

The background of the page is white with several large, overlapping teal-colored geometric shapes, primarily triangles and polygons, scattered across the space. The shapes vary in size and orientation, creating a modern, abstract pattern.

# **IXOM**

Department of Planning and Environment

2017 Annual Report

Prepared by: Steven Barclay

Date: January 2018

Revision: 1.0

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# 1 Title Block

**Table 1: Annual Review title block**

Name of operation	Ixom Botany ChlorAlkali Plant
Name of operator	Ixom Operations Pty Ltd
Development consent / project approval #	DA35/98
Name of holder of development consent / project approval	Ixom Operations Pty Ltd
Annual Review Start Date	1 December 2016
Annual Review End Date	30 November 2017
<p>I, Steven Barclay, certify that this audit report is a true and accurate record of the compliance status of Ixom Botany ChlorAlkali Plant for the period 1 December 2016 – 30 November 2017 and that I am authorised to make this statement on behalf of Ixom Operations Pty Ltd.</p> <p><i>Note.</i></p> <p>a) <i>The Annual Review is an ‘environmental audit’ for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p>b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Name of Authorising reporting officer	Steven Barclay
Title of Authorised Reporting Officer	Botany Site Manager
Signature of Authorised Reporting Officer	
Date	

## 2 Statement of Compliance

The following tables detail the compliance status of the Ixom Botany ChlorAlkali plant against relevant approvals and licences.

**Table 2: Statement of Compliance**

Were all conditions of the approvals complied with	
DA 35/98	No
EPL 20547	No

**Table 3: Non-compliances**

Relevant Approval	Condition Number	Condition Description (summary)	Compliance status	Comment	Where addressed in Annual Review
DA 35/98	Condition 5	Provide a revised EMP	Non-compliant	Deficiency resolved. EMP revised in Sept 17 and issued to DP&E	See Section 12.1
	Condition 13	Establish management system that defines statutory reporting requirements	Non-compliant	Deficiency resolved. Completed and published in November 2017	See Section 12.1
	Condition 35	Prepare a noise management plan	Non-compliant	Deficiency resolved. Completed as part of September 17 EMP review	See Section 12.1
	Condition 50	Prepare a waste management plan	Non-compliant	Deficiency resolved. Completed as part of Sept 17 EMP review	See Section 12.1
EPL 20547	M1.3	Include name of person who took samples	Non-compliant	Deficiency resolved. Records have been updated.	See Section 12.1
	M2.2	Review sampling protocol for HCL burner	Non-compliant	Deficiency resolved. Modified licence issued by EPA in July 17	See Section 12.1
	M4.2	Update complaint record process	Non-compliant	Deficiency resolved. Procedure confirmed with BIP manager	See Section 12.1

### Compliance status key for Table 3

Risk level	Colour code	Description
<b>High</b>	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
<b>Medium</b>	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for serious environmental consequences, but is unlikely to occur; or</li> <li>potential for moderate environmental consequences, but is likely to occur</li> </ul>
<b>Low</b>	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>potential for low environmental consequences, but is likely to occur</li> </ul>
<b>Administrative non-compliance</b>	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

## 3 Introduction

### 3.1 Site Overview

The site is located on Beauchamp Road, Matraville, within the Botany Industrial Park (BIP). Site details are summarised in Table 4.

**Table 4: 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	Appendix A
Site Plan	Appendix A
Current Use	Botany ChlorAlkali Plant
Lot No	Part of Lot 104 DP 1192400
Site Owner	Orica Limited owns approximately 40% of land at the BIP, including the area specific to this EMP

The facility manufactures chlorine and caustic soda from the electrolysis of salt. Hydrogen is produced as a by-product. The four main products produced are sodium hypochlorite (referred to as 'Hypo'), hydrochloric acid, caustic soda and ferric chloride.

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 kilo Amps (KA) per annum 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).

### 3.2 Key Contacts for Environmental Management

**Table 5: Environmental Contacts for Ixom Botany ChlorAlkali Plant**

Name	Position	Contact Details
Steven Barclay	Ixom Site Manager	02 3952 2118 0447 216 265 steven.barclay@ixom.com
Ben Lim	BIP Environmental Engineer	02 9381 8143 ben.lim@orica.com

## 4 Approvals

The following approvals are currently held or operated under by the Ixom Botany ChlorAlkali Plant:

**Table 6: Current Approvals and Licences**

Approval No.	Date last varied	Details of any changes made during reporting period
DA 35/98	10-09-2012	No change
EPL 20547	03-07-2017	Condition M2.4 removed from licence
MHF 10358-01	11-02-2014	No change
DG 35/03500 (held by Botany Industrial Park)	30-07-2017	Added existing air receivers to register. July 17

