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1. Purpose

The purpose of this Flora and Fauna Monitoring and Buffer Zone Management Plan is to detail the Flora and Fauna monitoring and management of the Tomago Aluminium Company (TAC) buffer zone in accordance with licence requirements and the relevant legislation. The outcome of this program will be the efficient and appropriate management of the environment within the buffer zone. The aims of this plan are to describe the appropriate environmental management practices employed at TAC to:

- 1) Satisfy legal requirements
- 2) Manage fire risks
- 3) Control noxious weeds
- 4) Control feral animals
- 5) Ensure protection of koalas and other native fauna
- 6) Maintain the health of native vegetation
- 7) Reduce erosion
- 8) Management and reporting of illegal dumping activity
- 9) Ensure air emissions from TAC are monitored and assessed

2. Scope

This program addresses the Flora and Fauna monitoring in the vicinity of the smelter undertaken by Tomago Aluminium and the management of Buffer Zone land owned by TAC, which surrounds the smelter.

This program is applicable to TAC personnel and contractors working on site at Tomago Aluminium.

3. References

Reference Document	Precis of Document
<i>ES.REG.0002</i> <i>Environmental Legal Register</i>	This register is a database in the Environment Management System and details environmental legal requirements for the Tomago Aluminium Smelter. Compliance against conditions are reviewed annually and legislation reviewed six monthly.
<i>HSE.MP.004</i> <i>HSE Legal & Other Requirements Procedure</i>	This procedure defines the methodology used to identify, access and update TAC's Environmental and WHS legal and other requirements and the communication of these requirements to the workforce. This program also addresses how TAC will assess compliance to identified legal and other requirements

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Reference Document	Precis of Document
<i>EHS.MP.006 EHS Communications</i>	This document is a part of the Environment Management System and details the process for internal and external communication of EHS issues.
<i>ES.EMS.0014 Environment Reporting</i>	This document is part of the Environment Management System and details the environment reporting and responsibility requirements for Tomago Aluminium Smelter.
<i>ES.ESM.0010 Vegetation Sampling</i>	This procedure is part of Tomago Aluminium's monitoring system that is accredited by NATA to ISO 17025 and describes the detail of the vegetation sampling and monitoring program.
<i>PW.DOC.0001 Plantwide Document Control</i>	This procedure defines the system for document management at Tomago Aluminium Company (TAC) and applies to all documents required by the TAC Management System.
<i>PW.EMS.0013 Environment Monitoring and Verification Plan</i>	This procedure is part of the Environment Management System and summarises the environment monitoring program and environment calibration processes for the TAC site.
<i>ES.ESM.0007 Ecosystem Monitoring</i>	This procedure is part of Tomago Aluminium's monitoring system that is accredited by NATA to ISO 17025 and describes the detail of the ecosystem sampling and monitoring program
<i>ES.FOR.0060 Annual Buffer Zone Management Agenda</i>	This document is part of the Environment Management System and is the standing agenda for the Annual Buffer Zone review meeting
<i>Competency Accreditation Procedure 120000002409</i>	This procedure defines Tomago Aluminium plant wide accreditation process required for all competencies developed at Tomago Aluminium.
<i>EHS Tomago Induction Procedure 150000000020</i>	This procedure defines the Tomago Aluminium Company Induction and Department Induction processes required for all new employees, contractors and visitors.

4. Legal Requirements

TAC has legal requirements associated with the management of the Buffer Zone to ensure that the environment is protected. A summary is provided below.

- Section 63 and 64 of the Rural Fires Act 1997 requires TAC to prevent fire from occurring in the Buffer Zone and minimise the danger of spread of bushfire on or from the land owned by Tomago Aluminium.
- Section 60N of the Local Land Services Act 2013 describes the authorisation required to clear land and section 142 and describes obligations of pest control and eradication orders.

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- The Biodiversity Conservation Act 2016 defines obligations and identifies vulnerable and protected species.

Relevant EPL 6163 Licence Conditions

- M5.1 The licensee must conduct a monitoring program capable of measuring the environment impact of emissions from the smelter on the surrounding environment.
- M5.2 The licensee must maintain a list of the monitoring sites and sampling frequency used to assess the impact of the smelter on surface water, groundwater, native vegetation and a map showing the locations of the smelter and the monitoring sites used.
- M5.3 Copies of the list(s) of monitoring sites and the map(s) showing their locations must be presented as part of the licensee's annual report.
- M5.4 Copies of the list of monitoring sites and map showing their locations must be made available to any authorised officer of the EPA who ask to see them.
- M5.5 Data must be presented in time series that allows year to year comparison.
- M5.6 The environmental monitoring program must include the following:
 - The licensee must monitor fluoride levels in native vegetation within 10 kilometres of the smelter. Monitoring results must be reported every two years (each odd numbered year).
 - The licensee must monitor fluoride and visual assessment of foliar damage during the growing season at commercial orchards, vineyards and market garden within 10 kilometres of the smelter. Monitoring results must be reported every two years (each odd numbered year).
 - The licensee must monitor fluoride levels in pasture grasses and forage crops within 10 kilometres of the smelter. Monitoring results must be reported every two years (each odd numbered year).
 - The licensee must monitor fluoride, pH and conductivity levels of surface waters within 16.5 kilometres of the smelter. Monitoring results must be reported annually.
 - The licensee must monitor fluoride pH and conductivity levels of groundwaters within 16.5 kilometres of the smelter. Monitoring results must be reported annually.
- M5.7 Ecological Monitoring

The licensee must undertake a program of ecosystem monitoring relevant to the discharge of atmospheric emissions. This program must include an ecological study of the major ecosystems within the influence of the smelter to the satisfaction of the EPA.

