implementation of additional control measures to prevent ongoing impact. This may include:
  - Installation of additional monitoring wells to assess the emergence of significant impacts that may not be considered presently significant
  - Installation of additional wells to capture and treat impacted groundwater. This may include treating the water separately or incorporating the system into the existing leachate treatment system

8.7.3 Activities/Frequency

The following will be undertaken:

- Monitoring – *ongoing*

8.7.4 Performance Indicators/Targets

In accordance with the EPL condition R2.3, the criteria for groundwater ammonia concentration is 1 mg/L

8.7.5 Reporting and Review

Daily operational checklists and weekly checklists are completed by the site supervisor. The compliance officer is responsible for completion of the environment weekly checklist.

Additional reporting and review functions include:

- Reporting at site meetings if problems occur
- Reporting problems that occur to the CRG
- Maintaining site environmental checklists

SECTION 9
MONITORING

THIS SECTION HAS NOT BEEN UPDATED TO INCORPORATE COUNCIL COMMENTS AS IT WILL RESPOND DIRECTLY TO THE REQUIREMENTS OF THE MEASURES WHEN THEY ARE UPDATED, THE 2015 EIS, APPROVAL AND EPL AND OTHER STATUTORY INSTRUMENTS.

The extent and frequency of monitoring will be in accordance with the site Closure Plan, which generally includes the following:

Ground and Surface Waters

Surface water sample sites and testing procedures will be similar to those described for the operational phase of LHRRP. Post closure groundwater monitoring and surface water monitoring is still to be determined.

Gas and Leachate

Monitoring and testing procedures will be similar to those used during site operations. Monitoring frequency will increase if significant increases in gas or leachate generation are observed or as required due to odour complaints received, or decrease as the longer-term gas and leachate production levels decline.

Rehabilitation and Pollution Controls

Regular inspections will continue until rehabilitation is satisfactorily completed, as per the Post Closure EMP. Pollution and drainage controls will continue to be inspected until areas are regarded as stable.

SECTION 10
RISK MANAGEMENT

SITA ensures the effective control of environmental hazards across its facilities so that environmental impacts are prevented or minimised. Two main types of risk assessment are used by SITA at operational/project level to assess environmental and WH&S risk:

10.1 JOB SAFETY AND ENVIRONMENTAL ANALYSIS (JSEA)

The JSEA process is used for new projects, new tasks, any unusual, abnormal or non-routine work or projects and tasks where there is likely to be an increase in the level of risk. This may include but is not limited to any unusual task not normally executed in day-to-day operations. All contractors are required to complete the JSEA process prior to commencing any work on the site.

10.2 PROJECT / SITE BASED RISK ASSESSMENTS

Project based risk assessments are carried out to assist in identifying additional environmental risks that may not have been assessed in the preparation of the EMP for the site (following post closure).

Site or project based risk assessments are performed when:

- A change in legislation requires a change in SITA practices and processes
- Additional processes or activities are introduced that may increase the level of environmental risk
- When new and additional information concerning an environmental hazard becomes available
- When required by existing legislative requirements

SECTION 11
REFERENCES

TO BE UPDATED

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Appendix H Post Closure Reporting Template

Reporting requirement	Reporting Frequency	Reporting Period	When Report	Comments
Environmental (Landfill, Garden Organics, ARRT and Resource Recovery Centre)				
				Additional reporting requirements may be added to this list depending upon the Environment Protection License and Conditions of Consent.
Rainfall	Quarterly (for two years), then	Jan – Mar Apr – Jun Jul – Oct Sept – Dec	Within two months following the Reporting Period	
Surface water				
Wet weather overflow				
Leachate	Six monthly (for three years), then	Jan – Jun Jul - Dec		Leachate treated and disposed to sewer
Landfill Gas	Yearly thereafter			Landfill surface monitoring
Groundwater				
Odour				
Annual report	Yearly (if required under Development Consent)	In line with EPA Annual Return reporting	Within two months following the Reporting Period	
Compliance Report	Three yearly (if required under Development Consent)	In accordance with Development Consent	Within two months following the Reporting Period	
Other EMP information	As requested			

Reporting requirement	Reporting Frequency	Reporting Period	When Report	Comments
Complaints	Quarterly (for two years), then Six monthly (for three years), then Yearly thereafter			Include number, type, location