## 5 Operations Summary

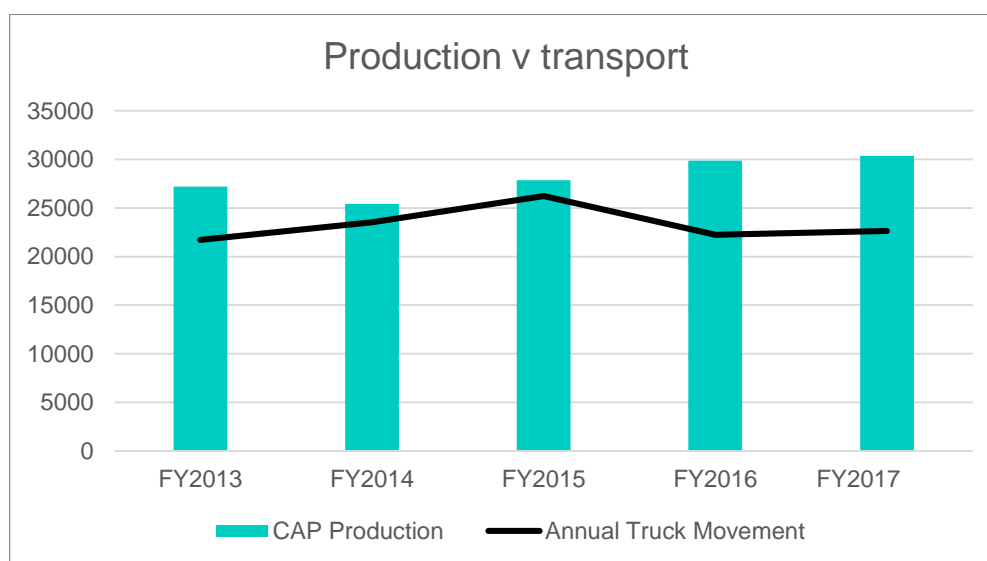
### 5.1 Current Reporting Period

The period covered by this report saw continuation of steady operation with a slight increase in output compared to the previous year. The plant achieved an uptime rate of approximately 91% which indicates consistent operation throughout the year.

Truck movements (figures reported below include both inwards and outwards movements – ie one truck entering the facility to load then exiting is counted as two truck movements) remained consistent with 2016. Table 7 and Figure 1 show a summary of key metrics for the facility over this reporting period compared to previous years.

**Table 7: Production Metrics Summary**

Reporting Requirement	Limit	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Traffic movements into and out of site	N/A	22,500	22,648	22,690
Hours spent by loaded chlorine road tankers on site	N/A	0	0	0
Production (100% caustic)	N/A	29,847	30,347	30,500



**Figure 1: Truck Movements vs Production**

Note: Financial year (FY) data provided in Figure 1 is for the October to September period each year (ie – FY2017 shows data from October 2016 to September 2017)

### 5.2 Next Reporting Period

Continued steady operation is forecast for the next reporting period. There are no upgrades or expansions planned for the Ixom Botany ChlorAlkali Plant in the 2017-18 reporting period.



## 6 Actions Required from Previous Annual Review

Table 8 details actions which have been undertaken during the reporting period, in response to feedback on the previous Annual Review.

**Table 8: Actions required from previous Annual Review**

Action required from previous Annual Review	Requested by	Action taken by the Operator	Where discussed in Annual Review
Undertake Independent Compliance Audit, including reference to the EIS	DP&E	Audit undertaken in December 2016	Section 11 – Independent Audit