The ecological study must include an assessment of vegetation species composition and vigour.

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The monitoring and the results of the monitoring must be reported every two years (each odd numbered year).

Development Consent Conditions

Development consent condition #	Development consent condition	Flora and Fauna & Buffer Zone Management Plan reference
Condition 18: (DA391-80) and Condition 48: (DA4908-90)	<p>The Applicant shall prepare and implement, a revised Flora and Fauna Monitoring Plan for the site in consultation with the DECCW to the satisfaction of the Director-General. This plan must:</p> <ul style="list-style-type: none"> (a) be submitted to the Director-General for approval within 12 months of DA 391-80 MOD 4; (b) include an ecosystem monitoring program to measure the impacts of fluoride and other contaminants on flora and fauna including farm animals and livestock (if any) within the vicinity of the smelter; and (c) include a monitoring program for the effects of fluoride on vegetative communities, within provision to be made for compensatory mechanisms for replanting if mangrove or wetlands are adversely affected. 	<p>Submitted to Department of Planning 21st June 2010. Resubmitted to Planning NSW 25/9/2017. Records of submission included in Appendix 4.</p> <p>Section 11.2 , 12.1 and 12.5</p> <p>Section 11.2 No mangrove or wetlands identified as being adversely affected in the above monitoring program.</p>
Condition 46: (DA4908-90)	The Applicant shall establish a fluoride monitoring system within the Gardens and the results obtained shall be made available to the Chairman of the Gardens or his representative.	Section 11.2: sites 122,194 and 185 are established within the Gardens or on the boundary. Annual vegetation inspection conducted includes the Gardens. Ambient air fluoride monitoring station established at the Gardens. Annual Environment Report sent to the Gardens (section 16)
Condition 61: (DA4908-90)	In consultation with the NPWS, the Applicant shall assist in the development of, and participate in, a periodic monitoring program targeting specific areas/species within Kooragang Island Nature Reserve	Section 11.2: Sites 174,172,183,125,192,131,173 are established

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Development consent condition #	Development consent condition	Flora and Fauna & Buffer Zone Management Plan reference
Condition 20: (DA391-80)	that the applicant shall at its own cost comply with the requirements of the Director of National Parks and Wildlife for making good damage to the existing or proposed nature reserves at Fullerton Cove, Kooragang Island and Hexham Swamp where the damage is found to be attributable to emissions from the smelter and comply with the reasonable requirements of the Commission to mitigate or eliminate the cause of damage;	Trigger point response table in section 11.3
Condition 44: (DA4908-90)	The Applicant at its own expense shall comply with the requirements of the Director of National Parks and Wildlife for making good damage to the Kooragang Nature Reserve and Hexham Swamp Nature Reserve where the damage is found to be attributable to emissions from the expanded smelter and comply with the reasonable requirements of the Commission to mitigate or eliminate the cause of damage.	Trigger point response table in section 11.3

For more detailed information on the requirements see the *Environment Legal and Other Requirements Register ES.REG.0002* and *HSE Legal & Other Requirements Procedure HSE.MP.004*.

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5. Summary of Monitoring Undertaken for this Plan

The table below summarises the monitoring conducted under this Plan

Element	Number of sample sites	Frequency of sampling	Monitoring body	Assessment criteria
Overstorey	49	Monthly	Tomago Aluminium	Trend analysis of fluoride concentration
Forage	22	14 sites monitored Monthly. 8 sites monitored Quarterly	Tomago Aluminium	ANZECC Goals for fluoride in forage or hay or silage grown as feed
Cultivated Vegetation	1	Quarterly	Tomago Aluminium	Trend analysis of fluoride concentration
Ecosystem: (overstorey, understorey, groundcover, leaf litter and soil)	4 sites	Monthly	Tomago Aluminium	Trend analysis of fluoride concentration
Visual vegetation assessment	600 sites	Annual	Third party biologist	Graded scale of vegetation injury
Cattle survey (ceased in 2013 after 28 years as no livestock activities carried out in the vicinity of the smelter)	5 sites monitored over the program duration.	Annual	Third party Veterinary provider	Dental scoring using Suttie method
Small Mammal Trapping Program (ceased in 2013 after 32 years of monitoring)	8 sites	Annual	Tomago Aluminium	Trend analysis

