APPENDIX M

ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan

Document Number: SHE-BOT-MGT-ENV-001

Scope of Application: Ixom Botany CAP

Revision: 2

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Document Owner: Site Manager, Botany

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1. INTRODUCTION

This Environmental Management Plan (EMP) has been developed for the Ixom Botany ChlorAlkali Plant (CAP). It has been developed in accordance with the Ixom values, policies and standards, the Environment Protection Licence (EPL) for the site issued by the NSW Environmental Protection Authority (EPA), the requirements of the Department of Planning and Environment (DPE) and with consideration to the *Environmental Protection Act 1994*.

1.1. Objectives

The aim of this EMP is to proactively manage potential and actual environmental impacts at the Ixom Botany site. This EMP documents Ixom's environmental commitments, the requirements of the local or state authorities and defines the responsibilities, management systems and work practices to be used to manage the environmental side of the site operations.

The objectives of this EMP are to:

- Identify, assess and control the activities that have the potential to impact the environment and community
- Record significant environmental aspects and impacts
- Describe the current site and operations
- Identify and describe current environmental management controls policies and procedures
- Identify and describe the additional controls required to ensure
  - Compliance with regulatory and customer requirements
  - Best practice in environmental management.

1.2. Scope

This EMP outlines measures covering activities relating to the Ixom Operations at Botany, including:

- CAP and maintenance facilities
- Ixom Main Administration Building
- Ixom staff and visitor car parks.

Consideration has also been given to third party property/operations which Ixom activities could impact, including groundwater infrastructure (treatment plant, pipelines, monitoring wells and settlement plates) and the broader Botany Industrial Park (BIP) infrastructure (including common roadways, stormwater and effluent systems). These items are discussed in broad terms as they relate to the CAP and operation of other Ixom controlled facilities.

1.2.1. EXCLUSIONS

The following projects will be considered in separate and discreet EMPs which are aligned to (and will not conflict with) this EMP. These discrete project EMPs are required to be submitted as part of planning or regulatory approvals.

- Hexachlorobenzene (HCB) Stores
- Caustic Tank replacement project
- HCB Stores K&L construction project
- Former ChlorAlkali Plant mercury remediation
- Southlands remediation and development project.

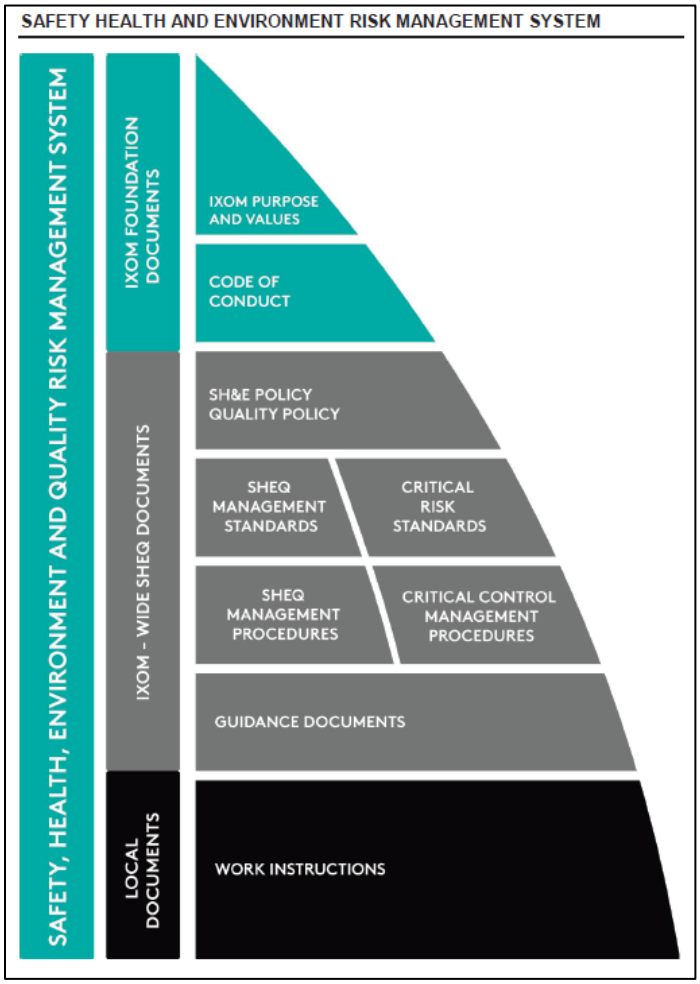
The scope of this EMP excludes property not owned, controlled or operated by Ixom or activities contracted to third parties. These include:

- Logistics / distribution of CAP products
- Huntsman
- Qenos (Alkathene, Alkatuff, Olefines and Site Utilities)
- State Rail
- Sydney Water Southern & Western Suburbs Ocean Outfall System.

2. ENVIRONMENTAL MANAGEMENT FRAMEWORK

Ixom has adopted a strategic environmental management framework to combine the company values and policy, supported by guidance documents and work instructions, as shown in Figure 1[1].

Figure 1: Ixom Safety, Health and Environment Risk Management System



2.1. Commitment Statement

Ixom's environmental commitment statement is publicly available on our website[2], and is defined as:

'Protecting the environment and communities in which we operate is a core value of our company. We understand that excellence in environmental performance is essential to our ongoing success.

'We will manage all our activities with concern for people and the environment and will conduct our business for the benefit of society and without compromising the quality of the life of future generations.

'At Ixom, we will:

- Use our resources in an efficient and responsible manner, and minimise waste and the environmental footprint of our activities.
- Ensure Safety, Health and Environment (SH&E) risks are identified, controlled and actively monitored across all of our operations.
- Sell only those products that can be produced, transported, stored, used and disposed of safely.

[1] SHE-GBL-STA-015 Environment
[2] www.ixom.com.au

- Provide appropriate information and/or training on the safe use and disposal of our products to our customers and consumers.
- Seek to develop new or improved products and processes to improve the contribution we make to the quality of peoples' lives and to minimise the impact on the environment.'

2.2. Safety, Health and Environment Policy

Ixom have a corporate Safety, Health and Environmental Policy[3] which defines their SH&E goals and purpose. The policy is available publicly on the Ixom website[4] and is provided below for completeness.

2.3. Environmental objectives

The environmental objectives relevant to the site include:

- Maintain regulatory compliance on discharge points
- Maintain compliance to Site Trade Waste discharge limits
- Maintain the Site Environmental Management Plan
- Maintain the Site Aspects and Impacts Register.

3 SHE-GBL-POL-001
4 http://www.ixom.com/being-responsible/environment

Safety, Health and Environment Policy

IXOM

OUR VALUES

At Ixom we do things safely and with integrity.

OUR COMMITMENT

We will manage all our activities with concern for the safety and wellbeing of our staff and members of the public who may be affected by Ixom's activities, and for the protection of the environment.

OUR ACTIONS

We will:

- Strive to ensure Ixom's facilities operate to high standards to protect our workers and the communities and environment that may be impacted by Ixom's activities.
- Build a culture that enables strong leadership and empowers Ixom workers to stop work if it is not able to be done safely.
- Seek to use our resources in an efficient and responsible manner and minimise waste and the environmental footprint of our activities.
- Ensure SH&E risks are identified, eliminated or controlled and actively monitored across all our operations.
- Sell only those products that can be produced, transported, stored used and disposed of safely.
- Provide appropriate information and/or training on the safe use and disposal of our products to our customers and consumers.
- Seek to develop new or improved products and processes to enhance the contribution we make to our customers, and to minimise the impact of those products on the environment.
- Support worker participation in SH&E activities and ensure all workers are competent and capable to perform their job.
- Encourage worker initiatives that contribute to a safer and improved environment at work, at home and in the communities in which we operate.
- Strive to continuously improve our SH&E management system and practices by seeking feedback from our people, industry and broader stakeholder groups.
- Set challenging targets and measure progress to ensure we continuously improve our safety, health and environmental performance.
- Strive to comply with all applicable laws, regulations, internal policies and contractual obligations as a minimum standard.
- Communicate openly about our activities and report progress on our safety, health and environment performance where appropriate.

David Head
Managing Director and CEO
Date: 19th July 2021

This Policy will be reviewed at least two yearly

3. ENVIRONMENTAL LEGISLATION

Ixom Botany conducts its operations within the realms of a variety of State and Commonwealth legislation.

Envirolaw is a web based application which provides up to date environmental legislation in a single location. Following a review of Envirolaw, requirements relevant to the Botany site have been summarised, with outlines of general legal requirements applicable to the site being provided below in Table 1.

Table 1: General Requirements Register

Requirement	Relevant Authority	Relevant Aspect
Common Law	NSW EPA	Prevent consequential air pollution, water pollution, unlawful discharges to the sewer, noise pollution and other environmental offences by taking preventive actions to deal with foreseeable acts of vandalism or natural events.
Corporations Act 2001 Sec 299, 299A.	ASIC	Public reporting of performance against environmental regulation.
Environmental Planning and Assessment Act 1979 Sec 767A.	NSW Department of Planning and Environment / City of Botany Bay Council.	If a site has been granted development consent, the site must comply with conditions of that consent.
Environmental Planning and Assessment Act 1979 Sec 767A.	NSW Department of Planning and Environment / City of Botany Bay Council.	Certain development may not be carried out except with development consent. The EP&A Act requires that a development consent be obtained for the development of land.
Environmentally Hazardous Chemicals Act Licence Sec 1.1	NSW EPA	Prescribed activities are carried out in a manner that prevents harm to human health and the environment.
Environmentally Hazardous Chemicals Act Licence Sec 1.2	NSW EPA	Adequate environmental protection measures are in place.
Environmentally Hazardous Chemicals Act Licence Sec 1.3	NSW EPA	Any direction given by an EPA officer in regards to the prescribed activity is carried out.
EPA NSW Licence Conditions A4.1.	NSW EPA	Works and activities must be carried out in accordance with the proposal contained in the licence application unless the licence itself provides otherwise.
EPA NSW Licence Conditions G1.1-G1.3.	NSW EPA	Keep a copy of the EPA licence at the premises, available for inspection.
EPA NSW Licence Conditions M1.1-M1.3.	NSW EPA	Ensure all monitoring records required by the licence are legible, kept for at least 4 years and can be made available to EPA officers upon request. Include details on where, when, and whom taken by.
EPA NSW Licence Conditions M4.1-M4.4, M5.1-M5.3.	NSW EPA	Record and keep for at least 4 years a legible record of pollution complaints made, including to any employee or agent, and including the details listed in condition M4.2. Operate a telephone complaints line during operating hours and notify the public of its existence.
EPA NSW Licence Conditions O1.1, O2.1.	NSW EPA	Carry out all licensed activities, including the management of materials and waste, in a competent manner. Properly maintain and operate all plant and equipment.
EPA NSW Licence Conditions R2.1-R2.2.	NSW EPA	Notify incidents causing or threatening material harm to the environment as required under Part 5.7 of the Protection of the Environment Operations Act 1997 by telephoning OEH's Pollution Line on 131 555. Follow up in writing within 7 days of the date on which the incident occurred.
POEO (General) Regulation 2009 Sec 63-67.	NSW Office of Environment & Heritage	National Pollutant Inventory Reporting

