



Sustainability Report 2018

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IPL defines Sustainability as ‘the creation of long term economic value whilst caring for our people, our communities and our environment’. This commitment to Sustainability is driven by the Company’s Values and is core to the way IPL operates its business.

For nine years Incitec Pivot Limited (IPL) has produced a stand-alone Sustainability Report, incrementally improving disclosure each year against the Global Reporting Initiative (GRI) Guidelines. This year is the fifth year that sustainability performance data has been included in the [Annual Report](#), thereby providing an account of IPL’s annual economic, environmental, social and governance performance in one document.

This online interactive Sustainability Report contains further information on those issues most material to the sustainability of IPL in 2018, so that stakeholders can better understand our social, environmental and safety focus and performance. The Report covers the 12 month period from 1 October 2017 to 30 September 2018, the Company’s financial year. Our last Sustainability Report was for the 2017 IPL financial year and was also published online in March 2018. It can be downloaded [here](#).

This Report covers the performance of IPL and its subsidiaries and the activities over which we had operational control for all or part of the financial year ended 30 September 2018. This period is referred to throughout the Report as ‘2018’. Together, this Report, the [2018 Sustainability Summary](#), the [2018 Annual Report](#) and the [2018 Corporate Governance Statement](#) provide the full account of IPL’s performance for the period.

This Report has been prepared in accordance with the GRI Standards: Core option. See our [GRI Index](#) here.

Prior year Sustainability Reports can be found in the Sustainability section of our website at www.incitecpivot.com.au/sustainability. We recognise the need to report on issues most relevant to our business and our key stakeholders, and we welcome feedback on this Report and our sustainability progress. Please direct any questions or comments regarding this Report or its content to us via sustainability.feedback@incitecpivot.com.au.

A Message from the CEO

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2018, we are not satisfied with this performance. We are applying our continuous improvement mindset to re-focus our Zero Harm strategy, broadening and setting year-on-year improvement objectives across environmental care and process safety as well as targeting a 30 percent improvement in TRIFR by 2021.

Talented & Engaged People are key to the delivery of our One IPL mindset. In 2018 we built a new leadership structure which includes the role of Group Chief Technology Development Officer. This reflects the importance of continuing to develop **Leading Technology Solutions** to meet new challenges facing our customers, including in the areas of safety, environmental responsibility, energy efficiency and climate change. To better engage our workforce, we conducted a company-wide employee engagement survey and developed a three-year employee engagement plan. We also exceeded a target of 2 percent Indigenous employees across our Australian businesses and remain committed to the gender diversity stretch target we set last year of 25 percent participation of women in our workforce by September 2022.

Our site-based **community engagement and investment approach** has provided some great Case Studies in 2018, each arising from our teams working across the globe to engage with their diverse and unique communities. In particular, we rallied to support our Indonesian employees who were impacted by a tsunami and our Australian farming communities as they responded to drought.

This year we strengthened our strategy, governance and Risk Management processes through using climate change scenarios to more formally assess the risks and opportunities for IPL associated with **climate change**. We recognise the need to not only manage our emissions, but to strategically manage the market impacts and physical risks associated with climate change, both now and in the future. Manufacturing Excellence, particularly at the new energy efficient Waggaman plant, and including continued investment in abatement technologies, allowed us to achieve a six percent reduction in greenhouse gas emissions per tonne of ammonia produced in 2018 against our 2015 baseline. While our greenhouse gas emissions per tonne of nitric acid increased slightly from last year's intensity due to an unexpected maintenance issue, these emissions were seven percent below our 2015 baseline. New equipment has been fabricated and delivered, and will be installed to address this issue during 2019.

Energy efficiency, reducing waste and water use and managing other environmental impacts continue to be key parts of our **environmental focus** and we set a new target of Zero Significant Environmental Incidents for 2019. We also reduced our total global nitrogen oxide (NOx) and sulphur oxide (SOx) emissions for the second consecutive year, while achieving increases in production.

For the fifth year, this online Sustainability Report supplements the short form Sustainability Report in our Annual Report. Our objective is to meet the needs of our diverse stakeholder group in an efficient and effective manner. I invite you to read it and welcome any **feedback** you may have.

Jeanne Johns
Managing Director and CEO

During 2018 IPL continued to create long term economic value while caring for our people, our communities and our environment. We remain committed to operating in a manner which acknowledges and proactively manages those issues which are most material to the long term sustainability of our business, the environment and the communities in which we operate.

We made significant progress with our strategic agenda through the year, defining **Our Purpose** in creating shared value and by focusing on our core competencies and driving sustainable growth through our six value drivers – Zero Harm, Talented & Engaged People, Customer Focus, Leading Technology Solutions, Manufacturing Excellence and Profitable Growth. We call this One IPL, working collaboratively across the Company to deliver 'Innovation on the Ground' to better serve our customers and build a sustainable business.

Our deep commitment to **Zero Harm** for our people and all our stakeholders continues to be our number one priority. Whilst we achieved our core safety target of Total Recordable Injury Frequency Rate (TRIFR) of less than 1 in

Sustainability Scorecard

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The Sustainability Scorecard shows our performance across a range of economic, social and environmental indicators.

Indicator	Unit of measure	2016	2017	2018
Product manufactured for sale	(million tonnes)	3.1	3.7	4.0
Environment		2016	2017	2018
Emissions				
Direct GHG emissions (Scope 1)		2,452,536	2,749,847	3,423,867
Indirect GHG emissions (Scope 2)	Tonnes CO2e	307,727	336,707	327,536
Total GHG emissions ¹		2,760,263	3,086,553	3,751,403
GHG intensity per tonne ammonia	tCO2e/t	2.05	2.04	1.9
GHG Intensity per tonne nitric acid	product	0.94	0.40	0.42
Total NOx emissions	t	3,989	3,178	3,143
Total SOx emissions	t	19,513	16,853	13,211
Energy				
Global direct energy consumption	GJ	44,972,204	61,972,212	68,500,621
Proportion energy from fossil fuels ²	approx. %	95%	95%	95%
Water				
Gross water use	GL	43.8	47.6	50.5
Water discharge ³	GL	35.6	32.4	30.9
Net water use ⁴	GL	9.3	15.6	23.0
Waste				
Global solid waste	kt	8.3	6.5	6.6
Australian solid waste	kt	3.5	4.1	3.6
Global solid chemical waste	kt	2,134.3	2,224.6	2,307.5
Australian solid chemical waste	kt	2,133.2	2,224.1	2,306.7
Global liquid waste	ML	14.3	15.2	19.6
Australian liquid waste	ML	9.7	10.7	11.3
Environmental compliance				
Environmental Incident Frequency Rate (EIFR) ⁵		0.32	0.49	0.35
Safety		2016	2017	2018
Total recordable Injury Frequency Rate (TRIFR) ⁶		0.82 ⁷	0.95 ⁷	0.96 ⁸
Employee Fatalities		0	0	0
Contractor Fatalities		0	0	0
People		2016	2017	2018
Total workforce (excluding contractors)				
Americas		2,283	2,328	2,452
Asia Pacific		2,089	1,971	2,050
Europe		212	271	264
Gender—Diversity (% of women)				
Board ⁹		28.6%	25.0%	42.9%
Executive		33.3%	33.3%	22.0%

This report is published as an interactive online report. Visit the website to access online features at www.incitecpivot.com.au/sustainability

Indicator	Unit of measure	2016	2017	2018
Gender—Diversity (% of women)				
Senior Management ¹⁰		16.9%	18.8%	16.8%
Management ¹¹		11.5%	11.3%	18.2%
Global		15.8%	15.8%	15.9%
Direct Economic Value Generated and Distributed				
A. Direct economic value generated				
Revenues	AUD\$Mil	3,390.4	3,533.1	3856.3
B. Economic value distributed				
Operating costs, including payments to suppliers, non-strategic investments and royalties		3,531.4	3,529.5	3,554.8
Employee wages and benefits: total monetary outflows for employees (current payments, not future commitments)		2,465.3	2,620.3	2,573.2
Employee wages and benefits: total monetary outflows for employees (current payments, not future commitments)		636.7	602.9	650.1
Payment to providers of capital, including dividends and interest		194.0	154.7	159.8
Government taxes (income tax, payroll tax, Australian goods and services, fringe benefits taxes and Australian fuel tax credits)		235.1	151.2	171.2
Voluntary community investments (including donations of cash, in-kind support and employee time)		0.3	0.4	0.5
C. Economic value retained (A-B)				
		(141.0)	3.6	348.6
Government Taxes paid per country (AUD\$Mil)				
Australia		152.1 ¹²	75.4 ¹²	88.3 ¹²
United States		34.8	28.6	32.3
Mexico		7.3	7.6	5.0
Canada		29.7	28.1	31.1
Chile		2.5	2.5	3.3
Hong Kong		0.0	0.0	0.0
Turkey		5.8	4.4	5.5
Indonesia		1.6	3.6	4.1
Papua New Guinea		1.3	1.0	1.6

1. Scope 1 + 2.

2. Excluding natural gas and diesel used as production raw material.

3. Includes stormwater at sites where it is captured and treated along with other discharge before release.

4. Gross water use minus clean water discharge.

5. Number of environmental incidents per 1,000,000 man hours worked which exceed licence conditions and create a material or off-site environmental impact with a consequence category of 3 and above; have resulted in a regulator (e.g. EPA) fine of any value; or are a community complaint that stops production.

6. Total Recordable Injury Frequency Rate: the number of recordable injuries per 200,000 hours worked; includes contractors unless otherwise indicated.

7. Restated due to finalisation of classification of incidents pending at the time of previous publication dates.

8. Subject to finalisation of classification of any pending incidents.

9. The IPL Managing Director & CEO is classified as a Board member.

10. Defined as roles which are 1-2 levels below the Executive Team.

11. Defined as roles that are 3-4 levels below the Executive Team.

12. Volatility in Australian taxes paid year on year is due to changes in IPL's Australian business earnings.

Benchmarking Our Performance

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To create real value for all our stakeholders, we are committed to improving the quality and quantity of the data we use to report. This requires benchmarking our performance against other companies in the chemicals sector and sharing our findings.

MEMBER OF
Dow Jones Sustainability Indices
 In Collaboration with RobecoSAM

The DJSI is widely recognised as the leading reference point in the growing field of sustainability investing due to the robustness of its assessment process. Since 2010 IPL has been included in the DJSI where our performance is benchmarked against peers in the global Chemicals sector. The results since 2014 are represented to the right.

Dimension	2014	2015	2016	2017	2018
Economic	65	67	74	73	71
Environmental	60	51	60	61	64
Social	67	63	65	68	57
Total for IPL	64	60	67	68	65
Chemicals sector average	55	58	56	53	44

FTSE Group confirms that IPL has been independently assessed according to the FTSE4Good criteria, and has satisfied the requirements to remain a constituent of the FTSE4Good Index Series in 2018. Created by the global index company FTSE Group, FTSE4Good is an equity index series that is designed to facilitate investment in companies that meet globally recognised corporate responsibility standards. Companies in the FTSE4Good Index Series have met stringent environmental, social and governance criteria, and are positioned to capitalise on the benefits of responsible business practice.



FTSE4Good

EcoVadis assists companies in improving environmental and social practices by leveraging the influence of global supply chains. It operates the first collaborative platform that enables companies to monitor the Sustainability performance of their suppliers, across 150 sectors and 99 countries. Through participation, EcoVadis reliable ratings allow companies to manage risks and drive eco-innovations in their global supply chains. IPL was awarded a Bronze EcoVadis Rating in 2017, and completes the survey biennially.



The Bloomberg Gender Equality Index (GEI) standardised reporting framework offers public companies the opportunity to disclose information on how they promote gender equality across four separate areas – company statistics, policies, community engagement and products and services. Reporting companies that score above a globally-established threshold, based on the extent of disclosures and the achievement of best-in-class statistics and policies, are included in the GEI. Based on our 2018 reporting, IPL has been selected for the 2019 Bloomberg Gender-Equality Index.



Carbon Disclosure Project For over a decade CDP has worked with companies to catalyse action towards a more sustainable world. This is a world with significant opportunities for business. Companies that measure their environmental risk are better able to manage it strategically. And those that are transparent and disclose this information are providing decision makers with access to a critical source of global data that delivers the evidence and insight required to drive action. Download our most recent CDP report, for the 2017 IPL financial year, [here](#).



CDP is also working to catalyse action on corporate water stewardship to safeguard water resources and address the global water crisis - one of the most significant challenges facing the global economy. Through participation in [CDP's water questionnaire](#), IPL provides investors with access to material data, consistently reported, on assessments and actions that lead to the more responsible use of freshwater resources. Importantly, participation in CDP's water program will help ensure the right to water for current and future generations. As part of this reporting project, IPL uses the World Business Council for Sustainable Development Global Water Tool to assess our global water use and discharge.



Our Approach

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Sustainability Strategy

IPL defines Sustainability as ‘the creation of long term economic value whilst caring for our people, our communities and our environment’. This commitment to Sustainability is driven by the Company’s Purpose and Values and is core to the way IPL operates its business.

We recognise that sustainable growth requires acknowledging and proactively managing those issues which are most material to the long term sustainability of our business, our environment and the communities in which we operate.

These issues include being a good corporate citizen and operating ethically. They include ensuring good governance in our day-to-day business activities and behaving with honesty and integrity in our interactions with our stakeholders.

In 2010, IPL’s Board and Executive Team approved a sustainability strategy to use ‘sustainability’ as a tool to think more broadly across all aspects of our business. This enabled us to focus on specific sustainable and value creating projects in line with our business objectives. The projects were selected to progress three initial focus areas that we refer to as our ‘Use Less, Get Close, Be Responsible’ agenda.

During 2014 a formal review of the Company’s sustainability performance to date was undertaken and the existing strategy for operational sites was reaffirmed. It was also determined that IPL should seek to influence suppliers to promote alignment with the Company’s corporate values and continue the sustainable development of its supply chain. In 2018 we continued to focus on education, training and awareness to further embed principles of sustainable resource use and environmental best practice across the business, as well as through continuous improvement best practices, resulting in a more integrated approach to sustainability. We also reviewed our processes in assessing and managing climate change related financial risks and opportunities against TCFD guidelines.

The Precautionary Principle

The Precautionary Principle advises that when an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. IPL recognises that there are risks and opportunities associated with climate change, and our risk management procedures associated with these are reported in our [CDP](#) response, our [2018 Annual Report](#) under Principal Risks, and under [Managing Climate Change](#) in this report. We also seek to mitigate our impact by reducing our [energy use and greenhouse gas emissions](#).

Continuous Improvement through BEx and IBP

Challenging and improving the status quo is one of IPL’s values which is actioned through continuous improvement efforts and [Integrated Business Planning](#) (IBP). IPL has built a culture that fosters productivity improvements and sustainability initiatives, while prioritising IPL’s company value of Zero Harm for Everyone, Everywhere (Zero Harm).



PURPOSE STATEMENT

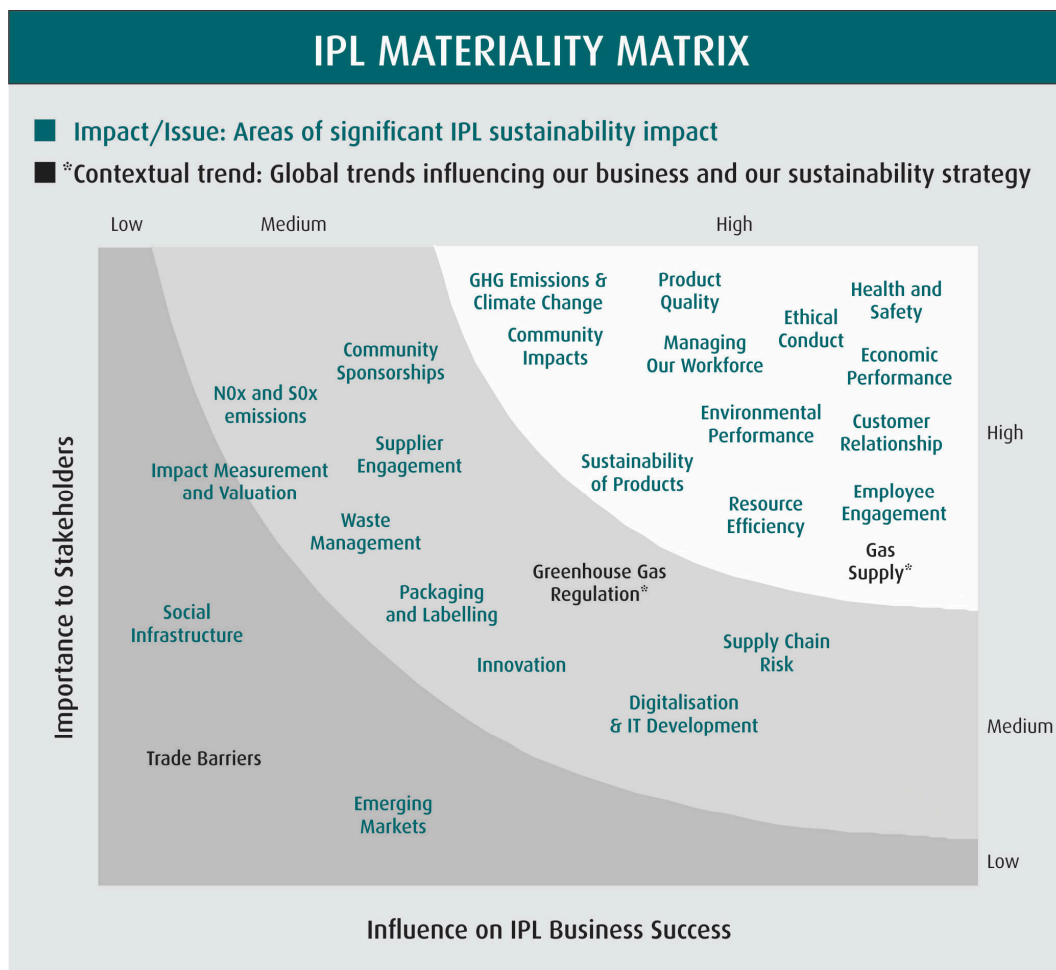
“Our purpose is to make people’s lives better by unlocking the world’s natural resources through innovation on the ground. We believe that we can fulfill our purpose through collaboration with the people that are most important to us, our Customers, our Employees and our Shareholders.”

VALUES



Content Selection Process

IPL recognises the need to provide focused and accessible disclosures on the issues that are most important to our stakeholders. With this in mind, we conduct a biennial formal materiality assessment to identify and rank the issues that matter most to our stakeholders, and to our business success. The output of the most recent review, conducted in 2017, is shown below as a materiality matrix. ‘Economic Performance’ and ‘Gas Supply’ are addressed in the [IPL 2018 Annual Report](#). The other top 11 material issues have been used to shape this report and are identified throughout by the ♦ symbol.



Materiality Assessment Process

1. IDENTIFICATION We identified the stakeholders who have a direct relationship with, or are impacted by, our business. These are listed in column one of the [Stakeholder Engagement table](#) below. We reviewed risk registers, sector issues and business communications, and researched publicly available information on sustainability issues in our sector. We also engaged with key stakeholders as detailed in our [Stakeholder Engagement table](#) to identify key issues.

2. PRIORITISATION Having identified our key stakeholders and a comprehensive list of issues, we then tailored six targeted ‘issue-scoring’ surveys to clarify and prioritise those issues most important to our stakeholders, including: customers; employees; suppliers and business partners; investors and shareholders; and local communities and residents. Issues were also scored by internal IPL stakeholders, and graphed to create the matrix above.

3. VALIDATION The thirteen most material aspects (identified as ‘High’ in the Materiality Matrix above) were assessed against the Scope of our previous reports and significant alignment was found. The impact boundaries of each of these issues were also determined and are included in the [Materiality and GRI Aspects table](#). This online report, together with our [Annual Report](#), our four page [Sustainability Summary and our Corporate Governance Statement](#) (collectively, our public reporting), address each of these material issues to a G4 ‘Core’ level. Content is also included for some issues identified as ‘Medium’ on the Materiality Matrix above.

3. REVIEW As part of the validation process, our previous year’s reports were reviewed with stakeholder feedback in mind. This report, and relevant stakeholder feedback will also be reviewed as part of the next reporting cycle.

Stakeholder Engagement

Stakeholder Group	Stakeholders	Concerns and Interests	Engagement Strategies
Employees and contractors	Our employees and contractors include a wide range of language speakers and cultural groups	Health, safety and working conditions; economic performance of IPL; ethical performance of IPL; career and development opportunities; remuneration; performance management; senior leadership/corporate strategy	Direct engagement at IPL sites, including leadership as coaching; direct participation and/or representation on site based Zero Harm Committees; real time 'Safety Alerts' via internal email; 'The Hub' intranet communications, including a range of newsletters, external HSE Alerts and links for employee feedback; interactive/collaborative annual employee performance management process; Indigenous Engagement Strategy (Australia); internal workshops and conferences; organisational culture surveys and spot 'health checks'
Customers - mining	Large companies and distributors in the mining, quarrying, seismic and construction industries	Cost; reliability of supply; product quality; access to specialist advice; technical innovation and diversity; sustainable performance of IPL and its products in relation to safety and environmental impacts	Direct engagement at customer sites; collaborative problem solving to meet customer needs; participation in EcoVadis customer sustainability questionnaires; customer technical workshops; dedicated Customer Relationship Managers; collaborative product research and development
Customers - fertilisers	Business partners, and agents who distribute IPL's bulk and packaged fertiliser products, agronomists, farmers who receive our products directly and through agents	Cost; efficiency/yield improvement; access to agronomy expertise and customer soils/plant testing; social licence to operate; sustainable performance of IPL products in relation to environmental impacts, including leaching and climate change	Direct engagement with customers; engagement during collaborative tailoring of product use through Nutrient Advantage laboratory soil and plant testing; Nutrient Advantage Advice interactive software and app; monitoring of customer satisfaction through Net Promoter Score software and Fertshed, IPL's online customer transactional portal; collaborative product research and development; online 'Agronomy Community' engagement; in person Agronomy Community Forums; formal complaint/product feedback process
Suppliers and business partners	Local businesses to large international organisations and joint venture partners	Supply agreements; reliable payment processes; health and safety performance; social, environmental and governance requirements	Direct engagement; supplier questionnaires; supplier audits; supplier Performance Scorecards; conditions of contracts; regular meetings with joint venture partners
Shareholders and the investment community	Retail, institutional and individual shareholders	Company performance; governance; investor sustainability ratings (CDP, DJSI, FTSE4Good); management of water (Australia); raw materials sourcing; management of climate change related risks	ASX announcements, Annual General Meeting; Sustainability Investor Briefings; half-year and end-of-year results presentations and webcasts; direct shareholder engagement including calls and meetings, with feedback to the Board where appropriate; shareholders may also write to the Chairman of the Board
Community and local residents	Individuals and groups local to our operations	Employment opportunities; business development; sponsorship and donations; local operational impacts; company environmental compliance; cultural heritage; transparency	Site-specific programs for community contact, information sharing and community investment; employment opportunities via the IPL and Dyno Nobel websites; direct engagement with individuals; systems to register, investigate and promptly respond to community complaints
Government	Local, state and national regulators and government agencies	Regulatory compliance; research and development; local community issues	Direct engagement with government and regulatory agencies in the countries in which we operate; written submissions regarding regulatory impact either directly or via professional groups or industry associations

Material Topics and Topic Boundaries

For the purposes of applying the GRI Standards guidelines, the material issues identified by IPL have been mapped back to the 'Topics' identified in the guidelines. The following table outlines these aspects, as well as whether the primary boundary for each topic falls within and/or outside the organisation. All topics have the potential to affect stakeholders outside the organisation secondarily.

Material Topics	GRI Standards	Related GRI Disclosures	Topic Boundary
Workplace Health and Safety	GRI 400: Social Standards 2016	403: Occupational Health & Safety	Within IPL – our employees and contractors
Ethical Conduct	GRI 102: General Disclosures 2016	102-16: Ethics and Integrity	Within IPL Outside IPL – stakeholders we deal with
Economic Performance	GRI 200: Economic Performance 2016	201-1: Economic Performance	Within IPL Outside of IPL – our shareholders and investors
Climate Change	GRI 200: Economic Performance 2016	201-2 Climate change	Within IPL Outside of IPL – our shareholders and investors
Mitigating Environmental Impacts	GRI 300 Environmental Standards 2016	307: Environmental Compliance	Within IPL – Our on-site environments Outside IPL – the local environments close to our operational and development projects, and potentially, the broader environment
Energy Use, GHG Emissions	GRI 300 Environmental Standards 2016	302: Energy 305: Emissions	Within IPL Outside IPL – customers, communities and the environment within the countries in which we operate, and globally with respect to climate change
Resource Efficiency	GRI 300: Environmental Standards 2016	303: Water	Within IPL – Use of the WBCSD Water Tool has identified 5 Australian IPL facilities as being located in areas of 'Extremely High Baseline Water Stress'. A sixth identified site at Cheyenne, Wyoming, USA, has an 'Annual Renewable Water Supply per Person (projected for 2025)' of greater than 4000 m3 Outside of IPL – the relevant local communities, other local water users and, at Cheyenne, the river basin management authority (the State Engineer's Office in Wyoming)
Sustainability of Products and Services	-	-	Outside of IPL – the environmental performance of our customers and the impacts on their environments globally
	GRI 400: Social Standards 2016	417: Product and Service Labelling	Within IPL – our employees Outside IPL – our customers, and our external product transporters and handlers globally
Managing Our Workforce	GRI 400: Social Standards 2016	404: Training & Education 405: Diversity & Equal Opportunity	Within IPL – our employees and contractors Within IPL – our employees and contractors
Employee Engagement	GRI 400: Social Standards 2016	-	Within IPL – our employees and contractors
Community Relations	GRI 400: Social Standards 2016	413: Local Communities	Within IPL Outside of IPL – the local communities in which we operate
Customer Relationships; Product Quality	-	-	Within IPL Outside IPL – our customers globally
Gas Supply	-	-	Within IPL. This issue is addressed on Page 18 of the 2018 IPL Annual Report under 'Risk'





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2018 Targets	2018 Performance	Future Targets
◆ Workplace Health and Safety		
TRIFR <1	 TRIFR 0.96	TRIFR 0.7 by 2021
◆ Environmental Compliance		
EIFR <1	 EIFR 0.35	Zero Significant Environmental Incidents
◆ Ethical Conduct		
Face to face training in Competition/Antitrust for all applicable employees in 2018	 Face to face training in Competition/Antitrust was conducted for all applicable employees in 2018	Face to face Anti-Bribery training to be conducted for all applicable employees in 2019
NOx emissions		
Maintenance, within 10%, of the 33% intensity reduction achieved in 2017 (0.002 tNOx per tonne of nitric acid produced globally)	 35% reduction in NOx emissions per tonne nitric acid produced globally in 2018 against a 2015 baseline	Maintenance, within 10%, of the 33% intensity reduction achieved in 2017 against a 2015 baseline (0.002 tNOx per tonne of nitric acid produced globally)
◆ GHG Emissions		
Maintenance, within 10%, of the 2017 targeted intensities of 0.4 tCO2e and 2.04 tCO2e per tonne of nitric acid and ammonia produced respectively	 0.42 tCO2e per tonne nitric acid produced in 2018 (a 2% increase from 2017)  1.9 tCO2e per tonne ammonia produced in 2018	Global emissions intensities of 2.00 tCO2e and 0.4 tCO2e per tonne of ammonia and nitric acid produced respectively by 2020
◆ Water		
5% reduction in total water withdrawal at Phosphate Hill in 2018	 19% reduction in total water withdrawal at Phosphate Hill in 2018 (against 2017)	Further 5% reduction in total water withdrawal at Phosphate Hill in 2019 (adjusted for 2018 shutdown period)
◆ Managing Our Workforce		
10% year-on-year increase in women in the global business: 25% women by 2022	 1% increase in women in the global business in 2018 against 2017	10% year-on-year increase in women in the global business and 25% women by 2022
◆ Product Quality		
<0.1% fertiliser sales compensation due to quality issues	 0.017% fertiliser sales compensation due to quality Issues	<0.1% fertiliser sales compensation due to quality issues in 2019
Global Explosives Initiating Systems Manufacturing quality 'Escape Rate' < 1	 0.30 Escape Rate in 2018	Global Explosives Initiating Systems Manufacturing quality 'Escape Rate' < 1 in 2019
◆ Community Impacts		
100% compliance with required Community Safety Communications	 Target Achieved	100% compliance with required Community Safety Communications in 2019

How We Operate

◆ Material issue

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We are committed to achieving and demonstrating the highest standards of corporate governance. Our governance framework and practices are consistent with the Australian Securities Exchange (ASX) Corporate Governance Council’s Corporate Governance Principles and Recommendations.

IPL’s highest governing body, the Board of Directors, is responsible for charting the direction, policies, strategies and financial objectives of the Company. The Board serves the interests of the Company and its shareholders, as well as other stakeholders including employees, creditors, customers and the community, in a manner designed to create and continue to build sustainable value.

The Board operates in accordance with the principles set out in its [Board Charter](#), which sets out the Board’s own tasks and activities, as well as the matters it has reserved for its own consideration and decision-making. To assist the Board in meeting its responsibilities, the Board currently has the following four Committees:

- the Audit and Risk Management Committee;
- the Nominations Committee;
- the Remuneration Committee; and
- the Health, Safety, Environment and Community Committee.

Day-to-day management of Company affairs and the implementation of the corporate strategy and policy initiatives are formally delegated to the Managing Director & CEO. The Managing Director & CEO and his/her direct reports form the Executive Team. This team also has a sub-committee called the Zero Harm Council.

During 2018, responsibility for sustainability strategy and governance resided with the Executive Team, advised by the Corporate Sustainability Manager. Climate change related issues, including those relating to financial risks and opportunities, were managed by two positions which report to the Chief Financial Officer, specifically, the Corporate Sustainability Manager and the Chief Risk Officer. Both of these positions also report to the Board either directly, or through committees of the Board, such as the HSEC Committee and the Audit and Risk Management Committee.

Key policies and systems

We are committed to operating to the highest standards of ethical behaviour and honesty, with full regard for the health and safety of our employees, customers, the wider community and the environment. As part of this commitment, we have a range of policies and systems that set ethical standards for directors, senior management and employees. These policies describe our core principles which are designed to ensure ethical conduct is maintained in the interests of shareholders and other stakeholders.

ETHICS & CONDUCT

The IPL Code of Conduct was reviewed in 2016 and sets out the Company’s global code for business conduct. It contains principles and standards of conduct which are based on the Company’s values and represents the Company’s commitment to uphold ethical business practices and meet applicable legal requirements. The Code applies to all directors, officers and employees of the Company and each

subsidiary, partnership, venture and business association including agents and other contractors that are effectively controlled by the Company or act on its behalf.

ZERO HARM FOR EVERYONE EVERYWHERE

The IPL [Health, Safety, Environment & Community Policy](#) sets out our commitment to our Values of “Zero Harm for Everyone Everywhere” and “Care for the Community and our Environment”. The Policy provides that we establish and maintain health and safety management standards and systems in compliance with relevant industry standards and regulatory requirements, and that we will provide a safe and healthy working environment. The Policy also provides for us to conduct our operations in compliance with all relevant environmental licences and regulations, and to strive to be a valued corporate citizen in the communities in which we operate.

ANTI BRIBERY FRAUD & CORRUPTION

The [IPL Anti-Bribery and Improper Payments Policy](#) prohibits the making of unlawful or improper payments to any individual or entity and outlines the processes for ensuring that appropriate controls are implemented in relation to third parties who are engaged to act on our behalf. The policy forms part of, and is supported by, the Fraud and Corruption Control framework. The Policy was updated in 2016 to reflect changes to Australian law and we conducted face-to-face training in anti-bribery, competition laws and company requirements for applicable employees during 2016 and 2017. In addition, a mandatory online Fraud & Corruption training course was implemented for all employees through IPL's Learning and Development Platform.

SANCTIONS

Our [Sanctions Policy](#) outlines the expected standards of conduct relevant to the Group's compliance with Australian and international sanctions laws when engaging in international trade. This includes engagement in appropriate due diligence in relation to third parties, transactions or activities that present a potential risk in relation to sanctions laws compliance. Face to face training was provided to all applicable employees in 2017.

CONFLICT OF INTEREST

A dedicated Global Conflict of Interest for Personnel policy was developed last year (2017). The policy aims to ensure employees and full-time contractors understand the key principles regarding conflicts of interest and, in particular, are able to identify circumstances which may give rise to a conflict of interest and understand the processes to disclose and manage conflicts of interest.

GROUP RISK

Our [Group Risk Policy](#) and risk management process ensures that risk is managed within a comprehensive risk management process which is consistent with the Australian/New Zealand Standard for Risk Management (AS/NZS ISO 31000:2009). A key element of this risk management process is the Board's assessment of risk, which is based on the level of risk we are prepared to sustain in achieving the corporate objective of delivering value to shareholders. Risks are identified, analysed and prioritised using common methodologies and risk controls are designed and implemented having regard to the overall corporate strategy. To help ensure quality and consistency in the identification, assessment, documentation, management and reporting of risk, a complete risk management document suite is available to all employees via the company's intranet. The document suite is further supported by comprehensive training programs that are tailored to specific employees' needs and delivered via on-line media and face to face workshops.