6. Definitions

- 6.1. Noxious/Priority Weed – any plant that Port Stephens Council has declared to be a noxious weed
- 6.2. Environmental Weed – any introduced species that is likely to threaten ecosystem stability
- 6.3. Feral animal – an individual of any species that is not native to Australia
- 6.4. Vulnerable and Protected Species – any plant or animal species listed in the Biodiversity Conservation Act 2016
- 6.5. Fire trail – any unsealed road through the buffer zone registered with the Rural Fire Service
- 6.6. NPWS – National Parks and Wildlife
- 6.7. RFS – Rural Fire Service

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7. Roles & Responsibilities

TAC Management is committed to the success of the Flora and Fauna monitoring and Buffer Zone Management Plan. Commitment is evident through active involvement of management personnel and by providing the necessary resources. In addition, management and individuals are held accountable for the successful implementation of this program. Key personnel and responsibilities for the execution of this Management Plan are defined below:

Responsibilities	CEO	Environment Superintendent	Managers, Superintendents / Supervisors	Employees and Contractors	Security Services	Emergency Response Team
Ensure that a Flora and Fauna and Buffer Zone Management Plan is established and maintained that meets all applicable legal requirements	X					
Co-ordination of the programs implementation, maintenance, auditing and review		X				
Ensuring activities in their respective area of control are conducted in a manner to minimise negative impacts on the environment			X			
Ensure that employees & contractors under their control meet the Buffer Zone Management Plan obligations			X			
Monitor and maintain access roads and fire trails				X		
Identify and report any W1 category noxious weeds to Environmental Services				X		
Immediately report any priority weeds to Port Stephens Council		X				
Monitor vegetation in the buffer zone to assess the effectiveness of management strategies		X				
Report koalas, injured or threatened wildlife, aboriginal artefacts and illegally dumped material to Environmental Services				X	X	
Notify National Parks and Wildlife Service of any koala sightings		X				
Notify National Parks and Wildlife Service of any evidence of Aboriginal occupation		X				

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Report fires in the buffer zone to fire service and conduct appropriate response					X	X
Notify Native Animal Trust Fund of injured wildlife		X				

The Environment Superintendent is required to have completed tertiary qualifications in science, environmental science or engineering and extensive experience in the management of environmental matters in large industries.

Members of the environment services team are required to have tertiary qualifications in science, environmental science or related discipline with relevant experience in environmental monitoring and management.

8. Site Description

The Tomago Aluminium Site is on the south western edge of an extensive low-lying area of sand dunes and flats. The site is adjacent to the Hunter River. Vegetation consists of woodland, forest and fresh water swamp communities. The extent of the buffer zone is indicated on the map "Plan Showing Property Ownership and other Properties", Reference No. 70172.

9. Summary of Buffer Zone Management Plan

The ultimate aim of this program is to protect the environment by minimising the impact of the activities of TAC on the buffer zone. This program identifies standards and practices employed at TAC to ensure that impacts on the buffer zone are minimised. These include:

- Maintaining fire trails and access roads.
- Controlling noxious and environmental weeds and pests.
- Established procedures for management and reporting of koala sightings, injured animals, discovery of aboriginal artefacts and of illegally dumped material.
- Implementing a replanting program to replace fluoride damaged trees as required.
- Conducting regular monitoring of flora and fauna in the buffer zone to determine impact.
- Training employees and contractors to recognise noxious weeds and protected species.
- Regular consultation with stakeholders e.g. Hunter Water, Port Stephens Council and the EPA to discuss monitoring results and management plans.

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10. Standards to Minimise Potential Impact

To reduce potential environmental degradation in the buffer zone, standards have been established for:

- Control of noxious weeds
- Fire trails and asset protection zones
- Site emission levels

11. Flora

11.1. Threatened and Protected Plants

TAC aims to protect threatened plants in the buffer zone in accordance with the Biodiversity Conservation Act 2016. Employees and contractors must not harm or pick any protected flora.

Sightings of endangered plants should be recorded and reported to Environmental Services and National Parks and Wildlife. A list of protected and threatened plants known to occur in the buffer zone is provided in Appendix 2. This list is updated by reviewing Biodiversity Conservation Act 2016 and other available literature for species relevant to the area.