## 7 Environmental Performance

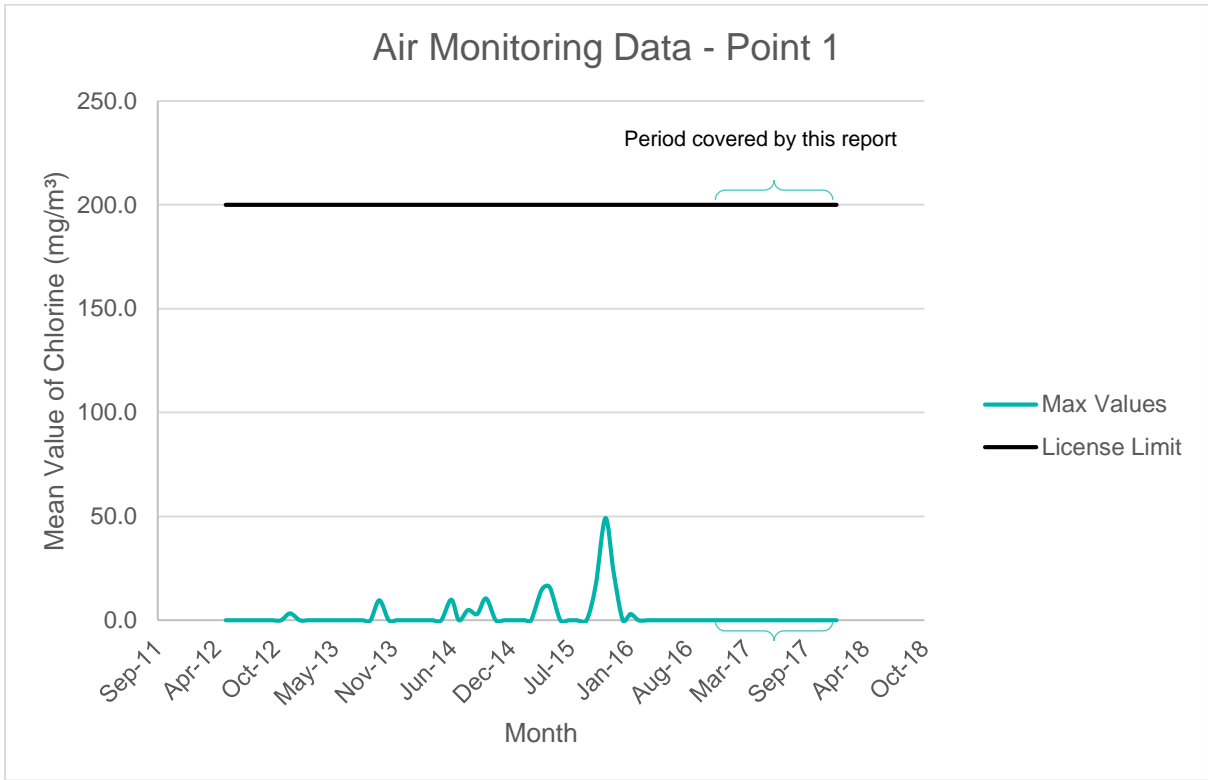
Table 9 details the key environmental performance parameters for the Ixom Botany ChlorAlkali Plant.

During the reporting period the Environmental Management plan was revised, and submitted to the Department of Planning and Environment in November 2017.