Requirement	Relevant Authority	Relevant Aspect
POEO Act 1997 Sec 116.	NSW EPA	Do not harm or risk harming the environment
POEO Act 1997 Sec 120.	NSW EPA	Do not pollute, or cause or permit to be polluted; any waters other than in accordance with the terms of an Environment Protection Licence.
POEO Act 1997 Sec 128.	NSW EPA	Do not pollute air at concentrations above those specified in the POEO (Clean Air) Regulation 2010.
POEO Act 1997 Sec 129.	NSW EPA	Do not emit offensive odour beyond the boundary.
POEO Act 1997 Sec 143.	NSW EPA	Do not transport waste or cause or permit waste to be transported to a place that cannot lawfully be used as a waste facility for that waste.
POEO Act 1997 Sec 153.	NSW EPA	Prepare, implement and test a Pollution Incident Response Management Plan. Make available to EPA officer on request.
POEO Act 1997 Sec 167.	NSW EPA	Properly and efficiently maintain and operate any installed pollution control equipment (including monitoring devices).
POEO Act 1997 Sec 180-183.	NSW EPA	Keeping of records prepared for voluntary audits.
POEO Act 1997 Sec 47-48.	NSW EPA	Obtain and maintain Environment Protection Licence for Scheduled activities.
POEO Act 1997 Sec 6, 147, 148, 151.	NSW EPA	Notification of Pollution Incidents.
POEO Act 1997 Sec 64, 66.	NSW EPA	Comply with all conditions in EPA licences.
POEO Act 1997 Sec 66(6).	NSW EPA	Ensure all monitoring records required by the licence are made publicly or prominently available on the licensee's website.
POEO Act 1997, 57, 64.	NSW EPA	Pay the administrative fee within 60 days of the anniversary date of a licence.
National Environment Protection (National Pollution Inventory) Measure 1998	Australian Department of Environment and Energy	Facility can potentially release emissions or generate waste transfers that exceed the National Pollutant Inventory (NPI) reporting thresholds.
WHS Regulation 2017, Chapter 9	Safework NSW	MHF License – Must provide safety case and ensure safety management system (schedule 17) in place
WHS Regulation 2017, Schedule 11	Safework NSW	Dangerous Goods Notification – Yearly notification of chemical storage to Regulator
NGER Act 2007, part 3	National Greenhouse and Energy Reporting	Yearly reporting to Regulator, energy, gas and fuel consumptions to determine greenhouse gas emission

3.1. Managing Legislative Requirements

Envirolaw provides updates on changes to environmental legislation to nominated persons within Ixom.

Compliance with legislative and regulatory requirements is assessed through:

- Regular review of compliance through monitoring programs and results
- Regular review of legislative and operating permit requirements
- SH&E audits and inspections
- Investigation of non-compliance events and initiative of corrective / preventative actions
- Environmental regulatory bodies compliance audits.

Responsibilities for actions and non-compliance are further defined in Section 5.

3.2. Current Environmental Licences / Permits / Authorisation

The Obligation Register[5], captures specific requirements relating to Ixom Botany's operations in a single register.

The site-specific instruments for relevant legislation (e.g. the environmental licence to operate is the instrument for the Protection of Environment Operations Act (POEO Act)) are summarised in Table 2.

3.2.1. ENVIRONMENTAL LICENCE

The site currently operates under EPL 20547, which permits the site to undertake the following Scheduled Activities:

- Chemical Production
- Chemical Storage
- Waste Processing (non-thermal treatment)
- Waste storage.

The conditions of the EPL for the site, where applicable, have been reflected in this document and in the specific management procedures for the site.

3.2.2. INTERNAL STANDARDS

Ixom have developed corporate standards which interpret, support and detail the requirements of the SH&E policies and form the basis for the development and application of SH&E procedures, guidance documents and work instructions across the company. All Ixom sites are required to achieve and maintain compliance to the internal standards, which include:

- SHE-GBL-STA-001 Leadership and Accountability
- SHE-GBL-STA-002 Planning, Goals and Targets
- SHE-GBL-STA-003 Legal Requirements
- SHE-GBL-STA-004 Hazard and Change Management
- SHE-GBL-STA-005 Training, Competency and Awareness
- SHE-GBL-STA-006 Communication and Consultation
- SHE-GBL-STA-007 Documentation and Document Control
- SHE-GBL-STA-008 Operational Control
- SHE-GBL-STA-009 Project Delivery
- SHE-GBL-STA-010 Contractors, Suppliers and Partners
- SHE-GBL-STA-011 Works at Customer Sites
- SHE-GBL-STA-012 Plant and Equipment Integrity
- SHE-GBL-STA-013 Personal and Process Safety
- SHE-GBL-STA-014 Occupational Health and Industrial Hygiene
- SHE-GBL-STA-015 Environment
- SHE-GBL-STA-016 External Stakeholders
- SHE-GBL-STA-017 Product Stewardship
- SHE-GBL-STA-018 Quality
- SHE-GBL-STA-019 Emergency and Crisis Preparedness
- SHE-GBL-STA-020 Incidents, Non-conformance and Actions
- SHE-GBL-STA-021 Monitoring, Audit and Review.

[5] L:\COR\PRIVATE\Botany EMS\04_Compliance management\04.1_Obligations register\04.1.0_Obligations Master

Table 2: Site Specific Instruments for Relevant Legislation

Plant / area	Legislation	Instrument	Activity	Issuing Authority	Licence identifier	Date issued	Date expires / next review	Location
Entire premises	POEO Act 1997	Environment Protection Licence	Scheduled and non-scheduled activities across premises (refer Attachment A).	NSW EPA	EPL 20547	19/02/2015	19/02/2020	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\POEO Act 2011 changes
	Sydney Water Act 1994	Trade waste Service Agreement	Discharge of trade waste to sewer	Sydney Water	TWSA 489	27/06/2013	TBA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\Trade Waste
	EP&A Act 1979	Subdivision agreement	Permission to subdivide BIP	NSW DP&E	30/98	16/12/1998	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\DoP
CAP	POEO Act 1997	Environment Protection Licence	Chemical production	NSW EPA	EPL 20547	19/02/2015	19/02/2020	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\POEO Act 2011 changes
	EP&A Act 1979	Planning consent and modification	Replacement of ChlorAlkaline Plant	NSW DPIE	DA 35/98	17/11/1998	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E
	EP&A Act 1979	Planning consent and modification	Replace sodium hypochlorite loading bays	NSW DPIE	DA 35/98 and modification 1	09/01/2006	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E
	EP&A Act 1979	Planning consent and modification	Demolition of the decommissioned ChlorAlkaline Plant	NSW DPIE	DA 35/98 and modification 2	04/05/2006	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E
	EP&A Act 1979	Planning consent and modification	Relocate the Sodium hypochlorite pant	NSW DPIE	DA 35/98 and modification 3	29/09/2009	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E
	EP&A Act 1979	Planning consent and modification	Replacement of Caustic Tanks	NSW DPIE	DA 35/98 and modification 4	13/04/2012	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E

Plant / area	Legislation	Instrument	Activity	Issuing Authority	Licence identifier	Date issued	Date expires / next review	Location
	EP&A Act 1979	Planning consent and modification	Construction and operations – Repack Facility	NSW DPIE	DA 35/98 and modification 5	30/10/2018	NA	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\00 DMS New 2019\01 SHEQ\1 Compliance\NSW DP&E
	WHS Act 2011	MHF Licence	MHF – operation of facility using schedule 15 chemicals.	NSW WorkCover	10095	11/2/2014	11/2/2019	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\WHS Work Health and Safety
	WHS Act 2011	Dangerous Goods Notification	Storage of Dangerous goods	NSW WorkCover	NDG035000	07/07/2019	07/07/2020	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\WHS Work Health and Safety Act
	POEO Act 1997	Environment Protection Licence	Chemical production	NSW EPA	EPL 20547	19/02/2015	19/02/2020	L:\che\chl\2. BOTANY CHLORALKALI FACILITY\01. Statutory Authority Information\POEO Act 2011 changes

4. SITE DETAILS

4.1. Site Identification

The site is located on Beauchamp Road, Matraville, within the BIP. Site details are summarised in Table 3, and discussed in the following sections.

Table 3: Site Details

Address	16-20 Beauchamp Road, Matraville, NSW
Industrial Complex	Botany Industrial Park (BIP)
Local Government Authority	City of Sydney
Site Area	BIP – 70 hectares Site – 23 hectares
Locality Map	Attachment A
Site Plan	Attachment A
Current Use	Botany ChlorAlkali Plant
Lot No	Part of Lot 104 DP 1192400
Site Owner	Orica owns approximately 40% of land at the BIP, including the area specific to this EMP

4.2. Site Operations

In 2000, the new ChlorAlkali Plant was commissioned using membrane technology and a 'chlorine gas-only' configuration. The four main products produced are sodium hypochlorite (referred to as 'Hypo'), hydrochloric acid, caustic soda and ferric chloride. The facility manufactures chlorine and caustic soda from the electrolysis of salt. Hydrogen is produced as a by-product.

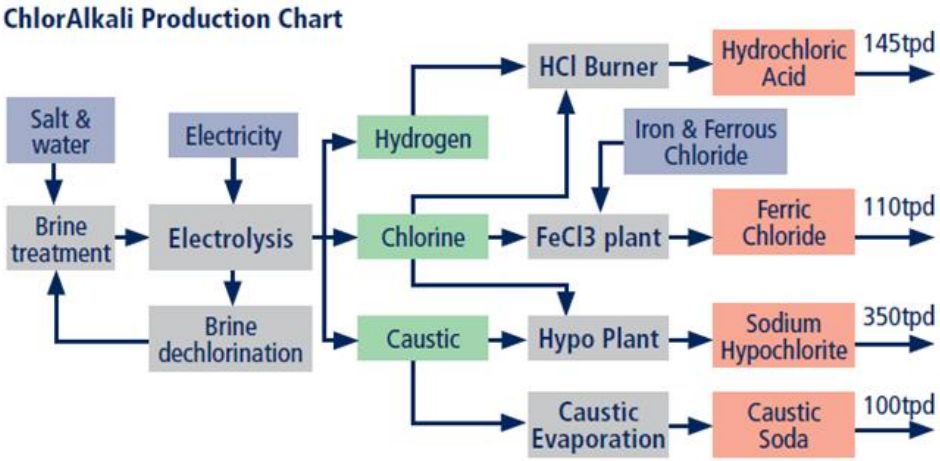
The chlorine produced on site is used in the manufacture of hydrochloric acid, hypo and ferric chloride, with these downstream processes being collectively referred to as product plants. All chlorine produced at Ixom Botany ChlorAlkali facility is consumed in the product plants.

