Taronga Conservation Society Australia

Waste Management Operational Plan

African Savannah & Congo Exhibits

Site Overview

Taronga Zoo is situated within a medium density populated urban locality on the northern side of the Sydney Harbour foreshore. Taronga is committed to ensuring that the Zoo's environment is managed safely and effectively so that it can be appreciated by both present and future generations of local and overseas guests.

Taronga's Sustainability Commitment and Waste Management Policy highlight the Zoo's commitment to the promotion of effective waste management on site. The policy also provides the framework for all Taronga employees and contractors to promote and conduct effective waste management practices within the workplace & the surrounding environment.

The Waste Management Operational Plan (WMOP) prescribed by this document relates specifically to the African Savannah and Congo exhibits. This precinct project is a key component of the Master plan works and is helping Taronga achieve its key objectives over the next 30+ years.

Service of Congo and Savannah

To ensure the highest standards in waste management are achieved Taronga has engaged the services of SUEZ Australia. The aim of the engagement is to increase the amount of waste diverted from landfill via processing through alternative waste recycling and treatment facilities. This practice is combined with the immediate capture through designated recycling receptacles on site for material that can be diverted directly into recycling from the generation point.

Suez uses only authorised and lawful landfill, transfer station, processing and recycling facility sites that have the approval of relevant Government authorities. Similarly, any organisation performing services for Suez on a subcontractor basis will only use authorised and lawful disposal sites that hold all of the required licences and compliance material. Suez has achieved ISO 14001 (Environmental Management) certification and AS 4801 (Occupational Health and Safety) at its operations across NSW, ACT, Queensland, Western Australia and South Australia.

Suez will proactively advise and inform Taronga Zoo in respect of regulations and compliance, as well as the introduction of applicable new technology and practices relating to the processing of waste and residual materials generated by the Zoo.

The exhibit will have the benefit of not being the recipient of a 'first time' application of the waste and recycling practices conducted on the Taronga site. Expanding the current service operation of Taronga to accommodate the additional requirements of the developments it will take full advantage of the existing in-house knowledge of both staff and the servicing contractor, SUEZ.

Ideally this will see the adoption of the expanded service meld efficiently within the existing operation as well as evolving with new practices that may potentially be adopted by all recipients and participants in this activity.

Operational Plan Intent

The operational plan is structured in a manner to achieve the following targets and practices:

- Identification of projected waste generation;
- Identification and formation of an effective plan of management for generation points and access to waste generated;
- Provision of point of generation separation practices for waste material, where viable;
- Provision of sustainable practices in the collection, storage and transport of separated and residual materials;
- Provision of a safe work environment in all waste management practices;
- Establishment of baseline targets by waste type to periodically measure waste generation rates and diversion from landfill;
- Regular review of waste management KPIs to ensure continuous and sustainable improvement in the Zoo's WMOP.

The success of the operational plan will rely substantially on the partnership of all stakeholders. These individuals and teams will all need to be inducted and trained where necessary in the delivery of the waste management practices proposed. They include:

- Taronga Zoo operational staff;
- SUEZ service and operations staff;
- The staff of Daniels Health Pty Ltd (previously Sterihealth);
- Waste and recycling facilities;
- Transporters and equipment providers; and
- Visitors, administrative staff, external contractors and other relevant stakeholders

To ensure compliance with the WMOP it is critical that all of the above stakeholder groups are aware of their specific operational role in the Zoo's waste management plan. The level of success will be determined during scheduled reviews of the WMOP and issues will be considered and acted upon accordingly. This scheduled review will include the Facilities/Operations Manager, the Environmental Manager and a senior representative from SUEZ.

A table nominating specific individuals to be engaged in the Waste and Recycling review panel follows.