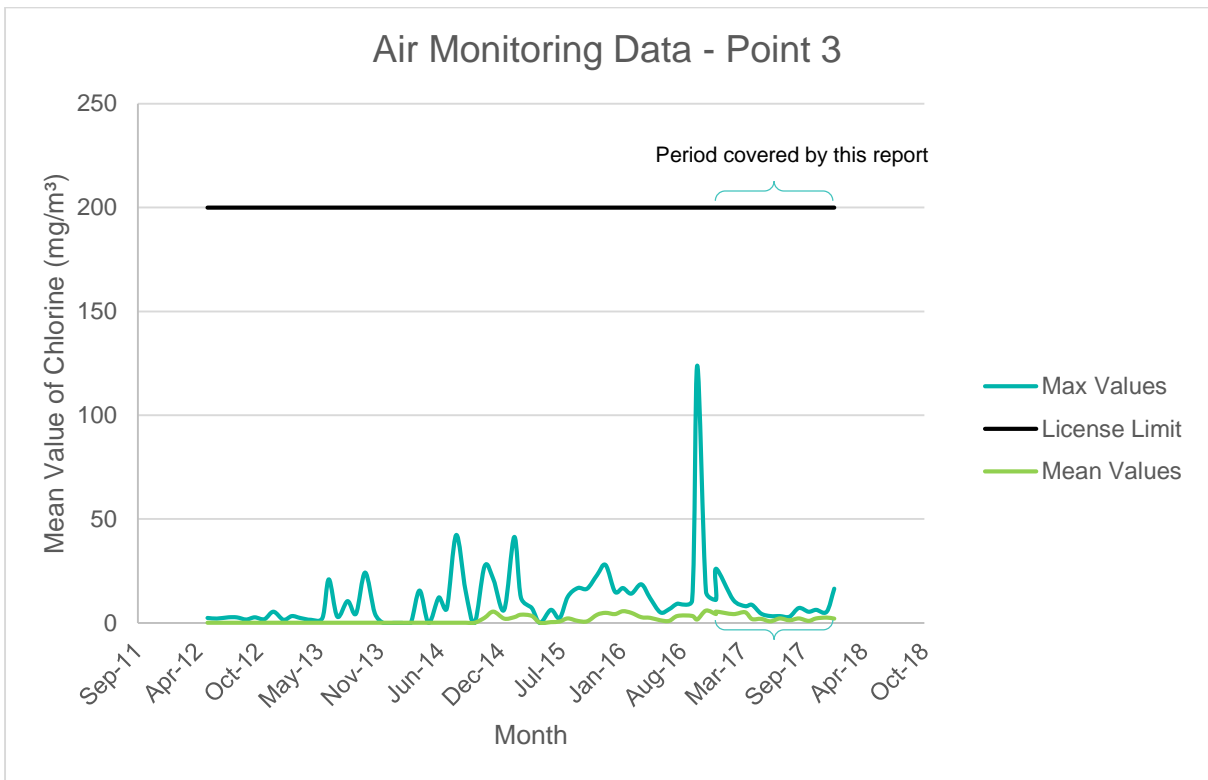
**Table 9: Environmental Performance**

Aspect	Approval criteria / EIS prediction	Performance during the reporting period	Trend / key management implications	Implemented/proposed management actions
Noise	Day – 65 LAeq Evening – 55 LAeq Night - 50 LAeq  (Limits from EPL 20547, Section L4.2)	Compliant. Noise monitoring was undertaken by Stephenson Environmental Management Australia during the reporting period. There were no exceedances of the amenity boundary limit related to activities at the ChlorAlkali plant or BIP partners.	The results are consistent with results over the last 7 years.	No action required
Air quality	There are 3 licenced discharge points at the Ixom Botany ChlorAlkali plant:  <b>Point 1</b> Hypochlorite Backing Tower. Discharge limit = 200mg/m <sup>3</sup> Chlorine, Monitored Continuously  <b>Point 2</b> Absorption Tail Tower. Discharge limit = 30mg/m <sup>3</sup> Hydrogen Chloride. Measured quarterly  <b>Point 3</b> Emergency Chlorine Vent. No discharge limit in EPL, statutory limit from Schedule 4 of the POEO act of 200mg/m <sup>3</sup> used for reference. Monitored Continuously	Compliant. Air quality data is reported on the Ixom website each month and is included in Appendix B of this report.	Results are consistent with that of previous years. See graphs below.  Monitoring results for Point 2 have been consistently below monitoring thresholds, and therefore have not been graphed.	No action required
Water	See Section 8 of this report			
Biodiversity	The EIS identified that there was no expected impact on Biodiversity from the operation of	No impact	None identified	No action required

	the Ixom Botany ChlorAlkali Plant			
Heritage	The EIS identified that there was no expected impact on Aboriginal, Natural or Urban Heritage items, relics or places from the operation of the Ixom Botany ChlorAlkali Plant	No impact	None identified	No action required
Flora and Fauna	The EIS indicated that no flora or fauna were expected to be directly affected by the operation of the Ixom Botany ChlorAlkali Plant	No impact	None identified	No action required
Amenity	<p>The premises and operations shall be conducted in such a manner as not to interfere with, or materially affect, the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil, or otherwise.</p> <p>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 be detected outside the property boundaries by its odour.</p> <p>(DA 35/98 conditions 37 and 38)</p>	<p>Compliant.</p> <p>There were no instances of material harm affecting the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, vapour, steam, soot, ash, dust or waste products.</p> <p>There were no reports of odorous material from the development detected outside the property boundaries.</p> <p>There were no community complaints received in the reporting period related to the Ixom Botany ChlorAlkali Plant or its operation.</p>	None identified	No action required



**Figure 2: Point 1 Air Monitoring Data April 2012 - November 2017**



**Figure 3: Point 3 Air Monitoring Data April 2012 - November 2017**  
 \* Statute limit as per Schedule 4 of POEO (Clean Air) Regulation

## 7.1 Continuous Improvement

The Ixom Botany site has implemented a continuous improvement program. Each financial year a Safety, Health, Environment and Quality (SHEQ) improvement plan is developed, listing the improvement initiatives for the year.

Table 10 and **Error! Reference source not found.** list the continuous improvement projects which were implemented during the 2016-17 reporting period.

**Table 10: Continuous Improvement Projects Implemented in 2016-17**

Project	Impact	Completion Date
Reduction in brine purge	Reduced plant effluent volume	Started, On-going
Products Cooling tower blowdown optimisation	Reduced plant effluent flow	Complete
Cells cooling tower conversion to GTP water	Optimise blowdown	Complete
Implement a stormwater monitoring program (BIP)	To quantify current stormwater characteristics and develop an improvement plan	Started, due to be completed Sept 18
Direct acid effluent to acid treatment	Improved pH control on effluent	Started, due to be completed Aug 18

Projects which have been included in the FY2018 SHEQ plan are detailed in Section 13 of this report.