SUSTAINABLE COMMUNITIES

Our [Sustainable Communities Policy](#) includes our commitment to listen to and work with the community, strive to be a valued corporate citizen in the communities where we operate; and respect our neighbours, their values and cultural heritage and be considerate to them in carrying out our operations. At IPL, we are committed to being an inclusive and accessible organisation through the development of a culture that embraces diversity. Our employees range in age and gender and come from many different cultures, traditions and lifestyles. IPL benefits from this variety of perspectives and ideas, experience and capabilities, all of which lead to a greater opportunity for innovation and a better workplace.

DIVERSITY

Diversity at IPL is led by the Executive Team, championed by our MD & CEO, and supported by the Company's Human Resources function. Our Board of Directors maintains oversight of the [Diversity Policy](#) and the implementation of the Diversity Strategy.

WHISTLE BLOWER PROTECTION

During 2018 the IPL Group Whistleblower Protection Policy was reviewed for consistency with Australian Standard AS 8004. The Whistleblower process is standardised globally and ensures that all staff can confidentially report improper, unethical or illegal conduct and raise concerns regarding actual or suspected contraventions of ethical or legal standards, without fear of victimisation, reprisal or harassment. "The Network" is an externally managed, worldwide service that is multi-lingual, confidential and designed to efficiently facilitate the resolution of business conduct queries and/or issues that staff feel they are unable to raise and resolve locally. "The Network" is able to take calls in all our major operating languages, being English, French, Spanish, Chinese, Turkish and Bahasa and provides our staff with multiple lines of communication and the opportunity to provide further information, or respond to requests for further information, whilst remaining anonymous.

Managing Climate Change

◆ Material issue

Sustainability Report 2018

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As discussed in the [Environment](#) section, the manufacture of ammonia and ammonia-derived products is energy-intensive, requiring natural gas as both a raw material and an energy source. The intensity of energy use and carbon emissions associated with our two main manufacturing processes is shown in the life cycle assessments for [ammonia](#) and [ammonium](#) nitrate. In Australia, IPL is a Large Emitter of greenhouse gases (GHG), as defined by the Australian National Greenhouse and Energy Reporting System (NGERS). In 2018, we reduced our GHG intensity per tonne of ammonia by 6 percent against our 2015 baseline, which is a 1 percent improvement from last year. Although our GHG intensity per tonne of nitric acid rose by [2 percent from last year due to an unexpected maintenance issue](#), our 2018 intensity was 7 percent less than our 2015 baseline intensity. Our [GHG reduction targets](#) and additional efforts to reduce our emissions are further discussed under [Energy and Greenhouse Gases](#).

Large volumes of high quality fresh water are also required for cooling towers during the manufacture of ammonia. In addition to IPL’s comprehensive annual risk management process, the WBCSD Global Water Tool is completed each year for long term projections and reviewed by the Chief Risk Officer. This analysis is used each year to identify sites at which water is a material issue. Water supplies and water management strategies at sites identified by the Water Tool are discussed under [Water](#).

Climate Change Governance

As discussed under [How We Operate](#), the Company’s highest governing body, the Board of Directors, is responsible for charting the direction, policies, strategies and financial objectives of the Company. The Board operates in accordance with the principles set out in its [Board Charter](#). Day-to-day management of Company affairs and the implementation of the corporate strategy and policy initiatives are formally delegated to the Managing Director & CEO, and her direct reports form the Executive Team. During 2018, climate change issues, including those relating to financial risks and opportunities, were managed by two positions which report to the Chief Financial Officer, specifically, the Corporate Sustainability Manager and the Chief Risk Officer. Both of these positions also report to the Board either directly, or through committees of the Board, such as the HSEC Committee and the Audit and Risk Management Committee.

Climate Change Risks and Opportunities

As previously noted, IPL’s main manufacturing process currently relies on sustainable access to natural gas and water, and is GHG emissions intensive. In addition, our farming and mining customers, and therefore our markets, can be impacted by extreme weather events such as droughts, floods, hurricanes and tropical cyclones, as can our own manufacturing facilities (see [Case Study: Preparing WALA for future extreme weather events](#)). For these reasons, the risks associated with emissions, access to natural gas and water, and the physical impacts of extreme weather events have been integrated into IPL’s existing [risk management](#) processes and corporate strategy for many years, with geographical and market diversification remaining a key management strategy.

During 2018, this integrated risk assessment process was strengthened with the engagement of an expert third party to complete two key actions aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Firstly, a comprehensive assessment of IPL’s physical and transitional (market-based) risks and opportunities associated with climate change was conducted using two future climate related scenarios: a [two-degree scenario \(2D\)](#) and a [four-degree scenario \(4D\)](#). Secondly, IPL’s comprehensive Risk Management process was reviewed in 2018 with a view to including the longer time frames associated with climate change related financial risks, as recommended by the TCFD.

6% REDUCTION IN GHG/TONNE AMMONIA
7% REDUCTION IN GHG/TONNE NITRIC ACID
 against 2015 baseline



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IPL climate related risks, mitigation options and opportunities

In 2018, IPL delivered a strong result with EBIT excluding IMIs up 11 percent to \$556.7 million, reflecting the growth across both Explosives businesses, the exceptional operations at the new Waggaman facility in the USA, the solid underlying performance of the Australian Fertilisers business, and a strong operating cash flow of \$662.7 million. We have high quality, strategically located assets in our chosen markets and our business is underpinned by strong fundamentals with our customers’ businesses driven by the growth in demand for food across Asia and continued demand for the resources needed to build infrastructure and technology across the globe. Our strong balance sheet and geographical and market diversification supports our overall resilience to climate change risks and enables us to take advantage of climate related opportunities.

The risks and opportunities summarised in the table below are not listed in order of significance and are not meant to be all-inclusive. The table describes the most significant risks and opportunities that were identified during 2018 through an analysis using two different potential future scenarios: one which describes a pathway resulting in less than two degrees of warming (the 2D scenario) and the other which describes a pathway leading to more than two degrees of warming (the 4D scenario). Risks considered to be material to IPL are reported under ‘Principal Risks’ in the 2018 IPL Annual Report.

The table below refers to the risks and opportunities for IPL as described by the 2D and 4D scenarios. Therefore, the descriptions of risks, opportunities and resilience are not forecasts, but describe what could happen if the world’s development progressed as described in either the 2D or 4D scenario. Although global temperature records indicate that, as at 2018, we have already surpassed a global average temperature increase of 1 degree Celsius above pre-industrial average temperatures, indicating that there is an appreciable prospect that the world will experience more than 2 degrees of warming, the transitional risks identified through the use of the 2D scenario could still occur because nations could introduce rapid market, technological and regulatory changes, regardless of the actual degree of warming, to try to reduce emissions as quickly as possible.

Topic	Risks	Mitigation and Resilience
Policy and Legal	<p>IPL has manufacturing facilities across various geographical locations that may be impacted by regulatory changes aimed at reducing the impact of, or otherwise addressing, climate change. Any changed regulation could result in an increase to the cost base or operating cost of these plants, and it may not be possible to alter sales prices to offset these cost increases. This includes, but is not restricted to, any regulations relating to reducing carbon emissions. Alternatively, any such regulatory changes may potentially impact the ability of these plants to continue functioning as currently operated. This risk would be heightened if regulatory changes are implemented inconsistently across regions or countries so that IPL’s facilities (principally located in Australia and North America) are impacted by regulatory changes while manufacturing facilities of competitors operating in other jurisdictions are less impacted.</p> <p>Carbon pricing currently applies in Australia, and under the 2D scenario, rapid action to limit climate change would include a global carbon price by 2020 (short-term risk: 1-3 years). Carbon pricing would increase operational costs as well as costs to transport products, which could impact until 2025, when most shipping options would be retrofitted with zero or low carbon mobility options (e.g. hydrogen). The transition to a global carbon price may give rise to a period of volatility where IPL would not be able to pass through the immediate carbon costs to customers, who may choose to source products more locally where available to avoid these carbon costs.</p>	<p>IPL has a large, diverse supplier group, which would assist in avoiding carbon pricing pass through in the short-term.</p> <p>Our customer agreements provide for the pass through of carbon pricing where possible and domestic co-location of critical products will reduce carbon costs associated with transport.</p> <p>Diversification away from single source suppliers, already being managed, will also assist in managing the potentially volatile/variable costs associated with increased regulation, including carbon pricing, in the period between 2030 and 2040.</p> <p>Carbon pricing and other policy support for transitioning to the low carbon future described in the 2D scenario may create opportunities for IPL related to funding for investment in new technologies which reduce GHG emissions. IPL is closely monitoring both policy developments and the development of new technologies and has successfully registered one project to earn Australian Carbon Credit Units (ACCUs) under the current Australian Federal Government Emissions Reduction Fund. IPL’s strategic focus on Leading Technology Solutions and Customer Focus as two of our six value drivers also positions us to leverage our premium technology platform throughout all our geographies and sectors, and we continue to develop and provide products and services which reduce our customers’ energy use and GHG emissions.</p>
Market Changes	<p>Under the 2D scenario, transitioning away from fossil fuels is likely to significantly decrease demand for thermal coal, with impacts beginning in the short term (1-3 years). However, the technologies associated with renewable energy such as electric vehicles and largescale batteries are likely to expand dramatically, with World Bank estimates indicating that demand for the metals required for these technologies could grow by 1000% under a 2-degree scenario. While these mining operations (which use explosives) mitigate the</p>	<p>We monitor the global environment, conduct detailed assessments of our markets and regularly update our supply and demand forecasts so that we can quickly respond to change. We seek to maintain competitive cost positions in our chosen markets, whilst maintaining quality product and service offerings. This focus on cost and quality positions our business units to compete over the medium to longer term in changing and competitive</p>

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Topic	Risks	Mitigation and Resilience
Market changes (cont)	<p>loss of revenue from the thermal coal market, 'new world commodities' do not require the same quantity of explosives as bulk commodities, which may result in lower overall demand and potentially lead to a supply/demand imbalance.</p>	<p>environments and we prefer to engage in long term customer and supply contractual relationships.</p> <p>In the 2D scenario the reduction in demand for explosives supplying the thermal coal markets will be partly offset by the mining of new world commodities required for renewable technologies, which could be higher margin activity. In the 4D scenario, the physical impacts of climate change are expected to increase demand for materials, and therefore explosives, in the quarry and construction sector.</p>
	<p>In the 2D scenario, recycling trends are expected to lower the need for primary metals, especially in the steel (iron ore and metallurgical coal) supply chains. Scrap steel may be utilised in electric arc furnaces and this would reduce the demand for virgin iron ore and metallurgical coal. Given the significant increase in the mining of primary metals for 'new world commodities' the reduction in the need for primary metals due to recycling will be tempered.</p>	<p>IPL's Moranbah manufacturing plant supplies explosives for mines in Queensland's Bowen Basin. This region produces some of the world's highest quality metallurgical coal, with low ash content and low/medium volatile matter. These hard-coking coals are recognised by steelworks as prime coking coals used in steel manufacture, and Australian hard-coking coals are regarded as the industry benchmark. Queensland has 3.75 billion tonnes metallurgical coal with volatile matter less than 25 percent, which is enough to sustain production for many years. As IPL's competitors are likely to see demand drop in line with thermal coal decline, the Moranbah facility will retain the unique competitive advantage of being located close to these metallurgical coal mines.</p> <p>In the USA the iron ore mines that we supply are mostly across Southern Canada and mid-West America. The recycling market in the USA is already very mature with two-thirds of the iron and steel produced in the USA being made from recycled scrap, rather than virgin iron ore. As the USA is a major importer of steel, the remaining primary iron ore market is likely to remain stable. As a result this risk is not considered to be material.</p>
Physical (acute and chronic)	<p>Impacts on Product Demand: IPL provides products and services to end markets, individual customers and suppliers that may be impacted by changes to weather patterns resulting from climate change. Changes to the number and/or intensity of storms, hurricanes and other extreme weather events may impact IPL's end markets, primarily mining and agriculture.</p>	<p>Fertiliser demand is likely to grow due to restoration of degraded land to meet growing population needs for food and increased meat and dairy consumption. IPL currently exports fertilisers from Australia and may be able to ship to other locations where demand is retained as markets are impacted by chronic changes in climate.</p>
	<p>The 4D scenario indicates fertiliser demand increasing in the short term, as emerging markets demand more meat, before a significant downturn associated with the economic impacts of acute extreme weather events and chronic changes in climatic conditions impacting the ability to grow crops. IPL's Asia-Pacific fertiliser revenue from exports may be impacted in the long-term (6+ years) by a decline in offshore market demand with most South-east Asian countries, which currently are IPL's predominant fertiliser export market, and small island developing states being ranked among the most vulnerable in the world by the Climate Risk Index (CRI).</p>	<p>We currently sell fertilisers on the spot market to a geographically diverse group of customers and have no long term reliance on a particular customer segment. We also have the competitive advantage of having manufacturing sites located primarily in Australia and the USA. These are wealthy countries which can afford to rebuild their port infrastructure in the event of rising sea-levels and damage from storm surges and other acute climate changes. For this reason, it is anticipated that IPL will be able to ship to other offshore markets which retain demand in the event that current export regions are impacted.</p>
	<p>IPL currently sells up to 15 percent of its Asia Pacific explosives into international markets, with most of these countries considered emerging or developing. Under a 4D scenario, explosives demand in the Asia Pacific region may be impacted in the long term (6+ years) by reduced demand in climate vulnerable nations, as indicated by the CRI.</p>	<p>In the 4D scenario, the physical impacts of climate change mean that the Quarry & Construction sector is likely to assume a portion of the demand for explosives that was previously supplied to mining companies in climate vulnerable nations in the Asia Pacific region. Many new mines are expected to be developed to supply 'new world commodities' for batteries, renewables and mobility options, however, these are not expected to require the same quantity of explosives as bulk commodities. IPL's strategic focus to deliver distinctive value to our customers by leveraging our differentiated technologies to solve our customers challenges on the ground positions us to be increasingly competitive in our markets.</p>

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Topic	Risks	Mitigation and Resilience
Physical (acute and chronic) (cont)	<p>Impacts on Operations (including supply chain): Some of IPL’s manufacturing plants are located in areas that are susceptible to extreme weather events, such as hurricanes, tropical storms and tornadoes. An increase in the severity and/or frequency of these extreme weather events as a result of climate change may cause more frequent disruption to IPL’s operations directly or as a result of supply chain disruption, which includes transportation of raw materials and finished product via road, rail and water. Impacts such as these may increase in the short term (1-3 years). Under this scenario, insurance premiums would be expected to increase along with a possibility that some events may be excluded from cover.</p>	<p>IPL’s own manufacturing facilities are considered resilient to the anticipated acute physical impacts of climate change, with measures currently in place to manage exposure where sites are located in tornado or hurricane zones. Due to its location in a hurricane zone, the Waggaman Louisiana plant was built to comply with wind codes set out by the International Building Code Design Standard IBC 20 and Minimum Design Loads for Buildings and Other Structures ASCE 7-05. The design was signed off by a Louisiana based certified Professional Engineer with experience in design standards for the region, where the impacts of future hurricanes must be considered.</p> <p>Safety and evacuation plans are in place for all personnel and sites. We endeavour to include force majeure clauses in agreements where relevant and insurance policies are in place across the Group. The location of the Moranbah facility close to high quality metallurgical coal producers would provide IPL with a strategic advantage over its competitors in the event of supply chain disruption due to extreme weather events. Domestic co-location of critical products and diversification away from single source suppliers, already being managed, will assist in managing supply chain interruption.</p>
	<p>Interruptions to logistics from extreme weather events could result in financial loss if product cannot be stored effectively and degrades.</p>	<p>IPL is developing technology solutions to increase the shelf life of our products. Were IPL required to build additional storage to stockpile raw materials and product for temporary interruptions to logistics, and to protect product quality from humidity, flooding, heat extremes and other physical impacts, the total aggregate cost would be immaterial. Additional storage, both onsite and at strategic locations along transport routes may be necessary, along with contingency plans to use alternative forms of transport to access these. This would allow IPL to create resilience in the event of volatility created by more extreme weather.</p>
	<p>Water is a key raw material for manufacturing, with the majority used for cooling purposes. In the 4D scenario, it is predicted that average annual rainfall will be reduced and longer periods of prolonged drought will be created, especially in Eastern Australia. While this may be offset somewhat by increased 1 in 20-year flooding events at some locations, and up to 15% more rainfall than historical averages in each single rain event, water restrictions may become more frequent in some areas. In addition, the possibility of less frequent, higher intensity rainfall events may lead to the risk of storm water pond overflows. These impacts could occur in the short-term (1-3 years), with very low dam levels being recorded near some sites in the recent past.</p>	<p>Water scarcity concerns could prompt the need for additional storage. The cost of creating additional storage (dams) in these locations is considered immaterial. Water restrictions as a result of longer periods of drought and therefore increased regulation, may also prompt IPL to seek alternative water sources. At present, no operations have been identified where sourcing of new water is considered to be too costly or unavailable. Ongoing and long-term water management strategies are in place to ensure overflows of storm water ponds due to higher intensity rainfall events are avoided, with water balance projects begun in 2018 at three manufacturing sites in Australia using predictive rainfall models.</p>
	<p>Several manufacturing sites are located on coasts and are very close to sea level. A significant rise in sea level combined with a king tide may cause flooding events at these sites from 2030 onwards (considered a long-term risk) particularly with increased storm activity causing storm surges to become more intense.</p>	<p>The construction of sea-level management infrastructure (levies, etc.) will be considered in the long-term where required for the identified manufacturing sites to manage the risk of flooding due to storm surges and sea level rise.</p>

Topic	Opportunities	Strategy
Market Changes	<p>Both the 2D and 4D scenarios describe conditions in which demand for explosives in the Quarrying and Construction sector will increase. In the 2D scenario, steady urbanisation rates and enough global wealth to support stable development will likely lead to the building, reinforcing and repairing of roads, buildings and other infrastructure. As only 1 percent of all residential buildings and commercial buildings in the USA are certified ‘green’, an enormous</p>	<p>Our Dyno Nobel business is the second largest industrial explosives distributor in North America by volume, providing ammonium nitrate, initiating systems and services to the Quarry & Construction sector in the southern US, northeast midwest US and Canada. In 2018, 40 percent of Dyno Nobel Americas Explosives revenue was generated from this sector with strong growth due to both market and share growth.</p>

Topic	Opportunities	Strategy
<p>Market Changes (cont)</p>	<p>opportunity presents itself for retrofitting of buildings in a future which addresses climate change. Although not as severe as in the 4D scenario, physical impacts occur and rebuilding is required. While this will be completed in a resource efficient way, the scale of the transition is large and generates increased demand for aggregate, even though the use of recycled aggregate and re-use of building materials occurs.</p> <p>The 4D scenario describes a future in which natural disasters severely impact on cities, towns and infrastructure, particularly along coasts due to sea level rise. An immense quantity of aggregate and other quarried materials is required in this scenario to rebuild, and to build new climate resilient infrastructure. This scenario describes the Quarrying and Construction sector expanding between 2020 and 2040 as the world (and the USA in particular) seeks to rebuild and protect itself from the physical impacts of climate change. From 2035, the scenario describes decreasing demand from many emerging and developing economies which cannot afford to rebuild after the cumulative losses from both the acute and chronic physical impacts of climate change.</p>	<p>We have a leading position in this end market, which benefits from a favourable mix of our high grade explosives, proprietary initiating systems and services. We continue to leverage our premium technology platform throughout and beyond the sector, including our proprietary Differential Energy offering. DeltaE has been in operation across the USA over the last three years and is well established in the quarry and construction and hard rock segments where customers value its safety, environmental, and efficiency benefits, including reduced GHG emissions due to reduced energy use. This technology is now being rolled out in the Asia Pacific business with trials being completed during 2018.</p> <p>Dyno Nobel Americas also operates a Quarry Academy training centre for stone quarry operators.</p>
	<p>Fertiliser demand grows in both the 2D and 4D scenarios. The 2D scenario describes a rise in fertiliser use overall from 2025 due to increased focus on restoring the large proportion of the world’s degraded agricultural land and unused land close to urban centres in order to provide food and fibre for a growing population. Artificial growing environments may be developed to meet growing demand while avoiding additional land clearing. Higher yields will need to be obtained from smaller land plots. New farms are expected to be built around urban centres, using highly controlled environments (i.e. vertical and high density farms with unique soil mixes). Products that are lower carbon and environmentally friendly (e.g. slow release fertilisers) will have a significant competitive advantage in this scenario.</p>	<p>During 2018, IPL reviewed its strategy, governance and funding of research and development. The position of Chief Technology Officer was added to the IPL Executive Leadership Team and six core technology programs were identified to advance IPL’s ability to strategically partner with customers to improve their productivity and safety, and reduce their environmental and social impacts. Collaborative research and product development, both with our customers and with recognised research bodies, is a core strategy and we aim to be well placed to meet any changed growing conditions which emerge, such as those described by the 2D and 4D scenarios. Projects in 2018 included our continued work on the Australia-China Joint Research Centre of Healthy Soils for Sustainable Food Production and Environmental Quality. We also actively promote the best practice use of our fertilisers and explosives products.</p>
	<p>In the 4D scenario, climate change is expected to result in landscape level changes to existing agricultural zones. This scenario describes a change in current soil temperatures in almost all agricultural zones, as well as changes in water content, resulting in changed growing seasons and a change in the suitability of regions for certain crops. On average, the scenario describes most regions having more days above 35 degrees and a lower proportion of minimum temperature days, relative to historical averages. The 4D scenario also indicates an increase in humidity, with longer periods of drought and more intense rainfall events impacting on the areas that are suitable for agricultural use.</p>	<p>IPL currently operates in all four major climatic zones in Australia, including far North Queensland where some conditions are similar to those which may be experienced further south in the very long-term. This presents an opportunity for IPL to produce new suitable products that match the kinds of volatility that is likely to be experienced by farmers. IPL also has a strong competitive advantage in its existing distribution networks, enabling it to roll out new products quickly and easily to a range of affected customers. Our currently marketed high-efficiency, slow release fertilisers, which have been shown to increase yields and reduce GHG emissions from agriculture, are likely to be in high demand in the conditions described in the 4D scenario.</p>
<p>Tech-nology: Energy</p>	<p>IPL is currently highly dependent on the availability of affordable natural gas, both as a feedstock for hydrogen and as a fuel source. IPL continues to monitor developments in the renewables and low carbon energy space, including solar hydrogen (making use of solar energy to manufacture hydrogen from water) production.</p>	<p>IPL has a core competency in the manufacture, storage and transportation of ammonia and is well placed to play a role in the ‘green hydrogen’ (and therefore green ammonia) and low carbon economy. Feedstock and energy options such as solar hydrogen are constantly assessed for viability as part of IPL’s overall capital management framework, supported by two of our strategic values drivers, Leading Technology Solutions and Manufacturing Excellence.</p>

IPL Climate Change Scenario Methodology

IPL recognises the need to understand the impact climate change could have on our business as well as our people, communities and shareholders. As noted in the G20 Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) recommendations, the exact timing and severity of [physical risks](#) (such as increased extreme weather events and changes to rainfall patterns) associated with climate change are difficult to estimate. In addition, market changes may occur as a result of governments and businesses acting to limit greenhouse gas emissions. These are known as [transition risks](#) and may also present financial risks for companies. For these reasons the TCFD guidelines recommend that companies identify and strategically consider their climate change-related financial risks and opportunities by assessing them against at least two future [climate change scenarios](#), with one being a scenario in which climate change is limited to 2° Celsius or lower.

In 2018 IPL engaged a specialist third party to construct two future climate change scenarios: a 2 degree (2D) scenario, in which global average temperatures are limited to less than two degrees Celsius of warming above average pre-industrial levels; and a 4 degree (4D) scenario where global average temperatures increase to 4 degrees Celsius above pre-industrial levels. The 2D and 4D future scenarios were developed specifically for IPL using the following:

- The International Energy Agency World Energy Outlook 2017 and 2018 and associated scenarios;
- The Bloomberg New Energy Finance New Energy Outlook 2018 (BNEF NEO);
- The Climate Futures Tool developed by the CSIRO and the Australian Bureau of Meteorology;
- The Climate Explorer Tool developed by the National Oceanographic and Atmospheric Association (NOAA), the WRI Aqueduct Tool developed by the World Resources Institute;
- Inputs from the Intergovernmental Panel on Climate Change (IPCC AR5);
- Inputs from the Louisiana Coastal Protection and Restoration Authority; and
- Inputs from peer reviewed scientific journals from sources including the Proceedings of the National Academy of Sciences of the United States of America (PNAS).

The scenarios each describe how physical climate change and efforts to reduce emissions would impact on areas including carbon pricing and carbon market development, the overall economy, the development of technology, people's consumption patterns and social structures, the physical environment, energy and power, agriculture, mining, infrastructure and transport, with the risk assessments considering the financial risks and opportunities for IPL in these areas under each scenario. The scenario based risk assessments also considered the physical and transitional impacts on IPL's 13 major manufacturing operations on an individual and detailed basis. The scenarios are described in summary below.

The 2 degree (2D) climate change scenario describes a future in which rapid action is taken globally to reduce carbon emissions and limit the degree of global warming to 2 degrees Celsius above pre-industrial levels.

- Climate change mitigation and adaptation policies, including carbon pricing, are introduced in order to rapidly reduce emissions.
- Extreme weather events occur and many countries invest in rebuilding and adaptation activities, ensuring that economic activity continues and the economies grow where this is possible.
- No and low carbon technologies are developed, including those used in transport, energy, agriculture and new infrastructure builds, as well as hydrogen made from renewable sources.
- New crop varieties and more intense farming aims to increase agricultural output without increasing the amount of land or water used.
- Bulk commodities (metallurgical coal, thermal coal and iron ore) decline overall, while demand for 'new world commodities' increases.

Both [physical risks](#) and [transition risks](#) were identified by the analysis using the 2D scenario. However, the greatest risks and opportunities for IPL in this scenario relate to transition impacts arising from the rapid global response that would need to be made by governments, sectors, businesses and communities to reduce emissions and limit average global temperature increases to 2 degrees.

The 4 degree climate change scenario assumes limited and/or ineffective policy and action to limit carbon emissions, resulting in 'run-away' climate change and an average increase in temperature of between 2.6°C and 4.8°C by 2100.

- A global carbon price never emerges and limited action to reduce GHG emissions results in severe physical impacts including higher global temperatures, more severe and more frequent extreme weather events such as hurricanes, drought and flooding, significant sea level rise and associated coastal flooding and storm surges.
- Damage to infrastructure occurs, including ports and ships, which causes delays to shipping and contributes to volatile global trade.
- Many regions start to focus on adaptation technologies, especially related to food and water security, and as global demand for food and fibre increases, there is a trend towards conflict between nations over increasingly scarce resources.
- Demand for fertiliser shifts to new locations globally. Australian and USA domestic markets are expected to be more resilient than export markets.
- Mining continues to extract metals and minerals, and in nations that can afford to rebuild after extreme physical impacts, steel (and therefore iron ore and metallurgical coal) and quarry and construction output demand also increases.

While market [transition risks](#) (such as risks from changed consumption patterns) occur in this 4D scenario, the material risks identified for IPL were associated with [physical risks](#) described above.

Case Study: Preparing WALA for future extreme weather events

IPL assumed operational management of the newly constructed 800,000 metric tonne per annum Waggaman, Louisiana ammonia plant on 19 October 2016. The plant uses the industry's leading technology and is among the most efficient plants of its kind in the world, employing gas purifier technology and recapturing steam for reuse. The plant is also fitted with Selective Catalytic Reduction technology to reduce emissions of NOx, and a portion of the CO₂ emissions generated during manufacturing are captured and used by a neighbouring plant to make melamine. Cooling water for the plant is sourced sustainably from the Mississippi River, and all wastewater and stormwater streams are treated onsite to meet strict water quality limits. Cooling water is returned as clean water to the river.

Due to its location in a hurricane zone, the plant was built to comply with wind codes set out by the International Building Code Design Standard IBC 20 and Minimum Design Loads for Buildings and Other Structures ASCE 7-05 which include the relevant standards for wind load, occupancy categories, basic wind speed and exposure.



The design was signed off by a Louisiana based certified Professional Engineer with experience in these design standards for the region, where the impacts of future hurricanes must be considered. The required permits also included ensuring that the plant was built at a height above Louisiana's expected future inundation levels. As part of its emergency response plan, the facility has a hurricane procedure which details the preparations that are made at various times prior to hurricane strike.

Preparations include:

- Management of the hurricane staffing crew;
- Housekeeping checks to remove or tie down materials that could become airborne;
- Ensuring the back-up power generator has adequate fuel;
- Ensuring the site has adequate supplies for the hurricane staff and for recovery post-storm;
- Communication with logistics on the status and coordination of final shipments prior to the event; and
- Internal Company updates on plant status and readiness for the event.

If the expected hurricane is of a high intensity, the plant may be required to shut down. This decision has Zero Harm as the primary goal, and is made in consultation with Cornerstone Chemical, St. Charles and Jefferson Parish Emergency Operations Centers, and with the support of IPL senior management. When this decision is made, a process is followed to shut down the plant in a controlled manner, with steps to cool and purge the system of hydrocarbons, block in major reactors under nitrogen purge and install additional securing of the cooling tower fans to prevent wind damage. Staff remaining on site are required to be housed in the control building which is rated for hurricane-strength winds and was built at an elevation where risk of flooding is negligible.

The procedure also calls for the storage of adequate supplies of food and water for the expected duration of the event and the release of staff early to make personal arrangements then return to site 16 hours in advance of the event to make final preparations and begin monitoring. The procedure references emergency evacuation routes which limit direction of travel on the major highways in the New Orleans metropolitan area. Additional safety buddies are required when performing work in the plant and employees are to remain inside when winds rise above 60 miles per hour.

Post storm, the procedure requires an assessment to be conducted prior to start-up to ensure Zero Harm. The assessment targets hazards such as potential chemical loss of containment, downed power lines and compromised structures and, where required, forms the basis of a recovery plan. Once plant repairs are completed, the plant is restarted using procedures which include functional checks of systems.

The facility has experienced one Category 2 hurricane since commissioning. We are pleased to be able to report that WALA came through Hurricane Nate with no injuries to people, zero days of production losses and less than \$100,000 in total costs.

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Scope

This Report covers subsidiaries of Incitec Pivot Limited ACN 42 004 080 264. The Company is a public company, trading on the Australian Securities Exchange as IPL.

In accordance with Global Reporting Initiative (GRI) 'G4' Sustainability Reporting Guidelines, our reporting covers all entities that generate significant sustainability impacts (actual and potential) and over which we exercise control or significant influence with regard to financial and operating policies and practices.

The financial year ending 30 September 2018 is indicated as '2018' in our reporting. The statistics in our reporting are for global sites wholly owned by IPL during 2018. Joint ventures are not covered in our reporting, unless indicated, nor are the activities of suppliers, customers or outsourced operations.

The Company participates in many joint ventures with varying levels of ownership interest. A list is provided on page 69 of our [2018 Annual Report](#).

All financial figures in the Report are in Australian dollars, unless otherwise indicated.

Data measurement and calculations

Financial data: Financial figures are derived from our audited accounts, which are prepared according to the International Financial Reporting Standards (IFRS).

Greenhouse Gas Emissions data: Scope 1 and 2 greenhouse gas emissions are calculated based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition).

Australian Scope 1 and 2 GHG emissions:

- National Greenhouse and Energy Reporting (Measurement) Determination 2008
- National Greenhouse Accounts (NGA) Factors (2016).

Americas Scope 1 and 2 GHG emissions:

- US Electricity: eGRID2012 (2015 Version) Year 2012 GHG Annual Output Emission Rates
- US Fuels: IPCC, Guidelines for National Greenhouse Gas Inventories (2006)
- Canada Fuels: Default CO2 Emission Factors: Environment Canada, National Inventory Report, 1990-2007: Greenhouse Gas Sources and Sinks in Canada (2009), Annex 12: Emission Factors, Table A12-5 (1998- 2007 data); Default Heat Content: Statistics Canada, Report on Energy Supply-demand in Canada, 2007 (2009).

- Electricity: Canadian Energy Issues: <http://canadianenergyissues.com/ontario-power-stats/>
- Mexico Electricity: Ecometrica Technical Paper: Electricity-specific emission factors for grid electricity (2011) Brander, Sood, Wylie, Haughton, and Lovell at <https://ecometrica.com/assets/Electricity-specific-emission-factors-for-grid-electricity.pdf>.

European Scope 1 and 2 GHG emissions:

- 2011 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting – Produced by AEA for the Department of Energy and Climate Change (DECC) and the Department for Environment, Food and Rural Affairs (DEFRA) in the UK. Version: 1.2

Changes during the period

A new executive management structure was announced in January 2018 with the separation of the leadership of Dyno Nobel Asia Pacific and Incitec Pivot Fertilisers to provide greater leadership focus on each of these businesses. In addition, the appointment of a Group Chief Technology Development Officer was made to streamline the development of technology and product innovation, and the appointment of an Executive Commercial Director was made to strengthen IPL's commercial competency. There were no other changes to the organisational structure or size of the Company during the reporting period.