Contact name	Title	Contact
Stephen Bedford	Taronga Facility Manager	sbedford@zoo.nsw.gov.au
Anne Kehlhofer	Taronga Manager Sustainability	akehlhofer@zoo.nsw.gov.au
Scott Bayliss	Suez Manager Sydney Branch	scott.bayliss@suez-env.com.au
Andrew Humphries	Suez Manager Sydney Operations	andrew.humphries@suez.com

Operational Plan

The intention of the African Savannah and Congo Exhibits WMOP is to incorporate waste generated from the facility into the existing waste and recycling service. Taronga's overall waste management operation is a daily service conducted 365 days per year and is inclusive of public holidays. Waste operators are scheduled for work daily on a rotating roster basis. It is the waste operator's responsibility to ensure that all waste management bins are serviced daily and all bins are placed on a bin washing schedule to maintain suitable levels of hygiene and to reduce the risk of unacceptable odours. Listed below is a table ***(1)*** outlining the Zoo's existing collection schedule which will also apply to the African Savannah and Congo exhibit operations.

Table 1 SUEZ service schedule

Item Collection	Collection Frequency
General Waste and recycling	Daily (Mon – Sun), rear loader only travels to waste processing and recycling centre at full capacity
Cardboard and paper	Daily (Mon-Sun), Compactor only serviced when full
Animal Waste	Daily (Monday- Sunday)
Green waste	On call - when bin full
Steel	On call - when bin full

Waste Identification and Quantification

The African Savannah and Congo exhibit will be comprised of the following workspaces:
Table 2

Area:	Waste Streams:
Giraffe, Ostrich and Zebra enclosures will occupy an area of 3000m^2	Animal waste
Lion enclosures 2700m^2	Animal waste
Gorilla enclosures 2800m^2	Animal waste
Okapi enclosure 850m^2	Animal waste
Meerkat/Fennec Fox with 400m^2	Animal waste
back of house areas will include the following (animal welfare facilities, visitor circulation, visitor facilities	General waste Comingled recycling Paper/Cardboard

Waste management categories that will drive recycling and diversion from landfill

For the back of house areas

Provision of receptacles (internal) allocated for the receipt of separated and unseparated waste. Within the workspaces and any public spaces nominated the appropriate bins will be placed to ensure a minimum disruption to operations and pose no threat to safety and/or human health. The material targeted for recycling and that for disposal or incineration has been listed in the following table **(3).** Combined with the strategic deployment of bins will be signage on or around the bin that clearly indicates what may or may not be disposed within the nominated bin.

Targets for **reduction and diversion** will be set after the first waste audit and review. At this time a real time waste analysis will become the benchmark upon which reduction targets may be established. Practices that will assist in achieving the reduction targets will be the targeted procurement of product purchased that are sustainably packaged and are recyclable and or the introduction of work and facility place practices in disposal which will capture further recyclables than previously.

Broadly the targets sought will align with the NSW EPA's 2014-2021 Waste Avoidance and Resource Recovery Strategy (WARR strategy).

Table 3

Waste or Recycling Product	Bin size and colour
General waste (external)	Red lid, dark green or black base 240 litre bins
Co-mingled recyclables (external)	Yellow lid, dark green or black base 240 litre bins
Office recycle stations (internal)	Red lid, black base, yellow lid, black base, blue bin, black base 3 x 60L bins
Green waste	Green lid, dark green or black base 240 litre bins
Medical waste	Yellow 5L bin
Hazardous waste	Containerisation will vary & be based on the specific hazard, refer Australian Dangerous Goods Code
Sharps	Yellow Approved single use containers
Cytotoxic waste	Purple 20 litre bins
Animal waste	Burgundy or brown 120 or 240 litre bins
Paper & cardboard recyclables	Blue 240 litre bins Blue 1100 litre bins

For reference purposes photographs of the nominated bins have been displayed in annexure 1.

To ensure efficient, responsible and sustainable waste management practices key Taronga employees are to be allocated responsibility for regular monitoring of the content of waste and recyclable materials being placed in bins. This will assist with target and KPI management and minimise the potential for contamination and inappropriate disposal activities. To accurately measure this interaction ***Table 4*** will include actual waste generation rates and projected waste management targets for regular 6 and 12 monthly reviews. Based on the collected data reduced waste to landfill targets will be further reviewed every twelve month period.