## 8 Water Management

Potable water is supplied to the Ixom Botany site through the BIP Site Utilities. Water usage for the reporting period is shown in Table 11.

The potable water consumptions was significantly reduced over the reporting period due to an improvement project where the water consumed in the cells cooling tower was changed from 100% potable water to a 50% mixture of potable and treated water. This project was jointly managed by Ixom and the Water Treatment Specialist Contracting company whom we utilise for management of the cooling towers on site.

**Table 11: Water Usage**

	Previous Reporting Period (Dec 2015 – Nov 2016)	Current Reporting Period (Dec 2016 – Nov 2017)
Potable Water Consumed (kL)	58,850	36,496
Recycled Water Consumed (kL)	181,670	175,929
Water Incorporated in Product (kL)	133,930	136,163
Effluent Discharged to BIP Trade-Waste System (kL)	70,770	65,141

The Site Stormwater and Effluent System are managed by BIP Site Utilities.

Effluent from the Ixom ChlorAlkali Plant is collected and processed in one of two automated effluent treatment tanks. These tanks each accumulate the plant effluent the dose acid or base into the tanks to control the pH to a consistent and acceptable level. When the target pH is achieved, the tanks are discharged to the EP6 effluent collection pit where flow and pH are continuously measured and recorded. The effluent then joins the other effluent streams from the other facilities at the Botany Industrial Park and flows to the Site Utilities effluent system. In this facility, the effluent is monitored and the pH adjusted where required to achieve permissible effluent standards before discharge from site.

The stormwater from the facility is collected through clearly labelled stormwater drains and flows to the Site Utilities stormwater system. The stormwater is continuously monitored for flow and pH. If the pH of the stormwater exceeds the permissible limits, the stormwater is automatically diverted to the Site Utilities effluent system where is it further treated through a pH adjustment in order to meet the required specifications prior to discharge.

Over the 2016-17 reporting period the Ixom Botany ChlorAlkali plant has implemented two key environmental improvement initiatives: reducing the Brine Purge through implementation of improved process control and reducing cooling tower blowdown.

Figure 4 shows the impact that these projects have had on the overall effluent volume discharged from the site.