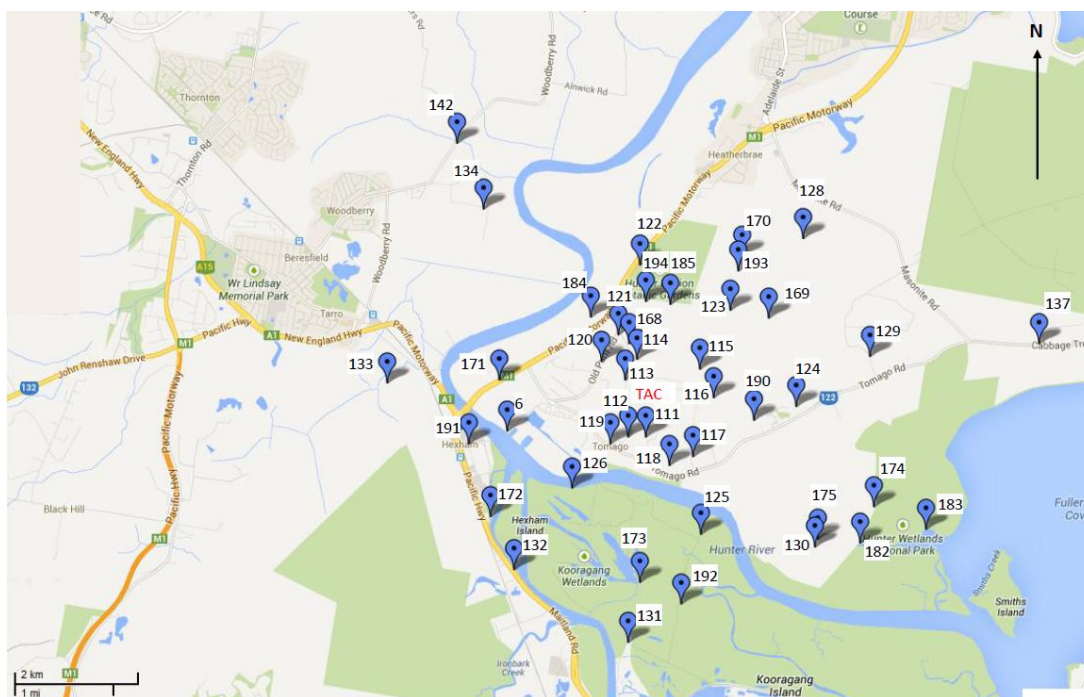
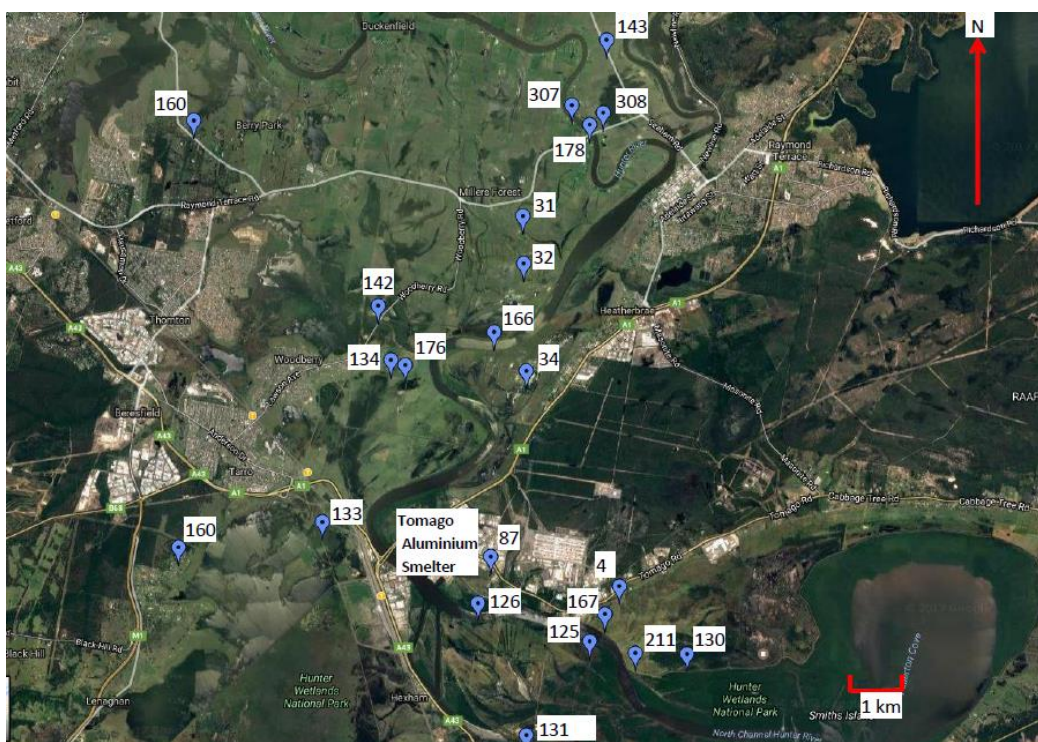
11.2. Flora Assessment and Management

TAC recognises that emissions have the potential to impact upon vegetation in the buffer zone. The main pollutants of concern are fluoride and sulfur dioxide.

Annual monitoring of plant health in the buffer zone and the Hunter Region Botanic Gardens is undertaken by a consultant botanist to assess these impacts. Vegetation monitoring is also conducted by Environmental Services on a regular basis to monitor fluoride concentration in vegetation and a visual assessment of fluoride damage. The program includes approximately 70 sites that are located within a 10 km radius of the smelter. (Refer to Vegetation Sampling ES.ESM.0010). The maps detailing the locations of the sample sites are displayed as **Map 1 and Map 2** below. A specific ecosystem monitoring program is conducted to examine the cycling of the fluoride within the forest structure (Refer to *Ecosystem Monitoring ES.ESM.0007*). Ecological monitoring has been conducted around the smelter site since May 1982, 15 months prior to smelter start-up. The original program involved monitoring nine sites that contained major communities near the smelter. After 3 years of monitoring it was recommended that the program focus on the cycling of fluoride through dry sclerophyll community. The dry sclerophyll community is predominate around the smelter and is the community identified in the 3 years of monitoring with the potential to be impacted by fluoride emissions from the smelter.

