

JULY 2024

Taronga Zoo Sky Safari

Appendix X Operational Waste Management Plan

PREPARED BY



PREPARED FOR



Taronga Conservation Society Australia

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Site Overview

Taronga Zoo is located at Bradleys Head Road, Mosman and is situated in the Mosman Local Government area (LGA) and on Cammeragal Country. The site is bounded by Bradleys Head Road to the east, Athol Wharf Road and Sydney Harbour to the south, Little Sirius Cove to the west and Whiting Beach Road to the north. Taronga Zoo is legally described as Lot 22 on DP843294 and is Crown Land managed by the TCSA (the Zoological Park Board). Taronga Zoo has been subject to numerous upgrades and redevelopment schemes over time, to stay compliant with contemporary regulations, meet contemporary animal welfare and contemporary visitor experience expectations.

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. The Zoo's mission is for a shared future for wildlife and people, and places strategic importance on environmental sustainability including reducing waste to landfill.

Taronga's Sustainability Commitment and Waste Management Policy highlights 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 and the surrounding environment. The zoo has a target of 90% diversion from landfill, and a commitment to circular economy initiatives. The recycling rate at Taronga Zoo Sydney in over the month of July 2023 was 73%, attributed to a complex pre and post source separation method including 16 recycling streams.

The Operational Waste Management Plan (OWMP) prescribed by this document relates specifically to the Taronga Sky Safari in Sydney. Once operational, the Sky Safari will have larger and accessible cable cars, encouraging visitors to travel to Taronga Zoo by public transport and take advantage of the beautiful ferry ride across Sydney Harbour, thereby assisting with reducing our visitors reliance on cars to access the zoo.

This Operational Waste Management Plan relates specifically to the methodology for waste management of the Sky Safari post construction. The management of construction waste is described in Construction Management Plan which forms part of the SSDA submission.

Service of the Taronga Sky Safari

To ensure the highest standards in waste management are achieved, Taronga has a contract with Veolia Australia. Veolia uses only authorised and lawful landfill, transfer stations, processing and recycling facility sites that have the approval of relevant Government authorities. Similarly, any organisation performing services for Veolia on a subcontractor basis will only use authorised and lawful disposal sites that hold all of the required licenses and compliance material. Veolia 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.

Veolia proactively advises and informs Taronga Zoo in respect of regulations and compliance, as well as the introduction of applicable new technology and practices relating to the processing and recycling of waste and residual materials generated by the Zoo.

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The former Sky Safari was previously serviced by Veolia Australia. The opportunity to update the Sky Safari facilities will allow for review and evolution of existing waste management practices and operations to suit the new attraction.

Operational Plan Intent

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

- Identification and quantification 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; and
- Regular review of waste management KPIs to ensure continuous and sustainable improvement in the Zoo's OWMP.

The success of the OMWP 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;
- Veolia in service and operations staff;
- Waste and recycling facilities;
- Transporters and equipment providers; and
- Visitors, administrative staff, external contractors and other relevant stakeholders.

To ensure compliance with the OWMP 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 OWMP and issues will be considered and acted upon accordingly. This scheduled review will include the Taronga Manager Environmental Sustainability and a senior representative from Veolia.

A table nominating specific individuals to be engaged in reviews of the OWMP are as follows.

Contact name	Title	Contact
Andrew Elphinstone	Director, Welfare, Conservation and Science	aelphinstone@zoo.nsw.gov.au
Rodd Stapley	Taronga Zoo Director of Asset Management	rstapley@zoo.nsw.gov.au
Jonathon Shaw	Taronga Manager Environmental Sustainability	jshaw@zoo.nsw.gov.au
Steve Brankston	Operations Manager	sbrankstone@veolia.com.au

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Operational Plan

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 odors.

Listed below is a **Table 4.1** outlining the Zoo's existing collection schedule which will also apply to Sky Safari operations. For specific management of individual waste streams refer to Annexure 1.

Table 4.1 Veolia service schedule for key waste streams

Item Collection	Collection Frequency
General Waste including food organics waste	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
Compostable Packaging	Daily (Mon – Sun), combined with back of house organics and transported to large commercial composting facility
Fish waste from Great Southern Oceans exhibit	Once per week, transported to commercial composting facility
Back of house food organics waste	Twice per week, transported to commercial composting facility
Animal Waste (manure, bedding)	Daily (Monday- Sunday), transported to commercial composting facility
Green waste	On call - when bin full, transported to a green waste recovery centre
Metal	On call - when bin full, transported to a recovery centre

Waste Identification and Quantification

Table 4.2 indicates the typical waste profile that will be generated during normal operations.