Restatements

The 2016 and 2017 TRIFRs have been restated due to the finalisation of classification of incidents pending at the time of previous publication dates.

Assurance and data integrity

We aim to ensure that the information we publish is accurate, complete and material and therefore contributes to building trust and credibility with stakeholders. To achieve this we have improved our internal processes for verifying non-financial management information and for reviewing and approving the content of our reporting.

Deloitte has provided a [limited assurance statement](#) on our Australian greenhouse gas emissions, energy consumption and production figures for the period 1 July 2016 to 30 June 2018. (Deloitte is an independent auditor who also audit the Company's financial statements. See pages 44 and 84-88 of the [2018 IPL Annual Report](#).)

IPL is not currently seeking an extension in the scope of assurance for this annual online Sustainability Report.

GRI Index

Legend:

- ◆ Material topic
- ❖ Disclosure required for GRI 'Core' reporting

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GRI102: General Disclosures 2016

Disclosure Number	Disclosure or Link	External Assurance
❖ Organisational Profile		
102-1	Name of the organisation: see About Incitec Pivot .	
102-2	Primary brands, products and services: see About Incitec Pivot .	
102-3	Incitec Pivot Limited's head office is located at Level 8, 28 Freshwater Place, Southbank, Victoria, Australia. See also the Contact Us section of our website.	
102-4	Where we operate: see About Incitec Pivot .	
102-5	Incitec Pivot is an Australian Securities Exchange (ASX) listed company. Shareholder information is available in our 2018 Annual Report , page 101.	
102-6	Our markets: see About Incitec Pivot .	
102-7	Scale of the organisation: Our number of employees, net revenue, tonnes of product supplied and economic value distributed and retained is reported in our 2018 Sustainability Scorecard . Other data required for this disclosure is reported in the 2018 IPL Annual Report .	
102-8	For information on employees and other workers by location, employment status and gender see Managing Our Workforce . IPL's data systems do not currently allow for the reporting and breakdown of all supervised workers or accurate breakdowns of contractors by contractor types. A substantial proportion of IPL's work is not performed by workers who are legally recognised as self employed, or by individuals other than employees or supervised workers, including employees and supervised workers of contractors.	
102-9	For a description of our supply chain, see Raw Materials and Supply Chain . For risk management strategies associated with ◆ gas supply , see page 18 of the 2018 IPL Annual Report .	
102-10	Significant changes during the reporting period to our organisation and/or our supply chain are reported under About the Data .	
102-11	For an explanation of how IPL addresses the Precautionary Principle , see Our Approach .	
102-12	IPL has not officially endorsed any externally developed economic, environmental or social charters, principles or other initiatives.	
102-13	For IPL membership of Associations, see Memberships of Associations .	
❖ Strategy and Analysis		
102-14	For a statement from the most senior decision-maker of the organisation, see A message from the CEO	
◆ Ethics and Integrity		
102-16	For our values, principles, standards and norms of behaviour such as codes of conduct and codes of ethics, see How We Operate .	
102-17	Although not required for Core reporting, mechanisms for advice and concerns about ethics are reported under How We Operate .	
❖ Governance		
102-18	For the governance structure of the organisation, including committees of the highest governance body and committees responsible for decision-making on economic, environmental and social impacts, see the Directors' Report in the IPL 2018 Annual Report , the IPL 2018 Corporate Governance Statement and How We Operate .	
❖ Stakeholder Engagement		
102-40	For a list of stakeholder groups, see Our Approach .	
102-41	For percentage of total employees covered by collective bargaining agreements see the table under Engaging Our Employees . IPL's data systems do not currently allow for the reporting and breakdown of contractors who are covered by collective bargaining agreements.	
102-42	For the basis for stakeholder identification and selection, see Our Approach .	

102-43	For approach to stakeholder engagement, see Our Approach .	
102-44	For key topics and concerns raised by our stakeholders, see Our Approach .	
❖ Identified Material Topics and Topic Boundaries		
102-45	For entities included in IPL's financial reporting, see the 2018 IPL Annual Report , page 68. All subsidiaries have been included in the Annual Report as they are controlled by the group.	
102-46	For report content selection process and topic boundaries, see Our Approach and About This Report respectively. For aspect boundaries, see the Materiality and GRI Aspect table under Our Approach .	
102-47	Our material topics are listed under Our Approach and are indicated by the ♦ symbol throughout this report.	
102-48	For restatements of information since the last reporting period see About the Data .	
102-49	There have been no significant changes since the previous reporting period in the list of material topics and topic boundaries, which are summarised under Our Approach .	
❖ Report Profile		
102-50	For details on the reporting period, see About This Report . The term '2018' is used throughout this report to refer to the reporting period, which is the IPL financial year, ending 30 September 2018.	
102-51	For the date of our most recent previous report, see About This Report .	
102-52	Our reporting cycle is annual. See About This Report .	
102-53	For the contact point for questions regarding this report, see About This Report .	
102-54	This Report has been prepared in accordance with the GRI Standards: Core option.	
102-55	The GRI Content Index is this table.	
102-56	External assurance is noted in column three of this table. For external assurance policy and current practice, see 'Assurance and data integrity' under About the Data .	
◆ GRI 200: Economic Standards 2016		
◆ GRI 201: Economic Performance 2016		
103-1	For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under Our Approach .	
103-2	For the management approach and its components, see the IPL 2018 Annual Report and the IPL 2018 Corporate Governance Statement .	
103-3	For an evaluation of the management approach, see the IPL 2018 Annual Report .	
201-1	For direct economic value generated and distributed see our Scorecard . For external assurance statement see the IPL 2018 Annual Report , page 56.	Yes
201-2	For financial implications and other risks and opportunities for the organisation's activities due to climate change, see Managing Climate Change , the IPL 2018 Annual Report 'Principal Risks' section, and the IPL 2018 CDP Report .	
GRI 205: Anti-corruption 2016		
205-3	There were no confirmed incidents in which employees were dismissed or disciplined for corruption in 2018. There were no fines, penalties or settlements in relation to corruption in 2018. This disclosure is not required for 'core' reporting.	
GRI 415: Public Policy 2016		
415-1	<p>The total monetary value of financial and in-kind political contributions made directly and indirectly by IPL in 2018 is zero. The IPL Political Engagement and Donations Policy, which was amended by the Board on 17 December 2015, prohibits the Group from making any political donations, whether in cash or in kind, to:</p> <ul style="list-style-type: none"> - any political party or organisation, party official; - individual politicians; - any political candidate for public office; or - any third party organisation that may make political donations (collectively referred to in the policy as 'political persons') in any country. <p>This disclosure is not required for 'core' reporting.</p>	

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◆ GRI 300: Environmental Standards 2016		
◆ GRI 301: Materials 2016		
301-3	Although not required for core disclosure, reclaimed packaging materials are reported under ‘Working with Our Suppliers’	
◆ GRI 302: Energy 2016		
103-1	For an explanation of the material topic and its boundary, see the table ‘Material Topics and Topic Boundaries’ under Our Approach .	
103-2	For the management approach and its components, see Energy and Greenhouse Gases and Our Targets .	
103-3	For an evaluation of the management approach, see Energy and Greenhouse Gases .	
302-1	For energy consumption within the organisation see Energy and Greenhouse Gases .	
◆ GRI 303: Water and Effluents 2016		
103-1	For an explanation of the material topic and its boundary, see the table ‘Material Topics and Topic Boundaries’ under Our Approach .	
103-2	For the management approach and its components, see Water and Our Targets .	
103-3	For an evaluation of the management approach, see Water .	
303-1	For total water withdrawal by source, see Water .	
303-3	For percentage and total volume of water recycled and reused, see Water .	
◆ GRI 305: Emissions 2016		
103-1	For an explanation of the material topic and its boundary, see the table ‘Material Topics and Topic Boundaries’ under Our Approach .	
103-2	For the management approach and its components, see Energy and Greenhouse Gases .	
103-3	For an evaluation of the management approach, see Energy and greenhouse Gases .	
305-1	For direct greenhouse gas (GHG) emissions (Scope 1), see Energy and Greenhouse Gases under Environment . See our external assurance statement .	Yes
305-2	For energy indirect greenhouse gas (GHG) emissions (Scope 2), see Energy and Greenhouse Gases under Environment . See our external assurance statement .	Yes
305-7	Disclosure is not required for ‘core’ reporting, however information relating to our NOx and SOx emissions is reported at Reducing NOx and SOx .	
GRI 306: Effluents and Waste 2016		
103-2	Disclosure is not required for ‘core’ reporting, however information on our management approach to waste and effluents is available in Environment .	
306-1	Disclosure is not required for ‘core’ reporting, however total water discharge by destination is reported under Water .	
306-2	Disclosure is not required for ‘core’ reporting, however total weight of waste by type and disposal method is reported under Waste .	
◆ GRI 307: Environmental Compliance 2016		
103-1	For an explanation of the material topic and its boundary, see the table ‘Material Topics and Topic Boundaries’ under Our Approach .	
103-2	For the management approach and its components, including grievance mechanisms, see Environmental Compliance .	
103-3	For an evaluation of the management approach, see Environmental Compliance .	
307-1	For the monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations, see the IPL 2018 Annual Report , page 4 and Environmental Compliance .	
GRI 308: Supplier Environmental Assessment 2016		
103-2	Disclosure is not required for ‘core’ reporting, however information on our management approach to Supplier Environmental Assessment is available in Working with Our Suppliers .	
308-1	Disclosure is not required for ‘core’ reporting, however information relating to the percentage of new suppliers screened using environmental criteria is available in Working with Our Suppliers .	

◆ GRI 400: Social Standards 2016

◆ GRI 401: Employment 2016

- 103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).
- 103-2 For the management approach and its components, including grievance mechanisms relating to labour practices, see [Managing Our Workforce](#).
- 103-3 For an evaluation of the management approach, see [Managing Our Workforce](#).
- 401-1 For new employee hires and employee turnover see [Engaging Our Employees](#)

◆ GRI 403: Occupational Health and Safety 2016

- 103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).
- 103-2 For the management approach and its components, including grievance mechanisms, see [Workplace Health and Safety](#).
- 103-3 For an evaluation of the management approach, see [Workplace Health and Safety](#).
- 403-1 The percentage of total workforce represented in formal joint 'management-worker' health and safety committees that help monitor and advise on occupational health and safety programs is 100%. Monthly Zero Harm meetings are held at all sites and are attended by all employees. See 'Passionate Leadership' under [Workplace Health and Safety](#).
- 403-2 Disclosure is not required for 'core' reporting, however our TRIFR is reported by region, by gender, and by employee and contractor categories, under [Workplace Health and Safety](#).

◆ GRI 404: Training and Education 2016

- 103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).
- 103-2 For management approach and its components, see the [Managing Our Workforce](#) section, including [Attracting and Developing Talent](#), [Engaging Our Employees](#) and [Learning and Development](#).
- 103-3 For an evaluation of the management approach see [Learning and Development](#)
- 404-2 Disclosure is not required for 'core' reporting, however information relating to our programs for upgrading employee skills and lifelong learning that support the continued employability of employees is available under [Engaging Our Employees](#) and [Learning and Development](#).
- 404-3 For the percentage of employees receiving regular performance and career development reviews by gender and by employee level see [Attracting and Developing Talent](#).

◆ GRI 405: Diversity and Equal Opportunity 2016

- 103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).
- 103-2 For management approach and its components regarding Diversity and Equal Opportunity, see [Managing Our Workforce](#), including our [Diversity](#) and [Australian Indigenous Employment Program](#) sections, and our [2018 Corporate Governance Statement](#), pages 2-4.
- 103-3 For an evaluation of the management approach see [Diversity](#) and [Australian Indigenous Employment](#).
- 405-1 For the diversity of governance bodies and employees according to gender and age group, see [Diversity](#). IPL does not currently ask employees who identify with particular minority groups within their countries to identify themselves. Due to our commitment to Indigenous employment in Australia, Dyno Nobel Asia Pacific employees may choose to identify themselves as Australian Indigenous or Torres Strait Islander persons.
- 405-2 Disclosure is not required for 'core' reporting, however information on our management approach to equal remuneration for women and men is included under [Diversity](#) and in the [IPL 2018 Corporate Governance Statement](#) on page 4 under 'Respecting Our Differences'.

◆ GRI 413: Local Communities 2016

- 103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).
- 103-2 For management approach and its components, see [Community](#).
- 103-3 For an evaluation of the management approach see [Community](#)

413-2 For operations with significant actual and potential negative impacts on local communities, see [Community Safety](#).

GRI 103: Human Rights Grievance Mechanisms

103-2 For management approach and it's components regarding human rights grievance mechanisms, see 'Whistleblower Protection' under [How We Operate](#).

GRI 103: Grievance Mechanisms for Impacts on Society

103-2 For management approach and it's [components regarding grievance mechanisms for impacts on society](#), see [Community Safety](#) 'and Whistleblower Protection' under [How We Operate](#).

GRI 414: Supplier Social Assessment 2016

103-2 Disclosure is not required for 'core' reporting, however information on our management approach to supplier social assessment is available under [Working with Our Suppliers](#).

414-1 Disclosure is not required for 'core' reporting, however, information relating to the percentage of new suppliers that were screened using human rights criteria is available under [Working With Our Suppliers](#).

GRI 415: Public Policy 2016

The total monetary value of financial and in-kind political contributions made directly and indirectly by IPL in 2018 is zero. The IPL Political Engagement and Donations Policy, which was amended by the Board on 17 December 2015, prohibits the Group from making any political donations, whether in cash or in kind, to:

- any political party or organisation, party official;
- 415-1 - individual politicians;
- any political candidate for public office; or
- any third party organisation that may make political donations (collectively referred to in the policy as 'political persons') in any country.

This disclosure is not required for 'core' reporting.

◆ GRI 417 Marketing and Labelling 2016

103-1 For an explanation of the material topic and its boundary, see the table 'Material Topics and Topic Boundaries' under [Our Approach](#).

103-2 For information on our management approach to product information and labelling, see [Customer Health and Safety](#) in the Products and Services section. Information relating to stewardship of our product packaging is available under [Raw Materials and Suppliers](#).

103-3 For an evaluation of the management approach see [Customer Health and Safety](#)

417-1 For information relating to the type of product and service information required by the organization's procedures for product and service information and labelling, and percentage of significant product and service categories subject to such information requirements, see [Customer Health and Safety](#) in the Products and Services section.

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IPL is a member of various industry Associations. Those which are considered strategic include:

Industry Association	Description
Fertilizer Australia	The industry association representing manufacturers, importers and distributors of fertiliser in Australia, and associated service industries. Fertiliser Australia members supply over 95% of the fertilisers used in Australia. IPL holds a board position.
International Fertilizer Industry Association	A not-for-profit organisation that represents the global fertiliser industry. IFA member companies represent all activities related to the production, trade, transport and distribution of the nutrients required to help farmers worldwide address the growing need for food, feed, fibre and bio energy. IPL holds a board position.
The Fertilizer Institute	The trade association representing the public policy, communication and statistical needs of producers, manufacturers, retailers and transporters of fertilizer in the US. Issues of interest include security, international trade, energy, transportation, the environment, worker health and safety, farm bill and conservation programs to promote the use of enhanced efficiency fertilizer. Dyno Nobel Americas is a member.
Australian Explosives Industry and Safety Group (AEISG)	Aims to continuously improve the level of safety in the manufacture, transport, storage, handling and use of precursors and explosives in commercial blasting throughout Australia. Dyno Nobel is a member.
Minerals Council of Australia	Represents Australia’s exploration, mining, and minerals processing industry, nationally and internationally, in its contribution to sustainable development and society. MCA member companies produce more than 85% of Australia’s annual mineral output. Dyno Nobel is a member.
National Mining Association	The voice of the American mining industry in Washington, D.C., NMA is the only national trade organisation that represents the interests of mining before Congress, the Administration, federal agencies, the judiciary and the media. Dyno Nobel is a member.
Queensland Resources Council (QRC)	An independent not-for-profit peak industry association representing the commercial developers of Queensland’s mineral and energy resources. The QRC works to secure an environment conducive to the long-term sustainability of the minerals and energy sectors in Queensland, Australia.
Institute of Makers of Explosives	An association concerned with the safety and security of the commercial explosives industry in the United States and Canada. Dyno Nobel is a member.
International Society of Explosives Engineers	A professional society dedicated to promoting the safety, security and controlled use of explosives. Dyno Nobel is a member.
Global Explosives Safety Group (SAFEX)	A non-profit organisation of manufacturers of explosives and pyrotechnics which aims to protect people and property against dangers and damage by the sharing of experience in the explosives industry. Dyno Nobel is a member.
Canadian Explosives Industry Association (CEAEC)	An industry concerned with the promotion of high standards in the manufacturing, use, transportation and handling of explosives in the interest of worker and public safety. Dyno Nobel is a member.
Ammonium Nitrate Nitric Acid Producers Group (ANNA)	An informal international organisation of manufacturers of ammonium nitrate and nitric acid with the goal of promoting networking within the industry through sharing knowledge, technology and experience. Dyno Nobel is a member.
The National Sand, Stone and Gravel Association	An association for the aggregates industry in the US, concerned with supporting policies and regulation that promote the safe and environmentally responsible use of aggregates. Dyno Nobel is a member.
Business Council of Australia	Provides a forum for Australian business leaders to contribute directly to public policy debates. Members determine the work program and policy positions of the Council through their participation in policy committees, special-issue task forces and the BCA Board.
Manufacturing Australia (MA)	A CEO-led coalition of some of Australia’s largest manufacturers that work with governments, businesses and communities to promote Australia’s manufacturing sector to make a significant and sustainable contribution to the nation’s economy.
Australian Industry Greenhouse Network	A network of industry associations and individual businesses which contribute to the climate change policy debate and see value in joint industry action on climate change in order to promote sustainable industry development. The network is committed to industry collaboration on equitable global action to reduce greenhouse gas emissions.

Industry Association (continued)	Description
Energy Users Association of Australia	The Energy Users Association of Australia plays a critical role in helping companies navigate uncertainty in energy markets and participate in driving changes in market rules and the way the network is managed, to ensure better outcomes and reduced costs for energy users. It seeks a competitive, reliable and sustainable energy supply for all users.
American Chamber of Commerce in Australia (AmCham)	AmCham gives members exclusive access to thought leadership, communities of interest, policy advice, business advocacy, information, and relationships with business and government. With roots in America, AMCham serves the business community across Australia and the entire Asia-Pacific region, providing assistance to companies in the USA and Australia and promoting trade, commerce and investment to and from Australia.
American Australian Business Council (AABC)	The dynamic economic bond between Australia and the United States is at the core of the relationship between the two nations. It is a bond founded on a commitment to commerce through the flow of capital, people and ideas. The AABC was formed to tell this story and help to further strengthen this bond. By highlighting the businesses and their leaders who are key to this relationship, the AABC serves as a resource for business on both sides of the Pacific.
Chief Executive Women (CEW)	Chief Executive Women represents more than 500 of Australia's most senior and distinguished women leaders, whose shared vision is Women Leaders Enabling Women Leaders. CEW strives to educate and influence all levels of Australian business and government on the importance of gender balance. Through advocacy, targeted programs and scholarships, CEW works to remove the barriers to women's progression and ensure equal opportunity for prosperity.
National Association of Women in Operations (NAWO)	NAWO is the peak Australian body championing women in operations and is an incorporated not-for-profit association lead by an unpaid Board of dedicated senior professionals. NAWO aims to: inspire and support women to reach their full potential and achieve their chosen career goals; and to inspire and support organisations to create inclusive workplaces, attract and retain the best talent and reach their chosen objectives.

List of research organisations funded

Research Organisation	Project Funded	Expected period of Funding
University of Melbourne, Australia	Healthy soils for sustainable food production and environmental quality	2016-2018
University of Melbourne, Australia	Soil microbial indicators for efficient use of nitrification inhibitors	2016-2018
Queensland Department of Science & Environment (DES), Australia	Smart blending of enhanced efficiency fertilisers to maximise sugarcane profitability	2018-2020
Various major customers under Partner Program, Australia	Various projects ranging from product evaluations through to farming systems trials to reduce nutrient runoff to waterways	2014 onwards
University of Sydney, Australia	Emulsion Explosives for Rock Blasting in Extreme Geothermal Environments	2018–2021
Murdoch University, Australia	Low fume explosives for critical areas	2017-2019

Glossary

Sustainability Report 2018

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Acute Risk	Acute physical risks refer to those that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, floods and coastal storm surges.
Agricultural extension	Agricultural extension is the application of scientific research and new knowledge to agricultural practices through farmer education. The field of 'extension' now encompasses a wide range of communication and learning activities organised for rural people by educators from different disciplines, including agriculture, agricultural marketing, health, and business studies.
BEx	Business Excellence (BEx) is the IPL Business System for continuous and focused improvement. BEx is strongly aligned to IPL's Corporate Values and has lean thinking at its core. Through BEx there is continuous review, measurement of business performance and improvement of the processes and systems that support sustainable practices.
Chronic Risk	Chronic physical risks refer to longer-term shifts in climate patterns such as permanent increases or decreases in average or seasonal rainfall at a particular region, sustained higher temperatures that may cause sea level rise or chronic heat waves, changes in seasonal periods of frost, etc.
Climate	The weather conditions prevailing in an area/region in general or over a long period.
Climate Risk Index (CRI)	The Global Climate Risk Index analyses to what extent countries have been affected by the impacts of weather-related loss events (storms, floods, heat waves etc.). It demonstrates that less developed countries are generally more affected than industrialised countries. Regarding future climate change, the Climate Risk Index may serve as a red flag for already existing vulnerability that may further increase in regions where extreme events will become more frequent or more severe due to climate change. While some vulnerable developing countries are frequently hit by extreme events, for others such disasters are a rare occurrence.
CO2e	Carbon dioxide equivalent: Universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of CO2. Used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.
Climate Change Scenario	A scenario describes a path of development leading to a particular outcome. A climate change scenario describes a path of development leading to a set degree of rise in temperature above pre-industrial global average temperatures. Scenarios are not intended to represent a full description of the future, but rather to highlight the central elements of a possible future and to draw attention to the key factors that will drive future developments, or in the case of climate change scenarios, financially material climate-related risks and opportunities. Scenarios are hypothetical constructs; they are not forecasts or predictions, nor are they sensitivity analyses.
EIFR	Environmental Incident Frequency Rate: number of incidents per 1,000,000 hours worked which: exceed licence conditions and create a material or off-site environmental impact with a consequence of Category 3 and above; have resulted in a regulator (e.g. EPA) fine of any value; or are a community complaint that stops production.
Extensive agriculture	Extensive agriculture (as opposed to intensive agriculture) is an agricultural production system that uses small inputs of labour, fertilisers, and capital, relative to the land area being farmed.
GRI	The Global Reporting Initiative (GRI) is a leading organization which promotes the use of sustainability reporting as a way for organisations to become more sustainable and contribute to sustainable development. GRI pioneered and developed the comprehensive Sustainability Reporting Framework that is most widely used around the world. To see the GRI indicators covered by our sustainability webpages and publications, click here
Group	The IPL group, collectively comprising IPL and its subsidiaries.
Integrated Business Planning	Integrated Business Planning (IBP) is the business planning process that extends the principles of Sales and Operations Planning throughout the supply chain, product and customer portfolios, customer demand and strategic planning, to deliver one seamless management process. Integrated Business Planning is industry's best practice model.
Materiality	In the context of the GRI Reporting Framework, 'material' topics for a reporting organization are those topics that have a direct or indirect impact on an organisation's ability to create, preserve or erode economic, environmental and social value for itself, its stakeholders and society at large.
Near miss	An unplanned event that did not result in injury, illness, or damage – but had the potential to do so. The aim of the investigation of each 'near miss' event is to identify and mitigate root causes, providing a focus for improvement.
NOx	A generic term for the mono-nitrogen oxides NO and NO2 (nitric oxide and nitrogen dioxide).
N2O	Nitrous oxide (an oxide of nitrogen), listed as one of six greenhouse gases covered by the Kyoto Protocol and the Greenhouse Gas Protocol.

Paris Agreement	A global climate agreement that was reached under the United Nations Framework Convention on Climate Change (UNFCCC) at the 21st Conference of the Parties (COP21) in Paris (30 November to 12 December 2015) to limit average global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. The Paris Agreement sets in place a durable and dynamic framework for all countries to take climate action from 2020, building on existing international efforts in the period up to 2020.
Physical Risk	Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organisations, such as direct damage to assets and indirect impacts from supply chain disruption. Organisations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; extreme temperature changes impacting organizations' premises, operations, supply chain, transport needs, and employee safety.
Plant	The equipment used to manufacture a specific product e.g. ammonia. There may be several plants on a single IPL site.
Prill	Small aggregates of solid ammonium nitrate formed by allowing drops of liquid AN to congeal or freeze in mid-air after being dripped from the top of a tall prilling tower.
Sales and Operations Planning	Sales and operations planning (S&OP) is an integrated business management process through which the executive/leadership team continually achieves focus, alignment and synchronisation among all functions of the organization.
Scope 1 emissions	Direct GHG emissions occurring from sources that are owned or controlled by the Group, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles etc., emissions from chemical production in owned or controlled process equipment.
Scope 2 emissions	Scope 2 emissions are GHG emissions which arise from the generation of purchased electricity consumed by the Group. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the Group. Scope 2 emissions physically occur at the facility where this electricity is generated.
Scope 3 emissions	Scope 3 is a GHG emissions reporting category that allows for the treatment of all indirect emissions (other than Scope 1 and 2 emissions). Scope 3 emissions are a consequence of the activities of the Group, but occur from sources not owned or controlled by the Group.
Significant Environmental Incident	Incidents rated by the IPL Risk Matrix as Category 5 or 6. A category 5 incident is 'a major event or repeat non-compliance with regulatory, licence or permit conditions leading to prosecution or restriction of operations' and a Category 6 incident is one which results in 'permanent or long-term impacts to water, land, biodiversity, air or ecosystems and requires significant remediation, rectification or investment in mitigation'.
Site	A single geographic location where IPL operations take place.
Supply Chain	Our supply chain is a sub-set of our value chain, referring to the companies who supply the inputs to our operations, such as raw materials for manufacturing, service providers and providers of other inputs such as electricity and water.
Transition Risk	Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organisations.
TCFD	The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) is a market-driven initiative, set up to develop a set of recommendations for voluntary and consistent climate-related financial risk disclosures in mainstream filings Task Force on Climate-related Financial Disclosures.
TRIFR	Total Recordable Injury Frequency Rate: number of recordable injuries per 200,000 hours worked; includes contractors unless otherwise indicated.
Value Chain	Our value chain includes our suppliers (and potentially their suppliers), our operations, our distribution channels, and our customers, who are the end users of our products. Our supply chain (described above) is a subset of this.



Workplace Health and Safety

◆ Material issue

Workplace Health and Safety

- ◆ Our Safety Performance
- > Health and Wellbeing

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[Link: What is BEx?](#)

Our approach to workplace health and safety is defined by our HSE Strategy which is underpinned by a focus on four key areas referred to as the '4Ps': [Passionate Leadership](#), [People](#), [Procedures](#) and [Plant](#). We believe that safety performance is a result of investment in each of these four areas. IPL has in place a fully integrated HSEC Management System which provides the foundation for effective identification and management of health, safety and environmental risks. Based on our HSEC Policy, this foundation is complemented by the corporate commitment to continuous improvement.

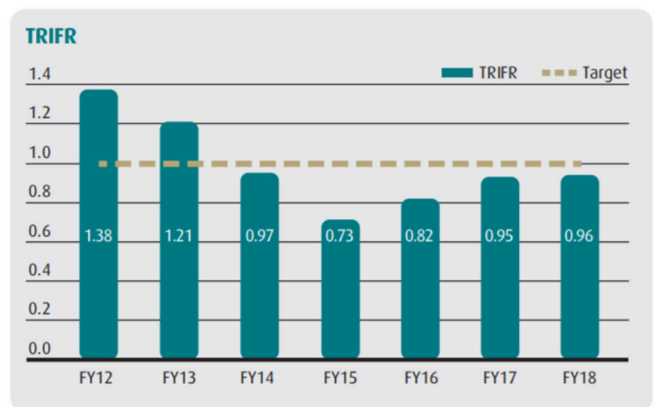


In 2018, IPL refreshed its Zero Harm ambition to extend beyond personal safety to include a greater focus on process safety and environmental management. This refresh aims to ensure that Zero Harm is a way of life not only for employees, but for other stakeholders, and that it extends beyond the Company to make a positive impact on the greater community.

IPL also revised its Zero Harm strategic plan to include a new three-year focus aimed at achieving a number of key safety measures, including a sustainable benchmark all worker Total Recordable Injury Frequency Rate (TRIFR) of 0.7 by 2021. In 2018, IPL achieved an all worker TRIFR of 0.96, which was consistent with our target of < 1. The increasing trend in the Company's TRIFR over the last three years has stabilised and improved since mid-2018 (1.02) as the Company reaffirmed its Zero Harm commitment.

Specific targets set as a result of the 2018 Zero Harm strategic review include:

- 30% improvement in TRIFR by 2021 (against the mid-2018 TRIFR of 1.02);
- Sustainable year-on-year reduction in Tier 1 and Tier 2 Process Safety Incidents as defined by the Center for Chemical Process Safety (CCPS);
- Sustainable year-on-year reduction in High Potential Severity Incidents; and
- [Zero Significant Environmental Incidents.](#)



Our employees, with all the skills, knowledge and expertise they bring and their capacity to see and manage risks, are a critical factor in achieving Zero Harm. We are working to further develop a culture of passionate leadership, effective procedures, well maintained plants and equipment, and, most of all, engagement from our people.



Passionate Leadership

Leaders take responsibility for the safety of their people and create the safety culture in which Zero Harm is achievable. Passionate Leadership is the most important of the 4Ps. We have a governance structure in place to ensure a safety focus across the organisation. The Board's Health, Safety, Environment and Community (HSEC) Committee assists the Board in its oversight of health, safety and environment matters arising out of our activities as they may affect employees, contractors, and the local communities in which we operate.

This report is published as an interactive online report. Visit the website to access online features at www.incitepivot.com.au/sustainability



[Link:](#)
What is BEx?

The Vice President of Health, Safety and Environment is accountable for advising the Managing Director & CEO and Executive Team on best practice strategies for health, safety and environmental improvement. The role supports the organisation in developing and delivering the health and safety strategy and works with a Group-wide network of safety professionals and operational leaders to achieve our goals and support line management in improving our performance. Regional safety managers provide advice and support to line management, to enable them to make the most effective use of resources, by sharing best practices, and standardising, streamlining and coordinating health and safety activities across the Group. 100 percent of our workers and contractors are represented in formal joint management-worker health and safety committees which operate at a site based level in the organisation. At large sites, these may also operate at a plant level.

The Zero Harm Council (ZHC), chaired by our Managing Director & CEO and consisting of all members of the Executive Team and the Vice President of Health, Safety & Environment, is accountable for overseeing the Group's execution of the Zero Harm Strategy and reviewing health, safety and environmental performance.

On a day-to-day operational level, our leaders are expected to consistently demonstrate and communicate high standards of behaviour and operating discipline and promotion of our Zero Harm Value. They must take proactive action to continuously improve our safety performance and use both leading and lagging indicators to monitor that performance. During 2018, priority was given to Executive Team leadership and coaching of employees in safety during site visits. The Executive Team made site visits in order to review site risk registers and Critical Control Verifications (CCVs), which are controls relating directly to fatal risks.



People

Personal responsibility at all levels is integral to promoting continuous health and safety improvement across the Group. We are embedding this culture with specific training, and supplementing this with the use of techniques such as safety observations, and incident and near miss investigations to share learnings.

We recognise that personal attitude plays a major role in workplace safety. We use two best practice tools globally: Take5! and Safe Act Observation (SAO).

84%
SITES RECORDABLE
**INJURY
FREE**

Take5! and SAO are behavioural safety tools that form part of the Group's overall risk management processes. Both tools require employees to take responsibility for their own safety, as well as that of their colleagues. Take5! is the process for conducting a personal rapid hazard assessment before starting work. It ensures that employees are aware of any risks and have put controls in place to make it safe to proceed. This tool is used in conjunction with Job Step Analyses (JSAs) and more formal risk-assessment processes. SAO is a step-by-step process for evaluating safe work behaviours, whereby team members are observed performing routine tasks in their normal work environment. It is collaborative, and provides positive reinforcement and feedback to ensure that all employees work as safely and efficiently as possible.

Our global behavioural safety training program called 'Safety Partners' was strengthened this year with the development of the IPL Safety Partners Standard, which was approved by the IPL Board. The initial program is based on the concept of how people think, which invariably impacts on what they do. By giving attention to individual attitudes and behaviours we are able to influence the results we achieve on and off the job. Ultimately, this approach will help to influence our attitude towards safety, understanding what is truly important to us and creating a personal safety action plan.