The plant can produce 31,200 tonnes per annum (TPA) following the 19.6 kilolitre per annum (kLA) uprate, assuming 95% uptime. All chlorine is reacted to produce the following product range:

- HCl (~35,000 TPA)
- Hypo (~55,000 kLA)
- Ferric chloride (~21,200 TPA)
- Sodium hydroxide (Caustic ~36,000 TPA as 50%) (co product of chlorine manufacturing process).

The following diagram provides an overview of the Botany ChlorAlkali facility and products plants process

Figure 2: Overview of Botany ChlorAlkali facility



4.3. Site History

The site history is summarised below. A more detailed history is available in Section 2.2 of the Conceptual Site Model (CSM) (Golder 2010) discussed within Section 4.3.1.

- Pre 1940 the land comprised Chinese owned market gardens
- Between 1942 and 1998, the site was occupied by Imperial Chemical Industries of Australia and New Zealand (ICIANZ), part of the UK-based ICI Plc Group, producing carbon bisulphide as the first chemical to be made at the new Botany site in Sydney. The company went on to produce a range of chemicals, primarily:
    - Polyethylene
    - Solvents such as perchlorethylene
    - Polyvinyl chloride
    - Ammonium nitrate and urea
    - Surfactants
    - Chlorine and caustic products
    - Polypropylene.
- Between 1998 and 2015, following ICI Australia's sell down, shareholders Ixom, Hunstman and Qenos became separate entities and the Botany Industrial Park was formed as a joint ownership between the three organisations
- Currently, Orica owns approximately 40% of land at the BIP, however Ixom operates the CAP and the groundwater treatment plant (GTP) associated with the Orica Botany Groundwater Cleanup Project described further in Section 4.4.6. Current operations are described in Section 4.2.

4.3.1. PREVIOUS ENVIRONMENTAL INVESTIGATION, ASSSESSMENTS AND LEGACY ISSUES

Environmental Studies and Contamination Assessments

Extensive environmental studies have been completed on the site to date. The most comprehensive recent studies, which capture many of the historical investigations and studies are:

- Conceptual Site Model – Botany (Golder, 2010)
- Consolidated Human Health Risk Assessment (Environmental Risk Sciences, 2010).

These address air quality, soil and groundwater contamination and their associated risks and are available at the Botany Transformation Projects Website [6].

The CAP and GTP were subject to Environmental Assessments as part of their development applications. These assessments are available on the company intranet [7,8,9].

Additional legal advice (potentially including legally privileged reports forming part of that advice) may have been received in relation to environmental matters at the Botany site. The Legacy Operations Lead (Orica) should be consulted for further information where applicable.

Legacy Contamination Issues

Legacy contamination issues and studies completed are summarised below. Full details are provided in Section 4.0 of the CSM (Golder, 2010). Contaminants of potential concern (COPC) identified for the site area include:

- Volatile and semi-volatile chlorinated hydrocarbons (CHCs)
- Mercury and chromium
- Ammonia
- Total petroleum hydrocarbons (TPH)

[6] http://www.orica.com/Locations/Asia-Pacific/Australia/Botany-Remediation-Projects/projects#.WHQ7P-S7p9A
[7] L:\COR\PRIVATE\Botany EMS\03_Planning\03.7_Studies\03.7.3_Chlorine\19980625_EIS_ORICA_Dames and Moore.pdf
[8] L:\COR\PRIVATE\Botany EMS\03_Planning\03.7_Studies\03.7.1_GTP\Final EIS_pdf_data
[9] L:\COR\PRIVATE\Botany EMS\03_Planning\03.7_Studies.

- Benzene, toluene, ethylbenzene and xylene (BTEX).

CHCs have been identified in a number of source areas from the southern end of the BIP through to the north-west. The CHCs from these areas have migrated through the Botany Sands Aquifer in a south westerly direction. These are represented in Figures 4.1 – 4.11 of the CSM (Golder, 2010).

Mercury has been identified in areas around the former ChlorAlkali Plant to the south of the BIP. These are presented in Figures 4.18 – 4.21 of the CSM (Golder, 2010).

Petroleum-based monoaromatic hydrocarbon (MAHs) compounds including BTEX were also detected in monitoring wells to the north of and beneath BIP, and throughout Southlands on the western side of Springvale Drain. Benzene, toluene and xylene are also present in shallow groundwater beneath Botany/Foreshore Road.

Chromium has been detected in sediment samples collected from Springvale Drain Southlands and in two groundwater locations on the southern boundary of Southlands.

Soil contaminated with HCB, Hexachlorobutadiene (HCBD) and other chlorinated and non-chlorinated compounds are located in various parts of the BIP, including within the:

- Car Park Waste Encapsulation area (now remediated)
- Denison Street landscaping mound
- Shallow soil where HCB and HCBD was previously drummed and stored.

4.4. Site Environmental Setting

4.4.1. SURROUNDING LANDUSE

The area is heavily developed and comprises residential, commercial, industrial and recreational land uses. The specific surrounding land uses are summarised below in Table 4.

Table 4: Site Surrounding Land Use

Sensitive Receptor Type	Direction	Detail
Environmental	South	Perry Street canal (approximately 150m) which drains via Long Dam (approximately 550m) to Botany Bay at Brotherson Dock (approximately 1.2km).
	West	Springvale Drain (<25m) which drains to Botany Bay at Penrhyn Estuary (approximately 1km).
Residential	North	Pagewood (approximately 600m), Daceyville (approximately 2km).
	South	Banksmeadow (approximately 1.2km).
	East	Botany (approximately 800m).
	West	Hillsdale (<50m), Matraville (approximately 400m) and Maroubra (approximately 700m).
Schools	North	Pagewood Primary (approximately 700m).
	East	Matraville Primary (approximately 600m).
	West	Banksmeadow Primary (approximately 1.3km).
Recreational areas	North	Hensley Athletics Field (<50m), Mutch Park (approximately 350m), Bonnie Doon and Eastlake Golf Courses (approximately 300m), David Philips Playing Fields, and Astrolabe, Jellicoe, Rowland and Nagle Parks (>1km).
	South	Botany Golf Course (approximately 800m), Joseph Banks Park (approximately 1.2km), Penrhyn Estuary and Botany Bay (approximately 1km).
	East	Grace Campbell Reserve (<50m), Heffron Park (approximately 800m) and a lawn bowling club located between Denison Road and Rhodes Street (approximately 250m).
	West	Garnet Jackson Reserve and Booralee Park (>700m).
Retail	North	Westfield Eastgardens (approximately 100m).
	East	Southpoint Shopping Centre (approximately 600m).

Sensitive Receptor Type	Direction	Detail
	South	Shops on Beauchamp Road (<100m) and Botany Road Banksmeadow (approximately 750m).
Commercial/Industrial	North	British American Tobacco, Taylorgraphic (printing), Visy, Nalco, Amcor (recycling, cardboard production), BOC Limited and Air Liquide Australia Pty Ltd.
	South	MCS and Toll (container terminals), Solvay Interox, Goodman (warehousing, offices, light industrial), Caltex Terminal, mixed light to medium industrial.
	West	Mobil Oil Terminal, Kellogg's, Nuplex Industries Australia Pty Ltd and Australand (warehousing).
Infrastructure	South	Sydenham to Botany Goods Railway (adjacent to the south dividing the BIP and Southlands), and Port Botany (approximately 1 km).
	East	South Western Sydney Ocean Outfall System, running through the BIP to Malabar.
	West	Sydney International Airport (approximately 3km).

4.4.2. SITE INFRASTRUCTURE

The Site Stormwater and Effluent System is managed by BIP Site Utilities. A map of the BIP Stormwater and Effluent System is presented in Attachment A. A flow diagram of the Effluent System is provided in Figure 3.

Stormwater System Overview

The Stormwater System captures rainfall across BIP common roadways and non-plant areas. The network flows to two main stormwater Interceptor Pits located near the midpoint of the site's western boundary (IP1 adjacent to the Eighth Avenue Effluent Treatment Pit and IP2 behind the Qenos cooling towers). These Interceptor Pits are fitted with level-sensor operated pumps that transfer small, dry weather inflows to the site effluent system (for eventual disposal to Sydney Water sewer under the TWSA No. 489, discussed further below). Each Interceptor Pit has a capacity of 11m^3 and pump out rate of 120m^3/hr. Excess flows are discharged to Springvale Drain which ultimately flows south to Botany Bay.

A small area on the eastern side of the site at 2nd Avenue flows direct to Denison Street and Beauchamp Road and subsequently, to Brotherson Dock in Botany Bay. A small area north of the roofed and bunded HCB Stores A, B, C and J flows directly to Springvale Drain which ultimately flows to Penhryn Estuary and Botany Bay.

Effluent System Overview

The Effluent System transfers 'dirty' water from Ixom (and non Ixom) plant areas, designated sumps and dry weather stormwater flows captured at Interceptor Pits 1 and 2, to the sewer. The sewer feeds to the Sydney Water owned South Western Sydney Ocean Outfall System (SWSOOS) at Malabar. The discharge to sewer is permitted and regulated under a Sydney Water Trade Waste Service Agreement (No. 489), of which Ixom, Qenos and Hunstman are joint customers.