***Table 4: Typical* waste analysis and review table used on site (to be used to manage & monitor progress by waste type – all weights will be in kilograms)**

Waste Type	*1st 6 month period*	*2nd 6 month period*	*Variance comparing 2nd 6 month period with the 1st 6 month period*	*Projected 3rd 6 month period*	*Variance Compared with last actual period*	*Comment*
General waste						
Co-mingled recyclables						
Green waste						
Clinical waste						
Hazardous waste						
Sharps						
Cytotoxic waste						
Animal waste						
Paper and Cardboard recyclables						

To further reduce landfilling of waste generated, the service provider must if available and if it is financially viable propose lawful disposal alternatives that will offer additional diversion opportunities of waste materials to either re-use, processing and/or recycling.

Further to this, all waste management practices should be sustainable. That is, transport, processing and re-manufacture may actually consume more energy and create more pollution than traditional landfill disposal methods. Decisions should only be made after a full cost / benefit analysis has been undertaken.

Ensure consignment of suitably separated food and animal wastes to lawful organics processing facilities.

In the event of any incident or emergency, it will need to be referred to and managed in accordance with the *Taronga Zoo Emergency Response and Pollution Incident Response Management Plan*

Management of Generation points

Once construction of the Savannah and Congo exhibit has been finalised, SUEZ will work with Zoo staff to position bins within a suitable proximity of the waste generation points (allowing for maximum waste capture, minimising the risks of contamination and liability issues). The positioning of bins will also allow for:

- Ease of access and the safe transfer of the bin to the designated collection point; and
- The need to minimise the risks associated with workplace injuries, public liability and containment.

Vehicle access and waste transfer

As is the case with the Zoo's current waste management collections, all waste management vehicles collecting from Savannah and Congo will enter and exit via the Security Portal perimeter fence. Once construction is finalised, specific routes and access points for collection and delivery of any associated equipment will be the subject of suitably prepared safe work method statements (SWMS). These SWMS will be distributed to the relevant stakeholders and training delivered during site induction and scheduled tool box meetings. Any relevant issues that may arise will be discussed and resolved at the appropriate time. All collection and drop off points including vehicle access will be determined to ensure the minimal possibility of injury or spillage.

Bin stations

Taronga has approximately 60 x 240 litre bins on site for front line general waste collection and 60 240 x litre bins for front line co-mingled recycling. These bins sit together at waste management stations (1 x recycling bin and 1 x general waste bin). There are also 6 recycle stations within Taronga's Food Market (which is the primary food outlet on site).

In addition to the above Suez places bins on site (as requested) for special events and concerts.

All bins are colour coded to comply with Australian Standards for mobile garbage bins. (i.e., general waste has a dark green or black body with a red lid whilst co-mingled recycling bins will have a dark green or black body with a yellow lid. The front of each bin and the waste management stations have a general waste or a recycling sticker with pictures of items to accommodate visitors who may be unable to read English or lack reading & literacy skills.

Additional coverage of 240 litre bins are required to cover peak periods. These are requested from Suez as required.

Suez's collection activities extend to bin stations located at Athol Hall and the Ferry Wharf.

Organic (food) waste

Suez's processing facility has the capability to extract food and organic waste from the general waste stream. Approximately 15-20% of food in general waste is captured and diverted from landfill.

Animal Waste

Animal waste is collected in 240 litre bins, which are emptied each day and stockpiled at Taronga's waste transfer area. There are approximately 70 animal waste bins located around the site at animal precincts. Suez's staff will collect these bins each morning prior to the zoo's opening.

Animal waste is transported from site every day to manage the quantity of waste stored on site and to control other issues such as pests, vermin and odour. The material is transported to Suez's Organics processing facility at Lucas Heights where the material is blended with other products and processed into compost for re-use.