The Safety Partners Standard that was developed during 2018 sets minimum standards to embed Safety Partners as a primary driver of strong safety culture at IPL whilst providing a degree of business unit flexibility to allow adaptation for particular site and business needs. The Global Safety Partners Steering Committee was established to support the implementation of the Standard, which was incorporated into the Global HSEC Management System. The Standard includes the following requirements:

- All new employees and full-time contractors must complete Safety Partners orientation eLearning as part of the IPL induction process;
- All new employees (and contractors) must complete a two-day Safety Partners training program within six months of hire;
- All employees (and full-time contractors) must complete an annual half day refresher course; and
- All IPL Safety Partner facilitators/trainers must have participated in, and received, accreditation in the IPL Safety Partners 'Train the Facilitator' program.

[Link:](#)
What is BEx?

Employees also receive safety training as part of their induction process, which is compulsory for all new employees (including contractors whose duration of engagement exceeds 40 hours). Our 'safety non-negotiables' as described in the '[Rules to Live By](#)' are clearly communicated at induction and reinforced by managers. We also use the '5S' approach to workplace efficiency and safety hazard removal. 5S is one of the business improvement training programs associated with BEx.



Procedures

Our HSEC policy and management system includes 18 global standards and is a key tool underpinning safety performance at all levels and across all functions.

These standards are a key component of our Safety Management System and are aligned to ISO14001, OHSAS 18001, ISO 31000 and AS 4801 international standards, as well as American Chemistry Council Responsible Care Management System and Centre for Chemical Process Safety risk based process safety standards.

To track and monitor our HSE performance, we use a global HSE reporting system called Cintellate. Incident reporting and analysis is key to our ability to continuously improve our safety practices. By recording and investigating incidents and 'near misses' to establish the root causes – be they injury, environmental, process safety or quality related – we gain valuable insights into the hazards faced by our people and communicate these learnings across all of our sites. A risk register template is included in Cintellate, which provides a uniform approach to risk ranking, management and reporting across the business. Data extracted from Cintellate is reported to the Board and Executive Team regularly. Our focus during 2018 included the continued improvement of risk management across all parts of the business, improving the quality of risk register content, and the development of the IPL global standardised Management of Change (MoC) process.



Plant

Given the nature of the risks involved, ensuring the safety and integrity of our major chemical manufacturing facilities is paramount. This means making sure our facilities are well designed, safely operated, properly inspected and maintained, and are meeting regulatory requirements. We are continuing to strengthen our governance of process safety. Our audit framework and established metrics ensure continuous monitoring and assessment of performance. The number of Center for Chemical Process Safety (CCPS) Tier 1 process safety incidents, which are the most serious of process safety events, has decreased by 29 percent since last year.

29%
**REDUCTION IN
PROCESS SAFETY
MANAGEMENT CCPS
TIER 1 INCIDENTS
SINCE 2017**

Our 2018 Performance

- Achievement of a global TRIFR of 0.96, with 84 percent of sites recordable injury free;
- 29 percent reduction in process safety management Center for Chemical Process Safety (CCPS) Tier 1 Incidents since last year (2017);
- Team member led management reviews of high potential incidents and Group wide communication of the resulting relevant learnings;
- Continued implementation of the Critical Control Verification management process. CCVs are controls which relate directly to fatal risks;
- Refresher training in the IPL Safety Partner Group Standard;
- Effective use of globally standardised Job Step Analysis (JSA) and Permit to Work (PTW) processes;
- Integration of behavioural safety training into the IPL HSEC Management System;
- Completion of the design for the global standardised Management of Change (MoC) process and database tool;
- Completion of the design of a customised Zero Harm Culture assessment tool across Global Manufacturing that is consistent with the way IPL measures culture;
- Development of Process Safety Management (PSM) competency training content;
- The Global launch of a refreshed [Rules to Live](#) by program across the business in conjunction with World Safety Day, which included the addition of two new rules;
- The recognition of a 'best ever' ground breaking, historic [safety performance in our Dyno Nobel Asia Pacific Business](#);
- Redesign of the [IPL 8 Week Health Challenge](#) and extension to all employees in our Australian & Asia Pacific business; and
- Development and distribution of the IPL Health and Wellbeing calendar for our employees.

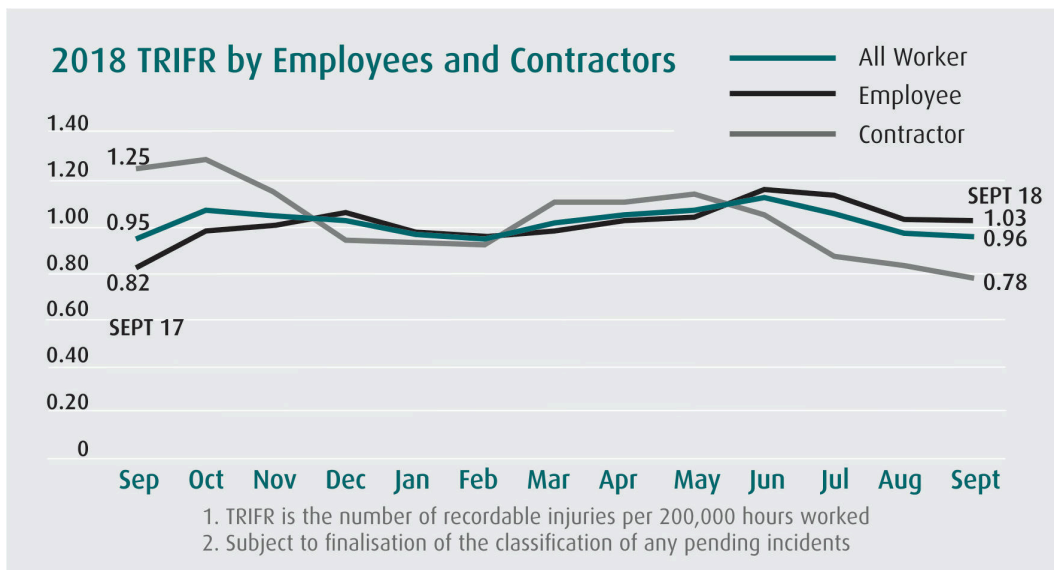
Key Challenges and Opportunities

- Striving for Zero Harm in our risk inherent manufacturing and customer mining environments; and
- Continuous improvement in all safety metrics.

Strategic Priorities for 2019

The following initiatives will be priorities in maintaining IPL’s Zero Harm focus in 2019:

- Continued risk management implementation and simplification;
- Development of a Safety Leadership Framework;
- Communication of the redefined Zero Harm culture vision;
- Continued improvement in the key areas of MoC processes and the on-site delivery of explosives products to customers (Explosives Management System);
- Improved PSM and operator competency;
- Injury management consistency across the IPL Group; and
- Simplification of the HSECMS, including standardising core and common processes.



TRIFR by region	2016	2017	2018
Australia	0.98 ¹	1.09 ²	1.08
North and South America	0.69 ¹	1.04 ²	1.11
Canada	0.61	1.69	1.36
Turkey	0.86	0.35	0.00
Indonesia	0.25	0.00	0.00
Papua New Guinea	0.00	0.00	0.00

Employee TRIFR by Gender	2016	2017	2018
Male	0.89 ³	0.81	1.06
Female	0.46 ³	0.89	0.85

1. Restated due to the reclassification of 5 recordable injuries.
 2. Restated due to the reclassification of 3 recordable injuries.
 3. Restated due to the inclusion of recordable injuries which occurred during the 2016 reporting period but were reported after the end of the reporting period.

Case Study: DNAP achieves ground breaking, historic safety performance

In February 2018, Lee Smith, VP HSE & Risk for Dyno Nobel Asia Pacific and Incitec Pivot Fertilisers, took time to acknowledge a significant safety performance milestone achieved across the Dyno Nobel Asia Pacific (DNAP) business. That month, DNAP celebrated its best safety performance in its history with an almost 90 percent reduction in all safety performance metrics across the business, including an 88 percent reduction in TRIFR and an 89 percent reduction in LTIFR compared to 2013.

“In addition, 90 percent of our sites have been recordable injury free for more than two years,” Lee said. “We have seen a downward trend in our injury severity rates and in our high potential incident rates.

Importantly, we’ve also recorded a reduction in repeat high potential incidents, which demonstrates the effectiveness of our corrective actions arising from incident investigations.”

“This was made possible through strong visible leadership and the commitment of everyone across the DNAP Business, I want to congratulate you all for working together with a collective focus on safety, increased engagement with our customers, and how each of us has embraced taking ownership of our improvement initiatives.”

Some of those initiatives include:

- The Fatal Risk and Critical Control Program;
- Refocused Communication and Visual Management;
- Hazard Identification and Management Process;
- Incident Management and Focus on Implementation of Hard Barriers;
- Revised High Potential Incident Management review process; and
- Early Incident Notification and Incident Management.



In his communication, Lee reminded employees and contractors that while the historic milestone should be celebrated, all workers must remember the need to keep their focus on the end goal of achieving Zero Harm, for Everyone, Everywhere and every day along with management’s partnership in helping to support IPL’s continued Zero Harm journey and drive our safety agenda, which is to:

- Deliver focused training aligned with our operating systems;
- Assign critical controls based on each site’s risk profile; and
- Further embed our Explosives Management System.

“I ask everyone to take the time to reflect on what has been achieved and to remain ever vigilant” Lee concluded. “Let’s not become complacent. Let’s remain committed to working together to stay safe, continually improving our safety performance and ultimately, achieving Zero Harm.”



Case Study: Engaging with Customers and Community on Safety

In line with extending our Zero Harm ambition beyond IPL to other stakeholders, IPL continued to engage with customers and the community to share our learnings on safety through events throughout 2018. Our CEO Jeanne Johns gave the key note speech at BHP’s global risk forum in August.

“It’s important to engage with our customers and exceed their expectations,” Jeanne said. “I found getting involved in the discussion on safety lessons learned from our respective risk journeys extremely rewarding”.

Andrew Cunningham, Dyno Nobel Risk and Project Manager, was part of the inaugural North American Dyno Nobel Major Customer Health and Safety Forum held in Cheyenne, Wyoming. Representatives from Dyno Nobel and our customers Peabody, Rio Tinto, Newmont and Martin Marietta, as well as Buckley Powder, and Wesco, discussed our Health and Safety processes, wins and challenges.

When asked to describe the outcomes of the day, Andrew said “We’ve agreed a forward program with sharing on a couple of common initiatives such as our control management programs. A common observation was that more safety programs doesn’t necessarily equal better safety performance. One of our customers appeared to be seeing improved performance with greater and deeper focus through fewer programs, and we agreed to share learnings on this going forward.”



In May 2018, the Team at our IS Manufacturing Plant in Helidon, Australia launched the BLAST (Building Leadership and Safety Together) program in the local Primary School.

When the Helidon Dyno Nobel team chose to engage with their community at the Helidon State School Fete last year, there was feedback from the community who noticed their strong focus on safety behaviours. From this interaction grew an idea to share the IPL Zero Harm safety culture with the community.

The concept of the BLAST program came from a vision shared by Production Planner Tina Hickmott and Nonel Assembly Operator Kemara Duffey. Collaborating with Sentis Education, the Helidon team was able to establish a site Community Safety Council to facilitate the program to educate children on the core concepts of our Safety Partners behavioural program, and in particular, the importance of our Personal Big 5 (PB5). Our PB5 are the top 5 reasons that each of us want to stay safe and avoid an injury at work, school or home, and include things like being with our family, our friends, taking holidays or a favourite sport or activity.



"The BLAST program has customised material to suit each grade from pre-primary through to year six. There was a story for the Prep and Year one children with a character called 'Dynamite' the Safety Rabbit," said Tina, who explained that Dynamite talks to his friends and family about 'How do I keep myself safe?' and 'How do I help keep my friends and family safe?'



"All the material aligns with our Safety Partners learnings from across our sites and the concept of PB5 was targeted as the personal link for staff, pupils and parents."

Helidon Plant Manager Paddy Wiggall, Executive Assistant Sonia Stewart and Global Head of Manufacturing Alan Grace joined Tina and Kemara for the launch of the BLAST program at Helidon Primary School.

"I want to thank Tina and Kemara for their work in developing this program, it was just so rewarding to see the Prep kids so fully engaged in this great safety learning initiative" said Alan. "It's a wonderful example of living out our Company Values of Zero Harm and Care for the Community."

The site is now in discussions with Sentis Education and the school to arrange a co-facilitated program at the school on an ongoing basis. Following the event, one mother of a Year 2 student offered her gratitude and appreciation to Kemara, with the following safety share.

Elijah got home from school on Friday and his Dad, Ben, was working in the shed. Ben is a diesel mechanic and was wearing open beach style shoes. Elijah said, "Dad why aren't you wearing your work boots when you are working?"

His Dad replied with, "I'm at home. I never wear my work boots down here, buddy."

Elijah said "Dad! Do you know that if you hurt yourself you won't be able to do all these things?" He then rattled off a list of his PB5 that he and his Dad would no longer be able to enjoy together if his Dad were to injure his feet. Finishing his point Elijah said, "Dad, if that happens you won't be able to take me fishing!"

The next morning Elijah's Dad got up and put his work boots on before he went to the shed.

Now that's how you build great safety leaders!



Workplace Health and Safety

Health and Wellbeing

Workplace Health and Safety

◆ Our Safety Performance

> Health and Wellbeing

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[Link:](#)
What is BEx?

IPL values people. This means that we care for the health and wellbeing of our employees. Studies show that companies that manage wellness programs effectively profit from increased employee engagement and higher organisational performance.

The IPL Zero Harm Council has responsibility for health across the Group, and each business unit and site offers health and wellbeing programs appropriate for local needs and to suit local regulatory and cultural requirements.

From an organisational point of view, health and wellbeing initiatives can:

- reduce absenteeism
- improve overall work performance
- reduce workplace accidents and injuries
- improve staff morale
- assist IPL in being an 'employer of choice'
- develop a healthy balance between work and home activities for our employees
- provide a supportive and healthy work environment that promotes effective teamwork and fosters professional growth

In addition, we encourage our employees to maintain their health for personal benefits, such as a longer life, an improved quality of life, increased energy and happiness and reduced expenditure on medical providers and premiums.

All Australian, Indonesian, USA and Canadian employees have access to an Employee Assistance Program (EAP).

In Australia, the EAP is available to employees through Converge International, providing up to five confidential specialist counselling sessions each year, available 24 hours per day. The EAP offers support for work and personal issues either face-to-face or over the telephone. Employees can also access the free Converge International portal online or directly on mobile devices through the new EAP Connect App. The portal offers tip sheets and handy hints on a range of lifestyle topics, including Ten Habits of Highly Effective Listening, Making Lifestyle Changes Stick, How Do I Know if I'm Not OK, Communication & Collaboration, and Creating a Positive Workplace (tips for managers and staff).

In the USA, employees and their immediate family members can access the EAP through SupportLinc, which offers up to eight confidential face-to-face or over the phone counselling sessions, regardless of whether employees enrol in other Company benefit programs. Employees can log on to the SupportLinc website for access to thousands of helpful articles and tip sheets, including topics such as child care, elder care, education, legal and financial assistance, and more. SupportLinc is also available 24 hours a day, 365 days a year. The counselling offered through the IPL EAP can help with managing conflict, coping with change, stress, grief, career transitions, relationship issues, gambling, alcohol and substance abuse, parenting conflict, pain, trauma, anxiety, depression and many types of emotional difficulties.

In Canada, the EAP is available to employees and their families through LifeWorks by Morneau Shepell and our Indonesian employees and their families can access the EAP through Iradat Konsultan.

Across our Australian sites, we promoted R U OK? Day on Thursday 13 September 2018, to equip and encourage work mates to start a conversation whenever they notice that a colleague might need help to seek assistance.

Employees were encouraged to download a tip sheet and watch some helpful videos on YouTube about signs to look out for which may indicate that a co-worker, family or friend is struggling. A number of our office and site locations organised activities to talk about R U OK? Day, and employees were encouraged to think about how they can recognise, and act to support someone at work or at home who may be having a hard time. In addition, the IPL EAP was also promoted to employees.

**How to ask
R U OK?**
[Learn here](#)

In 2018, the Executive Team endorsed the IPL Mental Health strategy to promote a mentally healthy workplace and a mentally healthy workforce at IPL.

IPL recognises that work is, in itself, beneficial to an individual's total health. Hence, the workplace has a significant opportunity to promote a mentally healthy workforce through establishing frameworks and programs that assist to reduce stress and build 'protective' factors. Two executives from the IPL Executive Team have been nominated as champions for the mental health program. The Program was launched by the champions on World Mental Health Day on 10 October 2018.

A key strategy of the program is to increase the awareness of mental health, its effect at work and where and how to seek help. As at 30 September 2018, over 230 workers have participated in Mental Health Workshops and have provided very positive feedback.

Shown below are two members of the IPL Health Services Team as they visited Telfer and Port Hedland in Western Australia during August. The team ran mental health awareness sessions which included some valuable team discussions. Occupational health and hygiene hazards were also assessed during the visits.



Sleep and driver safety

During 2018, our Dyno Nobel Transportation (DNTI) and Distribution business in North America continued to operate a Driver Alertness Program for our current truck drivers and new hire drivers. The program aims to assist in reducing fatigue and help keep our drivers safe on the road. Drivers are screened for Obstructive Sleep Apnea (OSA) and tested if found to be at risk. Those who are diagnosed with OSA are assisted to access treatment to improve their sleep. As with all of our drivers, determination for fitness for driving is made by the Department of Transport doctor. In the case of OSA, doctors confirm CPAP treatment compliance and monitor progress before issuing drivers with a medical card to drive. Dyno Nobel Transportation has partnered with Sleep Well to electronically monitor CPAP compliance for drivers using CPAP and to assist drivers with issues they may be having with their CPAP treatment. In addition, DNTI established a Transportation Drivers' Council to promote weekly wellness activities and increase awareness of the importance of health and wellness. In Australia, 'fitness for driving' medical assessments are also conducted as part of the requirements for Dangerous Goods Drivers' licencing. The issue of fatigue in the workplace and importance of sleep for good mental and physical health continues to be a focus.

Health assessments and Wellness Program

Across our US and Australian operations, occupational health assessments are also offered to employees. For example, we currently offer our US based employees confidential Health Evaluations on an annual basis. The screenings are goal oriented focusing on the early identification of personal modifiable health risk factors, which employees are encouraged to improve throughout the year. This provides each employee with a picture of their overall health status including blood pressure, cholesterol, glucose, and triglyceride levels, and the effects of smoking. Delivered by a third party professional health services provider, this screening information is provided confidentially to employees

who are then assisted in partnering with their physician and certified health coaches to take corrective action and improve health outcomes where required. Because the screening is conducted annually and includes a goal achievement component, a six-month check-up is included to help employees track their progress and improve their health. Employees in Australia who are exposed to noise, dust and other occupational exposures undergo relevant periodic medical assessments to monitor and ensure that their health is maintained.

In the US, the Wellness Program inspired great results in 2018:

- 68% of participants improved blood pressure levels,
- 71% improved LDL Cholesterol levels,
- 63% improved blood Glucose levels, and
- 64% improved Triglycerides.

IPL Health and Wellbeing Annual Calendar of Events

In 2018, the first IPL Health and Wellbeing calendar was developed and distributed to all employees across the Asia Pacific region and in Turkey. The calendar was translated into Bahasa for Indonesian employees and Turkish for those in Turkey. The calendar served as a Health and Wellbeing activities guide for the 2018 Health and Wellbeing program, with each month focusing on a theme and specific references to identified risks. These risks were also used to design the IPL 8 Week Health and Wellbeing Challenge in 2018 (see below).



The IPL 8 Week Health and Wellbeing Challenge



During 2018, the IPL 8 Week Health and Wellbeing Challenge was redesigned and extended to all employees globally. A total of 76 teams and over 660 employees participated globally. The objectives of the program were to promote the 5 ways to wellbeing: connect; be active; take notice; keep learning; and give. This approach encouraged participants to adopt a holistic and sustainable way of caring for both their physical and mental health and wellbeing. The top 3 teams were asked to nominate the charity of their choice to donate the prize money.

The Challenge began on February 5th. Employees earned points for their teams by achieving targets related to each of the 5 ways to wellbeing. The Challenge was promoted to employees by email and on the internal intranet through a weekly theme with bonus points available through engagement in weekly themed activities. Encouraging positive, sustainable lifestyle changes, all with a bit of fun, the outcomes achieved in total were 459 kilograms lost, 212 centimetres lost, 14,829.5 hours exercised solo and 10,543 hours exercised with someone else.



The winning team from Dyno Nobel Indonesia is shown above being awarded their trophy and certificates. The team [donated their prize money to the Yayasan Ronald McDonald House of Charities.](#)

Some of our sites in Australia, such as Phosphate Hill and Moranbah, have access to a range of health and fitness support facilities and services such as a gym, other sport and recreational facilities and lifestyle, nutrition, health and fitness professional support and advice. Several other sites offer a subsidy towards gym membership or other fitness programs.

Giving up smoking

In the US, a tobacco cessation program is also offered in association with the Wellness Screenings program and is conducted by the same third party health services provider. We incentivise this program by reimbursing the employee's costs for any approved tobacco cessation products once an employee has successfully completed the program and stopped smoking. During 2018, 9.5% of repeat participants quit using tobacco through this program.

Reducing sprains, strains and manual handling injuries

During 2018 we continued to focus on early intervention and prevention of all types of sprains, strains and manual handling injuries during the year through a combination of eliminating manual handling tasks where possible, and encouraging employees to report any signs of strain injuries as soon as they arise. In the US and Canada alone, 218 early reports of pain and possible strains allowed many of them to be treated with first aid, successfully reducing the severity of work related injuries. In the US, Mexico and Canada, investigation of incidents includes assessment of manual task injury reduction action items to further reduce the risk of injury. In addition, an Injury Prevention Active Warm-up Program for all manual task employees was rolled out. Designed during 2017, the program helps employees and contractors prepare their bodies before work by stretching. A version of the program was also rolled out to all office employees in Dyno Nobel North America during 2018. Reductions in musculoskeletal injury rates were also reported across our Asia Pacific business due to the ongoing success of the Hazardous Manual Task Injury Reduction Program.

Case Study: Reducing low level muscular skeletal strains at Moranbah

Our Moranbah Site identified that over the past 12 – 14 months employees had been experiencing regular, generally low-level muscular skeletal strains. Jane Leow, Health Services Manager for IPL, visited the Moranbah site in June to conduct training in Injury Management for People Leaders, as IPL recognises that leaders play an essential role in ensuring an effective injury and illness management process is implemented.

Accompanying Jane was Dr Sid O'Toole from Resile who is a specialist Occupational Physician. Dr O'Toole (pictured centre with Gerad Corkill and Jane Leow) was engaged to review and assess the tasks and environment at the Moranbah site with the scope including repetitive tasks and tasks involving additional PPE, identification of potential manual handling issues, heat stress, fatigue, and task sequencing. A report was presented to the site with recommendations on improving current tasks and options to consider changing some tasks completely to eliminate the risk of strain injuries. The report will be reviewed with a view to applying the recommendations across the rest of Australian Manufacturing.



Men's Health Week 2018

Men's Health Week was promoted to our employees this year from June 11th to 17th. The 2018 theme was 'Men and Families: Making Healthy Connections. This year, employees were encouraged to raise Men's Health Week as a culture share, tool box talk or an agenda item at their meeting, with the aim of talking about raising happy kids, work-life balance and ways to manage stress, as well as ways to build rewarding emotional relationships with family and friends. Employees were directed to the Men's Health Week website and were also reminded of the internal resources IPL offers to support Men's Health, including the HSE Men's Health page on our intranet, which contains information to increase employees' understanding of heart health, mental health and general wellbeing, the IPL Employee Assistance Program, and the IPL Work and Life Hub. In addition, the monthly EAP webinar for June, which is available to Australian employees, was on Building Positive Relationships and covered topics including The foundations of positive relationships; The principles of positive relationships; and Reflections on building positive relationships.

The IPL Work and Life Hub

EXPLORE YOUR HUB 

The Hub is an online support service available to our Australian based employees. Run by our partner, SeventeenHundred, the program is designed to assist our employees to achieve a healthy work-life balance and can help with a range of queries and concerns, from mental and physical well-being to parenting and caring responsibilities. Once registered, employees have access to information and services to help support a healthy work/life balance.

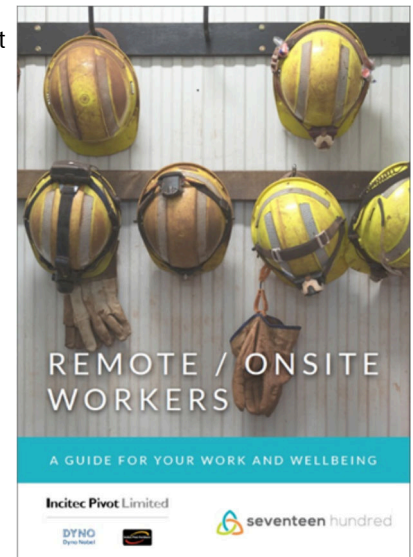
Australian employees can access the Program from work or home, and services offered include:

- Finding a nanny or babysitting service profile to ensure the care giver is a suitable match for an employee's family
- Searching for accredited childcare centres, primary and secondary schools close to work or home
- Searching for elder care and disability care information
- Accessing health and nutrition information
- Finding information on government benefits
- The Keeping Connected program, which provides fortnightly emails regarding the stages of pregnancy and the developments of your child.
- Resources for Remote/Onsite Workers Work and Wellbeing
- Parenting, including a Return to Work after Parental Leave Checklist
- Transitioning to retirement

Supporting remote workers' health and wellbeing

Last year IPL developed the Remote and Onsite Workers Pack in conjunction with SeventeenHundred to support our Fly In Fly Out (FIFO) and Drive In Drive Out (DIDO) workforce. The Pack includes case studies written using actual IPL remote worker experiences and contains a guide for remote work and wellbeing with information on topics including:

- Benefits and challenges of onsite work
- Onsite and At Home coping strategies
- Help for the families of onsite workers
- Taking care of yourself
- Taking care of the kids
- Taking care of your relationship
- How to find your happy place at work
- Staying positive at work
- Lifestyle lessons from a FIFO worker
- How to fight fatigue and stay safe at work
- Nutrition advice for onsite workers
- Making your money count
- How to find strength in the face of workplace change
- Surviving in a tough work environment



Building Mental Health into Leader as Coach training at Moranbah

During 2018, our Moranbah manufacturing site in Australia built health and wellbeing into the Leader as Coach training program by looking at the 'Happiness Advantage' video by Shawn Achor. Rather than success determining our happiness, Shawn proposes that the formula is, in fact, reversed and that happy people are actually more successful. The concepts mentioned in the video relate to positive psychology practices that help build resilience, which in turn can help protect us from mental illness. Key concepts include expressing gratitude, practising mediation and mindfulness, leveraging your strengths and taking time to savour the 'good'.

One team got back together to discuss their experience after 21 days and the response was overwhelmingly positive, with the entire team planning to continue the activities. The team also shared their learnings on our employee social media site for anyone who is thinking about trying the program. Their tips are:

1. Do your 3 gratitudes and journaling at the start of the day;
2. Make time to exercise;
3. Learn how to meditate (start small) before beginning;
4. Stick with it, if you miss a day pick it back up the next day;
5. Have an actual physical journal to record your progress/events;
6. Do it as a team - it is easier to stay on track if you are doing it with someone else; and
7. Find something that works for you



Community

St Helens employee, Rob Opperman, far left, shows St Helens High School students our St Helens operation.

Community

- ◆ Community Engagement
- ◆ Community Safety
- > Community Investment
- > Social Return on Investment (SROI)

Print PDF



IPL understands that long term and meaningful relationships with the community are fundamental to maintaining our social licence to operate, particularly in the area of maintaining community safety. We also believe we have a responsibility to make a positive social and economic contribution to our local communities. As an international company with operations in many countries, we take a grass-roots approach to community relations.

Community investment and engagement decisions are made locally, where community needs are best understood, and are guided by a Group-wide governance framework.

We are committed to building long term and meaningful relationships with the communities in which we operate in accordance with our Value of *Care for the Community & our Environment*. We actively engage with community members and representatives of national and international charities, regulators, Governments and grass-roots community organisations including resident groups, councils, farmers, sporting clubs and environmental groups.

We aim to have a positive impact by working closely with community representatives, providing local employment and selecting local suppliers wherever possible. We empower our people to engage with their local communities and seek to mitigate negative impacts and create positive perceptions and outcomes for our business.

Our [Sustainable Communities Policy](#) defines our approach to community relations, including commitments to:

- Listen to and work with the community;
- Strive to be a valued corporate citizen; and
- Respect our neighbours, their values and cultural heritage, and be considerate of them in carrying out our operations.

Day-to-day responsibility for assessing our community impacts and implementing community engagement programs rests with local management at each of our sites, as our site managers best understand their needs and concerns. Local priorities are informed by our [Community HSEC Standard](#), which sets our minimum requirements for engagement. Governance of our community investment programs is overseen by the Executive Team.

Key Challenges and Opportunities

- Ensuring alignment of our community activities to our Principles for Giving across our global operations
- Maintaining our social licence to operate with the inherent risks associated with chemical manufacture, storage and transport
- Building our reputation as an employer of choice in the community

Strategic Priorities

- We will continue to improve our approach to community engagement, including:
- Continuing to develop a Group-wide approach to community relations and embedding principles of community engagement at business unit and site level
 - Understanding and working to address the impacts we have on our communities
 - Embedding the principles of our Community Investment Framework within the ongoing operations of our businesses and functions

Community

Community Engagement

◆ Material issue

Community

- ◆ Community Engagement
- ◆ Community Safety
- > Community Investment
- > Social Return on Investment (SROI)

Print PDF



As an international company with operations in many countries, we take a grass-roots approach to community engagement.

Many of our operational sites have community engagement programs in place to facilitate two-way communication between the site and the local community, both directly and through local community organisations. Some of the outcomes associated with these local site community engagement programs during 2018 include:

- Our manufacturing site in Geelong, Australia conducts community meetings twice a year. Advertised through local letter box drops, the meetings are attended by site neighbours, including the North Shore Residents Group. During the meetings site representatives present data about the site, such as safety information and results of ongoing environmental monitoring. Community leaders are provided with the telephone numbers of key site employees and are able to notify them of issues if they arise.

The site sponsors an annual award for the top engineering graduate from Deakin University, and funds equipment for the annual Moorpanyal swim held by the North Shore Residents Group. The site has partnerships with [Give Where You Live](#) and [GenU](#). In addition, employees volunteered and fundraised for [Greening Australia](#), [White Ribbon Day](#), and supported the [Kids with Cancer Foundation](#) with a team at the 2018 Geelong Port Chilli Chicken Wing Challenge.

- Our manufacturing site in Portland, Australia holds community consultation group meetings which are advertised in the local newspaper. The agendas include updates on the company's performance, upcoming projects, general discussion and a question time. Environment Protection Authorities officers, representatives from the Glenelg Shire Council, local residents and other industries are invited to attend.

- Our explosives manufacturing site located in Cheyenne Wyoming, USA, has a long history of local community support. This year employees continued to focus on helping the underprivileged, running community safety events, such as the Annual Family Safety Day, and responding to local emergencies. Donations, sponsorships and time were given to support a wide range of local charities and causes, with a team of 10 employees from the site's Emergency Response Team winning the 2018 Cheyenne Fire Truck Pull, which benefits Special Olympics Wyoming.

- During 2018, our Dyno Nobel site in Moranbah, Queensland was a gold sponsor of both the Glencore Casa Grande charity Ball in Mount Isa and the Blackwater Rodeo. The site also supported Queensland's premier touring country rugby team,

the Dyno Nobel Outback Barbarians, which gathers young players from outback communities in Australia with a focus on mental health for young men in those communities. The team is shown below.



The Moranbah site also continued to support the local community through participating in the Moranbah High Schools Careers Fair and implementing the 'Big 5 for 5' program which links our values of Zero Harm and Care for the Community and our Environment. Under this program, on-site work teams who complete 5 safety improvement initiatives earn a \$500 donation from the site to a charity of their choice.

- Our sites regularly participate in community forums, working with local representatives to ensure appropriate plans are in place to mitigate the impacts in case of an emergency. For example, our Big N Fertiliser Depot in Moree, Australia conducts an Emergency Response Simulation day annually.

In 2018, this day included the activation of the Emergency Response Plan (ERP) for the site, community and the surrounding area; ensuring that the public has access to the ERP and [Community Safety Information Flyer](#) at the Moree Library; ensuring that site neighbours' details and contact information is up to date and correct; and distribution of the Community Safety Information Flyer. Staff members also attended the local



Aboriginal reserve, Stanley Village, and discussed the properties of chemicals at the site and safety responses in an emergency. On completion, the site hosted a BBQ and conducted a debriefing session. The local Police, Fire and Ambulance services also attend the annual Emergency Response Simulation day when possible. For more details, see [Community Safety](#).

In line with IPL's site based Community Engagement strategy, our Graham, Kentucky (GRKY) team formalised its community program with the creation of the GRKY Programs, Events, Activities, Charities & Engagement (PEACE) Team in 2018.