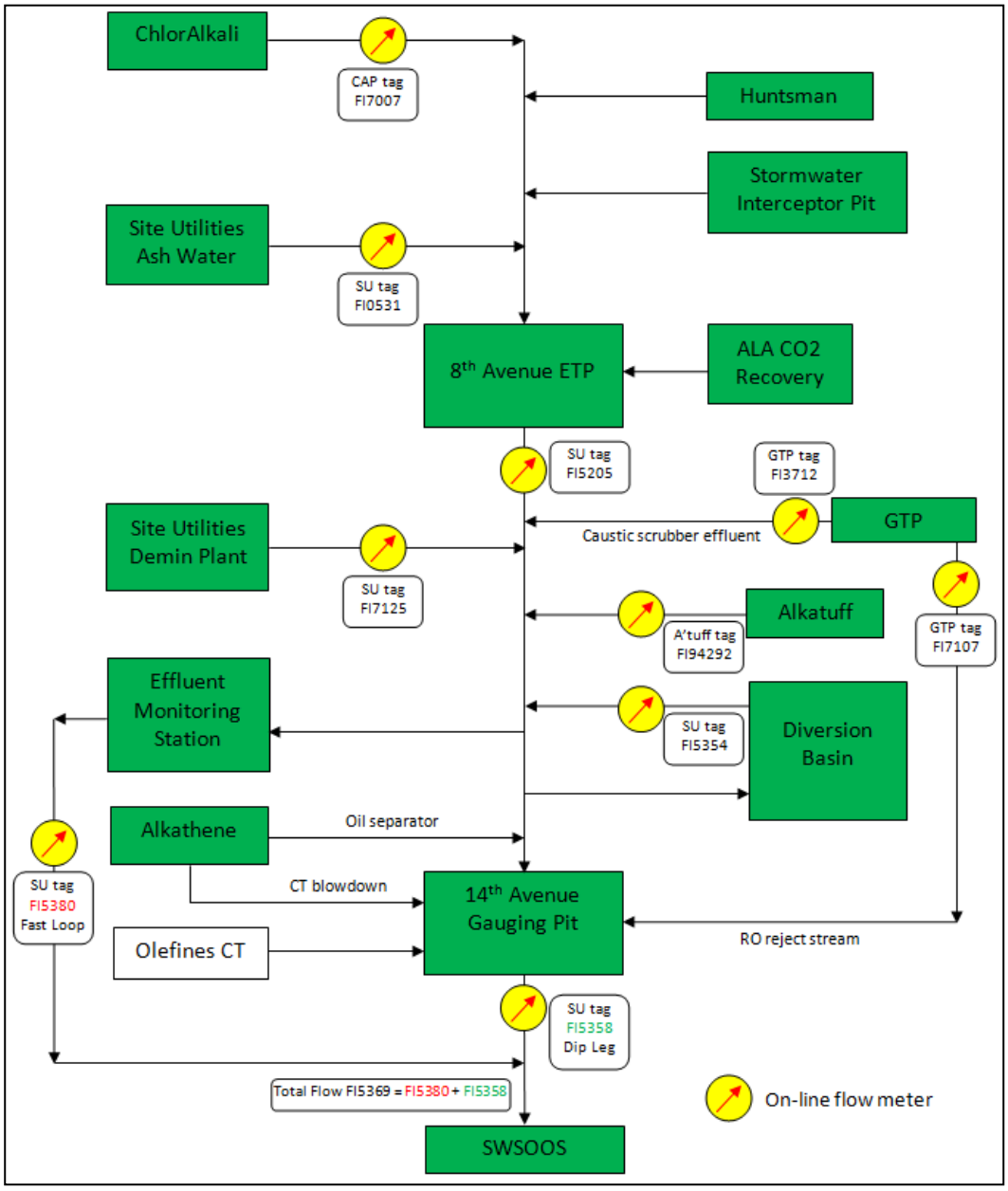
The BIP Effluent System is fitted with an analyser house, capable of monitoring various pollutants in accordance with TWSA No. 489 and a diversion basin located downstream from the analyser house, capable of holding 2.1ML. Both of these are located upstream of the connection to sewer.

In the event trade wastewater substances in the effluent system are measured outside of the criteria specified in TWSA No. 489, flows are automatically diverted to the diversion basin for treatment or disposal via a licensed liquid waste contractor. In the event of an incident, Ixom personnel can request Site Utilities to monitor concentrations measured at the analyser house and manually divert if required.

The typical effluent flow from the BIP is 150m^3/hr. At this rate, the diversion basin is capable of holding 6 hours of flow. If it is raining or the effluent flow rate is higher than normal, or the basin is already part

full at the time of an incident, the holding time will be reduced accordingly. Once the diversion basin reaches full capacity, effluent will flow directly to sewer regardless of composition.

Figure 3: BIP Effluent Flow Diagram



4.4.3. TOPOGRAPHY

The Botany Basin is a natural topographical basin surrounding Botany Bay. The Botany Basin is formed in a shallow depression in the sandstone bedrock which has filled with coastal sand dunes and estuarine sediments. The ground elevations rise from less than 5m Australian Height Datum (AHD) around the foreshore of Botany Bay and swampy areas to between 15 and 25m AHD in the sand dunes, reaching a maximum elevation of 35 to 40m AHD at the Basin edges.

4.4.4. GEOLOGY

The Botany Basin occupies an area of approximately 80km^2 and lies to the south of the City of Sydney. Quaternary sediments (Botany Sands) in the Botany Basin are up to 80m thick, though generally shallower, and overlie the bedrock surface of the Hawkesbury Sandstone.

4.4.5. HYDROLOGY

Natural drainage patterns have been extensively modified through industrial and commercial development. In the sand dune areas there are few natural water courses and most drainage is inferred to occur through infiltration into permeable sands. The major surface water features include:

- A series of interconnected man-made lakes, where the water table intersects the ground surface, called Lachlan Lakes, located to the North of BIP
- Surface drainage to the east of the site is via a series of lined or piped canals and drains through the Matraville area
- Near the BIP and towards Botany Bay, surface drainage is via Floodvale Drain and Springvale Drain. Floodvale and Springvale Drains originate near Page Street and Heffron Road, respectively, and were excavated in the 1870s to assist with drainage of Veterans Swamp. Both drains are piped at their northern ends and through to Southlands. Floodvale Drain is piped under Botany Golf Course and Foreshore Road, whilst Springvale Drain is piped through parts of Discovery Cove Industrial Estate and under Foreshore Road.

The various plants within BIP have internal stormwater management systems, however BIP as a whole does not have a first flush stormwater system in operation.

4.4.6. HYDROGEOLOGY

The Botany Sands contain a system of unconfined and semi-confined aquifers that are referred to as the Botany aquifer. The water table elevations range from 35m AHD at Centennial Park at the northern end of the basin to approximately 0m AHD at Botany Bay. Groundwater generally flows in a south-westerly direction, with an average hydraulic gradient of 1:120 and discharges into Botany Bay

Groundwater Treatment Plant & Well and Pipeline Network

Information pertaining to the GTP is provided for reference purposes only, with specific detail around environmental management not included within this EMP.

The Orica Botany Groundwater Cleanup Project involves hydraulic containment from three containment lines and treatment of the extracted groundwater in the GTP. The GTP removes CHCs from the groundwater by an air stripping process. The contaminated off-gas is treated in a thermal oxidiser. The 'stripped water' is then processed through various conventional water treatment operations before being feed to reverse osmosis units that produce high quality treated water. The GTP currently treats an average of 5 to 6 ML/day of contaminated groundwater and produces 4 to 5 ML/day of treated water for industrial reuse.

The GTP pipeline network comprises 109 extraction wells across three containment lines, these being BIP, Primary Containment Area (PCA) located on the area known as Southlands, and Secondary Containment Area (SCA) located along Foreshore Drive. Treated water lines run between the GTP and the CAP, Qenos facilities on the BIP, and offsite to Solvay Interox. A large number of groundwater monitoring wells are located around the area in support of the Cleanup Project. Some zones of the deep aquifer at the SCA and the PCA show a semi-confined aquifer response to pumping, while others show largely confined responses.

Aerial views of the GTP and pipeline network are presented in Attachment A.

4.4.7. ECOLOGY

The BIP is an industrial facility with little to no flora or fauna. Only the heavily disturbed and contaminated Southlands site contains potential fauna habitats. The threatened green and golden bell frog has been recorded on this site in the past, but no permanent population is present and the area has been approved for development.

Penrhyn Estuary is essentially comprised of an inner estuary and an outer estuary. Floodvale and Springvale Drains flow into the estuary from the industrial and residential catchments of Banksmeadow and Matraville. As well as conveying stormwater after rainfall, these drains carry a base flow of shallow contaminated groundwater.

The two drains that flow into Penrhyn Estuary (Floodvale Drain and Springvale Drain) have freshwater habitat in their upper catchments. These drains are highly disturbed by surrounding development and contaminants from industry and their value as freshwater habitat is considered to be very limited.

5. KEY ENVIRONMENTAL RESPONSIBILITIES

At Ixom, all personnel have clearly defined roles including those responsible for environmental management. Defining these responsibilities allows personnel to know what is expected of them, and ensures that everyone is aware of the obligations and are jointly responsible for environmental management. Ultimately, it is the responsibility of the Site Manager to provide effective environmental practice across the site activities and operations.

A range of responsibilities relating to the management and operation of the Botany site are outlined in the following sections. Further task specific responsibilities are provided within the Orica Botany Stakeholder Plan[10], which provides a policy framework to manage internal and external communications, and outlines roles and responsibilities for personnel at the Site with respect to stakeholder engagement.

5.1. Site Manager

The Site Manager is responsible for managing the site facilities and personnel (including Ixom personnel and contractors) on site. The Site Manager's environmental responsibilities include:

- Overall responsibility for environmental management on site, including (but not limited to):
  - Implementation of the SH&E policies, procedures and work instructions
  - Ensuring the Safety, Health & Environment (SH&E) advisor is kept informed of environmental issues and operational changes
  - Ensuring all incidents and complaints are reported and corrective actions implemented.
- Provide adequate resources to ensure this EMP is implemented.

5.2. Environmental Representative

5.2.1. SH&E ADVISOR

The SH&E Advisor, while not stationed on site, is in regular contact with the Site Management and Environmental Advisor. The SH&E Advisor's responsibilities include:

- Co-ordinate the development and implementation of SH&E plans
- Ensure SH&E audits are conducted, and all follow up actions completed
- Identify trends in SH&E and take appropriate actions
- Define SH&E training requirements for all site personnel
- Work with Site to improve environmental awareness
- Implement Emergency Response Plan[11] (ERP)
- Participate in SH&E Acceptances of projects.

5.2.2. SITE ENVIRONMENTAL ADVISOR (BIP)

Based on site, the Environmental Advisor responsibilities include:

- Prepare reports and implement programs to meet internal and external environmental compliance requirements (e.g. NPI, Annual return, EEO)
- Develop waste management and act on waste reduction opportunities
- Contact with regulator
- Participate in SH&E Acceptances of projects.

5.3. Site Operational Personnel

Site Operator's, Maintenance and Technical Personnel's responsibilities include:

- Undertake required training to understand environmental obligations
- Follow instructions with regards to operation of plant and management of waste
- Undertake mandatory testing as required by environmental licence

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- Follow instructions with regards to calibration and maintenance of plant and management of waste
- Assist in scope development and undertake capital works to improve environmental performance
- Report any non-compliance immediately upon knowledge of incident
- Act in an environmentally responsible manner.

5.4. Site Contractors

All contractors are expected to follow Ixom's procedures, policies and guidance while on the Botany site. Contractor's environmental responsibilities include:

- Follow instructions with regards to operation of plant and management of waste
- Report any non-compliance immediately upon knowledge of incident
- Act in an environmentally responsible manner.

5.5. Contact Details

Contact details for the site can be found at: http://www.ixom.com/being-responsible/environmental-monitoring-data/botany.

The Site has a specific Community Enquiries, Complaints & Feedback telephone line: 1800 025 138. For procedures and protocols in the event of an emergency, refer to the Ixom ERP, which:

- Documents the chain of command to function during an emergency
- Lists the duties and responsibilities of key appointments in the command structure
- Specifies Control Centres and other facilities which would be required in an emergency
- Details the necessary communication facilities and aids required for effective management of the emergency
- Details other resources that may be required in the event of an emergency
- Specifies the responsibilities for training those who have emergency response roles.