Cultivated vegetation is sampled at the community gardens on Ash Island. No commercial orchards, vineyards and market gardens are operating within 10 kilometres of the smelter.

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Map 1: Overstorey Monitoring Sites

Map 2: Forage Monitoring Sites


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Vegetation Assessment data is collated in the Annual Environment report where trends can be assessed.

Should the removal of individual plants be required, it will be conducted in accordance with the Local Land Services Act 2013 and Port Stephens Council's Tree Management Policies. Where possible vegetation will be replaced with suitable local species (Refer to Appendix 3).

11.3. Compensatory mechanism for Replanting Trigger

Development consent DA 391-80 and DA 4908-90 require making good any fluoride damage that occurs in mangroves or wetlands. These areas are covered in the routine monitoring and the table below defines trigger points.

Mangrove and wetland species (UNIVERSE report EVR458B)		
Trigger	Action	Response
Species in nature reserve or National Park area, Kooragang Island, Fullerton Cove or Hexham Swamp have foliar fluoride concentrations >500 ug/g	Alert Environment Superintendent	Engage third party consultant to complete visual inspection to determine the extent and cause of damage
Damage assessed to be as a result of fluoride emissions from Tomago Aluminium	Alert Site Management	Implement program to mitigate or eliminate damage and necessary compensatory replanting.

11.4. Weed Management

Tomago Aluminium is committed to the control of priority weeds on Tomago Aluminium owned land. The contract gardeners at TAC have primary responsibility for the eradication, control and suppression of priority weeds and the management of environmental weeds. In accordance with the Biosecurity Act 2015 and Local Land Services Act 2013, TAC will ensure that:

- The council is notified of the presence of priority weeds on TAC owned land within three days of their discovery (Refer to *Environmental Reporting Program ES.EMS.0014*).
- A regular eradication program on priority weeds is implemented
- Any orders issued by Port Stephens Council, the Minister or an authorised officer or inspector regarding noxious weeds are complied with.
- Noxious Weeds (or items which have on them or contain noxious weed material) shall not be purchased, sold or removed from site by TAC.

To aid in the process of weed control, the gardeners are trained in plant identification and a noxious weed identification kit is provided for their use. Contract gardeners and staff are aware of problem weed species and appropriate control methods, such as washing slashing and mowing equipment. The weeds of major concern will be dealt with by spraying and physical removal on an annual basis. Campaigns that target noxious weeds and environmental weeds of lower priority will be initiated after assessment by Environmental Services. Regular communication is conducted between Environment Services and the contractor to address issues of concern.

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Should a new weed incursion occur, the weed is to be identified and Port Stephens Council notified. Using advice from the Council Weeds Officer an appropriate strategy for the control of the weed can be formulated.

For a detailed listing of Port Stephens Noxious Weeds declarations are available on the Port Stephens Council website.

11.5. Fire Management

TAC will take actions to prevent the occurrence and minimise the danger of the spread of bush fires, in accordance with the Rural Fires Act 1997 and Protection of the Environment Operations (Clean Air) Regulation 2002.

Should a fire occur on TAC owned land, every effort will be made to extinguish the fire and Security Services and the Lower Hunter Region Rural Fire Service will be informed of its occurrence. TAC will comply with any notices, orders and directions given by the RFS and Port Stephens Council regarding bush fire management and provide water as needed to extinguish fires.

TAC will prepare a fuel management works proposal if required and submit it to the Rural Fire Service to minimise the risk of bush fire and protect assets in the buffer zone (see Record "Plan Showing Property Ownership and other Properties"). To aid in bushfire control and suppression, TAC maintains fire trials in accordance with the Bush Fire Coordinating Committee's Policy 1-03.

Any bush fire hazard reduction work that is carried out must be carried out in accordance with a bush fire hazard reduction certificate, obtained from Port Stephens Council, within 12 months of its issue. Bush fire hazard reduction work shall be done only in consultation with the Rural Fire Service and shall take into account the potential for smoke impacting any person through consideration of:

- Wind direction
- Weather conditions
- The length of time material will burn
- Moisture level of material

Should any changes to the fuel management works proposal be made, the Rural Fire Service should be informed as soon as practical (Refer to *Environmental Reporting Program ES.EMS.0014*).

12. Fauna Management

12.1. Fauna Monitoring

A small mammal monitoring program was conducted from 1982 to 2013. These surveys were required for compliance with the conditions contained in Environment Protection Licence 6163 and DA4908-90 Condition 45. The annual survey was conducted to determine the potential effects of fluoride exposure on small mammals in

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the vicinity of the smelter. In 2015 after 32 years of monitoring the data was reviewed by SMEC. The following conclusions were drawn from the collected data.