Although participating in several community support activities over the years, our Dyno Nobel Graham, Kentucky site employees were keen to develop a structured mission to help the community. In a great example of business improvement, HR Specialist Charity Franklin worked in partnership with the team as Teamwork Best Practice Champion to develop a program that both engages with the local community, whilst also improving our employees teamwork skills. Having raised money for a food bank organisation in the past which also leveraged IPL's Dollar for Dollar Matching Community Investment program, Charity worked to serve the site team's desire for a simple process and structured mission to enable them to contribute to the community whilst improving teamwork: through a common need to connect, contribute, and find a higher purpose.

"I am so proud to be a part of a company that supports and encourages employees to reach out into their communities to help those that need it," said Charity.

"This year, our Graham site, with support of the Peace Team and Site Manager John Jones, was able to help provide shoes to school aged children in our county. This program, Happy Feet, works to provide name brand shoes to children that are unable to purchase shoes at all. They work with a local store to get the shoes at a discount to these children. What a great cause to support! We were blessed to be able to have some representatives from Happy Feet come out and speak a little about their program and accept our site's donation to the cause," said Charity. Members of the Graham, Kentucky site Peace Team are pictured to the right with representatives from Happy Feet.



IPL Responds to Indonesia Tsunami disaster

In late September 2018 a 7.5-magnitude earthquake and a resulting tsunami struck the large Indonesian island of Sulawesi causing widespread destruction. While the Company does not have any operational facilities in the disaster zone, the Dyno Nobel Asia Pacific (DNAP) leadership team worked closely with our Indonesian management team to understand the extent of loss and impact on our employees and their families, as several employees had homes in the affected area in Sulawesi.

Andrew Gardner, DNAP Senior Vice President, Sales and Operations, quickly set up a Crisis Response Team led by Amsyah Sebayang, President Director Indonesia, and identified nine of our employees whose immediate family were impacted. Our priority was to support them and to provide financial assistance and essential supplies (medical, food and liquids) through the local management team. We also arranged [EAP support](#) for both the employees and their families.

Additional support was provided by one of our Indonesian operational supervisors who is an experienced disaster event volunteer and who flew to out to Palu, Sulawesi to coordinate our relief efforts, including engaging with a local reputable charity to supply our employees and their communities with some essential provisions including temporary shelters that could be immediately used in the affected area.

An Employee Donation Support Fund was set up on October 5 to allow our global employees to directly support our Indonesian colleagues through financial donations, with \$8,169 being raised and matched by IPL.

Damage to our employees' homes ranged from complete destruction to minor damage. By late October, with basic necessities restored and available, we focused on providing tent and bedding supplies to the international non-profit association, ACT, to extend our support to those in the community who were left without their homes.

During 2018, IPF's 'Farm Aid' gifted \$30,000 to feed livestock on drought affected farms, with efforts planned for extension into the 2019 IPL financial year. Many other initiatives and donations to support farming communities during 2018 were also undertaken.

As a key member of the Australian agricultural community, IPL encouraged our employees to support Australian farmers in 2018 by offering to match every employee dollar donated to make a real difference to those farmers and local businesses who needed a helping hand. As a result, \$4,616 was donated directly to Rural Aid Ltd, which includes the 'Buy a Bale' campaign. The funds contributed to the purchase of fodder, and to fund aid operations, volunteers, trades and local businesses.

In Mansfield, Queensland, fun and fundraising went hand in hand at the Buy a Bale High Country Ball in October. More than \$110,000 was raised to feed livestock thanks to the generosity of 260 attendees and the support of the community. IPF donated a B-double truck load of SuPerfect fertiliser to the auction list which was purchased for \$20,000 by a local Mansfield agricultural business. The SuPerfect fertiliser was just one of ten B-double truck loads which IPL donated to the fund-raising event in conjunction with our local dealer, Benalla Bulk Fertilizers. The remaining truckloads were offered for auction in the weeks following the ball to continue raising money for farming families doing it tough in New South Wales and southern Queensland, Australia.



Many sites also ran or participated in local activities to assist drought affected farming communities. In Victoria, employees from our Portland site raised \$1,600 for Buy a Bale from their own donations. Barry Jennings from IPL Portland presented the cheque at the Royal Hotel in Portland, where a local fundraiser was held, which raised another \$6,000 from the Portland community.

IPF joined forces with a regional supplier, Farm HQ in Proserpine, to drive a 12 month fundraising effort resulting in the donation of \$50,000 towards the rebuilding of the historic Proserpine Show pavilion.



Severely damaged by Cyclone Debbie, which also damaged other facilities at the showgrounds, the 80 year old pavilion and showgrounds are valuable assets enjoyed by the Proserpine community, not just for the annual show but for a range of local events during the year. IPF and Farm HQ set out to make a donation for every tonne of IPL fertiliser bought by local canegrowers from Farm HQ during the peak fertiliser season from July to December, with funds going to the Showgrounds Recovery Fund. IPL donated \$2 per tonne of fertiliser sold.

The \$50,000 target was reached when Farm HQ approached their generous local cane farming and grazing customers to join the fund. Donna Rogers from Farm HQ and Noel Matthews from Incitec Pivot Fertilisers presented the cheque to Mike Porter, vice-president of the Proserpine Showgrounds Committee, before a crowd of local community members at the 2018 Proserpine Show.

Dyno Nobel Indonesia designs and trials water filter for village employee homes

To align with IPL's Value to Care for the Community & Our Environment, and our focus on treating water as a precious resource, our Dyno Nobel Delta Binungan site conducted a trial water filter project to improve the quality of water used in some of our employees homes.

Many of our employees at the Dyno Nobel (PT DNX Indonesia) Binungan site live in the Pegat Bukur Village in the Berau Area, East Kalimantan, and rely on the Pegat Bukur River for water to wash and cook. After site water sample testing by Ajeng Puspita Sari, our Health Service Coordinator, revealed that turbidity and microbiology parameters were much higher than recommended, Pak Agus Rahyudi, DNX Indonesia's Engineering & Strategic Project Manager, designed and built a water filter which was trialled during 2018. The before and after photo shows to the right show the visible difference in the water before and after filtering.

"Local employees will get the benefits of this water filter once installed in their home," said Ajeng. "They will get healthier water to use for their household needs. It's a great idea to donate for the community also, it would be really appreciated and helpful for them."



Case Study: IPL's 'My Potential' Program encourages change through Science Week by taking STEM into local schools

The IPL [My Potential program](#) has been specifically developed to support female employees to progress and thrive in their careers. During 2018, our Group 4 My Potential team in Australia piloted a plan for female employees in non-traditional roles to participate in National Science Week to increase the profile of STEM (Science, Technology, Engineering and Maths) subjects for female students in schools.



The aim was to maintain the interest of female students in science subjects throughout primary (elementary) and secondary (middle and high) school so that they do not disengage from STEM subjects as they progress in their education towards careers.

The team began by emailing every female employee in a technical role across our Australian workforce with an invitation for them to consider engaging with their local school during Science Week. The manager of each female employee was also contacted to allow them to choose between discretionary effort or volunteering during work time. Involvement with a local school was promoted in line with IPL's community engagement strategy, and also gave our employees an opportunity to promote their local sites as an employer of choice in their community.

The lessons delivered by our employees in the classroom were age appropriate and included:

- 'EGGsperiments', which use chicken eggs to demonstrate how the properties of an object change under different pressures;
- A 'What does an agronomist do?' lesson, which included student pH testing of soils samples brought in from home, followed by the assessment of their test results and interaction with posters to find crops that could be successfully grown in that soil, and crops that would not survive;
- How to create a projector from a smart phone;
- Several 'Day in the Life of an IPL Employee' presentations, which were made to year 10,11 and 12 female students. These demonstrated the working life of several IPL female employees who work in engineering, IT and mechanical roles.

IPL tree planting efforts go global

During 2018, many of our sites participated in Earth Day and other tree planting activities. Three sites efforts are described below.



Geelong, Australia

In Geelong Australia, five employees took time out to assist Greening Australia to plant 750 trees around Limeburners Links at a community event. Limeburners Links is on Corio Bay located close to IPL's Oyster Cove and North Shore, Geelong fertiliser sites. Greening Australia aims to control weeds, collect rubbish, and deal with pest animals in the area to reduce the pressure upon the coastal saltmarsh fringe vegetation and its bird life habitats. The planting of native tree species into the existing vegetation will assist in promoting habitat for the local and migratory birds, and demonstrates Care for the Community & Our Environment.



Dinamita, Mexico

19 employees from our Dinamita, Mexico site planted 2,300 Cooperi Pines across two hectares in the Sierra De Durango to promote reforestation. Employees came from manufacturing, finance, technical services, human resources and acquisitions. The goal was to recover and preserve the natural areas that have been affected by wildfires while increasing ecological awareness. See the beautiful scenery of the El Tecuan park in the [video of the tree planting day](#) created by the employees who participated.



Dyno Nobel Indonesia

Selamat Hari Menanam Pohon Indonesia (Happy Indonesian Tree Planting Day)! Employees from Dyno Nobel, Indonesia planted trees to Care for the Community and our Environment on Tree Planting Day.

"DNX Indonesia not only serves customers with Best Blast performance for resources of the earth, but also we serve the earth with care," said Wahyu Hidayat.

Employees from the Lati site are pictured below.



Case Study: A unique community engaged at Phosphate Hill

Our Phosphate Hill ammonium phosphate fertiliser plant is located in a remote area of north-west Queensland, Australia where a natural phosphate rock deposit is located. Due to its remote location about 140km to the south-south-east of the city of Mount Isa, which has a population of 22,000, the nearest neighbouring township is Dajarra, which has a population of just under 200 people and is 64km from the site and Monument Village employee camp. We continued to support and engage with this unique local community in 2018.

When your neighbours drop in for a cuppa – and they've driven a couple of hours to get to your place – it's a special event!

Phosphate Hill's next door neighbours, James Hacon (Buckingham Downs Station), Andrew Davey (Chatsworth Station) and Al McDonald (Brightlands Station) popped in during the year and met some of our team. The Phosphate Hill mining leases are on Chatsworth Station which is owned and managed by the McDonald family. The business runs 175,000 head of cattle on 3.36 million hectares across its 13 Queensland properties (including Chatsworth and Brightlands). The Hacon family's Buckingham Downs Station is a 'short' 45 minute drive from the site on the way to Dajarra. Another grazing dynasty, the Hacons run 9 properties across western Queensland. Over a cup of tea, the group discussed service roads, flight services and camp drafts.

Dajarra school students visit Phosphate Hill Observatory

During the year our Phosphate Hill site hosted some very special guests from the Dajarra State School who visited our Observatory. The IPL Monument Village Observatory was built in 2004 and houses a Meade LX200 14 inch Schmidt-Cassegrain telescope. During the Dajarra school visit, the students were able to view the night sky at Phosphate Hill. The evening included dinner, a presentation on the telescope and a visit to the Observatory where the group looked at the stars then finished with a Creation story from the Yubulyawan clan of the Wardaman people of the Victoria River region of the Northern Territory. The Creation story centres on several constellations including the Southern Cross, the two Pointers and the Emu in the Sky.



Serving the community through the IPL Phosphate Hill Emergency Response Team

Due to the remote location of the site in the Queensland desert, the nearest available State Emergency Services (SES) response team is a minimum two hours away. For this reason, the Phosphate Hill site employs five dedicated professional Emergency Response employees and has approximately 35 volunteer employees who form the IPL Phosphate Hill Emergency Response Team. The team has responded at the request of SES agencies to multiple incidents within the district. These incidents have included a multi-trailer fuel tanker roll over, high speed light vehicle collisions/incidents, a road train fire and a rail train derailment. Due to their valuable service in the remote community, the team is expected to become members of the formal Dajarra SES unit within the Queensland Northern Region SES in 2019.



Hosting the Yulluna People's Cultural Heritage Team

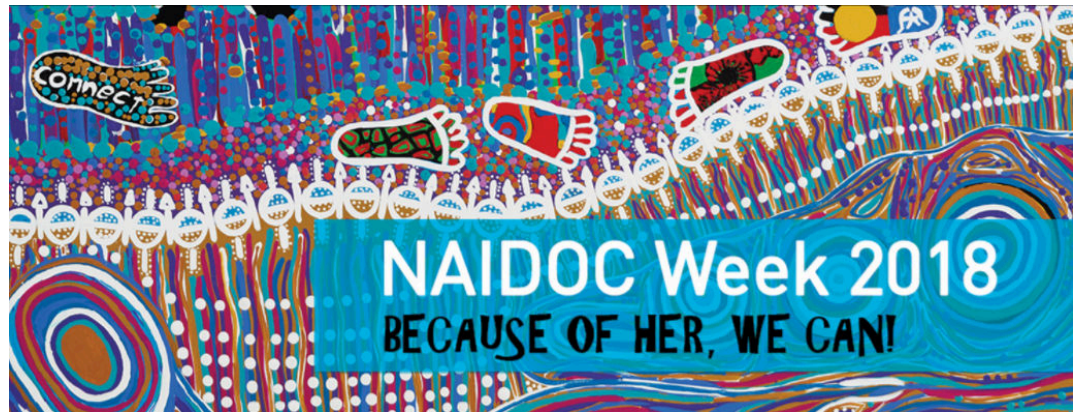
As the Traditional Owners of the land and waters on which the Phosphate Hill site and village camp are located, the Yulluna people have a special connection to the land. The preservation of artefacts and sites of cultural significance plays a critical role in maintaining this connection and educating current and future generations. During 2018 the site was honoured to host the Yulluna people's Cultural Heritage Team to survey a section of land. A number of artefacts including chert flakes, grinding stones, hammer stones and spear tips were identified and each artefact was gathered and relocated to a Keeping Site, which is marked as a protected area to preserve the artefacts. We would like to thank the Yulluna Cultural Heritage Team for sharing their knowledge and passion for the history of the Yulluna people with us.



Supporting the 2018 Dajarra Rodeo & Camp Draft

IPL's Phosphate Hill site has a long history of supporting the Rodeo, and after hearing how hard it was getting for the community to find volunteers for the growing event, our employees jumped at the opportunity to help out. The team worked hard at the canteen for three days, including cooking, prepping and serving food. A huge shout out to our 11 volunteers, and our contracting partners ESS and Coates Hire who also supported the event. The volunteers were all tired and covered in dust by the end of the Rodeo, but enjoyed both the event and, most importantly, supporting this important local community event.





At IPL, we are committed to engaging and partnering with our Australian Aboriginal and Torres Strait Islander communities. **NAIDOC** Week celebrates the history, culture and achievements of Australian Aboriginal and Torres Strait Islander peoples and is celebrated not only in Indigenous communities, but by Australians from all walks of life.

NAIDOC (National Aborigines and Islanders Day Observation Committee) Week was held from 8 to 15 July with the 2018 theme [Because of Her, we can!](#) The theme was chosen to celebrate the many Aboriginal and Torres Strait Islander women who were, and are, leaders, trailblazers, politicians, activists and social change advocates who fought and continue to fight, for justice, equal rights, rights to country, access to education, employment and to maintain and celebrate traditional culture, language, music and art. These women did so while caring for families, maintaining homes and breaking down cultural and institutionalised barriers and gender stereotypes, and are paving the way for generations to come. NAIDOC Week is a great opportunity for all Australians to participate in a range of activities and to support and connect with our local Aboriginal and Torres Strait Islander communities.



This year IPL promoted NAIDOC Week to our employees in the form of an online quiz designed to help increase the cultural capability of our employees. The prize was an IPL Dyno Nobel dual branded polo shirt as pictured. In addition, everyone who participated in the quiz was included in a draw to win 1 of 20 additional polo shirts. Employees were also encouraged to engage in NAIDOC activities across Australia where they live and work by contacting their Local Traditional Owner Group, Council, Chamber of Commerce or School for information.

As part of IPL's support for National Reconciliation Week 2018, Australian employees were encouraged to support the Indigenous Literacy Foundation (ILF).

ILF is an initiative of the Australian Book Industry and is a not-for-profit charity which aims to reduce the educational disadvantage experienced by some children in very remote indigenous communities across Australia. ILF's programs focus on creating a special relationship with reading from an early age through free books, some of which are in First Languages, and through publishing stories from communities. National Reconciliation Week ran from 27 May – 3 June in 2018. These dates mark two milestones in Australia's reconciliation journey; the 1967 referendum and the historic Mabo decision, respectively. As these significant milestones were commemorated during National Reconciliation Week, IPL employees were asked to consider donating to the ILF through an Everyday Hero fundraising page set up for them, as well as being encouraged to learn more about the history of Indigenous Australia through the 2018 theme 'Don't Keep History A Mystery: Learn. Share. Grow'. The [IPL Reconciliation Action Plan \(RAP\)](#) sets out the actions that guide our organisation to work in partnership with Aboriginal and Torres Strait Islander Peoples to help progress reconciliation.



Community

Community Safety

◆ Material issue

Community

- ◆ Community Engagement
- ◆ **Community Safety**
- > Community Investment
- > Social Return on Investment (SROI)

 Print PDF


Due to the nature of industrial and agricultural chemicals, our operations have the potential to impact on local communities.

IPL has measures in place to monitor, manage and prevent potential negative impacts on local communities which may arise. Due to the nature of our business, many sites are required by law to communicate regularly with the community regarding Community Safety Plans which describe the emergency procedures that should be followed to keep them safe in the unlikely event of a potential incident. In addition, potential impacts are also assessed and addressed. For example, where there is any risk of the release of fumes associated with ammonia, purpose built gas detectors are used. These are permanently located near the perimeters of sites that have ammonia storage tanks, ensuring that any potential leaks can be responded to. The detectors set off an alarm to response teams at any time of the day or night if gas is detected.

In North America, 53% of IPL's sites handle materials at locations which have the potential to impact on local community safety and are required to communicate with first responders in the community. Many of these sites are required to actively participate on Local Emergency Planning Committees (LEPCs) as part of the Emergency Planning and Community Right-to-Know Act (EPCRA). For example, our Cheyenne, Wyoming manufacturing site in the USA participates in the Mutual Aid Emergency Response Group along with the local Fire Department, Holly Frontier Refining and Warren Air Force Base. LEPC membership must include (at a minimum):

- Elected state and local officials
- Police, fire, civil defense, and public health officials
- IPL facility representatives
- Environment, transportation and hospital officials
- Representatives from community groups and the media

LEPCs measure their effectiveness against the EPA recommended guideline '[Measuring Progress in Chemical Safety: A Guide for Local Emergency Planning Committees and Similar Groups](#)'.

In the Asia Pacific region, 21% of sites have been identified as either 'Major Hazard Facilities' or sites which are required to provide specialised communications to their communities regarding safety. These sites follow '[Safe Work Australia](#)' guidelines and local regulations in developing emergency plans, establishing and evaluating a Safety Management System, and creating and distributing communications to their communities. Major Hazard Facilities must provide the local community (and the local authority in which the facility and surrounding area is located) with information about the facility, its operations, how the community will be notified if a major incident occurs and what the community should do if a major incident occurs. Copies of the Emergency Response Plans must be lodged with regulatory agencies, and information in relation to the site's activities and emergency response is provided to local libraries. A 24 hour emergency contact number must be displayed at each facility, and the name of a contact person provided, from whom information may be obtained, and with whom concerns can be raised. We also publish [IPL Community Safety Reports](#) on our website to provide information and advice for neighbours of our facilities who may be impacted by our activities.

In addition, IPL has a continuous improvement management approach in response to incidents such as gas sensor alarm responses and the IPL Issues Response Manual assists crisis management teams to effectively manage communication and engagement in the event of an incident.

Community

Community Investment

Community

- ◆ Community Engagement
- ◆ Community Safety
- > Community Investment
- > Social Return on Investment (SROI)

 Print PDF



Through our Community Investment Framework we are able to deliver long-term sustainable growth for our businesses and ensure the long-term health and vitality of our local communities. The Framework, implemented during 2013, has been one of the key outcomes of our Sustainability Strategy. It has been established to help us to build meaningful community relationships and has enabled us to further support our people in their endeavours to make a difference within their local communities. The framework sets minimum standards all businesses and sites within the Group are required to uphold when administering community programs and spend, ensuring funds are issued consistently and fairly across our operations. Importantly, the Framework preferences local approaches, enabling each IPL business and site to respond to the distinct needs of their communities.

IPL's Community Investment Framework directs that all community investments are issued in accordance with our 'Principles for Giving'. These Principles have been endorsed by the Executive Team and ensure we have a strategic and consistent approach to community giving across the Group.

The Principles for Giving ensure that we:

- Support activities that provide solutions to local challenges and opportunities in the communities around our operations and where our employees live.
- Place a strong emphasis on supporting initiatives that help local organisations develop the skills and resources to bring positive and lasting benefits to the community.
- Provide funding to initiatives that are aligned to IPL's Values and business strategy, and are integral to the long-term sustainability of the communities where we operate.

Our areas of focus are:

- Education – providing support for childhood, adult and indigenous specific education activities;
- Health – providing support for activities working towards better physical and mental health;
- Community Development – providing support for activities that enrich community life and enhance the social, environmental and economic sustainability of local communities.

Dollar for Dollar Program

Our [Dollar for Dollar program](#), a key component of our Community Investment Framework, matches employee donations and fundraising efforts that are aligned to our Principles for Giving to a total of A\$2000 per initiative. See examples of this fund at work under [Community Engagement](#).

Workplace Giving

Australian employees are offered a voluntary Workplace Giving scheme whereby they can donate to one or more of the company's nominated not-for-profit charities. The process is simple and streamlined, it offers a choice to employees as to how their contributions are directed, and allows them to influence where some of IPL's community giving is focused: IPL has readily, and for a considerable number of years, embraced Workplace Giving matching to a level of \$20,000 for each financial year.

Measuring community investment

During 2018, \$467,343 of community investment was made globally through IPL's Dollar-for-Dollar program, the Australian Workplace Giving program and various site-based initiatives. 100 percent of both local and Group donations were made in line with our Principles for Giving, with approximately 24 percent going to health initiatives (including sport), 10 percent going to education and 66 percent to local community development, which includes disaster relief.

Our total community investment increased by more than 20 percent since last year, and included \$30,000 raised to feed livestock on drought affected farms in Australia. IPL's 'Farm Aid' efforts will continue beyond 30 September 2018 into the 2019 IPL financial year.

Community

Social Return on Investment Metrics

Community

- ◆ Community Engagement
- ◆ Community Safety
- > Community Investment
- > **Social Return on Investment (SROI)**

 Print PDF



More than ever, people want to know how the work they are doing on a daily basis is contributing to the world. At IPL, we recognise that in addition to creating economic value, the social value that we create as a company is also important.

With the completion of our new US\$815 million Waggaman, Louisiana Ammonia Plant at the beginning of the IPL 2017 financial year, we worked with Louisiana Economic Development and engaged a third party to assist us in the development of a Social Return on Investment (SROI) metric to help us quantify and communicate the value of our social contribution relative to our financial investment in the new plant. SROI is a principles-based method for measuring the extra-financial value created by companies through investments, such as the development of the Louisiana Ammonia Plant. Built on a brownfield site, the development required no land clearing and created 65 above-average wage positions and 466 flow-on positions (which were valued at average wage). The SROI estimated that for every dollar IPL invested in the plant, US\$3.40 of social value has been created in the local community.

We also created two other SROI metrics. The first valued the social contribution made to the community by the reduction in injury rates as a result of our investment in safety training during the first two years of our [5 year global safety strategy](#). The second valued the social contribution made through our supply of fertiliser for food production in Bangladesh during 2016. The results of our three SROI metrics are presented below and linked to the relevant United Nations Sustainable Development Goal.

SUPPLYING FERTILISER FOR FOOD PRODUCTION & GROWTH IN GDP



For every tonne of fertiliser supplied by IPL, cereal yields were increased by 4.357 tonnes per hectare, which increased the GDP of Bangladesh by AUD\$3.53 per capita

1:1.8
For every dollar invested by IPL in the supply of fertilisers to Bangladesh, \$1.18 of social value was created per person in Bangladesh)

GLOBAL REDUCTION IN INJURIES
3.2 MILLION INVESTMENT IN SAFETY



In the first two years of IPL's 5 year safety program, injuries were reduced by an average of 25 per year, which saved the community an average of AUD \$103,950 per injury* (*Safework Australia)

1:66
For every dollar IPL invested in the first 2 years of our 5 year safety program, AUD\$66 of social value was created in the community

ECONOMIC DEVELOPMENT THROUGH AN \$815 MILLION INVESTMENT IN THE WAGGAMAN LOUISIANA AMMONIA PLANT



This development, on an existing industrial brownfield site, required no land clearing and created 65 above average wage positions and an estimated 466 flow on positions (Louisiana Economic Development) valued at average wage)

1:3.4
For every dollar IPL invested in the Waggaman, Louisiana Ammonia Plant, US\$3.4 of social value has been created in the local community



◆ Environment

- ◆ Energy and greenhouse gases
 - > Reducing NOx and SOx
- ◆ Water
 - > Waste
- ◆ Environmental Compliance

We rely on resources such as natural gas and water, and we have the potential to impact the environment through emissions of greenhouse gases (GHG), waste generation and contamination of soil and groundwater. We are committed to our Value of ‘Care for the Community & our Environment’ and we aim to minimise environmental impacts and leave no legacies.

In line with our Value of ‘Care for the Community and our Environment’, we apply a continuous improvement approach to management of environmental matters, focusing on the efficient use of non-renewable resources, environmental management at our sites and the rehabilitation and remediation of contaminated sites.

Our [Health, Safety, Environment and Community \(HSEC\) Policy](#) states that we will conduct our operations in compliance with all relevant environmental licences and regulations; promote the efficient use of resources and energy; and strive to minimise our impact on the environment. This Policy is enacted on a day-to-day basis through our [HSEC Management System](#).

Print PDF



CDP

IPL completes the CDP and Water CDP annually. These are available on our website and can also be downloaded here: [2018 CDP Report](#) [2018 CDP Water Report](#).

MAJOR PRODUCTS LCA

We have conducted high level Life Cycle Assessments of the energy and carbon emissions associated with our two major manufacturing processes, being the production of [ammonia](#) and [ammonium nitrate](#). The first is based on our Phosphate Hill site, which makes ammonia based fertilisers. The second is based on our Moranbah ammonium nitrate manufacturing site. Each is representative of the scope and activity of our manufacturing operations across the Group.

We have a governance structure in place that oversees the management of our environmental impacts:

- The Board’s Health, Safety, Environment and Community (HSEC) Committee assists the Board in its oversight of health, safety, environment and community matters arising from our activities as they may affect employees, contractors, and the local communities in which we operate.
- The Zero Harm Council, chaired by our Managing Director & CEO and consisting of members of the Executive Team, is accountable for reviewing health, safety and environmental performance, developing strategy and targets, reviewing progress against targets and prioritising activities on a Group-wide basis.
- The Zero Harm Council is supported by Zero Harm Councils within each business unit, down to site level. These Councils are chaired by the business unit head to provide leadership on health, safety and environment. Business Unit Councils meet monthly and report to the Executive Team. Within each of our business units, operations staff and project teams are responsible for preparing and executing plans to support environmental targets and strategies.
- Site managers are responsible for the operation of their site, including their environmental performance. Environmental managers within the business provide site managers with expertise to support the day-to-day environmental management of sites.
- Auditing is a key component of the IPL HSEC Management System and contributes to the effective management of our HSEC risks through ensuring the careful and systematic identification and assessment of specific hazards and the establishment of control measures to prevent negative environmental impacts. Audits are undertaken regularly throughout the company, and a number of internal auditors are trained

to conduct these audits. All audits are planned and managed through IPL's Safety, Health and Environmental Reporting System (Cintellate), including audit results and assigning and tracking of corrective actions. In addition, an internal auditing tool outlines the key requirements of the customised audit protocols tailored to IPL's HSEC Standards.

Our consumption of resources, such as fossil fuels (mostly natural gas), electricity and water and the amount of GHG emissions we produce is representative of the scale and capacity of our manufacturing plants, in particular the energy-intensive manufacture of ammonia-derived products, including urea, ammonium sulphate, ammonium phosphate and ammonium nitrate for the fertiliser and explosives markets. All of these products require natural gas as both an energy source and a raw material for production, with carbon dioxide being liberated during the process. In addition, carbon dioxide is liberated during the acidulation of phosphate rock in the manufacture of phosphate fertilisers and nitrogen oxide (NO_x) and nitrous oxide (N₂O, a potent GHG) are released during the production of nitric acid.

IPL has a strong focus on both abatement technologies and progressively increasing resource efficiencies to reduce its impacts on the environment, including NO_x and SO_x, and GHG emissions which contribute to climate change.

In Australia, the Cintellate system collects energy use, water use and waste data from all manned sites. The data is obtained from utility bills, except where electricity is generated on site. Electricity amounts generated from natural gas and waste heat are metered and entered into the database. Municipal water use is obtained from water bills, whereas volumes for storm water, river water, recycled process water or ground water are typically metered on site. Data is then consolidated and verified for reporting purposes. Energy use, water use and waste data for our sites in North America and Europe are supplied separately.

Key highlights during 2018:

35% REDUCTION IN NO_x PER TONNE NITRIC ACID PRODUCED AGAINST A 2015 BASELINE

6% REDUCTION IN GHG/TONNE AMMONIA AGAINST A 2015 BASELINE

Assessment of climate change risks and opportunities

We continued to drive environmental improvements and resource efficiencies in 2018 through:

- Implementation of an engineering framing assessment model to identify engineering and operational opportunities to improve environmental outcomes;
- Extension of the use of iAuditor from fertiliser distribution sites to Australian manufacturing sites to conduct daily site photo logs which facilitate continuous improvement in product handling, compliance management and risk management;
- Performance of Environmental Site Assessments at 22 sites across North America;
- Continued auditing of spill prevention, control and countermeasure plans, including stormwater pollution prevention controls, across North America;
- Continued use of visual management tools and lean processes, particularly 5S, to increase loss of containment awareness globally. This has resulted in increased operational control of product and a reduction in environmental risks associated with product tracking and spills; and
- Maintenance of the Environmental Incident Frequency Rate below 1 and setting of a new target of **Zero Significant Environmental Incidents** for 2019.

Key Challenges and Opportunities

- Continuing to identify and prioritise resource inefficiencies and reduce energy, water and waste
- Securing capital to drive resource efficiencies in difficult market conditions;
- Responding to changing carbon regulatory conditions globally, particularly in Australia;
- Continuing to improve our environmental compliance and management systems, and our environmental performance; and
- Managing the risks and opportunities associated with climate change.

Strategic Priorities

- Continued focus on improving environmental awareness through training, with emphasis on loss of containment, spill prevention, site cleaning processes and stormwater pollution prevention;
- Rollout of the IPL Environmental Awareness Training module through the IPL Learning Management System; and
- Continuing to work with the Australian Federal Government on energy and carbon policy to ensure favourable outcomes for business and the environment.

Environment

Energy and Greenhouse Gases

◆ Material issue

◆ Environment

◆ Energy and greenhouse gases

> Reducing NOx and SOX

◆ Water

> Waste

◆ Environmental Compliance

Print PDF



Although IPL’s energy use increased with increased production, energy efficiency improvements resulted in the maintenance of targeted global reductions in GHG emissions per tonne of ammonia. However, due to an unexpected maintenance issue at our Moranbah site in Australia, our global GHG per tonne of nitric acid increased by 2 percent, with a further increase expected in 2019.

New equipment to address this issue has been fabricated and delivered, and will be installed at the Moranbah site in 2019 to enable 2020 targets to be met. The targeted reduction in GHG per tonne of ammonia produced was achieved due to targeted energy efficiencies at our Waggaman Louisiana ammonia plant which were linked to executive remuneration through the IPL Long Term Incentive plans, as explained on page 32 of our [2018 Annual Report](#).

Energy use

IPL used 68,500,621 gigajoules (GJ) of energy over the past year, 2,113,300 of which was purchased electricity. Approximately 80 percent of the electricity purchased was generated from non-renewable sources. Approximately 20 percent of the purchased electricity (indirect energy) was generated from renewable resources, mostly hydroelectric. Natural gas and diesel amounts used as raw materials and on-sold in our products have been included in our energy use figure.

Approximately 1 percent of our direct energy is from CO2e-free sources, which includes electricity that is generated from heat captured during the manufacture of sulphuric acid.