Figure 4: Effluent Discharged from Ixom Botany ChlorAlkali Plant

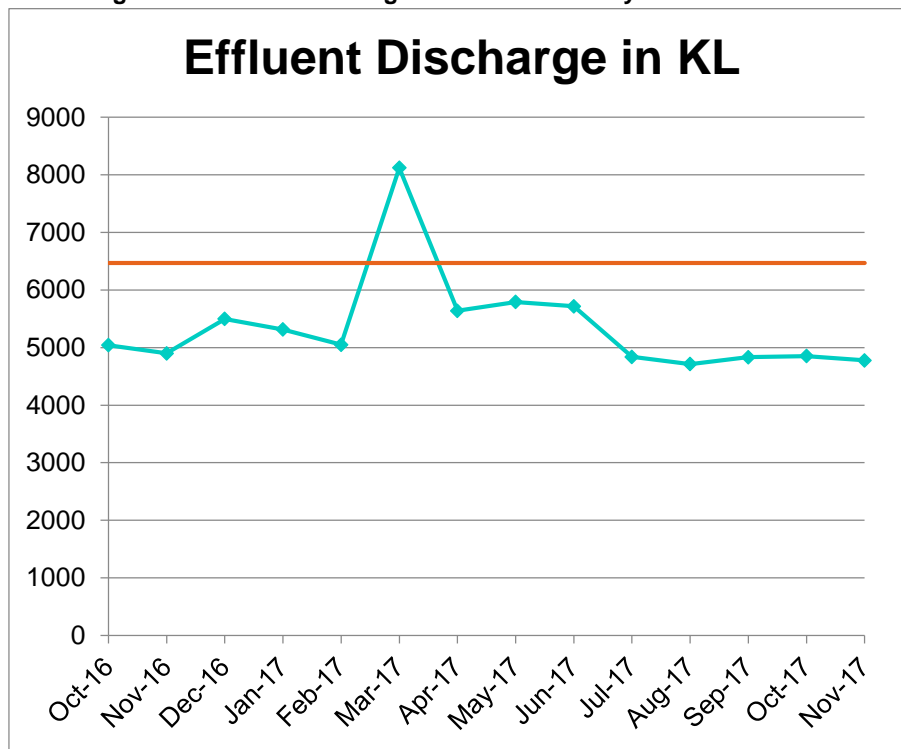
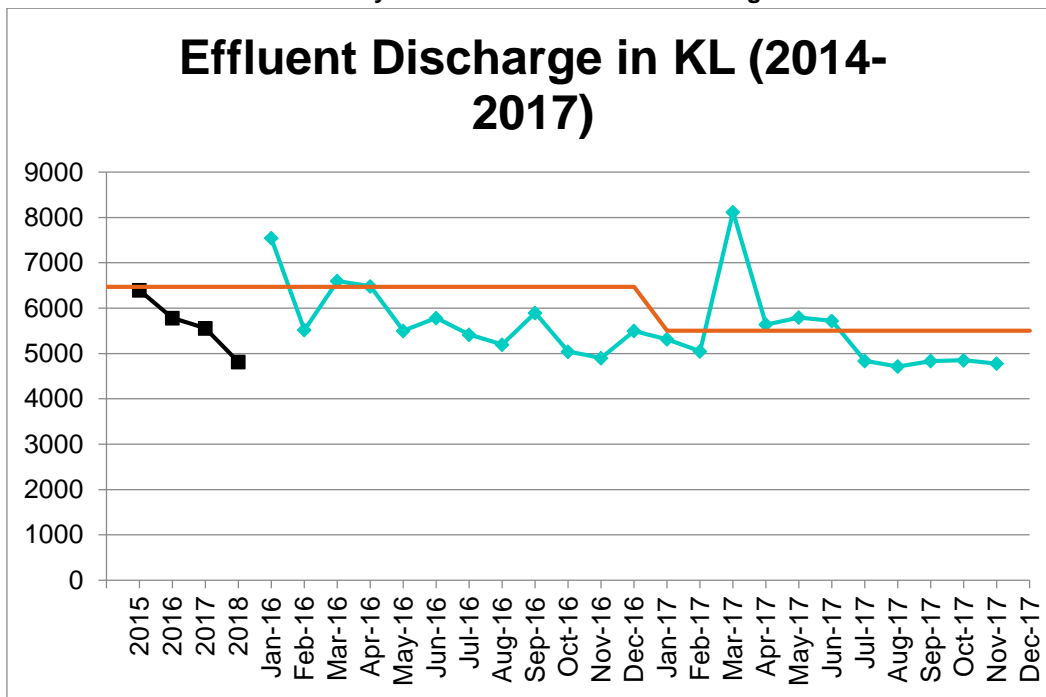


Table 12: Year on year decrease in effluent discharged from site



## 9 Rehabilitation

There have been no rehabilitation activities undertaken at the Ixom Botany ChlorAlkali Plant during the reporting period.

## 10 Community

The Botany Industrial Park (BIP) maintains an up to date website for the public that provides the following information:

- Minutes of the BIP Community Consultative Committee (BIPCC)
- Community Hotline
- Contacts for Regulators
- Items of interest including updates where appropriate. Currently information on PFAs is being shared.
- Commitments to Safety

Ixom maintains an up to date public website that provides the following information:

- Information about the Botany Chloralkali plant
- Details of Licence conditions
- Contact details for more information on the facility
- Map of licensed discharge points
- Results of monthly air quality monitoring
- Safety Management system
- Emergency Response including PIRMP
- Actions for the public to take in the event of an emergency
- Pollution Notification Process

There were three BIPCC meetings held throughout the reporting period, on 15 January 2017, 26 July 2017, 29 November 2017. Ixom representatives attended all meetings.

There were no public complaints recorded against Ixom via the community hotline during the reporting period.



## 11 Independent Audits

### 11.1 Independent Compliance Audit (ICA)

In April 2016, Ixom received a letter from the NSW Department of Planning and Environment (DP&E), requesting an Independent Compliance Audit (ICA) of the CAP at Botany which would be in lieu of the Independent Environmental Audit (IEA) triggered by the Development Consent DA 35/98 Condition 24, as well in lieu of resubmission of the Annual Report ended November 2015.

The period of the ICA was defined to be from 26 January 2013 (the end of the previous IEA period) to 29 November 2016 (the first day of the site visit of this ICA). This work was undertaken by WSP/Parsons Brinckerhoff, after approval by the DP&E on 18 October 2016. Whilst the report was not completed within the reporting period, an overview of results has been included below, for completeness.

The next IEA is due to be completed in December 2019.