"The longitudinal study of small mammal populations in the locality of the Tomago Aluminium smelter has accumulated 32 years of trapping data. This is a very substantial time series compared to most other studies of small mammal population dynamics. Although bone fluoride accumulation increased at the sites nearest the Tomago smelter during the study, this does not seem to have impacted on the abundance and distribution of small mammal species. This contrasts with the findings of an earlier study into the effects of fluoride exposure on small mammal species. The present study found that native small mammal species were not excluded from near sites and introduced species were not favoured at those sites. Although spatial and temporal variations in vegetation structure are important determinates of small mammal community structure, no sufficient data were collected to demonstrate these influences at Tomago. However, there are differences in vegetation type across the study area related to small variations in topography and some sites were recovering from a fire at the commencement of the study. The influence of these natural processes on habitat structure appears to explain most of the variation in the structure of the small mammal community at Tomago."

The report is filed at \\Tac32\env_sust\Environment Services\ENVIRO\REPORTS\SMALL MAMMAL TRAPPING.

The results of the annual small mammal monitoring program were provided to National Parks and Wildlife in the Quarter 3 Environment reports.

This DA Condition was removed in 2020.

12.2. Koala Management

The koala species (*Phascolarctos cinereus*) is a vulnerable species in NSW. To minimise impact on the koala population, the following measures are implemented:

- TAC have erected permanent signs adjacent to entrance road warning drivers of the presence of koalas. Temporary signage is also used when a koala is sighted near the roadway.
- Fencing and appropriate speed limits are also used to protect koalas, in accordance with the *National Parks and Wildlife Threatened Species Management - Species Information* document.
- Feral dog control methods are employed as required.

Should a koala be spotted, the sighting must immediately be reported to Security Services, who will inform Environmental Services. Security will then place moveable signs adjacent to the road near where the sighting occurred. This will warn drivers of the close proximity of the koala and ensure that they drive at a safe speed.

The sighting must be recorded using the Event Reporting System. Employees, contractors or Environmental Services are responsible for completing the form. The

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sighting will then be reported to NPWS in accordance with *Environmental Reporting Program ES.EMS.0014*.

Trees that the koala is known to utilise as habitat (including *E. robusta*, *E. tereticornis*, *E. haemastoma*, *E. signata* and *E. microcorys*) should be preserved in the buffer zone and monitored by a consultant on an annual basis to ensure the continued health of the trees.

12.3. Other Wildlife

TAC aims to protect native wildlife in the buffer zone. All personnel are trained to respect and prevent harm to wildlife, including snakes.

Any injured wildlife, koalas or animals in a situation likely to place them at risk of injury must be reported to Environmental Services, or Security Services after hours, using the Event Reporting System. Environmental Services will then contact the Native Animal Trust Fund on 0418 628 483 or 0408 640 517, or Raymond Terrace Veterinary Clinic. In the case of an emergency situation likely to cause injury to native animals (such as bushfire, storm or chemical spill), the Native Animal Trust Fund should be contacted as soon as possible.

12.4. Feral Animals and Pests

TAC will make every effort to humanely control problematic feral animals within the buffer zone. Target animals include feral dogs and foxes.

Feral dog and fox numbers will be reduced through conducting a 1080 baiting program when the need arises or the Livestock Health and Pest Authority deems it necessary. This will be undertaken in cooperation with the local landholders. All work involving the use of pesticides is performed in compliance with the Pesticides Act 1999. Should other pest species become problematic, an eradication plan will be formulated with Port Stephens Council and the Livestock Health and Pest Authority.

12.5. Livestock

TAC conducted an annual survey of livestock (cattle) in the vicinity of the smelter for thirty years. The survey was designed to determine the impact of fluoride exposure on the livestock by assessing the teeth and scoring against the "suttie index" and taking a biopsy of tail bone for fluoride analysis. The change of land use around the smelter from rural to industrial resulted in the survey being discontinued in 2013 with the agreement of the EPA and the condition was removed from EPL 6163.

13. Aboriginal Heritage

The buffer zone is not known to be a place of significant Aboriginal heritage. If any Aboriginal artefacts are located, then work must immediately cease in that area, and Environmental Services must be alerted. The discovery should be recorded on the Event Reporting System and National Parks and Wildlife Service must be informed according to *Environmental Reporting Program ES.EMS.0014*.

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14. Illegally Dumped Material

In the event of illegal dumping of material on buffer zone land, the discovery of the illegal dump site is recorded on the Event Reporting System. The Environment Superintendent will inspect the site and decide upon the best course of action which may include arranging removal of waste.

15. Training

Refer to the *Competency Accreditation Procedure (120000002409)* and the *Tomago EHS Induction Procedure (150000000020)*.

16. Notification, Reporting & Documentation

Sightings of noxious weeds, koalas, injured animals, feral animals, threatened plants, aboriginal heritage and illegal dump sites must be recorded using the Event Reporting System. This document will then be sent to Environmental Services to notify them of the incident. Environment Services will then decide the most appropriate course of action.