Greenhouse gas emissions

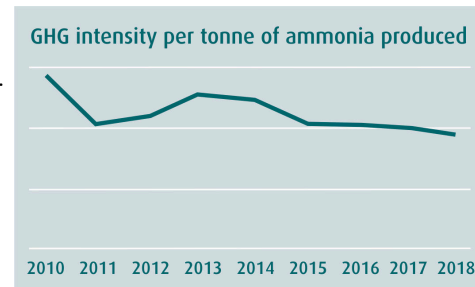
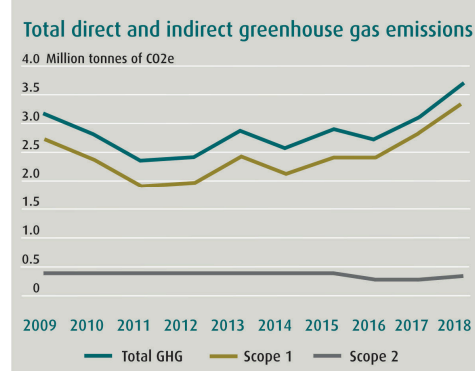
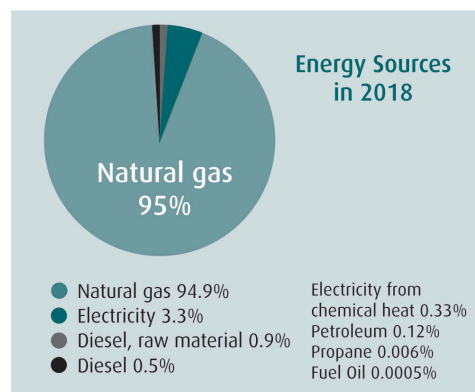
In 2018 our recorded Scope 1 (direct) and 2 (indirect) absolute GHG emissions increased to 3,751,403 tonnes of carbon dioxide equivalent (CO2e). The total figure comprises 3,423,867 tonnes of Scope 1 (direct) emissions and 327,536 tonnes of Scope 2 (indirect) emissions. While a portion of this increase was due to increased production, the unexpected maintenance issue at Moranbah reported above resulted in an increase in emissions of N₂O at the site. A third party was engaged to provide an assurance opinion over our Australian GHG emissions, energy consumption and production figures for the period 1 July 2017 to 30 June 2018, with the third party issuing an unqualified opinion.

Improving our performance

Continuous improvements made by our manufacturing plants to reduce energy use and GHG in 2018 include:

- At Cheyenne, Wyoming, the replacement of a prism membrane and painting of the primary reformer with an internal coating to improve firing efficiency will reduce natural gas use and therefore emissions.

- At Louisiana, Missouri, 617 lighting fixtures throughout the plant were rewired to use LED bulbs, improving lighting, reducing annual energy use by 28,700 kWh and reducing annual costs by \$29,750.
- At Carthage, Missouri, an explosives manufacturing optimisation project reduced annual energy use by 160,000 kWh and annual scope 2 GHG emissions by 110 tCO2e.
- At Moranbah, Queensland, a project to preheat deaerator feedwater with process heat currently lost to the atmosphere is expected to save 196,000 GJ of natural gas, reduce GHG emissions by 10,000 tCO2e and save over \$1,000,000 each year.
- During 2018, IPL’s Waggaman, Louisiana ammonia plant captured 10,990 tCO2e for use by a neighbouring melamine manufacturing plant, avoiding the release of these GHG emissions to air.
- We also quantified the [Scope 3 emissions associated with our shipping](#) for the third year.



Environment

Reducing NOx and SOx

Environment

- ◆ Energy and greenhouse gases
 - > Reducing NOx and SOx
- ◆ Water
- > Waste
- ◆ Environmental Compliance

Print PDF



Nitrogen oxides (NO₂ and NO, referred to collectively as NOx) are released when fuels are burned at high temperatures, and when nitric acid is manufactured. Sulphur oxides (SO, SO₂, SO₃, referred to collectively as SOx) are emitted when fossil fuels are combusted, and in the making of sulphuric acid. This year our operations emitted 3,143 tonnes of NOx and 13,211 tonnes of SOx. This is an absolute reduction of 2 percent in NOx emissions and 28 percent in SOx emissions since last year. Although not greenhouse gases, NOx and SOx have other environmental impacts, such as air pollution. We are committed to reducing emissions of NOx and SOx across our global manufacturing sites.

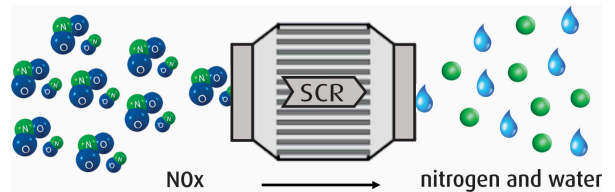
The US\$7,700,000 Selective Catalytic Reduction (SCR) unit installed in 2017 at our Louisiana, Missouri (LOMO) nitric acid plant reduced potential NOx emissions at the site by 98 percent during 2018.

As a result, IPL exceeded its 2018 intensity target of a 30 percent reduction in NOx emissions per tonne of nitric acid produced against our 2015 baseline. With the installation of SCR at LOMO, all of IPL's nitric acid plants are now fitted with NOx reduction technology.

**35%
REDUCTION
IN NOx
INTENSITY
SINCE 2015**

What is SCR?

Selective catalytic reduction (SCR) is a proven active emissions control technology system that converts NOx into nitrogen (N₂) and water (H₂O), which are natural elements common to the air we breathe everyday. It is called selective because it injects a liquid-reductant agent, in this case, ammonia, (NH₃) through a special catalyst to react specifically with NOx. SCR using ammonia as the reducing agent was patented in the United States of America (USA) by the Engelhard Corporation. Development of SCR technology has continued in Japan and the USA with more recent research focusing on less expensive and more durable catalyst agents. The SCR process is the most efficient NOx reduction technology available because it provides the best conversion rate of NOx to environmentally friendly nitrogen and water.



In addition to the significant reductions achieved at Louisiana, Missouri, other sites are also investing in NOx and SOx reductions. At Carthage, Missouri, work progressed during 2018 on the design of a new wet scrubber system for the acid tanks with consultants developing several alternative designs. The project requires permit approval and the application has been submitted to state authorities for review. It is planned that the scrubber will recycle vent fumes from both nitric and sulphuric acid tanks, combining them with water to create a weak acid stream. This stream will then be sent for distillation to separate nitric and sulphuric acid products for use in product manufacture.

At Mt Isa, Australia, we invested \$1,480,000 in a new high efficiency catalyst in the sulphuric acid plant converter last year (2017). This new catalyst improved the conversion of sulphur dioxide (SO₂) to make sulphuric acid, reducing SOx emissions at the site by 32 percent against 2016 SOx.

**21%
REDUCTION IN
ABSOLUTE
GLOBAL SOx
SINCE 2016**

Environment

Water

◆ Material issue at some sites

◆ Environment

- ◆ Energy and greenhouse gases
- > Reducing NOx and SOX
- ◆ Water
- > Waste
- ◆ Environmental Compliance

Print PDF



Water is a key raw material for the manufacture of ammonia which is the major component of our explosives and fertiliser products. Within our ammonia plants, the majority of water use is for cooling during the manufacturing process. A small percentage is used for steam to power equipment and as an input for the chemical reaction that makes ammonia. The risks and opportunities associated with water management as it relates to climate change have been assessed and are described in our annual [CDP Water submission](#).

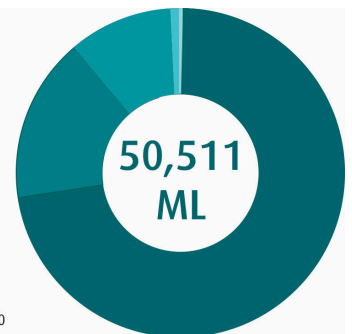
While the majority of IPL’s manufacturing plants are located in regions with plentiful natural supplies of water, some of our Australian sites and one in the South West of the USA operate in regions where water conservation is a critical issue. In other regions, where there is higher rainfall, we recognise that water management is also important.

Water use by source

During 2018 we withdrew 50,511 ML (mega-litres) of water, a 6 percent increase from last year. This increase is mostly due to increased production. Our total reported water use includes the categories shown on the right. A large proportion of this water is used more than once within our plants, but most sites do not meter this recycling of water. 781 ML of water was recycled and reused at sites which have meters. This represents 1.5 percent of our withdrawal and 2 percent of our total water use.

Water Use by Source:

- Surface water - 76%
- Groundwater - 14%
- Municipal water - 9%
- Recycled water - 1.5%
- Storm water - 0.1%
- Desal water - 0.004%
- Rain water - 0.00001%



Water discharge by destination

During 2018 we discharged 30,901,050 m3 of water to the environment, a decrease of 5 percent. This total discharge excludes sewage, and waste water removed for treatment or disposal as liquid waste (which are included under [Waste](#)). It includes some discharge of rainwater where runoff is collected and treated at several sites in North America, and therefore cannot be separately metered. As shown in the graph, most discharge was clean cooling water which was released to surface waters (the natural waterways from which it was taken) reducing our net water use to 22,978 ML. We monitor the water quality of such discharges on an ongoing basis to meet local regulatory requirements and also seek to improve water quality beyond the standards required by licensing wherever possible.



- 97%**
CLEAN WATER TO SURFACE WATERS
- Surface waters - 97.4%
 - Groundwater - 2.3%
 - Sewers - 0.3%

Improving our performance

- Continuous improvements in 2018 included:
- At Cheyenne, Wyoming, continued use of reverse osmosis units recycled a total of 30,968 kL of water for reuse during 2018.
 - Water balance projects were initiated at three major Australian manufacturing sites in Geelong, Gibson Island and Moranbah. These are assisting in the management of stormwater storage ponds and aim to increase the use of recycled water.
 - A reduction in total water withdrawal target set at our Phosphate Hill site was exceeded, with a 19 percent reduction in total volumes since last year.
 - At Carthage, Missouri, a 5 year project to

completely redesign the site wastewater system has progressed as scheduled with design alternatives and cost analyses planned for completion in early 2019, followed by the detailed design and construction phase. In addition to reducing waste water, significant water savings are expected to be made due to planned reuse of waste water streams.

- At Louisiana, Missouri, an upgrade of the river water withdrawal system was begun. The upgrade is expected to reduce future water withdrawal.
- 59,367 kL of water was recovered from waste gypsum stockpiles at our Phosphate Hill site in Australia, also recovering valuable phosphates for fertiliser production.

This report is published as an interactive online report. Visit the website to access online features at www.incitepivot.com.au/sustainability

In addition to IPL's comprehensive annual risk management process, the WBCSD Global Water Tool is completed each year for long term projections and reviewed by the Chief Risk Officer. This analysis is used to identify sites at which water is a material issue.

The tool has identified one ammonia manufacturing site in the United States where baseline water stress in the water catchment area is high. It has also identified one ammonia manufacturing site and several smaller manufacturing sites in Australia as being located in water catchment areas which may experience water stress by 2025. Water supplies and water management strategies at these sites are discussed below.

Cheyenne: Wyoming, USA

At our ammonia manufacturing site at Laramie County, Cheyenne, Wyoming, USA, water resources are of particular concern and management involves multiple stakeholders. Located in a semi-arid area, water for the site is drawn from an underground aquifer which is recharged each year by precipitation, including snowmelt. We engage with key stakeholders including the Wyoming State Engineer's Office (SEO) which manages stakeholder access to the aquifer and maintains databases for ground water levels, along with the Ground Water Division of the U.S. Geological Survey, and our Cheyenne site monitors wells through totalizing flowmeters and water level measurements and reports to the SEO annually. Water saving initiatives at the site include:

- The monitoring and maintenance of steam traps and condensate systems to reduce water loss;
- Operation of a brine concentrator unit which recycles approximately 100 gallons of water per minute;
- Operation of several mobile reverse osmosis units, which recycled a total of 30,968 kL of water for reuse during 2018;
- Communication to personnel through daily reports to watch for and prevent excess water from running;
- Visual management board for water reduction projects and efforts;
- The creation of the position of Focused Improvement Engineer in 2016 to focus specifically on further water reduction opportunities including the development of a complete water strategy for the site, which was completed in 2017 and has been approved by management. One of the initiatives proposed for 2019 is the purchase of a permanent reverse osmosis water treatment unit to replace one of the mobile units. The overall strategy is to increase the recycling of waste water streams and reduce waste water volumes to deep well groundwaters.

Phosphate Hill: Queensland, Australia

Located in the Georgina Basin, IPL's Phosphate Hill site in remote North West Queensland manufactures ammonium phosphate fertilisers, which requires large volumes of high quality cooling water. In addition to its ammonia, rock processing, phosphoric acid and granulation plants, Phosphate Hill has its own phosphate mine, ore processing facility and, due to its remote location, its own gas fired power plant, reverse osmosis water treatment plant and employee accommodation village. The WBCSD Water tool identifies this site as being in an area which may experience water stress by 2025 due to the high inter-annual variability of rainfall.

To ensure supply, groundwater is drawn under licence from the phosphate orebody, which is porous and contains an aquifer called the Duchess Embayment Aquifer (DEA). The many aquifers in the Georgina Basin are naturally recharged by rainfall during the summer wet season and were identified as a renewable (annually replenished) groundwater resource with high groundwater development potential (over 100GL/yr) by a recent [inquiry into the development of northern Australia](#) by the [CSIRO](#). Although wet season rainfall over the last several years in the DEA has been lower than the long term average, ongoing model prediction and quarterly monitoring conducted using 39 monitoring bores across the embayment indicate that adequate supply to the site is currently being maintained. In addition to monitoring for potential changes in the embayment, the Phosphate Hill site submits an annual Borefield Performance Report to the Queensland Government Department of Natural Resources and Mines (DNRM) each year in September and completes an Annual Aquifer Review in December each year.

Our Phosphate Hill site is committed to reducing water usage wherever possible through continuous improvements and water recycling strategies. These presently include multiple re-uses of cooling water (our major use) and reclamation of water from waste gypsum stacks. Mine dewatering, a process to remove water so that the phosphate ore body can be accessed, was ceased in 2015 and a third party specialist was commissioned to complete a Water Balance Study for the site. This initiated a project to identify specific actions to reduce water use at the site by 5% each year, commencing in 2016. The site used 11 percent less water in 2016 than the previous year, however, projects delivering targeted water reductions for 2017 were delayed due to the construction of a new evaporation pond. Projects involving the reuse of process water to allow both the recapture of phosphates and the reduction of fresh groundwater extraction, were completed during 2018 and contributed to a 19 percent reduction in water extraction in 2018 against 2017 usage. While some of this reduction was due to a planned maintenance shutdown in April 2018, the site exceeded its targeted 5 percent reduction in water withdrawal considerably.

Geelong: Victoria, Australia

The Geelong site manufactures single super phosphate fertilisers, a process which requires much less water than ammonia manufacture. However, the site has been identified by the WBCSD Water Tool as being in a water catchment area which may experience water stress by 2025. The site obtains its water from the state government managed [Barwon Region Water Corporation](#), Victoria's largest regional urban water management body. Barwon water is predominantly sourced from forested catchments on the upper Barwon and Moorabool rivers, but during periods of prolonged drought water is sourced from underground aquifers via the Barwon Downs and Anglesea bore fields. In extreme drought, the water management body can also access supply from the water grid of the City of Melbourne via the [Melbourne to Geelong Pipeline](#), a 59-kilometre underground pipeline which is part of the state's long-term plan to secure the region's water supply into the future.

Water saving strategies at the site include the on-site capture, treatment and reuse of large volumes of stormwater, with 32,172 kL being treated and re-used this year. The site began a complete water balance project in 2018 to identify potential water savings and opportunities to better manage waste water and stormwater. This project initiated the use of rainfall prediction models at the site to more closely manage levels and capacities of water storage ponds. The collection of rooftop rainwater was identified as an option to reduce reliance on municipal water supplies and increase the amount of stormwater collected and recycled.

Mt Isa: Queensland, Australia

With a population of 22,000, the mining town of Mount Isa is the administrative, commercial and industrial centre for the state's vast north-western region. Our Mt Isa site manufactures sulphuric acid using waste sulphur obtained from a nearby metal ore mine. This process also uses less water than ammonia manufacture, however steam is also used at the site in the process of generating electricity from waste heat captured from the sulphuric acid making process. Water for the site is obtained through the [Mount Isa Water Board](#) which is responsible for the sustainable management of water supplies in the region. Although identified by the WBCSD Water Tool as being located in an arid area which may experience water stress by 2025, the Water Board manages supply using two man-made lakes. Water is drawn mostly from Lake Moondarra (owned by a metal ore mining company, but transported by the Mt Isa Water Board) 13 kilometres downstream of Mt Isa, and pumped 60km up from Lake Julius in times of extreme drought to ensure supply is maintained.

Water saving strategies at the site include the condensing of all steam used in our on-site electricity generation turbine and the returning of any blow down water from our cooling towers to the nearby metal ore mine as process water.

Bajool: Queensland, Australia

Our site at Bajool, Australia, manufactures explosives emulsions. Although identified by the WBCSD Water Tool as being in a watershed area which may experience water stress by 2025, water supply is not considered a material issue at this site due to the low water usage required for emulsion manufacturing processes. Drinking water is delivered in bottles and all other water for the site, including amenities, is drawn from a small on-site bore under licence granted by the Queensland State Government.

Environment Waste

Environment

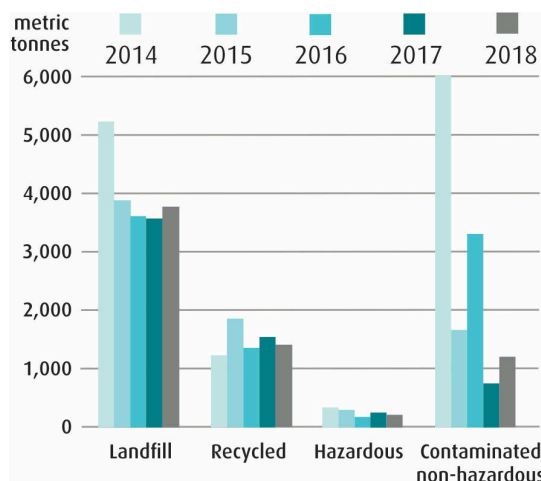
- ◆ Energy and greenhouse gases
 - > Reducing NOx and SOx
- ◆ Water
 - > Waste
- ◆ Environmental Compliance

Print PDF



Solid waste by destination

This year our sites generated 6,611 tonnes of solid waste, 0.5 percent more than last year. 21 percent of this waste, 1,377 tonnes, was sent for recycling. As shown in the graph to the right, our global waste to landfill has declined since 2014 when waste-to-landfill reduction targets were introduced. In 2018, approximately 2.4 percent of our solid waste was classified as hazardous and was mostly waste from the manufacture of our explosives products. In the Americas, 18,087 tonnes of ammonium nitrate that was unsuitable for use in explosives manufacturing was converted to fertiliser and sold to local farmers as either a nitrogen rich liquid fertiliser, or a low grade solid fertiliser. In Australia, 3,792 tonnes was recycled into making explosives emulsions.

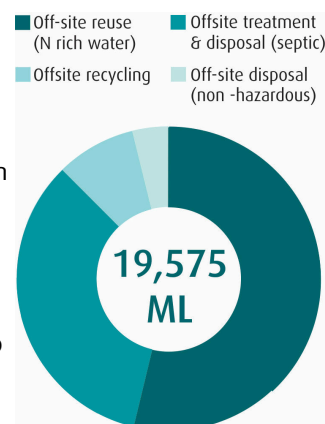


Solid chemical waste

Our sites generated 2,307,510 tonnes of solid chemical waste this year, an increase of 3.7 percent from last year. Over 99 percent of this was phosphogypsum chemical waste that was stockpiled at our site in Phosphate Hill, Queensland, Australia. This waste is considered hazardous because of its low pH, however water and phosphate are currently being reclaimed from this material and it is planned that these stockpiles will ultimately be capped and re-vegetated. The other 502 tonnes (0.02 percent) of hazardous chemical waste was mostly generated during explosives initiation system manufacturing.

Liquid waste by destination

Our sites generated 19,575 kL of liquid waste that was sent offsite for re-use, recycling or disposal this year, an increase of 22 percent from 2017. This increase was due to greater rainfall in Australia, which increased the volumes of nitrogen rich (contaminated) water captured on sites, and an increase in septic pump outs during the year. The liquid waste total includes 11,181 kL of contaminated water, 7,546 kL of hazardous liquid waste and 848 kL of non-hazardous waste. Approximately 51 percent of the total liquid waste was nitrogen-rich water from our fertiliser manufacturing and distribution sites in Australia that was sent offsite to third parties for use as fertiliser and/or woodchip additive. 95 percent of the hazardous liquid waste was septic liquid or sludge (considered a bio-hazard) which was sent offsite for disposal or treatment.



2018 Waste reduction initiatives

- At Carthage, USA, a 5 year project begun in 2016 to completely redesign the site wastewater system has progressed as scheduled with design alternatives and cost analyses planned for completion in early 2019. The project is considering all wastewaters and evaluating each stream for reduction, elimination or reuse to reclaim valuable ammonia and nitrates. During 2018, evaluation of solids recovery in the Cast Booster plant was completed, followed by the redesign of the filtration systems to allow solids to be recaptured for product manufacturing. This resulted in a reduction of approximately 2 tonnes of hazardous waste in 2018.
- The \$260,000 Micro-Auto Gasification System (MAGS) purchased last year at our Carthage, USA site reduced solid waste by 9 tonnes in 2018. The MAGS converts the organics in non-hazardous explosives contaminated waste into syngas, which is used as fuel for the MAGS and to generate hot water, saving approximately \$130,000 in waste disposal costs and reducing energy costs.
- At Simsbury, USA, the switch was made from ordering new drums with tops to ordering reconditioned drums without tops, as the tops were previously discarded. This has resulted in an ongoing reduction of half a tonne of metal waste each year and cost savings of over \$5000.
- At Wolf Lake, USA, the recycling of pentolite floor sweepings has reduced hazardous waste and saved an estimated \$46,000 in 2018. Paper cannister recycling was also implemented this year with both waste and cost reductions expected in 2019.

Environment

Environmental Compliance

◆ Material issue

◆ Environment

◆ Energy and greenhouse gases

> Reducing NOx and SOx

◆ Water

> Waste

◆ Environmental Compliance

Print PDF



As a Large Emitter under Australian National Greenhouse and Energy Reporting (NGER), IPL is required to report annually on energy and GHG emissions associated with more than 50 sites across Australia. Direct and indirect emissions from our Australian operations are reported to the Government under this national initiative, which began in 2009. Assurance was obtained over our Australian GHG emissions, energy consumption and production figures for the period 1 July 2017 to 30 June 2018. The third party issued an unqualified opinion over our reported emissions, energy production and energy consumption.

We report environmental release and discharge data to the National Pollutants Inventory in Australia, the Toxic Release Inventory in the USA, the National Pollutant Release Inventory in Canada and the Register of Pollutant Release and Transfer in Mexico. As required in New South Wales (NSW), Australia under the Protection of the Environment Operations Act 1997, holders of Environment Protection Licences who undertake pollution monitoring as a result of a licence condition must publish monitoring data on their corporate website. Of the five Environment Protection Licences which we hold for our NSW sites, there was one which required us to undertake pollution monitoring during 2018 ([Kooragang Island](#)) and we continued to publish this data on our [website](#).

We are subject to environmental regulation under the jurisdiction of the countries in which we operate including Australia, USA, Mexico, Chile, Canada, Indonesia, Papua New Guinea and Turkey. These environmental laws and regulations generally address the potential aspects and impacts of our activities in relation to, among other things, air and noise quality, soil, water, biodiversity and wildlife. We operate under a [Global Health, Safety and Environment Management System](#) which sets out guidelines on the Group's approach to environmental management, including a requirement for sites to undertake an Environmental Site Assessment. In certain jurisdictions, the Group holds licences for some of our operations and activities from the relevant environmental regulator. We measure our compliance with such licences and report statutory non-compliances as required.

Continuous improvement during the 2018 financial year was focused on improved product handling, compliance management and risk management.

Highlights included the following:

- The implementation of an engineering framing assessment Model to identify engineering and operational opportunities to improve environmental outcomes;
- Extension of the use of iAuditor from fertiliser distribution sites to Australian manufacturing sites to conduct daily site photo logs which facilitate continuous improvement in product handling, compliance management and risk management;
- Performance of Environmental Site Assessments at 22 sites across North America;
- Continued auditing of spill prevention, control and countermeasure plans, including stormwater pollution prevention controls, across North America;
- Continued use of visual management tools and lean processes, particularly 5S, to increase loss of containment awareness globally. This has resulted in increased operational control of product and a reduction in environmental risks associated with product tracking and spills; and
- Maintenance of the [Environmental Incident Frequency Rate](#) (EIFR) below 1 at 0.35 and the setting of a new target of [Zero Significant Environmental Incidents](#) for 2019.

Fines

In May 2017, the Land and Environment Court of New South Wales ordered a subsidiary of the Company to pay a fine of \$460,000 and costs of \$72,750 in connection with an incident at the Group's Warkworth manufacturing facility in New South Wales involving an inadvertent release of waste water during remediation works on site in 2015. Following an appeal in December 2017, the fine was reduced to \$360,000. For the 2018 financial year, the Group received two penalty infringement notices issued by a regulatory authority arising from the overflow of a site containment pond in Queensland, Australia, which resulted in fines totalling \$25,230. The Group also received a fine of US\$250,000 for untimely reporting of an inadvertent release of anhydrous ammonia into the air at a site in the USA.

Incident management

In accordance with Standard 16 of the IPL [Global Health, Safety and Environment Management System](#), all incidents, including near misses, are reported immediately to the Manager of the Site and elevated to Senior Leadership, Legal and/or external authorities based on the event potential consequence and outcome. All incidents are recorded and investigated according to the IPL Incident Reporting, Investigation and Root Cause Analysis Procedure. Incident investigations identify and prioritise corrective and preventative actions, in order to eliminate or reduce the risk of the incident recurring.



Products and Services

◆ Material issue

◆ Sustainability of Products and Services

- > Working with Our Suppliers
- > Our Raw Materials
- > Product Quality
- > Fertiliser Research and Development
- > Explosives Research and Development
- > Best Practice in Fertiliser Use
- > Minimising the Impacts of Blasting
- > Customer Health and Safety
- > **Customer Support & Engagement**

During 2018, IPL reviewed its strategy, governance and funding of research and development. The position of Chief Technology Officer was added to the IPL Executive Leadership Team and six core technology programs were implemented to advance IPL’s ability to strategically partner with customers to improve their productivity and safety, and reduce their environmental and social impacts.

Through Incitec Pivot Fertilisers, IPL supplies approximately two million tonnes of fertiliser per year across Eastern and Southern Australia. We distribute fertilisers manufactured in our four fertiliser manufacturing operations in Australia as well as imported fertilisers. Our product range includes products such as urea, ammonium phosphates, ammonium sulphate, single super-phosphates, anhydrous ammonia and speciality products such as those treated with urease and nitrification inhibitors. Blending facilities for solid fertilisers are located at strategic centres throughout the market place, offering a range of blends and, for farmers who request them, individual custom blends tailored to specific needs.

Within the fertiliser value chain our sustainability focus is on ensuring that the health, safety and environmental impacts of products and services are considered and managed responsibly throughout the product life cycle. This includes research and development of new, high-efficiency products and product coating technologies, as well the promotion of the effective and sustainable use of our fertilisers.

Product Stewardship regarding fertiliser products is the responsibility of the Agronomy function within IPL and our approach is defined in our Product Design and Stewardship Standard, included in our [Health, Safety and Environment Management System](#). The Standard requires that the “health, safety and environmental impact of products, product packaging and services are considered and managed responsibly and ethically throughout the product life cycle, including: research and development; purchase of raw materials, intermediates and finished products; manufacture; formulation; packaging; labelling; storage; sale; transport; use and the disposal of damaged products, waste and packaging.” Many industry issues concerning agricultural fertilisers are not confined to individual suppliers. These are addressed at the industry level through [Fertilizer Australia](#). As Australia’s largest fertiliser supplier, IPL is a key member of Fertilizer Australia and actively engages in their Product Stewardship activities.

We supply explosives through the Dyno Nobel brand in the Americas, Europe, Australia and the Asia Pacific. We manufacture, distribute and sell bulk and packaged ammonium nitrate-based explosives and blasting supplies as well as providing services to customers in the mining, quarry, construction, pipeline and geophysical exploration industries.

Efforts to mitigate the environmental impacts of our explosives products continue to be focused on the development of new product and delivery technologies which solve our customers’ challenges on the ground as well as improving the sustainability of the input materials we use for manufacture.

Print PDF



Our focus includes:

- Reducing the energy, greenhouse gas emissions, water use and waste associated with the manufacturing and transport of our products (discussed in the [Environment](#) section);
- Ongoing [fertiliser research and development programs](#) focused on joint development and [agricultural extension](#) with customers, including enhanced efficiency and low GHG emission fertilisers;
- Maintaining [product quality](#);
- Adopting and promoting the [Fertcare principles](#) and [Members Code of Practice](#), a joint initiative between Fertilizer Australia Inc. and the Australian Fertiliser Services Association;
- The provision of R&D support to facilitate the internal recycling of both high nutrient waste waters and old product into manufacturing;
- [Recycling our packaging](#), as well as re-using product that did not meet final specifications, has been returned by customers or was used during experimental work, to manufacture new product;
- [Testing third party recycled customer oils and hydrocarbons](#) recovered from non-traditional waste materials to replace virgin oils in explosives manufacture;
- The continued [development and marketing of explosive products and delivery systems](#) that reduce our customers' energy use, greenhouse gases, blast fume emissions and minimise nitrate leaching to groundwaters; and
- The development of [inhibited emulsion explosives for safer blasting](#) in extreme (hot and reactive) geothermal environments.

Sustainability of Products and Services

Working with Our Suppliers

◆ Sustainability of Products and Services

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- > Minimising the Impacts of Blasting
- > Customer Health and Safety
- > **Customer Support & Engagement**

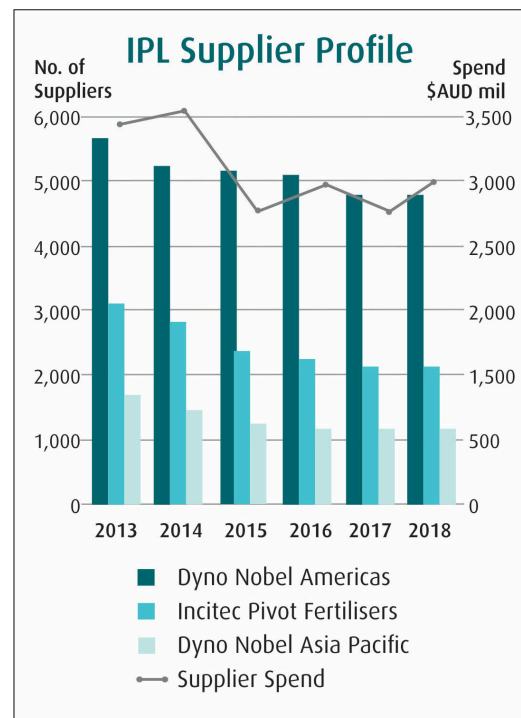
Our Global Procurement team has a number of mechanisms in place to assess the sustainability practices of our suppliers.

IPL uses these processes to assess potential and current contracted suppliers to ensure sustainability risks are well understood and addressed. Potential and current contracted suppliers are assessed using a questionnaire that covers environmental, social and governance aspects and the Global Procurement team works with suppliers on gap closing action plans where required. Contracts between IPL and major materials suppliers also contain requirements that are consistent with IPL’s expectations of suppliers’ workplace health, safety and environmental performance. The assessment of suppliers and close out of assigned actions is monitored through regular reporting.

100%
OF MAJOR MATERIALS SUPPLIERS SCREENED
* ‘Major Suppliers’ are those which make up the top 20% of our spend

We deliver best cost commercial outcomes aligned with stakeholder requirements through a sustainable, systematic sourcing process and active management of supplier spend.

Our procurement team assesses the effectiveness of our supplier management processes through the IPL Supplier Relationship Management (SRM) program. Suppliers included in the SRM program are determined by segmentation analysis. The aim of the program is to create value from existing supplier relationship for both parties through discussion and delivering improvements. Regular supplier meetings are held and SRM actions are recorded in the Procurement Contracts Database (PCD) and tracked by the Procurement Manager. Completed and overdue actions are tracked on the IPL SRM dashboard, which includes targets and KPI’s based on the number of meetings held, their timing and Contractor [TRIFR](#) and [IRI](#)s.



During 2018, IPL conducted a review of current procurement processes against the ISO:20400 Standard for Sustainable Procurement and identified areas for improvement.

ISO:20400 was released in 2017 and provides guidance, rather than certification, on building sustainable procurement processes and developing a sustainable supply chain.

As part of this work, the [IPL Supplier Code of Conduct](#) was completed in 2018, the IPL Modern Slavery Project Team was formed to manage compliance with the requirements of the new [Australian Modern Slavery Act 2018 \(Cth\)](#) to assess and address human rights risks in our supply chain.

Print PDF



In line with our commitment to develop the sustainability of our supply chain, we continued to work with suppliers, customers and industry bodies on a range of initiatives in 2018 to reduce our impacts and bring positive change. Two of these are outlined in the case studies below.

Case Study: Working with RightShip to reduce, quantify and offset Scope 3 carbon emissions associated with our global shipping

During 2018 we continued to minimise the emissions associated with our global shipping contractors in the performance of their services for us. By using the RightShip [Greenhouse Gas \(GHG\) Emissions Rating](#) to find more efficient shipping vessels, we are using our influence to bring change in the maritime industry by rewarding ship owners that prioritise energy efficiency in line with our values, our commitment to minimise environmental impacts, and our drive to improve our financial performance.