Table 4.2 Workspace, waste type and average quantity of waste material

Workspace	Waste type	Bin Size	Collection frequency	Estimated quantity per day**
Lower and Upper Station	1. General waste 2. Comingled recyclables 3. Zoo packaging	240L x 3 at each station	Daily	80kg per station

** Quantity is an average projection in kilograms calculated over a daily period. These projections may be further refined once staff and guest numbers have been finalised..

Waste management categories that will drive recycling and diversion from landfill

The material targeted for recycling or disposal has been listed in the following **Table 4.3**. Additional detail on the collection, transport and end-use for each material stream is described in Annexure 1.

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.

Combined with the strategic deployment of bins will be signage on each bin that clearly indicates what may or may not be disposed within the nominated bin.

Public facing bins at Taronga include best-practice signage developed alongside the NSW EPA and VEOLIA – this includes color coding and real-life images as examples of what can go in each bin. Most public facing bins have covers, which feature cut outs shaped like the items which should go in, for example a bottle shaped cut out for the yellow commingled bin. Back of house (BoH) bins generally include signage or stickers in line with best practice also.

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 and literacy skills.

Table 4.3 Indicates the typical colour coding of the bins that will be used for the Sky Safari for the various waste streams

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
Food organics waste	Green lid, dark green or black base 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 **Appendix 1**.*

Throughout its overall operations Taronga Zoo is striving towards a 90% diversion from landfill rate by 2025. Taronga Zoo achieved 80% diversion in 2022, but due to the recent compostable ban, separated organics from the mixed general waste stream could not be diverted from landfill. As a result, Taronga's recycling rate was 73% in July 2023. Taronga is now working closely with Veolia to increase our recovery rate.

Sky Safari will be striving towards a minimum of an 80% diversion rate to ensure that the 90% diversion rate is achieved. This is a conservative target, and it is anticipated that a greater percentage of waste will be diverted from Sky Safari, in particular once all the waste system and processes are operational and subsequent to undertaking regular waste audit and education.

Additional practices that will assist in achieving the reduction targets will be the targeted

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procurement of products that are sustainably packaged and are recyclable. Taronga has initiated several projects aimed at reducing the consumption of single-use plastics on both zoo sites and will be free of single use plastic by the end of 2023. Taronga has also installed four 'Return and Earn' container collection points onsite, in cooperation with the NSW EPA container deposit scheme. To date, over 2 million containers have been recycled through these collection points.

Monitoring of the OWMP

To ensure efficient, responsible, and sustainable waste management practices, Sky Safari employees will be allocated responsibility for regular monitoring 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 whether diversion targets are being met, Taronga's Manager of Environmental Sustainability meets with Veolia every month to evaluate waste tonnage data broken down by material streams, including overall percentage diversion from landfill.

Taronga Zoo also performs an annual review alongside Veolia to ensure contract KPIs are being met. If there is repeated contamination of material streams from Sky Safari, an audit can be performed to ascertain how the bin numbers, size, locations and/or empty frequency can be modified to ensure that diversion targets are being met.

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.

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

Veolia has worked with Taronga in finalising the location of the bins within the Sky Safari boundary, in particular the stations where the highest flow of patrons will be. The positions of bins have been illustrated in the Appendix 2. The bins have been positioned within a suitable proximity of the entry/exit points. This will allow for maximum waste capture, and minimising the risks of contamination and liability issues.

The nominated positions of the bins 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

Four collection points have been allocated for General, Recycling Waste and Organics/ Compostable Waste. These collection points, illustrated in Appendix 2, have been determined to ensure the minimal possibility of injury or spillage subject to the attached SWMS template in **Annexure 3**. This SWMS has been specifically prepared for the work and will be distributed to

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the relevant stakeholders and training delivered during site induction and scheduled tool box meetings.

As is the case with the Zoo's current waste management collections, the waste management vehicles collecting from the zoo's internal service roads, will enter and exit via the Backyard to Bush Perimeter Fence Gate. After the collection of the waste from Upper Australia, all waste management vehicles will head to 'Styx Yard', the Taronga Zoo common waste storage zone, via Bradleys Head Road.

Review of the OWMP

This OWMP will be reviewed at the time which Taronga's waste service contract is renewed, approximately every five years.

Existing Waste Management Methodology

The following information outlines the existing waste management practices throughout the Taronga Zoo site. It is intended that the Sky Safari waste management plan be incorporated into this existing scheme.