6. ENVIRONMENTAL ASPECTS AND RISKS

6.1. Aspects and Impacts Process

Development of an aspects and impacts register enables the site to evaluate and manage environmental risk according to the significance of their impact and likelihood of occurrence and allows control measures to be scheduled and listed to manage the risks.

The following Aspect and Impact registers have been established for the Botany site:

- SHE-BOT-EMP-ENV-003 Botany ChlorAlkali Environmental Impact.

Environmental Risk Assessments form part of the broader Hazard Study / Risk management process. New plant is subject to Hazard Studies in accordance with the Risk Management Process Procedure Suite. The procedures provide a systematic approach to identifying and managing risk. Large changes or installations go through Hazard Studies which require review of environmental factors, and / or are subject to environmental assessments / environmental impacts statements.

Smaller changes are managed through the modifications process. Section C13 of the Management of Change form (which is part of the modification process) considers environmental impacts.

Risk Assessment are led by either the Risk manager or the Senior Risk Specialist onsite. Senior project / operational personnel participate. Where controls identified in the Risk Assessment process are yet to be implemented, actions are assigned accordingly, these may include capital works, modification or administrative change.

Records of Risk Assessments are available on Lotus Notes (transition to Velocity in progress).

6.2. Significant Environmental Aspects

The site specific relevant aspects and risks and associated site management strategies are detailed in the following sections.

6.2.1. ATMOSPHERIC

ATMOSPHERIC

Aspect

Definition: Site Activities relating to air quality, greenhouse gases, particulates and odour.

Requirements (EPL conditions):

P1.1 *The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or setting of limits for the emission of pollutants to the air from the point.*

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	Vent from the hypochlorite backing tower marked "EPA Point 1" on the aerial photograph titles "CAO EPL Attachment 5_CAP monitoring points" and dated 19 February 2015
2	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	Vent from the absorption tail tower marked "EPA Point 2" on the aerial photograph titles "CAO EPL Attachment 5_CAP monitoring points" and dated 19 February 2015
3	Discharge to air Air emissions monitoring	Discharge to air Air emissions monitoring	Emergency chlorine vent marked "EPA Point 3" on the aerial photograph titles "CAO EPL Attachment 5_CAP monitoring points" and dated 19 February 2015

L2.1 *For each monitoring/discharge point or utilisation area specirfic in the tables below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specific for that pollutant in the table.*

L2.3 *Air Concentration Limits*

POINT 1

Pollutant	Units of Measure	100 percentile concentration limit	Reference conditions	Oxygen Correction	Averaging Period
Chlorine	Milligrams per cubic metre	200			

POINT 2

Pollutant	Units of Measure	100 percentile concentration limit	Reference conditions	Oxygen Correction	Averaging Period
Hydrogen chloride	Milligrams per cubic metre	30			

M2.1 *For each of the monitoring/discharge point or utilisation area specified below (by point number), the licnesee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specific in Column 1. The licensee must use the sampling method, unit of measure, and sample at the frequencey specific opposite in the other columns:*

M2.2 *Air Monitoring Requirments*

POINT 1

Pollutant	Units of Measure	Frequency	Sampling Method
Chlorine	Milligrams per cubic metre	Continuous	In line instrumentation

POINT 2

Pollutant	Units of Measure	Frequency	Sampling Method
Hydrogen chloride	Milligrams per cubic metre	Quarterly	Method approved in writing by the Authority

POINT 3

Pollutant	Units of Measure	Frequency	Sampling Method
Chlorine	Milligrams per cubic metre	Continuous	In line instrumentation

M2.3 *Emission monitoring for hydrogen chloride in point 2 must be undertaken when the burner is on line at such a steady rate as will facilitate sampling in accordance with the EPA's letter dated 20 August 2002.*

	M2.4 *At Point 2, the licensee is required to take a grab sample during 4 start ups and shutdowns to determine the concentration of HCl emissions during start-up or shutdown conditions. In these circumstances, refer to the EPA's letter dated 20 August 2002 or any other methods approved in writing by the EPA.*
Potential impacts	

Issues and Risks	Adverse impacts on human health and safety due to:
	• Excessive chlorine gas release:
	  ○ From the HCl Burner Stack
	  ○ Due to weak gas system restriction in Ferric Plant
	  ○ Due to pressurised piping or equipment failure
	  ○ Due to failure of the Chlorine Dryers
	  ○ Due to open valve
	  ○ Due to incorrect preparation for maintenance
	  ○ Due to high pressure in low Pressure system
	  ○ Due to backpressure on the Chlorine Header
	  ○ From weak Sulphuric Acid Tank
	  ○ From Chlorinated Liquid LOC due to maintenance activities
	  ○ From a violent reaction Between Chlorine and Hydrocarbons
	  ○ Due to Chlorine dioxide explosion
	  ○ From Lixators due to failure of Brine Dechlorination System
	  ○ From a Chlorinated Liquid LOC due to piping or equipment failure
	  ○ From Chlorinated Liquid LOC due to open vent or drain
	  ○ From Dechlorinated Brine Tank overflow
	  ○ Due to ECS Circulation failure
	  ○ Due to ECS Fan failure
	  ○ Due to High Strength Caustic Plugging Hypo Make Towers with NaCl
	  ○ Due to loss of suction on Weak Gas System
	  ○ Due to loss of Hypo Circulating Liquor Flow
	  ○ Due to ineffective scrubbing in the Backing Tower
	  ○ Due to a vehicle fire impacting on a Chlorine container
	  ○ Due to chlorine tanker mechanical failure
	  ○ Due to truck collision on site
	  ○ Due to drum or cylinder mechanical failure
	• Chlorine/Iron fire due to high temperature in Chlorine Compressor
	• Hydrogen/Chlorine explosion due to flammable mixtures forming in the Electrolysers
	• Chlorine LOC due to ineffective scrubbing in ECS
	• Chlorine evolution from mixing Hypo with incompatible material in a road tanker
	Adverse impacts on human health and surrounding fauna from high levels of legionella in cooling towers
	Adverse impact on air quality due to emissions of particulates from:
	• Dust generated during construction or demolition
	• Sodium metabisulphite and magnesium chloride storage
	• Resins, activated carbon and filter aid storage.

Mitigation Measures	

Physical	• Use of a number of automated protection systems to provide multiple layers of protection to prevent hazardous scenarios from arising, including:
	  ○ Distributed control system
	  ○ Hard wired instrument protective systems
	  ○ Safety instrumented systems
	  ○ Multiple instantaneous gas emission monitoring and chlorine detection devices
	  ○ Chlorine alarms
	• Emergency chlorine scrubber using extraction fans to collect gas from all the chlorine-containing plant vents.
	• Selected piping elevated to prevent physical impact damage
	• Correct material and gasket specification
	• Double block isolations on offshoots

	• Piping supports to prevent strain, cracks and loss of containment • Amount of nozzles and flange connections minimised • Isolation valves and automatic isolation valves. •
Procedures and Equipment	The following procedures and equipment have been developed to manage this aspect: ▪ SHE-GBL-PRO-ENV-006 – Air Emissions Management ▪ SHE-GBL-PRO-ENV-005 – Energy and GHG Management ERA-CC-007 - Hypo dosing of cells and products cooling towers to maintain free chlorine ERA-CC-009 - Gas detector (45) in vicinity storage tank area ERA-CC-011 - Chlorine gas detector (14) at EP6 ERA-CC-018 - Monthly plate count for legionella MHF-CC-006 - HCl burner low demin water flow trip MHF-CC-007 - HCl burner low cooling water trip • Cooling tower management plan reviewed by Botany Council. • Response plan for high legionella count involving increasing hypo dosing, slug dosing and decontamination procedure.
Registers	The following registers have been developed to record and manage this aspect: • Database of monitoring results for EPL • Register of venting/air emission points • Velocity keeps records of energy, gas and fuel consumptions
Verification Process	
Monitoring	Monitoring as specified under the EPL is scheduled using the SAP EPMS/Velocity EHS Information System. The EPMS/Velocity EHS Information System allows notifications to go to the assignee, relevant approver and relevant line manager plus other interested parties such as compliance personnel. These persons are notified when the task becomes open, critical and overdue. Monitoring is undertaken at the frequency and using the method prescribed within the EPL conditions. In addition, there are a number of online continuously monitored air emission and chlorine detection instruments throughout the site. The operator monitors the instruments and alarms within the control room.
Reporting	Monitoring results are tabled in the designated monitoring results tables and are compared with the relevant limits[12]. Results collected under EPL 20547 are checked by line management (Plant Leads), prior to publishing them publicly online[13]. Results are published within the Annual Report to Department of Planning and Infrastructure. NPI reporting completed by 30 September, including emission and transfer estimates. Where chlorine or emission levels are reported outside normal operating levels, these are raised at daily operation meetings to determine if remedial action is required. NGER reporting of energy, gas and fuel consumptions calculated as Greenhouse gas emission annually in October

[12] L:\COR\PRIVATE\Botany EMS\04_Compliance management\04.5_Monitoring records

[13] http://www.ixom.com/being-responsible/environmental-monitoring-data/botany

6.2.2. WATER MANAGEMENT

<table>
<tr><th colspan="3">WATER</th></tr>
<tr><th colspan="3">Aspect</th></tr>
<tr><td>Definition</td><td colspan="2">Site Activities relating to surface water, water usage and wastewater.</td></tr>
<tr><td>Requirements (EPL conditions)</td><td colspan="2">L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with Section 120 of the POEO Act[14].</td></tr>
<tr><th colspan="3">Potential impacts</th></tr>
<tr><td>Issues and Risks</td><td colspan="2">Interceptor Pit 1 overflow to Springvale Drain.
Release to Southern and Western Suburbs Ocean Outfall Sewer (SWOOS) from Site Utilities without treatment, resulting in adverse impact on trade waste water quality from:
▪ Overfilling of onsite storage tanks, lixators, clarifiers, drying towers, cooling towers and Intermediate Bulk Containers (IBCs)
▪ Release of fire water runoff contamination
▪ Mechanical failure of transfer pumps, pipes and accessories
▪ Refuelling diesel equipment including temporary equipment
▪ Changing transformer and site equipment oil
▪ Washing down site equipment
▪ Failure of mobile and permanent hydraulic equipment
▪ Tanks and sump cleaning.
Adverse impact on trade waste treatment system with possible release to ocean from trade waste facility from:
▪ Release of trapped free mercury
▪ Residual mercury in cooling tower sludge.
Adverse impact on trade waste treatment system with possible consequent release of other materials from trade waste from:
▪ Sodium metabisulphite and magnesium chloride storage
▪ Storage of cooling tower chemicals
▪ Storage of resins, activated carbon and filter aids.</td></tr>
<tr><th colspan="3">Mitigation Measures</th></tr>
<tr><td rowspan="3">Physical</td><td>Site Area</td><td>Procedure / Equipment</td></tr>
<tr><td>All</td><td>BIP Stormwater / Effluent System (Interceptor Pits, analyser house and diversion basin). Managed by Site Utilities</td></tr>
<tr><td>CAP[1]</td><td>Selected piping elevated to prevent physical impact damage
Correct material and gasket specification
Double block isolations on offshoots
Numerous piping and valves in bunded areas to avoid physical impact and contain potential spills
Piping supports to prevent strain, cracks and loss of containment
Valves selected suitable for operation
Amount of nozzles and flange connections minimised
Isolation valves and automatic isolation valves
Process locks on sump pumps
Dedicated effluent treatment tanks
Settling pit within EP6
Transfer pumps to BIP treatment system from EP6.</td></tr>
<tr><td>Procedures</td><td colspan="2">The following procedures and equipment have been developed to manage this aspect:
▪ SHE-GBL-PRO-ENV-004 – Water Management
ERA-CC-001 - DCS EP6 low low pH AALL7012 and high high pH AAHH7012 alarms.;
ERA-CC-002 - DCS sulphuric acid E-stop HS3546A for unloading;
ERA-CC-003 - Dry weather and wet weather first flush automatic diversion to effluent system;
ERA-CC-004 - Annual ultrasonic testing of strong sulphuric acid tank;
ERA-CC-005 - 5 year internal inspection of weak sulphuric acid tank;
ERA-CC-006 - Scheduled internal and external inspections of caustic storage tanks;</td></tr>
</table>