The Environment Quarterly Reports include results of monthly vegetation sampling. The Quarter 1 Environment Report every year includes the analysis of data collected from ecosystem monitoring program. The Quarter 4 Environment Report includes the annual vegetation health survey. The Quarterly reports are supplied to the following organisations:

1. Hunter Region Botanical Gardens
2. Hunter Water
3. NSW Fisheries
4. NSW Office of Water
5. National Parks and Wildlife Services
6. Department of Planning and Environment
7. Port Stephens Council
8. Environment Protection Authority: - Hunter Region

Annual Environment Report reviews data trends over a five year period and a summary of the annual vegetation health survey and ecosystem monitoring program. The Annual Environment Reports is provided to:

1. Hunter Region Botanical Gardens
2. Hunter Water
3. NSW Fisheries
4. NSW Office of Water
5. National Parks and Wildlife Services
6. Department of Planning and Environment
7. Port Stephens Council
8. Environment Protection Authority: - Hunter Region
9. Department of Primary Industry

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At Tomago Aluminium, environment regulatory reporting is managed by Environmental Services. The environment monitoring program is summarised in *Environment Monitoring and Verification Plan PW.EMS.0013* and the environmental reporting requirements are detailed in *Environment Reporting Program ES.EMS.0014*.

17. Resources

Funding for the activities outlined in this plan will be allocated from the Environmental Services or Facilities Maintenance budget as appropriate.

18. Contractors & Visitors

TAC employees responsible for bringing contractors or visitors on site must ensure that the individual(s) adheres to TAC's Flora and Fauna Monitoring and Buffer Zone Management Plan.

19. Communications

The Flora and Fauna Monitoring and Buffer Zone Management Plan is modified as required to reflect changes in regulatory requirements, processes, procedures, site conditions, or in response to recommended changes to facilitate continuous improvement. These changes are managed in conformance with *Plantwide Document Management PW.DOC.0001*.

Changes to the buffer zone procedures are communicated in conformance with: *EHS Communication EHS.MP.006*.

As this document is required to be approved by the Department of Planning, Infrastructure and Environment, subsequent revisions are required to be submitted for approval.

An annual meeting is established between the Environment Services and landscape contractors. The standard agenda is found in *Annual Buffer Zone Management Agenda ES.FOR.0060*.

20. Compliance / Auditing

Changes to relevant buffer zone management process regulations and other commitments are assessed, analysed and tracked in accordance with the procedure *HSE Legal & Other Requirements Procedure HSE.MP.004*.

At TAC, various mechanisms are employed to ensure compliance, including

- TAC internal EHS audits
- The TAC Buffer Zone Management Plan is audited as part of the ISO 14001 accreditation.

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Appendix 1 – Contact numbers

Port Stephens Council	49 800 392
Native Animal Trust Fund	0418 628 483 or 0408 640 517
NPWS	1300 361 967 or (02) 9995 5550
Rural Fire Service Regional Office	4980 7300
Livestock Health and Pest Authority	49 328 866
Weeds Officer	49 800 392

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Appendix 2 – Threatened Plants

Port Stephens Threatened Species

PLANTS		
Common name	Scientific Name	Status
Black-eyed Susan	<i>Tetradlea juncea</i>	V
Sand Spurge	<i>Chamaesyce psammogeton</i>	E1
Villous Mint-bush	<i>Prostanthera densa</i>	V
Charmhaven Apple	<i>Angophora inopina</i>	V
Netted Bottle Brush	<i>Callistemon linearifolius</i>	V
Heart-leaved Stringybark	<i>Eucalyptus camfieldii</i>	V
Slaty Red Gum	<i>Eucalyptus glaucina</i>	V
	<i>Eucalyptus parramattensis subsp. decadens</i>	V
Grove's Paperbark	<i>Melaleuca groveana</i>	V
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	V
Sand Doubletail	<i>Diuris arenaria</i>	E1
Rough Double Tail	<i>Diuris praecox</i>	V
Small-flower Grevillea	<i>Grevillea parviflora subsp. parviflora</i>	V
Dwarf Kerrawang	<i>Rulingia prostrata</i>	E1

V -- Vulnerable (Threatened Species Conservation Act, 1995)

E1 - Endangered (Threatened Species Conservation Act, 1995)

Reference: Plant Community Field Guide, Threatened Species Lists, Port Stephens-Newcastle-Lake Macquarie-Gosford-Wyong Local Government Areas

http://control.visionscape.com.au/SiteFiles/treesinnewcastleorgau/Threatened_Species_lists_5_Local_Gov_web.pdf

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Appendix 3 – Suitable Varieties for Planting at Tomago

A List Of Some Floral Varieties Suitable For Planting In The Grounds Of The Tomago Aluminium Smelter (Johnston, J. & Little, G., 1993).