Co-mingled recyclables

Co-mingled recyclable bins are emptied into an 8m³ rear loading compaction vehicle. This material is then transported off site as required in full truck loads (variable based on Zoo patronage, each day in peak periods or 2 to 3 times per week in non-peak periods). Material is sorted at the recycling facility to maximise the amount of recycling material.

Paper and Cardboard

Taronga Zoo's cardboard and paper is collected in separate blue bins and cardboard cages. The contents of the bins and cages are emptied daily into a 23 cubic metre on-site compactor. Once the compactor is full, the paper and cardboard is transported to either Visy Recycling or Orora Recycling (lawful recycling facilities).

Green waste

Material that is not suitable for chipping will be collected by Taronga Zoo staff and placed into a dedicated skip bin. When full, this bin is then transported by SUEZ to the SUEZ's Ryde transfer station, where it is bulked up with other green waste and then transported by walking floor trailers to SUEZ's facility at Eastern Creek. There it is processed into a range of re-useable mulches and compost.

Bulk waste

Non-recyclable materials such as construction waste, timber off-cuts, broken equipment, miscellaneous materials, etc. are placed into a general waste bulk bin. When full, this bin is transported by SUEZ to SUEZ's Artarmon transfer station, where it is bulked up with other general waste products and transported to either of SUEZ's landfill sites at Eastern Creek or Lucas Heights.

Note –: any items that contain scrap metal or that are made of metal are placed in a dedicated scrap metal bin which is transported to a metal recycling facility when full.

Other waste types

- *Asbestos (Special waste as per NSW EPA classification system)*

  Asbestos will be managed in accordance with *CWIO Asbestos Management Plan for Taronga Zoo*.

- *Clinical & related waste*

  Clinical & related waste at Taronga Zoo is not managed by SUEZ. Taronga Zoo has engaged Daniels Health Pty Ltd (previously Sterihealth) to manage the waste from the Taronga Wildlife Hospital. Biological waste (such as animal tissue) is collected in appropriate containers and transported for disposal at the Daniels' clinical waste facility in Silverwater.

- *Grease Trap Waste*

  SUEZ services the grease traps for both Taronga and Compass Catering. The pits are serviced on a scheduled basis as determined by Sydney Water. The grease trap residue is transported by SUEZ in dedicated tankers to Earthpower at Camellia for processing, recycling and disposal.

- *Other miscellaneous wastes*

  From time-to-time, there may be the need for other specialised waste collections. In such cases SUEZ will assess and provide the Zoo with a proposal, prior to collection and transport of these waste products to an appropriate lawful facility.

- **Container Deposit Scheme (NSW)**

  The NSW Government has announced that a CDS will be introduced in 1 July 2017. At this stage the legislation, regulations and detail are not available. Once the CDS detail has been agreed and suitably announced by the Government, SUEZ will re-visit this matter and discuss with Zoo staff.

- **Disposal bins provided by SUEZ**
  All waste and recycling activities are carried out in accordance with the guidelines and laws of the NSW EPA. In all cases only lawful and approved waste facilities are utilised.

Transfer area

1. Animal Waste - 2 x 5 cubic metre bins
2. Steel - 1 x 23 cubic metres
3. Bulk waste - 1 x 23 cubic metres
4. Green Waste - 1 x 23 cubic metres
5. Cardboard Compactor - 23 cubic metres
6. 100 x spare 240 litre bins as spares and for change over purposes

Transport vehicles

1. 1 x 2 tonne Pantech truck with tail gate
2. 1 x small hook lift truck
3. 3 x 8m3 rear load trucks

Annexure 1- Images of bins nominated in ***Table 4***

Image	Waste stream
 	Paper / cardboard - 120 lt blue bin Secure - 240 lt blue bin yellow lid
	**Office Space – recycle station** Recyclables- 60Lt bin – yellow lid Paper/cardboard – 60Lt blue lid General waste – 60lt red lid
	**Public Space - recycle station** General waste -240 Lt bin Recyclables – 240 Lt bin
 	Animal and green waste - 240Lt bin
	Biological waste – 240 Lt bin
	Medical sharps waste -5L