[14] Section 120 of the POEO Act refers to the prohibition of pollution of wastes (i.e. *a person who pollutes any waters is guilty of an offence*).

	ERA-CC-008 - Scheduled internal inspections of HCl acid storage tanks; ERA-CC-010 - Residual rain water in ferric storage bund tested, logged on daily log and sent to storm water; ERA-CC-012 - DCS hypo tanker high level LSH7366 and LSH7386 trip of loading; ERA-CC-013 - Site effluent mercury analyser; ERA-CC-016 - Inventory of both iron salts tanks maintained below 120% to meet bund capacity; ERA-CC-017 - 5 year internal inspection of iron salts tank; ERA-CC-019 - Management of 2nd Avenue Pit MHF-CC-083 - Hypo destruction reactor testing prior to discharge. Protocol for pH monitoring within EP6 and transfer to BIP treatment system as necessary Stormwater sump pump operations manual.
Registers	The following registers have been developed to record and manage this aspect: ▪ Register of effluent volume discharged to sewer from sumps
Verification Process	
Monitoring	Monitoring required within the Trade Waste Service Agreement is scheduled and completed by others, as part of the contractual management of the BIP. Site utilities operator monitors pH in EP6 to determine if manual transfer to BIP treatment system is required.
Reporting	Reporting required within the Trade Waste Service Agreement is scheduled and completed by others, as part of the contractual management of the BIP. Results of pH monitoring within EP6 and frequency of transfer to BIP treatment system are reported to the Site Environmental Engineer (BIP) and the Site manager on a monthly basis.

6.2.3. SOIL & GROUNDWATER

SOIL & GROUNDWATER		
Aspect		
Definition	Site Activities relating to soil and groundwater quality.	
Requirements (EPL conditions) DA 35/98 Condition 21	No specific licence conditions, refer to POEO Act in Section 3. **Condition 21:** a) Excavated material shall be screened, tested and disposed of in accordance with the Department of Environment, Climate Change and Water's Waste Classification Guidelines 2008. Testing shall include, but not be limited to, mercury and hexachlorobenzene. b) Materials found to be contaminated shall be disposed of to an appropriately licensed facility and not reused on site for any purpose.	
Potential impacts		
Issues and Risks	Soil and groundwater contamination leading to adverse impact on biological habitats from: ▪ Overfilling of onsite storage tanks, lixators, clarifiers, drying towers, cooling towers and Intermediate Bulk Containers (IBCs) ▪ Presence of construction and demolition waste ▪ Release of trapped free mercury ▪ Contaminated soil exposed during construction and demolition Soil and groundwater contamination at landfill facility leading to adverse impact on biological habitats from: ▪ Solid waste process chemical disposal; ▪ Residual mercury in cooling tower sludge	
Mitigation Measures		
Physical	***Site Area***	***Procedure / Equipment***
	All Site	BIP testing and approval for soil removal off site. Contaminated soil retained on site where possible.
	CAP	Visual inspections by loader Stormwater automatically intercepted to Site Utilities effluent system with pH indication and Diversion Basin downstream for out of specification effluent Selected piping elevated to prevent physical impact damage Correct material and gasket specification Double block isolations on offshoots Numerous piping and valves in bunded areas to avoid physical impact and contain potential spills Piping supports to prevent strain, cracks and loss of containment Valves selected suitable for operation Amount of nozzles and flange connections minimised Isolation valves and automatic isolation valves
Procedures	The following procedure has been developed to guide the management of this aspect: ▪ SHE-GBL-PRO-ENV-002 – Land Management NSW electronic waste tracking system. Project planning and hazard study process will identify potential contaminated soil. Provision of suitable means of disposal of all waste Appropriate training on appropriate waste disposal Engage Environmental Advisor (BIP) to determine required soil testing prior to disposal	
Registers	The following registers have been developed to record and manage this aspect: ▪ Building Material Asbestos Register (Orica document) ▪ Soil Asbestos Register (Orica document)	
Verification Process		
Monitoring	The broader BIP groundwater monitoring program is scheduled and completed by others, as part of the contractual management of the BIP. Additional soil and groundwater monitoring is completed on an as needs basis.	
Reporting	The broader BIP groundwater monitoring program is scheduled and completed by others, as part of the contractual management of the BIP. Additional soil and groundwater monitoring reports are completed on an as needs basis.	

6.2.4. WASTE GENERATION

<table>
<tr><th colspan="3">WASTE GENERATION</th></tr>
<tr><th colspan="3">Aspect</th></tr>
<tr><td>Definition</td><td colspan="2">Site Activities relating to general landfill, hazardous landfill and liquid wastes.</td></tr>
<tr><td>Requirements (EPL conditions)</td><td colspan="2">
L3.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be use for the activities referred to in relation to that waste in the column titles “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.
<table>
<tr><th>Code</th><th>Waste</th><th>Description</th><th>Activity</th><th>Other Limits</th></tr>
<tr><td>NA</td><td>Waste</td><td>Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time</td><td></td><td>NA</td></tr>
<tr><td>NA</td><td>General or Specific exempted waste</td><td>Waste that meets all the conditions of a resource recovery exemption under Clause 92 of the POEO (Waste) Regulation 2014</td><td>As specified in each particular resource recovery exemption</td><td>NA</td></tr>
<tr><td>B100</td><td>Acidic solutions or acids in solid form</td><td></td><td>Waste processing (non-thermal treatment) Waste storage</td><td>B100 waste is limited to ferrous chloride (Pickle liquor)</td></tr>
</table>
</td></tr>
<tr><th colspan="3">Potential impacts</th></tr>
<tr><td>Issues and Risks</td><td colspan="2">
Release to SWOOS from Site Utilities without treatment, resulting in adverse impact on trade waste water quality.
Changing transformer and site equipment oil
Tanks and sump cleaning
Adverse impact on trade waste treatment system with possible release to ocean from trade waste facility from:
Release of trapped free mercury
Residual mercury in cooling tower sludge:
Soil and groundwater contamination leading to adverse impact on biological habitats from:
Presence of construction and demolition waste
Release of trapped free mercury
Contaminated soil exposed during construction and demolition
Soil and groundwater contamination at landfill facility leading to adverse impact on biological habitats from:
Solid waste process chemical disposal (i.e. filter cake waste)
Residual mercury in cooling tower sludge
General waste and recyclable material removed from site
</td></tr>
<tr><th colspan="3">Mitigation Measures</th></tr>
<tr><td rowspan="3">Physical</td><td>Site Area</td><td>Procedure / Equipment</td></tr>
<tr><td>All site</td><td>BIP Stormwater / Effluent System (Interceptor Pits, analyser house and diversion basin). Managed by Site Utilities
EPL 2148 Monitoring Points:
Point 14 - Effluent discharge to stormwater (multiple pollutants);
Point 15 - Effluent discharge to stormwater (conductivity);
Point 16 - Effluent discharge to stormwater (temperature).</td></tr>
<tr><td>CAP</td><td>ERA-CC-003 - Dry weather and wet weather first flush automatic diversion to effluent system;
ERA-CC-010 - Residual rain water in ferric storage bund tested, logged on daily log and sent to storm water;</td></tr>
</table>

		ERA-CC-013 - Site effluent mercury analyser; Non-Putrescible Waste identification and segregation
Procedures	The following procedure has been developed to guide the management of this aspect: ▪ SHE-GBL-PRO-ENV-003 – Waste Generation ▪ Botany Waste Management procedure located in Ixom Sharepoint DMS NSW electronic waste tracking system. Provision of suitable means of disposal of all waste Appropriate training on appropriate waste disposal Sub-contractor removes general and filter cake waste on a bi-weekly basis ▪ Employees and contractors should follow the Guidelines of waste disposal flowchart – 'Non-putrescible Waste Disposal Guidelines – Ixom', attached to this document. It is also located in the Botany Site Supporting Documents intranet site. ▪ Ensure waste identification and segregation are being followed ▪ Prevent use of materials that are single use that are not able to be recycled ▪ Minimise use of such products if no alternative is available ▪ Reuse materials / products where possible instead of disposing offsite ▪ Recycle materials / products at a suitable recycling facility ▪ Where offsite disposal is required, dispose of to a suitably licensed facility	
Registers	The following registers have been developed to record and manage this aspect: ▪ Velocity EHS Information System tracks volume of waste material disposed offsite ▪ Botany contaminated waste spreadsheet located in Sharepoint DMS	
Verification Process		
Monitoring	Visual inspection of waste and recyclable material is conducted on a daily basis if additional removal is required beyond the two week removal interval.	
Reporting	Confirmation of the waste received by Ixom are published within the Annual Report to Department of Planning and Infrastructure. The volume of non-hazardous waste recycled, non-hazardous waste disposed to landfill. hazardous waste recycled, and the effluent discharge to trade waste or sewer is documented within the Velocity EHS Information System when invoices are received from sub-contractor. Restricted wastes are recorded in the Botany Contaminated Waste Spreadsheet being held in the Botany Site Supporting Documents intranet site.	