TREES:

<i>Casuarina glauca</i>	Swamp Oak
<i>Casuarina littoralis</i>	Black She-oak
<i>Casuarina torulosa</i>	Forrest Oak
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus tereticornis</i>	Forrest Red Gum
<i>Eucalyptus crebra</i>	Narrow Leaved Ironbark
<i>Eucalyptus grandis</i>	Flooded Gum
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Eucalyptus haemastoma</i>	Scribbly Gum
<i>Eucalyptus resinifera</i>	Red Mahogany
<i>Eucalyptus globoidea</i>	White Stringy bark
<i>Eucalyptus globulus</i>	
<i>Eucalyptus molluccana</i>	Grey Box
<i>Tristania conferta</i>	Brush Box
<i>Cupaniopsis anacardioides</i>	Tuckeroo
<i>Ficus macrophylla</i>	Moreton Bay Fig
<i>Ficus rubignosa</i>	Rusty Fig

SHRUBS:

<i>Acacia longifolia</i>	Coast Wattle
<i>Acacia falcata</i>	Sickle Wattle
<i>Acacia myrtifolia</i>	Myrtle Wattle
<i>Acacia elongata</i>	Slender Wattle
<i>Acacia suaveoleus</i>	Sweet Wattle

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<i>Banksia integrifolia</i>	Coast Banksia
<i>Banksia asplenifolia</i>	Rock Banksia
<i>Banksia collina</i>	
<i>Daviesia ulicifolia</i>	
<i>Bursaria spinosa</i>	Blackthorn
<i>Callistemon citrinus</i>	Lemon Bottlebrush
<i>Leptospermum juniperinum</i>	Prickly Tea Tree
<i>Leptospermum flavescens</i>	Yellow Tea Tree
<i>Melaleuca quinquinervia</i>	Broad Leaved Paperbark
<i>Melaleuca sieberi</i>	Sieber's Paperbark
<i>Melaleuca styphelioides</i>	Prickly Leaved Paperbark
<i>Melaleuca thymifolia</i>	Feather Honey-myrtle
<i>Melaleuca nodosa</i>	Ball Honey-myrtle
<i>Westringia fruticosa</i>	
<i>Dillwynia parvifolia</i>	
<i>Exocarpus cupressiformis</i>	Native Cherry
<i>Hakea servicea</i>	Silky Hakea
<i>Hakea gibbosa</i>	Peeling Hakea
<i>Actinotus helianthi</i>	Flannel Flower
<i>Grevillea banksii</i>	
<i>Isopogon anemonifolius</i>	Drumsticks
<i>Lambertia formosa</i>	Mountain Devil
<i>Leucopogon parviflorus</i>	Coast Beard Heath
<i>Leucopogon virgatus</i>	Common Beard Heath

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<i>Bossia heterophylla</i>	Variable Bossiaea
<i>Bossia rhombifolia</i>	Appressed Bossiaea
<i>Monotoca elliptica</i>	Tree Broom Heath
<i>Persoonia linearis</i>	
<i>Persoonia pinifolia</i>	Pine Leaf Geebung
<i>Styphelia viridis</i>	Green Five Corners
<i>Pimelia linifolia</i>	Slender Rice Flower
<i>Syncarpia glomulifera</i>	Turpentine
<i>Xylomelum pyriforme</i>	Woody Pear
<i>Cerutopetalum gummiiferum</i>	Christmas Bush
<i>Lomatia silaifolia</i>	Crinkle Bush

GROUND COVERS, VINES AND GRASSES:

<i>Kennedia prostrata</i>	Running Postman
<i>Kennedia rubiconda</i>	Dusty Coral Pea
<i>Hardenbergia violacea</i>	False Sarsparilla
<i>Salicornia quinqueflora</i>	Samphire
<i>Sporobulus virginicus</i>	Sand Couch
<i>Lomandra longifolia</i>	Spiny Headed Matrush
<i>Hibbertia linearis</i>	Showy Guinea Flower
<i>Pandorea pandorana</i>	Wonga Vine
<i>Dianella caerulea</i>	Paroo Lilly
<i>Themeda australis</i>	Kangaroo Grass

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Appendix 4 – Records of Submission

From: Neil Roser
To: compliance@planning.nsw.gov.au
Cc: Robyn Parker
Subject: Tomago Aluminium Environment Management Plans

Message: 2017-08 EPA response on management plans.pdf (232 KB) 2017-09 Air Management Plan.pdf (632 KB) 2017-09 water management plan.pdf (679 KB) 2017-09 Flora and Fauna Management Plan.pdf (511 KB)

Ms Anne Hagerthy,

With regards to the correspondence from the Department of Planning dated 29/6/2017, Tomago Aluminium have revised the :

- Water Management Plan
- Waste Management Plan
- Flora and Fauna Management Plan, and
- Air Quality Management Plan

In accordance with the development consent condition the revised Plans were sent to EPA and Hunter Water for consultation. The response letter from the EPA is attached and to date no response has been received from Hunter Water on the Water Management Plan.

This email has the Air Quality Management Plan, the Water Management Plan, the Flora and Fauna Management Plan The Waste Management Plan will follow in a further email.

Yours sincerely

Neil Roser
Superintendent- Environment
Tomago Aluminium Company
ph (02)49669322
(mob) 0419464691

Registered Post – Customer Receipt
Please complete, tear off and retain. Enquiries: please call 13 13 18.

Item addressed to: Department of Planning
C.P.O Box 39
Sydney 2001

I have read the information on the reverse side of this receipt.

Sender's Signature: N. Roser

510089091016

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