The relative performance of a vessel is rated from A through to G, the most efficient being A, the least efficient being G. Selecting more efficient ships means less energy used as fuel, lowered fuel costs and reduced Scope 3 GHG emissions.

Since we began using the Rightship GHG emissions rating system in 2016, we have reduced our emissions by 8 percent, even though our cargo quantity has increased by 10 percent. 32 percent of our ships in 2018 were rated A or B, and almost 80 percent were rated D and above. We used no G rated ships in 2018.

As part of this engagement with our global shipping suppliers, we were also able to quantify the Scope 3 greenhouse gas emissions associated with our global shipping for the third year. The [Rightship GHG methodology](#) uses the standard European energy efficiency scale and allows emissions to be benchmarked and tracked per journey and over time. The methodology has been verified according to an internationally recognised standard (EN16258:2012).

During 2018, the Scope 3 emissions associated with our global shipping were 68,634 tCO₂e. Through an opportunity provided by Rightship and CBL Markets, we are pleased to report that we were able to offset these emissions through the purchase of verified carbon credits for the second year in a row.

Although a small contribution to reducing our total impact, the purchase of these units was the first offset purchase by an Australian company in the global shipping space, and we will continue to look for opportunities to work with our suppliers to bring change in new ways.

Although present data collection systems do not currently allow us to calculate the amount of emissions avoided by our use of more efficient vessels, we continue to work with our suppliers to be able to calculate this in future years.

32
% VESSELS
RATED
A or B

8%
REDUCTION
IN GHG
SINCE 2015

79
% VESSELS
RATED D+

Case Study: In 2018, IPL continued to work with suppliers, customers and industry bodies to collect and recycle our fertiliser packaging through the Farm Waste Recovery initiative.

In any given year, over 80% of our fertiliser sales are bulk sales which require no packaging. However, approximately 15% of our fertilisers are transported to customers in one tonne FIBCs (Flexible Intermediate Bulk Containers) and 5% is sold in small packs.

Prior to 2015, we used reusable FIBCs to reduce our packaging impact. With the move to single trip plastic packaging to improve customer safety and reduce the risk of potential spills to the environment, we worked with our fertiliser packaging suppliers, plastics reprocessing companies, 23 local councils, the Queensland Department of Environment and Heritage Protection, and 'Farm Waste Recovery', a subsidiary of the Australian agricultural industry body, [AgStewardship](#), to establish the Sugar Cane Fertiliser Bag Recovery Trial. AgStewardship's key objective is to support and develop Australian Agriculture's environmental sustainability and stewardship, while the key objective met by the trial was to develop a sustainable model for the collection of fertiliser bags and the reuse of the recovered materials.



Due to its success, we continued to extend the bag collection and recycling program across eastern Australia during 2017 and 2018 through providing financial and promotional support to encourage growers to tie the bags in bundles and drop them at local council and private farm collection centres, where they are bailed for transportation to Brisbane for recycling.

Now in its fourth year, the Farm Waste Recovery program continues to grow, with 17 percent more plastics collected than last year and 60.3 percent more than the pilot year.

In total, 2,341 tonnes of plastics have been collected for recycling since the program began. This amount includes all types of recyclable farm plastics, as well as IPL's fertiliser bags. The success of this program demonstrates the commitment of our customers to a sustainable recycling option for their farm plastics, including our fertiliser packaging.

Not only was the volume of plastic collected in 2018 enough to make 2,201 park benches, it means tidier farms, less material going into landfill sites and less likelihood of the plastic packaging ending up in the environment.



Sustainability of Products and Services

Our Raw Materials

◆ Sustainability of Products and Services

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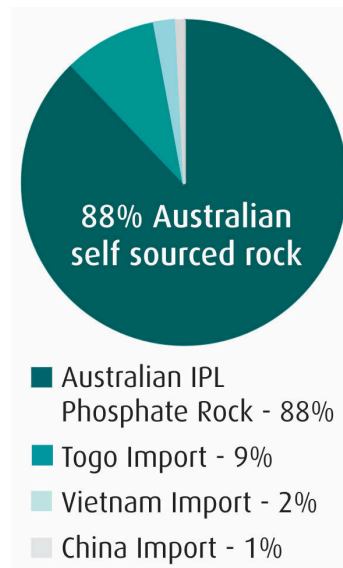
Natural gas accounts for approximately 70–80 percent of the cost of ammonia manufacture.

Energy is an important issue for our business, particularly the supply of natural gas, which is used as both a raw material and an energy source in the [production of ammonia](#). Ammonia is then used to make both our nitrogen fertilisers, such as urea and ammonium phosphates, and our major explosives product, ammonium nitrate, using [chemical reactions](#). In Australia, access to competitively priced gas is a well-documented challenge for the manufacturing industry. IPL believes that it is essential that Australia find a solution that balances the needs of supplying gas to value-adding manufacturing with those of an energy export market. We will continue to work with Federal and State governments on this issue.

In the production of both single super-phosphate fertilisers (SSP) and ammonium phosphate fertilisers, we use phosphate rock, a naturally occurring mineral rock.

At our plant at Phosphate Hill in Queensland, Australia we produce ammonium phosphate fertilisers, namely mono-ammonium phosphate (MAP) and di-ammonium phosphate (DAP). This year we sourced 2,048,345 tonnes of phosphate rock for MAP and DAP from our own phosphate rock mine which is adjacent to the plant. We produced approximately 1,000,000 tonnes of ammonium phosphates. At our Portland and Geelong plants in Victoria, Australia we manufacture SSP. The composition of phosphate rock used at these plants varies according to place of origin with varying levels of available phosphorus, cadmium, odour and reactivity, that is, the capability of the rock to react with sulphuric acid and release available phosphorus for plant nutrition.

Our SSP manufacturing plants are configured to produce fertiliser using a blend of phosphate rock from different sources thereby balancing the above factors to produce a product that meets Australia’s regulations with regard to available phosphorus. This year we produced approximately 436,311 tonnes of SSP using a blend of 271,698 tonnes of phosphate rock. During 2018 we imported phosphate rock from Togo, Vietnam and China, with 88 percent of our total phosphate rock being supplied from our own phosphate mine in north Queensland, Australia.



We use sulphuric acid in the manufacture of single superphosphate, mono-ammonium phosphate, di-ammonium phosphate and granulated ammonium sulphate, and nitric acid in the manufacture of ammonium nitrate.

We produce sulphuric acid at our Mount Isa site in Queensland, Australia. The acid is transferred to our fertiliser manufacturing plant at Phosphate Hill by a purpose built railway and used in the production of DAP and MAP fertilisers. We source additional sulphuric acid, including for our SSP plants in Victoria, Australia, from both domestic and international suppliers. We manufacture the nitric acid we use to make ammonium nitrate explosives at our nitric acid plants in Moranbah, Australia, and St Helens, Louisiana, and Cheyenne in North America.

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Sustainability of Products and Services

Product Quality

◆ Sustainability of Products and Services

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IPL is committed to providing quality products and services to the explosives, fertilisers and industrial chemicals sectors.

IPL is a global provider of innovative explosive products, services and solutions under the renowned Dyno Nobel brand. Product quality is being continuously improved by the detection, analysis and correction of trends during processing to enhance quality and performance. Since 2015, a working partnership between IPL’s explosives research and development laboratories and its manufacturing plants has served to further improve operating procedures, particularly where product analysis is required: see the [Case Study on the Dyno Nobel Emulsion Quality System](#) under Research and Development. Ongoing improvements in both the product formulations and the raw materials sourced have resulted in improved explosives product quality and enhanced performance.

A specialised Quality Management System operates in our Explosives Initiations Systems manufacturing plants and our Australian bulk emulsion manufacturing plants which allow us to track and correct product quality using a range of KPIs. These metrics include:

- First Pass Yield, also known as [Throughput Yield](#);
- Process Capability Index, a measure of how closely a process is running to its specification limits, relative to the natural variability of the process;
- Financial cost of non-conforming products; and
- Escape Rate ((Total 'Escaped' Defects / Total Production) x 1,000,000) of IS units not meeting our high standards of quality control. Our 2018 Escape Rate was 0.30, a better result than our target rate of <1. The Marketing & Technology Ideas & Work Requests Database, which was upgraded during 2018, not only provides research and development assistance across the organisation, but also facilitates knowledge sharing and collaboration between IPL’s employees across the globe as they find innovative ways to improve product quality.

0.000030
% 'IS' UNITS
QUALITY CONTROL
ESCAPE RATE

Our fertiliser [Quality Policy](#) outlines our commitment to providing products and services that meet our customers’ needs. During 2018, IPL’s manufacturing quality standards were extended to apply to the fertiliser distribution business, and the IPF Quality Assurance Council was established to drive continuous improvement through the development and delivery of the two-year IPL Key Quality Strategic Roadmap.

Fertilisers contain various impurities which are mostly derived from the raw materials used in fertiliser manufacture. We manufacture a wide range of fertilisers in Australia and source products from other Australian suppliers and overseas to offer a comprehensive product range. In Australia, fertilisers must meet certain standards and be labelled in accordance with relevant statutory requirements. We also label our products in accordance with the Fertilizer Australia National Code of Practice for Fertilizer Description and Labelling. We have set specifications for domestically manufactured and imported fertilisers that meet these standards. Routine laboratory analyses are performed to ensure products meet these specifications. Our fertiliser manufacturing is monitored by our own [Quality Control Laboratories](#) and our Ammonia (BIG N), Urea and GranAm products are Quality Assured to AS/NZS ISO9001:2000 standards.

All of our product imports are sourced in compliance with the [Fertilizer Australia Purchasing Code of Practice](#). Product Specifications are set that meet statutory limits and market needs. Certificates of Analysis are sought from suppliers. The delivered products are then analysed through our Quality Control Laboratories to ensure they are within specification, e.g. maximum limits of heavy metal impurities such as cadmium, lead and mercury. We declare the impurity content of fertilisers on the product label.

Through our Fertiliser Customer Complaints Data Base, we track the percentage of our fertiliser product sold (imported or manufactured) which has quality control issues and we seek to improve this KPI each year. In 2018, the percentage of fertiliser sales with quality control issues which were compensated for was just 0.017, a significant improvement on last year’s 0.071. We examine quarterly ‘touchpoint’ reports assessed through ‘Fertshed’, our online customer transactional portal, which also tracks aspects of customer sentiment. This allows management to disseminate the information quickly through internal channels, solving product quality or delivery issues quickly.

0.017
% SALES
FERTILISER
QUALITY CONTROL
ESCAPE RATE

 Print PDF



Sustainability of Products and Services

Fertiliser Research and Development

◆ Sustainability of Products and Services

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The focus of our fertiliser extension and research programs is on the efficient use of existing fertiliser products and the development of enhanced efficiency fertilisers.

Considerable emphasis is placed on applying products in the right place and at the right time. Soil and plant tissue analysis is used to better predict the rates at which fertilisers should be applied, and the use of computer based decision support tools to fine tune fertiliser programs is gaining favour within the industry. Our Nutrient Advantage Laboratory Services is NATA accredited and operates in accordance with the international standard ISO/IEC 17025. Analyses conducted at the lab are certified under the [ASPAC](#) proficiency scheme. Our accreditations are a reliable indicator of the technical competence of a facility to perform specific tests. Nutrient Advantage Laboratory Services delivers consistently high quality analytical results by employing nationally and internationally recognised standardised analytical methods.



During 2018, we focused on increasing our capacity to analyse specific farming customer issues relating to soils, crops and crop nutrition, aiming to solve these issues through the development of innovative products and services. We operate one of the largest commercial plant nutrition research and development programs in Australia, with a range of replicated research trials in conjunction with customers, independent organisations and agronomists.

Our long term experiments aim to produce insights that benefit Australian farmers and allow them to [improve fertiliser use efficiency](#) and [adopt sustainable fertiliser practices](#). We are also committed to helping farmers in ways that may assist them to improve productivity and profitability through expanding and developing our range of products and services. The development of new fertilisers is driven by the needs of farmers and is focused on improving nutrient use efficiency, flexibility and environmental performance. We continue to study nitrogen losses from conventional and enhanced efficiency fertilisers to reduce environmental impacts of fertiliser use. IPL offers two enhanced efficiency fertilisers:

- [Entec®](#) is a treatment that retains nitrogen in the stable ammonium form for an extended period. This reduces nitrogen losses via leaching (to waterways) and/or denitrification (to the atmosphere), while conserving more nitrogen for plant uptake.

Both trials and customer use continue to demonstrate the potential for significant reductions in GHG as well as cane yield increase with the use of Entec (see pages 35-42 of the [Australian Sugarcane Annual 2016](#) and [Less Nitrogen Lost is More Gain in Cane](#), in [the Australian Cane grower, Sept 2017](#)).

- [Green Urea NV®](#) is a top dressing fertiliser, recommended where volatilisation losses of ammonia are likely. Green Urea NV products contain urea treated with the urease inhibitor, N-(n-butyl) thiophosphoric triamide (NBPT), and are aimed at delaying hydrolysis of urea into unstable forms that may be lost to the atmosphere, thereby reducing emissions related to fertiliser usage. Green Urea NV can help to protect against volatilisation losses, particularly for:



- intensive dairy and beef pasture production
- irrigated cotton where urea is applied mid-season
- forestry situations
- field crops where urea is applied to bare soil or soon after germination.

Key highlights in fertiliser research and development during 2018 included the following:

- Continuation of a joint research project with the University of Melbourne into [new fertiliser technologies for sustained food security](#), which has so far resulted in the development and testing of prototype products in 2018;
- The commercialisation, at a number of distribution sites, of novel fertiliser nutrient delivery systems including trace element coating of fertilisers, with further installations of these systems planned for 2019;
- Continued promotion of IPL's enhanced efficiency fertilisers, Entec and Green Urea, with a 32 percent

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increase in Green Urea volumes. These products minimise nitrogen losses to waterways and to the atmosphere as GHG;

- Continued work on the [Australia-China Joint Research Centre of Healthy Soils for Sustainable Food Production and Environmental Quality](#) and [Soil microbial indicators for efficient use of nitrification inhibitors](#) research projects;
- Research and development support for the extension of IPL's quality standards throughout the fertiliser distribution business, including the assessment of innovative ways of reducing and reusing waste; and
- Research and development support for the implementation of our fertiliser product lifecycle management procedure which will incorporate the introduction of new products and product deletion.

Planned for 2019:

- A new partnership with the University of Adelaide and [CSIRO](#) to research and develop novel urea coatings for use in arid cropping zones where a particular nutrient deficiency is common;
- The development and commercialisation of a new enhanced efficiency ammonium phosphate fertiliser, which, like our Entec and Green Urea products, aims to reduce nitrogen losses to the air as GHG and to waterways through leaching;
- The test marketing of silicon fertilisers which have been shown to increase stress resistance in crops, as well as replace silicon lost from soils through farming some crops, such as cane and rice;
- Assessing opportunities to assist productivity improvement in the [extensive](#) beef industry;
- Continued work on nutrient use efficiency to assist our customers to increase their yields while reducing their costs and environmental impacts; and
- Rolling out upgraded Nutrient Advantage Pro software, which was tested and further developed in 2018 prior to release, and which will further promote the LabStream soils and plant testing application, which was text marketed with some of our customers this year.

Case Study: New fertiliser technologies for sustained food security.

With society facing the triple challenges of food security, environmental degradation and climate change, we recognise the need for fundamental research to develop next-generation fertiliser products that will improve the efficiency of nitrogen use to feed a growing population on less land while reducing nitrogen losses from food production systems to the environment.



As part of the [Australia-China Joint Research Centre of Healthy Soils for Sustainable Food Production and Environmental Quality](#), IPL is partnering with the University of Melbourne and experts in fields including chemistry, chemical engineering and soil science to apply a novel multidisciplinary approach to develop and test new, highly-efficient fertilisers. This is not only critical for addressing the triple challenges, but also for the competitive advantages of the Australian fertiliser industry.

The Centre of Healthy Soils for Sustainable Food Production seeks to investigate the practical challenges of more fully understanding the sustainable limits for the productive use of soil, fresh water, river flows and terrestrial and marine systems, as well as reducing the impacts from agricultural systems on soil, fresh and potable water, urban catchments and marine systems.

A key aim of the Centre is to reduce the footprint of agriculture production systems by retaining nutrients in food, reducing wastes, developing climate resilient systems and remediating soils. As Australia's largest fertiliser manufacturer, IPL is a key partner in the work of the Centre in regard to introducing new technologies and management practices that will improve farming productivity and sustainability, which has broad social implications for national food security and the sustainability of rural communities.

This project aims to produce innovative and cost-effective fertiliser products, which will have a significant impact on the profitability and sustainability of food production. The project provides excellent research training opportunities in a multidisciplinary high-quality environment and will not only advance Australia's reputation as a "clean and green" producer, but also create opportunities for market expansion nationally and internationally.

Case Study: ENTEC use means peace of mind, less nitrogen losses and more gain in cane

In wet or dry seasons, Robert Silvini likes the peace of mind that comes with using ENTEC treated fertilisers in his sugarcane.

"By using urea blends treated with ENTEC, I know the nitrogen is staying on my farm and there's a much lower risk of losing it in runoff after a downpour," he said. "I'm also doing my bit to make sure our industry is protecting the Great Barrier Reef."



Mr Silvini grows cane on a range of soil types between Forrest Beach and Taylors Beach, east of Ingham. He feels more confident that his cane is benefiting from the nitrogen supplied by ENTEC urea blends and there's a much lower risk of nitrogen leaching from the sand hills or floodprone blocks he farms.

"I like the idea that by using urea blends treated with ENTEC, the nitrogen stays in the soil for longer and whether the cane is cut early or late, I am giving the crop the best possible chance to make the most of the nitrogen," Mr Silvini said.

Sibby Di Giacomo, branch manager at Ingham Farm Centre, described ENTEC as a welcome development for the district's cane growers.

"Nitrogen management is a constant challenge for cane growers who have to cope with the most unpredictable weather conditions and with the Reef close by, there's increasing pressure on growers to improve nitrogen use efficiency," he said. "ENTECC keeps nitrogen stable in the soil for longer, giving it more staying power so the crop can use the nitrogen more efficiently. We like ENTEC because it means growers like Robert have a better alternative for enhancing the efficiency of their nitrogen applications while protecting the environment."

On the Kolan River north of Bundaberg, cane farmers Glenn and Susy Robertson are taking steps to change their fertiliser management for the better. In addition to long-standing best management practices like soil testing, trash blanket farming and banding fertiliser into the soil, they have recently started using ENTEC and split fertiliser applications.

They are finding the changes especially effective for protecting against leaching losses and keeping nitrogen available to the crop for longer on their lighter soils. The farm has a mix of soil types, with river loam, grey forest country and sandy soils. According to Glenn, the most difficult soils to manage are sands, with leaching a real problem.

"To get yields to lift on the sandy soils normally takes a wet year or a lot of watering, but with that comes leaching," he said. That's why three years ago, they trialled ENTEC with their cane fertiliser blend on half a block of sandy soil. At the same time, they cut the fertiliser rate by about 20%.



"I figured I could cut rates because I would be getting more than 20% extra from the fertiliser if it wasn't leaching away," Glenn said.

The result was a difference of around 35 cm of cane growth and around 15% extra yield, which was enough to see him adopt ENTEC on all the sandy country. "I use it on all the sandy soils now and have started using it in the grey forest country as well with similar results," he said.

"I'm already using less than the local cane board's recommended fertiliser rates and I'll be going further this year," he said. "With ENTEC we're getting better use of the nitrogen, so I don't have to put as much on."

Case Study: IPF extends Queensland Department of Agriculture and Fisheries research to reduce nitrogen run off from cane farming to waterways.

During 2018, the Queensland Department of Agriculture and Fisheries (DAF) completed a project to design, fabricate and test a mechanical device to improve soil cover in cane fields. In their previous research, DAF found that one of the issues contributing to increased concentrations of nitrogen in waterways was the slot or groove shape created in soils by commonly used farm applicator machinery. This slot shape can act as a funnel to direct water and exacerbate pesticide and nutrient runoff following rainfall events or overhead irrigation. The project resulted in the creation of the 'StoolZippa' which is designed to run behind the applicator machinery and close the slot shaped groove in the soil.

IPF extended this research through the promotion of the StoolZippa at grower meetings and agronomy forums throughout 2017 and 2018 as part of the project, due to its strong alignment with the aims of our own research, product development and customer focused solutions aimed at reducing nitrogen run off to waterways and GHG emissions to air.

"The combination of Entec-treated urea and effective slot closure with the StoolZippa will contribute to improved water quality in nearby waterways as well as decreasing nitrogen losses to the air as greenhouse gases," said Charlie Walker, IPL's Fertiliser Technical & Development Manager. "Less nitrogen losses to the environment not only reduces those impacts, but it also results in improved nitrogen use efficiency for the sugarcane industry."

Robert Dwyer, IPF Technical Agronomist, and Paul Rogers from Farm HQ are shown with StoolZippas fitted to a gessner applicator with a hydraulic depth control configuration on the axle, which was demonstrated to farmers at the Proserpine Show.



Sustainability of Products and Services

Explosives Research and Development

◆ Sustainability of Products and Services

- > Working with Our Suppliers
- > Our Raw Materials
- > Product Quality
- > Fertiliser Research and Development
- > **Explosives Research and Development**
- > Best Practice in Fertiliser Use
- > Minimising the Impacts of Blasting
- > Customer Health and Safety
- > Customer Support & Engagement

Efforts to mitigate the environmental impacts of our explosives products continue to be focused on reducing the impacts associated with their use and using more sustainable input materials. Highlights during 2018 included:

- Continued development and marketing of explosive products and delivery systems that reduce blast fume emissions and minimise groundwater nitrate leaching, including the commencement of a new joint research project with Murdoch University titled [Low Fume Explosives for Critical Areas](#) (read our case study below);
- Continued testing of recycled, reclaimed and treated oils, hydrocarbons and waxes to supplement the use of virgin fuel sources in emulsion-based explosives;
- Testing of oxidiser, an ingredient of explosives, sourced from internal and customer waste streams, with the successful commercialisation of one source, reducing waste and generating cost savings for customers;
- Continued collaboration with customers to test ore samples and selectively modify emulsion products for hot and reactive ground in North America;
- Commencement of a new Australian Research Council funded project [Emulsion Explosives for blasting in extreme geothermal environments](#) with the University of Sydney to further develop inhibited emulsion explosives for safer blasting in extreme (hot and reactive) geothermal environments;
- The introduction of our proprietary [Differential Energy](#) technology to the Australian and Indonesian explosives markets. This product continues to result in reduced NOx emissions, reduced energy use, less noise and ground vibration and increased productivity for customers; and
- Implementation of the improved technology underground product-delivery system.

Planned for 2019:

- Continued support of 'Value In Use' programs for major customers to reduce the cost of blasting;
- Continued in field trialling and research into post blast fume reduction;
- Continued collaboration between our explosives laboratories and our fertiliser business to further develop a technical capability to support the manufacture, transport and storage of both fertiliser and explosives products.
- Continued laboratory testing of new raw material sources to ensure product quality in the USA;
- Investigation of new technology to allow the utilization of resources previously deemed unfeasible;
- Innovation of underground emulsion delivery system technology to meet customer specific requirements.

Read more about our work with customers to reduce the environmental and social impacts of using our explosives products at [Minimising the impacts of blasting](#).

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REDUCING NOx EMISSIONS

We continue to research both the formation of NOx and methods to reduce NOx to minimise the impacts of the use of our explosives products on the environment. Having completed a previous project on the effects of different additives in reducing NOx formation, we are now working on the development of low fume explosives for critical areas. This research has resulted in more than six published papers in scientific journals related to reducing NOx emissions and we are using this research to develop improved products and product delivery methods.

BIO FUELS

In North America, we have developed technology that allows the use of bio-fuels and bio-fuel by-products as an alternative to petroleum-derived hydrocarbons for the manufacture of blasting agents and bulk emulsion products. This technology has been enabled in our product line, though take up has been slow due to limited product availability and the relative costs associated with using bio-fuels if the mine site is not located close by. We continue to offer this service to our North American customers and expect greater uptake in the future.

RECYCLING HYDRO CARBONS & WASTE MATERIALS

We have also undertaken work with customers and third party suppliers to introduce technologies that use petrochemicals extracted from waste materials as part of the explosive composition. Waste materials such as discarded tyres and waste oil from machinery are ideal candidates for use, particularly at remote mine sites where trucking virgin materials in and waste materials out consumes resources and time. The recycling of a range of 'out of specification' (OOS) materials has been developed significantly, and we will continue to test non-traditional sources for recycling hydrocarbons and other materials in partnership with our customers as the opportunities arise.

Case Study: Research and development underpins the Dyno Nobel Emulsions Quality System (EQS)

During 2018 we continued to promote the collaboration between our research and development teams and our manufacturing sites to improve the quality of our products. Our research and development team in North America worked with product management to identify opportunities in operator training to improve quality control. This resulted in further collaboration between Dyno Nobel Transport International (DNTI), our engineers and our product managers to implement a new training system aimed at ensuring that the high standards for product quality established for our emulsion products were extended beyond manufacturing to handling, delivery and loading for use at customer sites. The training addresses handling procedures that can potentially impact on product quality and shelf life, and supports the Dyno Nobel Emulsion Quality System (EQS). The EQS was implemented in 2017, with all actions associated backed up by the science of our research and development teams.

These actions included:

- Review of the quality control requirements for emulsion manufacture, transport, storage and use;
- Standardisation of all emulsion plants with regards to processes, instrumentation and calibration; and
- Establishment of the Emulsion Plant Optimisation Team to embed the EQS learnings, to share experiences and knowledge across our sites, and to use continuous improvement processes to continue to improve on all facets of product quality.

Case Study: Dyno Nobel and Murdoch University designing safer, low NOx explosives for mining

A research project to tackle one of the major safety and environmental concerns for the mining industry is the focus of a three year project now underway at Murdoch University with the support of global explosives manufacturer and supplier, Dyno Nobel. This Australian Research Council Linkage project, worth \$570,000 with a further \$390,000 cash and further in kind support from Dyno Nobel Asia Pacific is investigating ways to reduce emissions of NOx gas during blasts, which can arise in certain conditions.

DNAP Research and Development Manager Dr Jeffrey Gore says Dyno Nobel has worked for several years with Professor Dlugogorski from Murdoch University to identify suitable explosive technologies to minimise the generation of post blast fumes for application in soft and wet ground.



“An example is the [Titan 9000xero® product](#) which was developed by the DNAP Explosives R&D team in 2014. To date, in more than 200 blasts, no orange post blast fume, which may contain NOx (nitrogen dioxide), has been observed during use,” Dr Gore said. This project aims to include the development of new blends of no-fume high-bulk energy strength explosives and to develop better methods to sample gases from detonation fumes. The work will be completed by Professor Dlugogorski and Dr Mohammednoor Altarawneh from Murdoch University and Dr Gore.

“Working with Murdoch University allows access to world class researchers and facilities with the right experience that can significantly shorten the development and commercialisation times for new products and technologies,” said Dr Gore.

Dr Gore said the fundamental studies of the research program would be performed at Murdoch University and when the technology was to be scaled up in explosives formulations, the work would be performed at Dyno Nobel’s R&D Centre at Mt Thorley in New South Wales.

Case Study: Dyno Nobel and the University of Sydney’s Key Centre for Polymer Colloids secure ARC research grant to focus on safer mining in high temperature geothermal ore bodies

In line with our strategic value drivers of Customer Focus and Leading Technology Solutions, this project will allow us to develop solutions to our customers’ challenges when working in hot and reactive ground. As Rob Rounsley, our Chief Technology Development Officer explained, mining in high temperature ground, such as extreme geothermal environments, has always been a challenge for the industry.

“Creating a solution that improves safety whilst lifting productivity through innovative technology is a key driver for Dyno Nobel, and we are excited to be working on developing this ground breaking project,” Mr Rounsley said.

Dyno Nobel has some of the world's most innovative explosives chemists on board, led by Explosives R&D Manager Dr Jeff Gore.

"The team is thrilled to be collaborating with the some of the brightest minds in Australia on this project including Associate Professor Brian Hawkett, Professor Gregory Warr, Associate Professor James Beattie, and Professor Roger Tanner at the Key Centre for Polymer Colloids," Dr Gore said.

"Partnering with these world-class experts is an exciting step forward in addressing the challenges global miners face in operation in higher temperature ground."

Research into emulsion explosives for rock blasting in extreme geothermal environments aims to understand the underlying mechanisms behind the physical and chemical breakdown of ammonium nitrate-based emulsion explosives used for mining in geothermally active regions.

"We want to progress our learnings and apply this knowledge to develop a new class of emulsion explosives for use at higher temperatures," Dr Gore said.

"Our findings will also benefit the Australian mining industry by allowing mining of resources at depth, where the ground temperature is very high due to geothermal heating or other factors associated with high temperature ore body and importantly extract these resources safely and with improved productivity."

"Dyno Nobel and the KCPC have a long history of success in obtaining government-sponsored funding for these high-end research activities, and with only 34 per cent of proposals receiving approval, we are very much looking forward to researching solutions to these issues."



Case Study: Addressing hot and reactive ground for our North American customers

Addressing hot and reactive ground also continued to be a significant focus in north America in 2018. The testing of ore samples to determine product compatibility was conducted for a number of our customers in the USA. Working in collaboration with the engineering group, the research and development team developed a new process to allow customers to selectively modify standard emulsion products to inhibit them against hot and reactive ground. This included the modification of delivery systems and the creation of an inhibiting solution to allow variable inhibition of the final product. This was successfully trialled at a customer site and was very well received as it improved mine efficiency and product performance.

Sustainability of Products and Services

Best Practice in Fertiliser Use

◆ Sustainability of Products and Services

- > Working with Our Suppliers
- > Our Raw Materials
- > Product Quality
- > Fertiliser Research and Development
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- > Minimising the Impacts of Blasting
- > Customer Health and Safety
- > Customer Support & Engagement

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To provide the food our growing global population demands, farmers are seeking to increase production on their land while minimising environmental impacts. We support this effort by working with researchers who seek to grow more food using best management soil practices and new technologies such as enhanced efficiency fertilisers.

Fertilisers are essential to productive farming, allowing farmers to grow more food on a decreased area of arable land. High yields are necessary to support the world's growing population. To optimise food and fibre production per unit of nutrient input and return on investment, attention must be paid to how, when and where fertilisers are applied. It is also important that fertilisers are applied at appropriate rates. Too little, and crop and pasture yields may be sacrificed and produce quality affected. Too much, and the nutrients applied in excess of crop demands may be lost, either to the atmosphere or to waterways. Nutrient enrichment of waterways may stimulate additional weed and algal growth.

To optimise production per unit of nutrient input, it is important that fertilisers are used at appropriate rates and in a responsible manner. To support this, our analytical laboratory (Nutrient Advantage) offers specialist soil, plant and water testing to advisors and farmers. Our [Nutrient Advantage Laboratory Service](#) is NATA accredited, [ASPAC](#) certified and operates in accordance with the international standard ISO/IEC 17025. Testing, together with professional advice from our team of agronomists and our computerised decision-support system, Nutrient Advantage Advice, provides the diagnostic data, best practice information and advice farmers need to choose the right fertilisers and apply them correctly, in order to optimise outcomes from the use of nutrients. Read about how two of our customers reduced their fertiliser use while increasing their yields in 2017 in our case study [ENTEC use means peace of mind, less nitrogen losses and more gain in cane](#).



Our Nutrient Advantage Advice system is audited by Fertilizer Australia every two years to ensure it complies with their fertiliser management best practice recommendations.

Our fertiliser business has run six Agronomy Community Forums over the last two years. Approximately 250 agronomists (plant and soil advisers) attended the forums to update their knowledge, share ideas and consider the truths and myths associated with the use of fertilisers. Guest speakers included leading agronomists, scientists, researchers and fertiliser advisers.



Our fertilisers business also hosted 14 Agronomy in Practice courses throughout 2018 across Eastern Australia, training over 100 agronomists.

The [Agronomy in Practice](#) course focuses on the practical aspects of making credible fertiliser recommendations to farmers, whether they're involved in cropping, pasture, summer crops, sugar cane or horticulture. The course is aimed at training the next generation of agronomists as well as current advisers who want to enhance their skills in soil and plant nutrition. This year's participants include a cross-section of commercial and private agronomists, and government extension agents. [Nutrient Advantage Advice](#) is IPL's Fertcare accredited decision support software system. Fertcare is amongst the leading programs addressing the issue of expanding food production to feed and clothe a growing global community through judicious use of fertiliser, while limiting the potential for off-site nutrient impacts such as eutrophication of waterways. We offer [Agronomy in Practice](#) training, which covers the process for making a fertiliser recommendation from a soil or plant analysis, use of [Nutrient Advantage Advice](#) software and [Fertcare level C](#) accreditation. This confers Fertcare Accredited Agronomist status for successful candidates who are employed by Fertcare accredited businesses. The program has been developed to equip people providing fertiliser services and nutrient advice to farmers with quality assurance to a set of national standards. This year an additional **10** staff received [Fertcare A or B training](#).