#### 11.1.1 Summary of Findings

During the Audit a total of 266 approval and licence conditions and commitments were assessed, resulting in seven non-compliances. Five of these non-compliances were listed as “administrative” (i.e. non-compliance does not impact on performance), with the remaining two non-compliances being assessed and ranked as “low” risk.

There were no “high” or “medium” rated risks identified in the audit.

A summary of the actions from the audit can be found in Table 14, Section 12.1 of this report.

## 11.2 Hazard Audit

The last Hazard Audit was conducted on 26 June 2015, and was undertaken by an independent approved third party against the requirements of HIPAP No5 – Hazard Audit Department of Planning 2011.

The next Hazard Audit is due to be completed in June 2018.

### 11.2.1 Summary of Hazard Audit Findings

The Audit found that there was demonstration of a ‘clear commitment to maintaining plant operations in terms of formal risk management performance’ through the ‘use of several programs for risk management and continuous safety improvement initiatives.’

There were 13 recommendations from the Audit, all prioritised as “Medium”. The status of these recommendations is detailed in Table 13.

**Table 13: Status of Hazard Audit Recommendations**

Recommendation	Status (as at November 2017)
Ensure Electrical work carried out on site, including electrical isolations, is lined up with the required procedures and applicable standard.	Standard and procedure in place
Electrical procedures require updating	Complete - All procedures up to date
Conduct drill for bomb threat	Complete - 28 August 2017
Update SHE Committee records for CAP to show attendance to meetings	Complete minutes reflect attendees
Authorised clearance issuers listing is not up to date	Complete
Continue investigation on how to reduce the risk of damage to gantry and camlocks	Complete - camlocks angle changed
Provide signs on vessels and pipes within the ferric chloride plant as per legislative requirements	Complete
Check DG signs around plants to ensure signage up to date	DG audit conducted in July 17 and signage being updated
Check adequacy of hypo tank bunding at the cells cooling tower and sulphuric acid tanks	Incomplete - project initiated to correct
Replace/rectify missing flange covers in the ferric chloride plant area	Complete
Work instructions used at the CAP plant are of varying quality and standard	Work instructions progressively updated and will be moved to new DMS
Follow up mandatory PTW training	Complete
Initiate Job Cycle checks for critical maintenance procedures	Complete

## 12 Incidents and Non-Compliances During the Reporting Period

### 12.1 Independent Compliance Audit

The following table details non-compliances identified in the Independent Compliance Audit undertaken in December 2016

Table 14: Actions from ICA

NC No	Risk Rating	Action	Status – November 2017
DA 35/98 Condition 5	Administrative NC	Develop and Implement a revised EMP seeking approval of DP&E for confirmation	Revised EMP created in September 2017. Table 2 of the EMP lists site specific instruments for relevant legislation. Document submitted to DP&E in November 17. Awaiting response.
DA 35/98 Condition 13	Administrative NC	Ixom to implement a compliance management system that identifies regulatory requirements and due dates	Botany Licence reporting requirement table published, covering period 2018/2019
DA 35/98 Condition 35	Low	Prepare a noise management plan as a component of the site EMP	EMP section 6.2-5 has been updated to include noise management plan.
DA 35/98 Condition 50	Low	Prepare a waste management plan as part of the site EMP	EMP section 6.2-4 has been updated to include waste management.
EPL 20547 M1.3	Administrative NC	Include the name of the person who collected the sample on sampling records triggered by EPL 20547	Records have been confirmed as updated and action closed in Velocity- Ixom incident management system.
EPL 20547 M2.2	Administrative NC	Review sampling protocol for HCl burner	Modified licence issued by EPA dated July 2017 clarifying sampling protocol.
EPL 20547 M4.2	Administrative NC	Update the complaint record process to include records of the method of making the complaint and if no action taken	BIP maintains site register of complaints. BIP environment manager alerts Ixom to relevant complaints and Site Manager ensures they are entered into Velocity and actioned. BIP complaint record process discussed with BIP Manager who confirmed that appropriate records will be maintained.