6.2.5. NOISE AND AMENITY

<table>
<tr><th colspan="2">NOISE AND AMENITY</th></tr>
<tr><th colspan="2">Aspect</th></tr>
<tr><td>Definition</td><td>Site Activities relating to visual, lightning impact, transport capacity, noise, vibration and cultural heritage at the site.</td></tr>
<tr><td>Requirements (EPL conditions),

(DA 35/98 conditions, Noise: 36 – 38,</td><td>
L4.1 For the operation of plant and equipment locatied at the BIP premises the following conditions L4.2 to L$.10 inclusively apply:
L4.2 Noise emissions emanating from all active Plants in the BIP premises, including loading and unloading of material in or above the presmises and when determined as a sound level contribution, shall not exceed the following amendity LAeq criteria when measures or computed at any point within one metre of the nearest boundary of any residence int eh vicinity of the premises, using the “FAST” response on the sound level meter.
<table>
<tr><th>Time of Day</th><th>LAeq</th></tr>
<tr><td>Day</td><td>65</td></tr>
<tr><td>Evening</td><td>55</td></tr>
<tr><td>Night</td><td>50</td></tr>
</table>
L4.3 The intrusive noise criteria for all active plants in the BIP shall be that the LAeq15 minute noise levels shall not exceed the amenity LAeq noise levels by mopre than 5 dB(A) when measured or computed at any point within one metre fo the nearest boundary of any residence in the vicinity of the premises, using the “FAST” response on the sound level meter.
L4.4 Each existing BIP Plant shall ensure that new or replacement equipment is selcted and/or installed so that no incerase in noise emissions is thereeby created when measured or computed at any point within one metre of the nearest boundary of any residence in the vicinity of the premises, using the “FAST “ response on the sound level meter.
L4.5 A report for all BIP Licences demonstrating compliance with the noise conditions listed at Condition L4.1 to L4-2 must be appended to the Annual Return for Qenos L10000.
L4.6 For the purposes of Condition L4.1, L4.2 and L4.3:
a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays,
b) Evening is defined as the period from 6pm to 10pm, and
c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.
L4.7 Noise from the premises is to be measured at the most affected point on or within the residential boundary to determine compliance with the LAeq (15 minute) noise limits in condition L4.2.
Where it can be demonstrated that direct measurement of noise from the presmises is impractical, the EPA may accept alternative measns of determining compliance.
L4.8 the noise emission limits identified in condition L4.2 apply under meteorological conditions of:
a) Wind speeds up to 3 m/s at 10 metres above ground level; or
b) Temperature inversion condition sof up to 3 degreesC/100m and wind speeds up to 2m/sw at 10 metres above ground level.
L4.9 Activities at the premises, other than construction work, that meet the noise goal provided in L4.2 may be conducted on a continuous basis.
L4.10 The following activies may be carried out at the presmises outside the hours specified in conditions L4.6:
a) The delivery of maerials as requested by Police or other authorities for safety reasons; and
b) Emergencey work to avoid the loss of lives, property and/or to prevent environmental harm.

Condition 36:
All machinery shall be installed and/or housed in such a manner as to prevent the emission of noise and transmission of vibration outside the premises.

Condition 37:
The premises and operations shall be conducted in such a manner as not to interfere with, or materially affect, the amenity of the neighbourhood outside the boundaries of whole complex currently owned by Orica Australia Pty Ltd, by reason of noise, vibration, smell, fumes, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil or otherwise.
</td></tr>
</table>

<table>
<tr><td></td><td colspan="2">Condition 38:
The occupier of the premises shall not cause, permit or allow the emission of any odorous air impurity from the development such that it can detected outside the property boundaries of the whole complex currently owned by Orica Australia Pty Ltd.</td></tr>
<tr><td colspan="3">Potential impacts</td></tr>
<tr><td>Issues and Risks</td><td colspan="2">Reduction in community quality of life due to noise and vibration associated with:
Brine sludge pumps
ECS fans
Hypo fans
Air compressors
Cells cooling tower pump
Salt delivery
Front end loader delivery
Hydrogen stack operation
Steam venting and leaks
Temporary air pumps
Demolition and construction
Traffic:
Tanker truck pickup and delivery
Courier delivery</td></tr>
<tr><td colspan="3">Mitigation Measures</td></tr>
<tr><td rowspan="2">Physical</td><td>Site Area</td><td>Procedure / Equipment</td></tr>
<tr><td>All CAP</td><td>Modification process considers noise in the selection and installation of new equipment.
ECS fans have noise reduction on fan and stack.
Air compressors are housed in acoustic enclosures.
Cells cooling tower pumps have a noise reduction wall.
Curfew on operation of salt handling equipment
Steam leaks repaired under maintenance program.
Curfew on operation of salt handling equipment</td></tr>
<tr><td>Procedures</td><td colspan="2">The following procedures have been developed to guide the management of this aspect:
Ixom Botany Traffic Management Plan</td></tr>
<tr><td>Registers</td><td colspan="2">The following registers have been developed to record and manage this aspect:
Community Enquiries, Complaints & Feedback hotline record</td></tr>
<tr><td colspan="3">Verification Process</td></tr>
<tr><td>Monitoring</td><td colspan="2">Traffic movement into and from the site is documented and tracked by the sign in process on the attendance board at the security entrance.
Routine monthly boundary noise monitoring is completed by independent third party contractors on an ongoing basis. Monitoring location 8 in the noise report, is the most directly affected location where the receiver is impacted by Ixom Operations</td></tr>
<tr><td>Reporting</td><td colspan="2">Traffic movements are reported within the Annual Report to Department of Planning and Infrastructure.
Noise emissions monitoring results are reported within the Annual Report to Department of Planning and Infrastructure.</td></tr>
</table>

6.2.6. OPERATIONAL (INCL FUEL AND CHEMICALS)

<table>
<tr><th colspan="3">OPERATIONAL (including FUEL AND CHEMICALS)</th></tr>
<tr><th colspan="3">Aspect</th></tr>
<tr><td>Definition</td><td colspan="2">Site Activities relating to the transport and storage of fuel and chemicals at the site.</td></tr>
<tr><td>Requirements (EPL conditions)</td><td colspan="2">O1.1 Licenced activities must be carried out in a competent manner. This includes:
a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.
O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) Must be maintained in a proper and efficient condition; and
b) Must be operated in a proper and efficient condition.</td></tr>
<tr><th colspan="3">Potential impacts</th></tr>
<tr><td>Issues and Risks</td><td colspan="2">Interceptor Pit 1 overflow to Springvale Drain. Adverse impact on aquatic organisms, including lethal dosage; release to SWOOS from Site Utilities without treatment, resulting in adverse impact on trade waste water quality.
▪ Overfilling of onsite storage tanks, lixators, clarifiers, drying towers, cooling towers and Intermediate Bulk Containers (IBCs)
▪ Refuelling diesel equipment including temporary equipment
▪ Changing transformer and site equipment oil
▪ Washing down site equipment
▪ Tanks and sump cleaning</td></tr>
<tr><th colspan="3">Mitigation Measures</th></tr>
<tr><td rowspan="2">Physical</td><td>Site Area</td><td>Procedure / Equipment</td></tr>
<tr><td>All</td><td>Emergency spill response kits present
Designated fuelling location for onsite mobile plant
Fuel and chemicals onsite stored within designated area
Stormwater drains clearly marked</td></tr>
<tr><td>Procedures / Notification</td><td colspan="2">Critical controls are subject to preventative or reactive maintenance and regular inspections. Maintenance needs are identified by the relevant Maintenance, E&I or Operations Leads in consideration of manufacturers specifications, intensity of use or operating performance. Maintenance is planned, scheduled and tracked using the MEX Computerized maintenance management software.
Training provided on chemical handling during Site induction.
The Dangerous Goods Notification for the site is available on the company intranet[15].
Other preventative and mitigative controls, in addition to those identified in the above sections are accessible in the Environmental Risk Assessments supporting the Pollution Incident Response Management Plan (PIRMP) relevant for the plant / operation. These are available on the Botany SH&E Risk Register[16].</td></tr>
<tr><td>Registers</td><td colspan="2">The following registers have been developed to record and manage this aspect:
▪ Register of Site inducted personnel
▪ Computerized Maintenance Management System (CMMS) - Preventative and Reactive Maintenance</td></tr>
<tr><th colspan="3">Verification Process</th></tr>
<tr><td>Monitoring</td><td colspan="2">Visual inspection of chemical storage is completed on a daily basis. Additional monitoring beyond this is completed on an as needs basis, subject to incident and regular audits.</td></tr>
<tr><td>Reporting</td><td colspan="2">NPI reporting completed by 30 September, including emission and transfer estimates.
Spills reported by exception and managed through the Velocity EHS Information System.</td></tr>
</table>

[15] L:\COR\PRIVATE\Botany EMS\03_Planning\03.2_Approvals, Licences, Management Plans\03.2.0_BIP\003_Dangerous Goods Acknowledgement)

[16] Botany SH&E Risk Register / Risk Assessments / ERAs / Choose facility (CAP, GTP etc).

6.2.7. ENERGY (ELECTRICITY) CONSUMPTION

<table>
<tr><th colspan="3">OPERATIONS ENERGY USE</th></tr>
<tr><th colspan="3">Aspect</th></tr>
<tr><td>Definition</td><td colspan="2">Site Activities relating to the consumption of electricity usage.</td></tr>
<tr><td>Requirements (Ixom Botany)</td><td colspan="2">1. The site is regarded as significant electricity user.
a) Equipment are required to operate to maintain supply of products to the business
b)</td></tr>
<tr><th colspan="3">Potential impacts</th></tr>
<tr><td>Issues and Risks</td><td colspan="2">The electrolysers are the equipment consuming majority of the site electricity energy. Production outputs are dependent of the runtime of the electrolyser.
▪ Energy could be monitored and managed to be more efficient without jeopardising production outputs
▪</td></tr>
<tr><th colspan="3">Mitigation Measures</th></tr>
<tr><td rowspan="2">Physical</td><td>Site Area</td><td>Procedure / Equipment</td></tr>
<tr><td>All</td><td>Emergency Response Plan.
Start-up, Shutdown and Abnormal Operations procedures
Operating Conditions and efficiency of the equipment</td></tr>
<tr><td>Procedures / Notification</td><td colspan="2">Critical controls are subject to preventative or reactive maintenance and regular inspections. Maintenance needs are identified by the relevant Maintenance, E&I or Operations Leads in consideration of manufacturers specifications, intensity of use or operating performance. Maintenance is planned, scheduled and tracked using the Computerized Maintenance Management System software.
Energy use tracking on a monthly basis.
Energy Management System audit has been conducted. Report has been made available.</td></tr>
<tr><td>Registers</td><td colspan="2">The following registers have been developed to record and manage this aspect:
▪ Velocity EHS energy usage tracking
▪ Computerized Maintenance Management System (CMMS) Preventative and Reactive Maintenance</td></tr>
<tr><th colspan="3">Verification Process</th></tr>
<tr><td>Monitoring</td><td colspan="2">Monthly energy bills are stored in Velocity system and is continually monitored by the Site Management.</td></tr>
<tr><td>Reporting</td><td colspan="2">NPI reporting completed by 30 September,
NGERS reporting completed by 31 October. Records are kept in Velocity EHS Information System.</td></tr>
</table>

7. SITE ENVIRONMENTAL MANAGEMENT

Environmental Management Procedures for the site seek to eliminate or reduce impacts using the preferred hierarchy strategy as provided below in Table 5. Where possible, activities will be scheduled or planned to avoid causing impacts as this is the preferred management strategy. Where the activity cannot be avoided, management measures will be implemented to impede, prevent, or minimise the environmental consequence. Where possible, all activities on site will use this process to avoid and prevent environmental impacts from operational activities.