Bin stations

In front of house (public areas), Taronga has approximately 50 x 240 litre bins on site for general waste collection, 35 x 240 litre bins for compostable packaging, and 50 x 240 litre bins for co-mingled recycling. These bins generally sit together at recycle stations (1 x recycling bin, 1 x compostable packaging 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, Veolia places general waste and recycling bins on site (as requested) for special events and concerts. Additional coverage of 240 litre bins is required to cover peak periods. These are requested from Veolia as required.

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

Animal Waste

Animal waste is collected in 240 litre bins, which are emptied each day into a mini rear-loader and stockpiled at Taronga Zoo's waste transfer area. There are approximately 120 animal waste bins located around the site at animal precincts (90 x 240L and 30 x 120L). Veolia's staff will collect these bins each morning prior to the zoo's opening.

The material is transported to Soilco's Organics processing facility at Kembla Grange where the material is blended with other products and processed into compost for re-use.

Compostable packaging

The food packaging, straws and coffee cups sold onsite are fully compostable so can be recovered in these bins. There are approximately 35 public facing (FoH) bins dedicated to compostable packaging that is sold onsite at Taronga Zoo's retail and food outlets. These bins are collected by Veolia on a regular basis and transported to Soilco*** for commercial composting.

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***** Compostable packaging waste is currently being directed to landfill as directed by the EPA. We are awaiting further clarification and review on the compostable packaging ban which was communicated to us earlier this year.**

Fish waste and BoH organics

Fish waste from the preparation of food for marine mammals is placed in 2 x 120L bins and emptied once per week by Veolia. Back of house food organics (kitchens preparation waste, café food preparation waste, animal food preparation waste) is also collected in dedicated bins and transported offsite by Veolia once per week. Fish waste and BOH organics is transported to the Soilco facility to be recovered as compost.

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 then sorted at the recycling facility to maximise the amount of recycling material.

Plastics recovery

Taronga Zoo has partnered with Plasmar – a Soft plastics recycling company that recycles a range of hard to recycle plastics. Since the partnership started in November 2022 Taronga has recycled over 1.5 tonnes of soft and hard plastics. Three (3) skip bins are located around site that are serviced once every 3 weeks by Plasmar and are taken to their facility in Revesby. There is currently one guest facing bin that is serviced weekly by staff and is taken to one of the skips.

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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 is collected by Taronga Zoo staff and placed into a dedicated skip bin. When full, this bin is then transported by Soilco to Soilco's Composting facility in Kembla Grange.

Bulk waste

Non-recyclable materials such as construction waste, broken equipment, miscellaneous materials, etc. are placed into a general waste bulk bin. When full, this bin is transported by Veolia to Veolia's Artarmon transfer station, where it is bulked up with other general waste products and transported to either of Veolia'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.

Medical and Clinical waste

Medical and Clinical waste at Taronga Zoo is managed by Veolia. It is collected in appropriate containers and transported for necessary treatment and disposal.

Anatomical Waste

Anatomical waste is managed by Veolia. It is collected in distinctive bins and transported for incineration and disposal. This type of waste is generally stored in a freezer until collected. If bins become full an additional collection can be arranged by Veolia.

Infectious Waste

Infectious waste is managed by Veolia. It is collected in distinctive bins and transported for treatment and disposal.

Biosecurity Waste

Quarantine regulations apply to biosecurity waste. Veolia collects the isolated bin, treats and disposes.

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*.

- *Grease Trap Waste*

Veolia services the grease traps for both Taronga and Trippas White Group Catering. The pits

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are serviced on a scheduled basis as determined by Sydney Water. The grease trap residue is transported by Veolia in dedicated tankers to other facilities 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 Veolia 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)**

There are four Container Collection points at Taronga Zoo as part of the NSW Government Container Deposit Scheme (CDS). Three of these are Donation Stations that are located within the zoo grounds, and the 4th being a Reverse Vending Machine that is publicly accessible 24/7 outside of the zoo's secure perimeter.

Disposal bins provided by Veolia

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 – 1 x 20 cubic metres
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. 2 x 8m³ rear load trucks

APPENDIX 1 : (BIN TYPES NOMINATED IN TABLE 4.2)

Image	Waste stream
	<p>Public Space - recycle station</p> <p>General waste – 240 Lt</p> <p>Organics and Zoo packaging Waste -240 Lt</p> <p>Recyclables – 240 Lt</p>