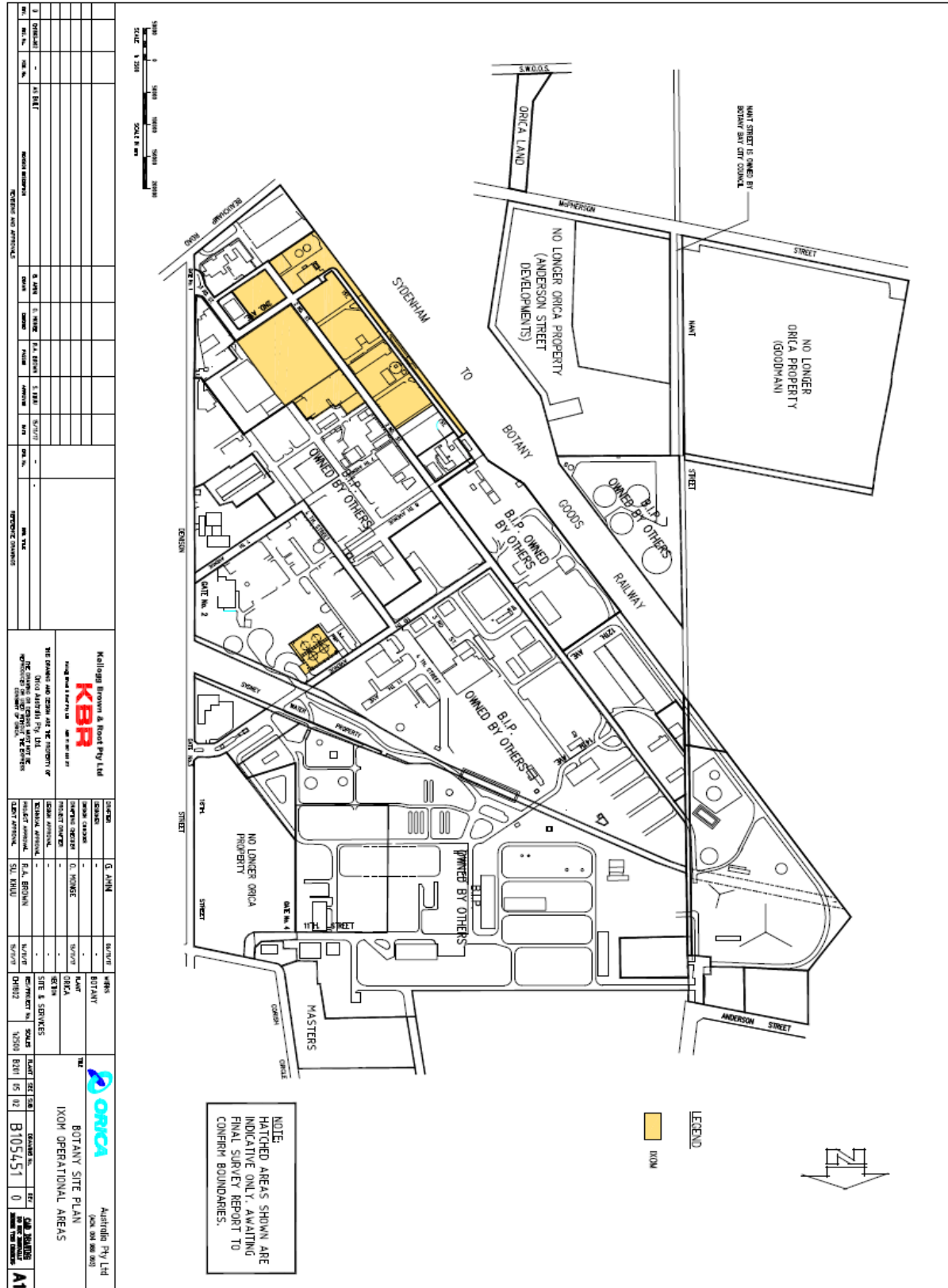
## 13 Activities to be completed in the next Reporting Period

Each year, the Ixom sites develop and agree on a Safety, Health, Environment and Quality (SHEQ) plan. This plan is communicated to all employees. The following tables detail activities that are scheduled to be completed during the December 2016 - November 2017 reporting period. Further environmental initiatives are also included in Table 10 in Section 7.1 of this report.

**Table 15: Activities (incl. Continuous Improvement identified in 2017/2018 SHEQ plan)**

Activity Detail	Scheduled Completion Date
Update asbestos management survey	Ongoing
Using the continuous improvement process, look for ways to reduce effluent	Ongoing
Implement a stormwater monitoring program	2017/2018
Continue with stormwater improvement programs, and complete sampling and develop a response plan by November 2018.	November 2018
Replace stormwater lines	TBD
Replace effluent transfer lines to trade-waste pit	TBD
Cooling tower blowdown reduction	Dec 2017
Control valve installed to control effluent from sulphuric acid bund to EP6 - tradewaste discharge	Dec 2017

## Appendix A – Site Map



## Appendix B - Air Monitoring Data

Historical data is available through the Ixom website: <https://www.ixom.com/being-responsible/environmental-monitoring-data/botany>