Table 5: Preferred Environmental Management Hierarchy

Most Preferred	Eliminate / Avoid	Activities that could cause adverse impacts
	Prevent	Measures that impeded the occurrence of negative impacts
	Preserve	Preventing future actions that may negatively impact a resource or attribute
	Minimise	Limiting or reducing the degree of an impact
	Rehabilitate	Repairing or enhancing affected areas
	Restore	Restoring an affected resource to its state prior to impact
Least Preferred	Compensate	Create or enhance resource to compensate for what is lost

7.1. Reporting

7.1.1. INTERNAL

Internal environmental reporting includes incident management, management of change, and site inspection procedures. All of these are described in the following sections. Internal environmental metric reporting will occur as required on the site, and the following scheduled meetings will include any relevant items as needed:

Table 6: Regular internal communications

Subject	Audience	Method	Frequency
GTP management team meeting	GTP management team	In person	Monthly
GTP operations meeting	GTP operations staff	In person	Weekly
CAP 9 am meeting	CAP operations staff and management	In person	Daily

Incident Management

Ixom personnel are made aware through inductions and ongoing training that incidents are to be reported to their relevant line manager immediately. Line managers then report to the Site Manager. These persons are responsible for implementing an appropriate response and further internal reporting.

Where an incident, non-conformance or improvement is identified for the Botany site, these are recorded in the Velocity EHS Information System (an online database for the management of SH&E reporting). The Velocity EHS Information System allows classification, reporting and investigation and corrective actions of incidents as well as actions and follow up to be designated to the appropriate person for completion and tracking. Specific responsibilities are captured within the Botany Stakeholder Plan, which outlines roles and engagement levels, summarised in Table 7.

Table 7: Internal Stakeholder Responsibility Classification

Classification	Rating	Description
Responsible	R	Person who does the work to achieve the task
Accountable	A	An *accountable* must sign off on work that *responsible* provides
Consulted	C	Opinions are sought – to way communication
Informed	I	Persons to be kept up to date – one way communication

Incident management is guided by the SH&E Incident Management Procedure[17] for the site, which describes requirements for the management of SH&E incidents, including the requirements for incident response, notification, recording, investigation, close-out and communications of learnings.

Incident response plans (Pollution, Emergency and Crisis Plans) have been prepared in consideration of Ixom's procedures and include information relating to preventative controls, mitigation measures and immediate reporting. Those responsible for the site and compliance matters have been trained on the content of these plans.

Non Conformance and Corrective Action

Where a non-conformance and subsequent action are identified for the Botany site, these are recorded in the Velocity EHS Information System. Non-compliances against a licence condition are a specific incident type captured by this system.

The Velocity EHS Information system describes the non-conformance, and documents the escalation, review and closeout process through lifecycle of the incident. The Velocity EHS Information System includes a non-subjective severity matrix which is automatically linked to a distribution list, developed based on the potential severities of incidents.

Actions can be either preventive or corrective:

- A preventive action is an action to prevent an event occurring, typically raised during an audit.
- A corrective action is an action to prevent an event recurring, typically raised following an incident.

Where necessary, the non-conformance is addressed by a corrective action immediately, Where the non-conformance does not require immediate attention, the timeframe for incident close out and subsequent audits is defined within the Velocity EHS Information System.

Public Complaint or Feedback

The community enquiries, complaints and feedback telephone line is provided to the public via http://www.ixom.com/being-responsible/environmental-monitoring-data/botany. The website provides further information regarding the safety management system for the IXOM operations, as well as the specific CAP emergency chlorine scrubber system.

Where a complaint and or feedback is received, it is documented by the Environmental Engineer, and where applicable to Ixom, is raised in the Velocity EHS Information System under the correct Facility Grouping. The responsible area is then required to address the complaint and respond to the complainant within an agreed timeframe. The Velocity EHS Information System records when the complaint is closed out and tracks unresolved complaints.

Management of Change

The site adopts and implements Hazard Studies in accordance with the Risk Management Process Procedure Suite. The procedures provide a systematic approach to identifying and managing risk (including environmental risks).

Larger changes or installations go through Hazard Studies which require review of environmental factors, and / or are subject to environmental assessments / environmental impacts statements. Each project must determine and document which of the 6 Hazard Study stages are required and agree this with the Business Hazard Study Manager.

Smaller changes are managed through the modifications process. Section C13 of the Management of Change form (which is part of the modification process) considers environmental impacts. Modifications forms are maintained in hard copy or on the Lotus Notes based Modifications Database and / or Velocity EHS Information System.

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Risk management records are maintained on the Lotus Notes based Botany Risk Register or on the IXOM Risk DNA system.

Site Inspection and Auditing

Each plant and the site in general is subject to a number of periodic inspections. These are implemented to monitor activities performance, and consider indicators demonstrating compliance such as waste management, air quality, noise, spills and leaks, and confirmation plant parameters are in specification. These include:

- CAP (and Products) Daily Check Sheets (refer control room for access);
- CAP Weekly Housekeeping Checklist (refer control room for access);
- CAP Weekly Safety Checklist (refer control room for access);
- CAP and Process historian database (available through uniformance); and
- Monthly Site Inspection.

Records of completed inspections are kept on file on the company intranet[18].

Operations on the site are subject to auditing to ensure that activities are being carried out in accordance with the applicable legal instruments. These are carried out internally, by independent auditors and by regulators and range from desktop audits through to inspections of plant and facilities[19].

7.1.2. EXTERNAL

Regulatory Notification

Ixom Botany maintains a close relationship with relevant authorities. These include:

- NSW EPA (Sydney Industry, Contaminated Sites and Waste);
- Department of Planning and Infrastructure (Major Projects and Hazards);
- Independent Pricing and Regulatory Tribunal (Water);
- City of Botany Bay Council (Planning);
- WorkCover Authority;
- NSW Health (South Eastern Sydney Public Health Unit); and
- Department of Primary Industries (Office of Water).

Communications with these authorities for incidents and non-compliance are strictly the responsibility of the Site Manager, or their delegates as identified in the PIRMP and ERP.

Communications for operational matters are the responsibility of those managing the particular item of work or legislative instrument of concern.

External Reporting Requirements

Ixom Botany has several external reporting obligations which are required to be met on an annual basis. These are detailed in the Table 5.

Table 5: External Annual Reporting Obligations

Report	Statutory Body	Due Date	Details
Annual Return	NSW EPA	60 days after the end of each reporting period	Annual submission of declaration of compliance with site environmental licence conditions, including: ▪ Statement of compliance; and ▪ A monitoring and complaints summary.
NPI	Australian Department of Sustainability, Environment, Water, Population and Communities	30 September annually	National Pollutant Inventory online submission (submission of inventory of NPI substances used between 1 July and 30 June).

[18] L:\COR\PRIVATE\Botany EMS\04_Compliance management\04.4_Inspections, checklists and observation records
19 L:\COR\PRIVATE\Botany EMS\07_Audit, review and continual improvement

NGER	Clean Energy Regulator	31 October annually	National Greenhouse & Energy Report (site has reporting obligations for national submission, reporting period 1 July to 30 June).

Community Notification and Consultation

Community engagement is ongoing, with tasks, frequency and responsible parties identified within the Botany Stakeholder Plan.

In the event of a pollution incident, consultation with relevant community stakeholders shall occur as soon as is practical in line with the ERP and PIRMP, as well as SHEQ Standards *SHE-GBL-STA-006 Communication and Consultation* and *SHE-GBL-STA-016 External Stakeholders*.

If the pollution incident presents an immediate threat to human health or property, public notifications shall be made by Emergency Services.

Potentially affected community members shall be contacted via door knocks or letter box drops. Door knocks and letterbox drops shall also be used to provide early warnings and regular updates to owners/occupiers as required.

Interested stakeholders, as appropriate for the nature / scale of the pollution incident, such as the Community Participation and Review Committee, Community Liaison Committee and the Botany Industrial Park Community Consultative Committee, shall be notified via phone and / or email.

Notification, as appropriate for the nature / scale of the pollution incident may also be provided to the wider community by way of media release on www.ixom.com.

7.2. Record Keeping and Document Control

All records required to be kept by EPL 20547 must be:

- In a legible form, or in a form that can readily be reduced to a legible form
- Kept for at least 4 years after the monitoring or event to which they relate or took place
- Produced in a legible form to any authorised officer of the EPA who asks to see them.

All environmentally relevant documents are accessible through the site Environmental Management System folders [20,21,22,23] or are managed on the Lotus Notes based Document Management System.

7.3. Review of Environmental Management Plan

The site completes both a targeted and comprehensive review of the EMP on a regular basis. Management responsible for the site complete a thorough review of the document and associated documentation during the comprehensive review phase. The activities to be completed during each review are detailed in Table 6.

Table 6: EMP Review Schedule

Annual Targeted Review	Comprehensive Review (3 yearly)
Update site organisational structure (when changes occur)	Review all content in the EMP against the current version of the Group Procedure (SHE-GBL-PRO-ENV-001) and relevant guidelines, and update accordingly
Update any areas in which actions have impacted the content included in the EMP	Review all general and site specific legal requirements including new versions of requirements. Update accordingly.
Update licences / agreements including expiration / issue dates (when changes occur)	Review impacts and aspects register. Validate all significant impacts.
Update monitoring requirements (when changes occur)	Update any new improvement program processes (when changes occur)

[20] L:\COR\PRIVATE\Botany EMS
[21] L:\COR\PRIVATE\Botany EMS\03_Planning\03.2_Approvals, Licences, Management Plans
[22] L:\COR\PRIVATE\Botany EMS\04_Compliance management\04.5_Monitoring records
[23] L:\COR\PRIVATE\Botany EMS\04_Compliance management\04.6_Reporting records

Include any new impacts / aspects if activities have altered on site or new activities have been introduced.	Review training requirements and E training packages
Update references to controlled documents or files (when changes occur)	Review of standards in which monitoring is completed to, to ensure the method used is being followed and the site is in compliance.

8. ATTACHMENTS

Attachment A – Site Maps / Plans

- **Site location**
- **Site Layout**
- **BIP Process Effluent and Stormwater Drainage**
- **Aerial view of GTP and pipeline network**
- **Guidelines of waste disposal flowchart – Non-putrescible waste disposal guidelines**

End of Document