Sustainability of Products and Services

Minimising the Impacts of Blasting

◆ Sustainability of Products and Services

- > Working with Our Suppliers
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- > Explosives Research and Development
- > Best Practice in Fertiliser Use
- > **Minimising the Impacts of Blasting**
- > Customer Health and Safety
- > Customer Support & Engagement

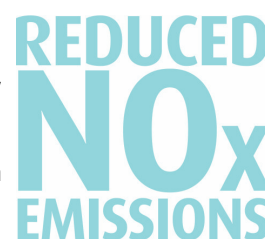
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Dyno Nobel’s ethos is to work in partnership with our customers, earning us the enviable reputation of being a trusted global partner. We listen to our customers’ needs and work with them to tailor an approach in delivering ground breaking solutions.



The use of ammonium nitrate based bulk explosives during blasting activities is well known and widely used throughout the world today. A known risk associated with these products is the generation of excessive nitrogen oxides (NOx). While a number of factors have been identified that can contribute to excessive NOx generation, these contributing factors can change from site to site and blast to blast. As NOx emissions can have significant environmental, health, safety and community impacts, we have been a leader in researching and developing new and improved products and blasting methods to reduce NOx emissions since 2007. In 2014 we launched [Titan 9000xero](#), a reduced energy bulk explosive which contains a high performance emulsion, Titan 9000, blended with a specialised bulk additive formulated for reducing NOx fume. During 2018 we continued to work on the development of a high energy form of the product with large scale field trials in 2018. Titan 9000xero has been tested in Eastern Australian mines in soft, wet tertiary material which is frequently associated with excessive NOx generation during blasting.



The results continue to impress with no NOx emissions recorded during trials. Read our Case Study [Controlling Fume Generation with TITAN® 9000xero®](#). The practical innovation of Titan 9000xero is not only reducing NOx fumes, but also making our communities and environments safer. The flexibility to deliver Titan 9000xero in changing ground conditions is critical. This product can be delivered into dry or dewatered blast holes using an auger, or pumped into the bottom of wet blast holes. Titan 9000xero is a water resistant, flexible solution for reducing the risk of excessive NOx generation, solving a challenge many of our clients are facing.

Ground vibration and noise are also impacts that our customers are seeking to reduce, both for the community and for health and safety reasons. We are responding by training our customers in the use of electronic initiation system technology. This technology allows the more accurate detonation of a single blast hole, which in turn allows the use of a computer model to reduce the blast-induced shock waves that are transmitted through the ground. The detonations of each blast hole can be programmed to introduce interference between the shock waves, thus reducing the vibration that is felt. Read our Case Study [‘Making Way for Increased Production of Hydroelectric Power in Southern Vermont’](#) as one example of the application of this technology.



During 2018, we continued to grow the use of [Differential Energy](#) (DeltaE) to help our customers reduce energy use, blast fumes and nitrate leaching to the environment while providing other safety and production benefits. [DeltaE](#) has been in operation across the US over the last three years and is well established in quarry and construction and hard rock mining where customers value its safety, environmental, and efficiency benefits. This technology was introduced to our Asia Pacific customers during 2018 with trials completed in gold, iron ore and coal applications. A proprietary explosives method which allows blasters to accurately vary the density of chemically gassed emulsion as it is being loaded into the blast hole, it allows the operator to load multiple densities of gassed emulsion into the same hole in order to match the unique geological characteristics present in the ground. Because the explosives energy is precisely targeted to match the rock properties, the amount of energy loaded into the blast hole will match what’s needed for an optimal blast. This reduces energy use, the associated GHG and vertical movement at the surface, resulting in less air overpressure and noise from the blast event. It also improves air quality, mine productivity, rock fragmentation and dig-ability. Read our [Differential Energy Case Studies](#).



The use of *DeltaE* continues to result in reduced NOx and GHG emissions, reduced energy use, less noise and ground vibration and increased productivity while reducing overall costs for our customers.

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Case Study: Differential Energy Leads to Continuous Improvements

A surface molybdenum mine in the United States found that by switching to Differential Energy (DeltaE) with TITAN® 1000ΔE, they were able to improve safety, air quality, productivity, fragmentation, and dig-ability. This technology enabled the mine to redistribute the explosive energy in the borehole, putting energy where it was needed by varying the detonation pressure, while using a single truck to load both wet and dry holes. Up to this point, fragmentation, oversize, and hard toes had all been occasional issues for our customer. In addition, some blast events had produced NOx, limiting the size of their blast events.

We worked with our customer to organise a formal three month trial of our Differential Energy technology. The primary goals established for the trial were to:

- Improve safety with consistent product performance;
- Improve air quality by reducing NOx after blast fumes; and
- Improve productivity of the loading process, i.e. faster turnaround times of bulk truck;
- Improve fragmentation and dig-ability; and
- Lower the overall costs of operating mine and mill.



TITAN 1000ΔE emulsion, together with the Dyno Nobel ΔE bulk truck technology, allows blasters to accurately vary the density and viscosity of chemically gassed emulsion as it is loaded into a borehole. This technology enables multiple densities of gassed emulsion to be loaded into the same hole. This particular surface mine blasts in a variety of geologies. As a result, the blast crew pushed TITAN 1000ΔE to density extremes in order to extract the greatest value from the technology and the trial was extended to six months, over which time there were 109 blasts.

Safety

Prior to the trial, the mine had reported incidents of undetonated blasting agent in their muck piles. TITAN 1000ΔE proved to be a reliable and resilient product that provided dependable results. No undetonated blasting agent was found in the muck piles during the trial.

Air Quality

Due to the excellent water resistance of TITAN 1000ΔE, the number and severity of NOx incidents was significantly reduced. This has allowed the mine to consider revising their air quality permit to allow for larger blast events. Water resistance also limits the dissolution and run off of nitrates.

Productivity

The success and versatility of the Titan ΔE has allowed the mine to go from two bulk trucks to a single truck that can load both wet and dry holes. The Titan ΔE truck not only has a faster turn-around time than the blend truck, but it also has a larger capacity and can load more holes per cycle.

Fragmentation & Dig Ability

Oversize and floor grade problems were noticeably reduced during the trial period. There were no physical measurements of fragmentation and dig ability during the trial, but shovel operators and drill and blast management observed a significant improvement in dig times.

Sustainability of Products and Services

Customer Health and Safety

◆ Sustainability of Products and Services

- > Working with Our Suppliers
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- > Customer Support & Engagement

Our Australian fertiliser products comply with Fertilizer Australia Codes of Practice, including the National Code of Practice for Fertilizer Description and Labelling.

This Code of Practice aims to achieve uniform description and labelling of fertilisers across Australia. The label provides advice on the product’s nutrient content, and the maximum concentration of impurities that may impact on soil concentrations of the element, plant growth, the health of grazing animals, food safety, and the marketability of farm produce. Safety Data Sheets (SDS), which comply with the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) and meet the requirements of the Australian Dangerous Goods Code and Safe Work Australia criteria, are available for all range products. The SDS include advice on the safe use, storage and handling of the product, and its disposal. Labels are attached to the package, or the Delivery Docket for bulk deliveries. Label information and SDS can also be accessed on the Incitec Pivot Fertilisers website, along with other technical information, including advice on Farm Safety when handling Bulk Bags and storing fertiliser in silos, information on product density and sizing, and the company’s [Quality Policy](#), which is included for use in our farming customers’ Quality Assurance programs.

We provide support to our explosives customers to assist them in choosing the right product and blast plan to minimise environmental impacts.

In addition to providing information about the technical aspects of the use of our explosives products, our technical support teams and our Dyno Consult business provide documentation and advice to our customers about:

- Product content, particularly with regard to substances that might produce an environmental or social impact.
- Safe use, storage and handling of the product.
- Disposal of the product as required by applicable law.

This advice is supplied on our websites, on the product label, in the Safety Data Sheet (SDS) or directly to the customer via training sessions. Our Australian labelling complies with the requirements of the SafeWork Australia Code of Practice for Labelling of Workplace Hazardous Chemicals and our Australian SDS complies with the requirements of SafeWork Australia. Our North American labelling meets the requirements of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) and our North American SDS comply with the Mine Safety and Health Administration (MSHA) for products destined for the mining industry.

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Assessments for new explosives products

New or modified explosives products are typically developed by our research and development team in conjunction with specific customers. As such, the life cycle stages in which health and safety impacts of those products are assessed are dependent upon the customer’s requirements. For explosives products, typically this would be focused on the impact of product use, with the assessment included in trials. Dyno Nobel’s product development protocol requires all products to be blasted at our R&D test sites prior to being fired in the ground. Minimum booster testing and Velocity of Detonation (VoD) measurement provide important information on the performance of the explosive product and blast chamber testing is also conducted at our R&D test facility in the US to verify the gas components generated where required.

Site and distribution security

Many of the explosive and ammonium nitrate products we manufacture, and some of the fertilisers we manufacture and distribute, are classified as security-sensitive and/or dangerous goods and as such, their storage, distribution and sale is regulated by Federal, State and sometimes local governments in North America, Europe, Asia Pacific and Australia. We meet our regulatory compliance and licensing obligations surrounding those products, with internal procedures and training in place for our employees. We keep abreast of regulatory developments in this area and are committed to working with government and key stakeholders to ensure ongoing security. Last year our Dyno Nobel business in North America worked closely with the Institute of Makers of Explosives (IME) on the [Safety and Security Guidelines for Ammonium Nitrate](#), promoting best industry practices for minimising security and safety risk. Our Dyno Nobel business in Asia Pacific is a founding member of the Australian Explosives Industry and Safety Group (AEISG), which is an associate member of the IME. The Group produces Codes of Practice that promote best industry practices regarding safety and security, and has a seat as an NGO at the Committee of Experts on the Transport of Dangerous Goods of the United Nations Economic and Social Council (ECOSOC). Our sites are also managed under our own strict health, safety and environmental management system.

Sustainability of Products and Services

Customer Support and Engagement

◆ Sustainability of Products and Services

- > Working with Our Suppliers
- > Our Raw Materials
- > Product Quality
- > Fertiliser Research and Development
- > Explosives Research and Development
- > Best Practice in Fertiliser Use
- > Minimising the Impacts of Blasting
- > Customer Health and Safety
- > Customer Support & Engagement

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IPL fosters strong ongoing relationships with customers through collaborative research and product development, the promotion of best practice use of our products to reduce environmental impacts and increase safety, and through a range of customer support and education technology applications.

IPL conducts ongoing research in the development and testing of our fertiliser and explosives products at customer sites, often in response to specific issues that our customers are facing. Read about our work in 2018 under [Fertiliser Research and Development](#) and [Explosives Research and Development](#). In 2016 we implemented the customer survey software 'Net Promoter Score' (NPS) across the entire fertiliser customer base to monitor customer sentiment and to engage our customers on how we can serve them better. Through NPS, we run a monthly 'voice of customer' survey and we examine quarterly 'touchpoint' reports assessed through 'Fertshed', our online customer transactional portal (see below) which also tracks aspects of customer sentiment. To track our progress, we conduct a weekly customer council that assesses and sets actions regarding customer feedback. NPS will be introduced to our explosives customers in 2019.

Fertshed is our interactive online customer software portal. Since 2014 Fertshed has delivered greater efficiency, transparency and enablement for our customers, agents and dealers.

Along with 24 hour ordering capability, Fertshed allows the management of contacts and orders from start to finish, including the ordering of blends from bulk purchases, download of at-the-market prices, confirming availability of stock at the time of order and other benefits.



Our Fertiliser business engages with representatives of the agricultural industry online. We operate an online community for agronomic advisors which focuses on providing resources and support, particularly for those in remote locations.

The online [Agronomy Community](#) is a specialist nutrition website, bringing together Australia's leading agronomists. It is a comprehensive resource for plant nutrition agronomy and a community where members are invited to participate, interact and network with their peers. The site includes a wealth of plant nutrition information including trials data and reports, videos of fertiliser trials and photo galleries, industry journals, advice and articles. [Agronomic Insights](#) provides online articles on cotton and summer crops, winter crops, pasture, sugar, horticulture and plant and soil testing. Established in 2010, the Agronomy Community online forum now has more than 800 members around Australia who share the common goal of advancing the science of plant nutrition.

In addition, our analytical plant and soil laboratory, Nutrient Advantage, offers specialist soil, plant and water testing to advisors and farmers. Our team of agronomists provide specialist advice supported by our Nutrient Advantage Advice software.

An update to our Nutrient Advantage software, NA Pro, will be rolled out to our fertiliser customers in 2019. This will promote the uptake of the LabSTREAM mobile sampling application, which was test marketed with some customers in 2018. The LabSTREAM app allows 'on the go' logging for testing of soil and plant samples, with simultaneous geolocation. We also host Agronomy Community Forums and Agronomy in Practice courses. Read about these under [Best Practise in Fertiliser Use](#).



Case Study: IPF awarded the CRT National Award for Supplier Partner of the Year – Seed and Fertiliser

Combined Rural Traders (CRT) are an independent group of rural retail merchants and have been supplied by IPF for many years. With over 300 outlets and 240 agronomists, CRT is the largest rural retailing group in Australia. In February 2018, IPF was awarded the National Award for Supplier Partner of the Year in the Seed and Fertiliser category at the CRT National Awards, held at the Perth Convention Centre. Our Fertiliser business received additional nominations in the categories of Logistics and Distribution and Product Innovation.

“It was an absolute honour for the Incitec Pivot Fertilisers business to be recognised at such a high level by the CRT Group,” said Justin Turvey, General Manager, IPF Northern Region. “This award is recognition for the many people across our business who are dedicated to ongoing customer focus and who deliver the best possible experience to our customers.”

“We recognise this as a credit to every individual in our business working together to achieve our business outcomes.”

Left to Right: Ryan Berndt (CRT Bulk Fertiliser Manager), Ian Laube (IPF Regional Business Manager), Noel Matthews (IPF Regional Business Manager), Rhiannon Modica (IPF General Manager – South), Justin Turvey (IPF General Manager – North), Rob Alexander (IPF Regional Business Manager), Chris Farlow (IPF Regional Business Manager) and Sam Hunt (CRT Specialty Fertiliser Manager).



Through the Dyno Nobel brand, IPL has a concentrated customer base of large corporate customers.

Regular meetings are held with all key customers at least quarterly and each customer has a dedicated business relationship manager, enabling regular communications. A high proportion of our research and development work is in response to requests from customers to tailor solutions to their specific on-site needs: see our [Research & Development](#) and [Differential Energy](#) case studies.

In North America, our Dyno Nobel business operates a Quarry Academy training centre for stone quarry operators.



**QUARRY
ACADEMY**

Improving Processes. Instilling Expertise.

In 2018 the curriculum included drilling, loading, crushing and screening training, as well as lectures from industry experts in subjects such as quarry planning and metrics, chemical crushing, fragmentation management, vibration control, load and haul cost improvement, safety behaviours, optimizing plant performance, screening and sizing, analytics and business intelligence and the principles of mechanical crushing. The sustainability benefits for our customer include learnings regarding lower costs, reduced energy use, improved safety and reduced environmental and social impacts e.g. lower dust production. This year a total of 128 employees from 47 companies across the aggregate industry attended the three-day event at San Antonio, Texas.

In 2017, Dyno Nobel released a new and improved version of its Explosives Engineers' Mobile App. The app equips users with the full range of blasting tools, with worldwide accessibility - even in remote locations.

Our [Explosives Engineers' Mobile Phone App](#) shares information with our customers about the most sustainable ways to utilise our products. The app equips current and potential customers with a full range of blasting tools that help optimise the blasting experience in the field. It also provides an electronic method to research product information, reducing the amount of documentation printed in the field.

The Explosives Engineers' Mobile App includes seven critical blasting calculators, access to our technical library and a comprehensive set of Dyno Nobel product information, including product specs and application uses. Users can also receive real-time updates that feature Dyno Nobel news, recent innovations and new videos. Moreover, worldwide remote accessibility to the app caters to the fact that remote mine sites often experience difficulties connecting to mobile services.



Explosives Engineer's Guide
on Your iPhone, iPad or Android Device!

- 7 Interactive Blasting Calculators
- Dyno Nobel Product Specifications
- Accessible Anytime, Anywhere
- Real Time Dyno Nobel News
- GPS Enabled

www.dynonobel.com/explosives-engineers-guide-mobile-app/

FREE DOWNLOAD!



Managing Our Workforce

◆ Material issue

◆ Managing Our Workforce

- > Attracting and Developing Talent
- > Engaging Our Employees
- > Learning and Development
- > Diversity
- > Australian Indigenous Employment

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What is BEx?

IPL endeavours to be a business where Company Values guide behaviours in the workplace, and where employees have the flexibility and tools to learn what they need to execute business objectives within a multi-geography, multi-cultural organisation. Attracting, developing and retaining a highly talented, inclusive and diverse workforce is key to living our Value of Respect, Recognise & Reward and vital to achieving our business objectives. Our Human Capital strategy contributes to the achievement of our cultural, social and business goals.

During 2018, IPL focused on engaging our employees, developing leaders to build professional skills and continuing to build a diverse and inclusive workforce representative of our communities.

Key highlights during 2018 included:

- A new executive management structure, announced in January 2018, and restructuring of business to elevate and provide stronger focus on our customers and the development of technology development and product innovation, and providing employees across IPL with new opportunities for career development;
- A global 'One IPL' Leadership Forum held in Melbourne, Australia with the aim of bringing together leaders from across our global business to align around our Company Purpose, Company Values and our six strategic Values Drivers: Zero Harm, Talented and Engaged People, Customer Focus, Leading Technology Solutions, Manufacturing Excellence and Profitable Growth;
- A company-wide employee survey using the Gallup Q12, an independent and globally recognised approach to employee engagement. This resulted in over 700 individual reports for managers and the development of three-year employee engagement plans at different business levels;
- Continued training to further facilitate leadership coaching capability;
- Expanding the diversity of IPL's workforce. In Australia, 33 percent of IPL's external hires during 2018 were female, increasing female participation across IPL's Australian workforce to 22 percent;
- Exceeding a two percent target of Indigenous employees across IPL's Australian businesses, reaching 2.6 percent in 2018;
- The completion and review of our first three-year Australian Indigenous Reconciliation Action Plan (RAP), with a new plan to be developed in 2019;
- Foundational software system updates across Australia to facilitate the completion of the global One IPL Learning Management System in early 2019; and
- Continuation of the My Potential development program, along with a co-program for the managers of participants, for our high potential female talent was run across the Americas in 2018 and will be re-introduced to Australia in 2019.

Key Challenges & Opportunities

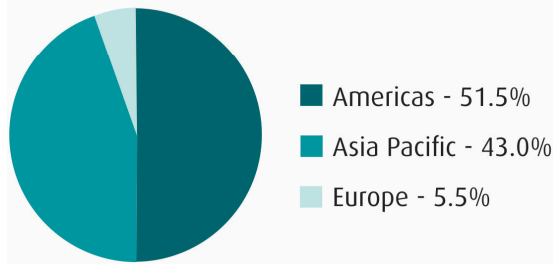
- Ensuring that we continuously have skilled, diverse and ready talent to meet current and future demands in changing markets;
- Being an inclusive and accessible organisation with a range of strategies to attract and retain a diverse workforce;
- Continuing to build the pipeline of talent throughout the organisation, particularly for critical roles, to ensure business continuity; and
- Engaging our geographically and culturally diverse workforce on a site-by-site basis.

Strategic Priorities

- Increasing our diversity profile at all levels of IPL;
- Further development of our human resources strategy to complement our existing talent, development, performance cycle and recruitment processes; and
- Building a more engaging workplace experience through our strategic three-year employee engagement plan

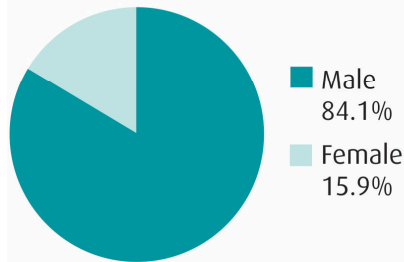
Our workforce as at 30th September 2018

Total workforce by geographic location (excluding contractors)

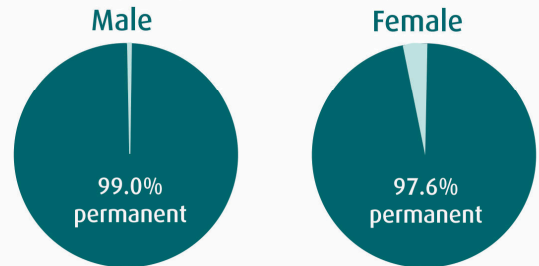


4766
EMPLOYEES
(excluding contractors)
GROUP-WIDE

Total workforce by gender (excluding contractors)



Total workforce by gender and employment type (permanent v temporary, excluding contractors)




Managing our Workforce

Attracting and Developing Talent

◆ Managing our Workforce

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What is BEx?

We recognise the importance of having a talented and committed workforce at all levels. Succession planning and building talent pipelines are key strategies to ensuring long term business success.

Succession planning is conducted annually, identifying short, medium and long term candidates for key roles. The identification process uses both a set of criteria and data from our performance management process. Action plans are implemented, with the aim of developing the capabilities required for future advancement.

During 2018 in Australia we engaged specialist communications company, Lightbox Communications, to assist us in attracting the talent we require to increase our global gender diversity and achieve better business outcomes.

Qualitative and quantitative research was conducted in Australia to assist us to develop communications that are meaningful, relevant, engaging and factual to resonate with diverse high potential talent.

Targeted training programs continue to nurture the next generation of talent, including our Australian

Manufacturing Graduate Program and our [Dyno Nobel Vacation Program](#), which actively supported Austmine’s ‘Women In STEM: METS Career Pathway Program’ in 2018.

Working and being mentored at an IPL manufacturing site is the ultimate opportunity to gain exposure to both the mining and manufacturing industries as an engineer. During our two-year program, graduates receive hands-on engineering experience through a combination of site-based rotations and a formal development plan. Graduates focus on their technical, professional and personal development and are supported by an experienced manager for the duration of the program. The learning structure is tailored to their discipline and individual needs. In addition, graduates are mentored by leaders in the company.

The success of the Australian Manufacturing Graduate Program is demonstrated by the employment outcomes: we are pleased to have offered roles within IPL to 100% of the graduates who have completed the program in the last 6 years, with all of the graduates who completed the two-year program in 2018 accepting permanent roles at IPL.

The 2018 program was evaluated through a feedback process involving interviews with our completing graduates and their mentors. As a result of this review, we increased the range of critical on-the-job experiences our graduates are exposed to and changes were made to the graduate and mentor

Rate of new employee hires for the full year (%)	2017	2018
Total:	14.8%	16.3%
Percentage rate of new hires in each age group:		
All employees under 30		32.3%
All employees 30-50		15.8%
All employees 50+		8.8%
Percentage rate of new hires by gender:		
Male	14.8%	
Female	21.9%	
Percentage rate of new hires in each region:		
Americas (incl US, Canada & Chile)		16.3%
Asia Pacific (incl Australia & Indonesia)		16.0%
Europe (Turkey)		11.8%

The data in the table above has been calculated by dividing the number of new hires in each category by the average (2017 and 2018) number of employees in that category.

matching process. Our Australian Manufacturing Graduates for the 2019 intake have been selected and we are pleased to report that 66 percent of the graduates beginning the program in 2019 are female.

Graduates attending Gibson Island's Graduate Assessment Centre are shown below. The Assessment Centre events, held at our major manufacturing sites, are a great opportunity to meet with upcoming engineers who are eager to kick start their careers, and include presentations by former members of the Graduate Program who describe their experiences and the different career pathways IPL offers.



The Australian Manufacturing Graduate program is designed to nurture the next generation of talent by providing a learning platform to develop the technical experts and future leaders of tomorrow whilst preparing them for a career within the sector.

Case Study: IPL's Dyno Nobel Vacation Program actively supports Austmine's 'Women In STEM: METS Career Pathway Program'



New challenges demand new ideas, and as an organisation we continue to look for the next generation of leaders and innovators of our industry. We seek people who will think creatively to deliver ideas and answers that are essential to our customers in the blasting services industry.

This is why the Dyno Nobel Vacation Program exists. Providing a great opportunity to tap into the minds of the next generation of visionaries, it also provides an opportunity for them to apply their minds to the challenges in the STEM field.

Austmine is the leading industry body in Australia for the mining equipment, technology & services (METS) sector and is actively supporting the promotion of women in science, technology, engineering and maths (STEM). IPL is proud to have supported Austmine's 'Women in STEM: METS Career Pathway Program', designed to improve gender diversity across the sector, by welcoming three female STEM students to our Dyno Nobel Metals Team as part the Dyno Nobel Vacation Program.

In 2018, the program of work chosen by the Dyno Nobel Metals underground team for the Vacation Students involved applying their skills to a fresh concept for the next generation customer operated emulsion pumping system - 'DynoMiner'. After experiencing the underground mining environment at Jundee and consulting with our customers on their needs, the students were set the task of reviewing the existing designs and engaging industry specialists to produce an underground mining industry leading emulsion delivery system. Kim Le, Mechanical Engineering (Curtin University, WA), Ye Mon Thant, Engineering Science (University of WA) and Arnadya Pudhiastono, Chemical Engineering (Curtin University, WA), joined us early in the 2018 financial year.

We assess the success of our talent management processes through monitoring the following key metrics:

- Retention of high potential individuals & succession candidates;
- Role moves based on development plans;
- Talent outcomes year-on-year with the shape and spread of the population, and with the goal of year-on-year improvement.

Our performance management framework aims for consistency, fairness, equity and reward for performance.

It is a process for establishing a shared understanding of ‘what’ is to be achieved and ‘how’ it is to be achieved. It is a collaborative process, and requires both manager and employee to participate equally. Online tools provide a consistent process and a central repository for performance management information. Employees are required to set goals for their performance and development each year and have a formal performance review at six monthly intervals. The percentage of employees across the Group who participated in the performance review process increased for the second year in a row, reaching 81 percent in 2018.

The percentages in the table to the right were calculated by dividing the number of employees in each category who received an annual performance review by the total number of employees in that category. The calculation for full time and part time employees has been included for the first time this year.

In order to ensure individual goals and performance are linked to the key objectives and performance of the business, our Short Term Incentive (STI) plan includes safety goals in support of our Zero Harm strategy and explicit links between STI goals and the performance of the business. During 2018, employees were assessed against their individual goals, with consideration of how they incorporated our [Company Values](#) into their everyday work and management, and enhanced IPL’s performance and culture.

% of employees by gender and employee category receiving regular career development & performance reviews:

	2017	2018
Total	59.0%	81.0%
% of males	56.2%	79.3%
% of females	74.0%	90.2%
% of full time employees		81.2%
% of part time employees		67.9%

% of employees by management level who received regular career development & performance reviews

	2017	2018
Board	100.0%	100.0%
Executive	100.0%	100.0%
Management*	100.0%	100.0%
Non-management	72.8%	80.0%
Total	74.0%	81.0%

* Includes senior management and management

More than ever, people want to know how the work they are doing on a daily basis is contributing to the world. At IPL, our purpose is to make people’s lives better by unlocking the world’s natural resources through innovation on the ground. We believe that we can fulfil our purpose through collaboration with the people that are most important to us: our customers, our employees and our shareholders.

We recognise in addition to creating economic value, the social value that we create as a company is also important, particularly when attracting new talent and engaging our employees. To that end, IPL engaged a third party to assist us in the development of Social Return on Investment (SROI) metrics to help us quantify and communicate the value of our social contributions relative to our financial investment in areas such as food production, safety training and employment, and to relate these to the UN Sustainable Development Goals. The metrics have become part of the IPL employee value proposition going forward, as they assist us in communicating to our prospective and current employees how their work at IPL contributes value to the communities in which we operate. See [Social Return on Investment](#) under Community.

Managing Our Workforce

Engaging Our Employees

◆ Material issue

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Along with our customers, employees are IPL’s most influential and important stakeholders.

Research has shown that highly engaged employees perform up to 20% better and are 87% less likely to leave an organisation than employees with low levels of engagement. Engaging our employees is therefore essential in order to meet our customer needs, live our Company Values and achieve our business objectives.

During 2018, all IPL Group employees were given the opportunity to participate in an employee survey which sought feedback on our workplaces and our employees’ everyday experience of working at IPL. Participation by our employees in the survey was very high at over 80 percent.

To conduct the survey, we engaged independent and recognised industry experts Gallup, who have over 80 years of research and experience in understanding what matters most to people in their workplace. The results of the survey were benchmarked against global data and three-year strategic engagement plans with targets were developed for the business at a high-level and for each site.

Two major existing strengths which strongly bond and engage our employees were identified by the survey: Zero Harm and our Company Values.

The survey results indicated that the IPL safety culture of Zero Harm strongly bonded and engaged our people, and that they recognise and identify with our [Company Values](#). Based on other feedback from the survey, plans are in place to improve communication and ensure that all of our people are connected with our Purpose and Strategy Value Drivers. All of IPL’s leaders have identified one to three key actions for improvement and the three-year engagement plans include regular pulse surveys to measure the progress being made. Gallop’s research also suggests that managers play the most significant role in driving employee engagement, determining up to 70 percent of their team’s engagement. For this reason, we continued training throughout 2018 to further facilitate [leadership as coaching](#), and this will remain a key strategy.

We undertake benchmarking of employee turnover rates for the Global Manufacturing and Oil & Gas/Mining/Energy industries, as well as by Executive job level and by total workforce.

Employee voluntary turnover rates for the full year (%)	2017	2018
Total:	8.4%	9.4%

By age group:		
All employees under 30	9.4%	12.1%
All employees 30-50	7.4%	7.8%
All employees 50+	7.4%	8.3%

By gender:		
Male	8.0%	8.9%
Female	10.6%	11.7%

By region:		
Americas (incl US, Canada & Chile)	10.9%	9.9%
Asia Pacific (incl Australia & Indonesia)	7.3%	10.3%
Europe (incl Turkey)	7.9%	10.9%

Percentage of employees covered by collective bargaining agreements	2017	2018
	21.1%	25.4%

Employee involuntary turnover rates for the full year (%)	2017	2018
Total:	5.8%	4.4%

By age group:		
All employees under 30	5.7%	7.3%
All employees 30-50	4.9%	3.3%
All employees 50+	5.6%	4.0%

By gender:		
Male	5.7%	4.5%
Female	6.1%	4.1%

By region:		
Americas (incl US, Canada & Chile)	4.2%	5.1%
Asia Pacific (incl Australia & Indonesia)	8.0%	3.7%
Europe (incl Turkey)	9.1%	10.5%

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What is BEx?

This report is published as an interactive online report. Visit the website to access online features at www.incitecpivot.com.au/sustainability

We use voluntary turnover rates as one indicator of employee engagement and, along with exit interview data, use this information to inform our talent and engagement practices. Turnover rates within the company have been tallied at a Group level, with the exception of our Mexico operations. Due to cyclical factors, statistics from this region have not been included when determining the average turnover rates provided in the table on the previous page. The turnover percentage in each category shown in the table has been calculated by dividing the number of voluntary terminations for each category or region during 2018 by the average total number of employees in that category or region during 2017 and 2018.

Business Excellence (BEx) and Integrated Business Planning (IBP) form IPL’s Business System through which a culture of continuous improvement has been built. BEx and IBP processes engage our employees by involving them directly in the design of streamlined processes and activities, and in the implementation and sharing of ‘best practice’ in their own work areas.

Employees at all levels of our business are encouraged to think laterally, to share their experiences and ideas, and to participate in implementing improvements, resulting in outcomes which are highly valued by both the business and our employees.

Case Study: BEx processes in IPL Global Manufacturing

- 1**

BEX PROCESSES ARE PART OF IPL’S DAILY MANAGEMENT SYSTEMS

BEX methodologies are embedded in the rituals and routines that govern IPL operations, continuous improvement and problem solving, engaging our people from the ‘shop-floor’ to the executive.
- 2**

ONGOING COMMUNICATION IS FACILITATED

Visual management tools are used to track performance and bolster team morale. Materials, including team based Case Studies, performance improvements and team suggestions and projects, are displayed.
- 3**

COACHING AND TRAINING IS PROVIDED

We continue to build coaching capability in our line leaders through the Leader as Coach program, who then coach our people to problem solve and continuously improve in their own work areas.
- 4**

COLLABORATION AND PARTICIPATION IS ENCOURAGED

Specific tasks are assigned to teams, along with deadlines to implement solutions and coaching to develop our people, laying the foundation for a truly participative and collaborative environment.
- 5**

ACHIEVEMENT AND PROGRESS ARE RECOGNISED & REWARDED

Our Value of Recognise, Respect and Reward is also actively promoted in all work areas and is a strong part of our culture.
- 6**

LEADERSHIP ACTIVELY MODELS BEX CULTURE

Leaders from all levels go on regular site Gemba Walks, allowing them to observe work & safety practises and guide teams through problem solving processes, which helps our employees develop greater autonomy.

Adapted from ‘6 steps for keeping your teams engaged on the CI journey’ at <https://traccsolution.com/resources/keeping-teams-engaged/>

Managing Our Workforce

Learning and Development

◆ Material issue

◆ Managing Our Workforce

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We aim to develop leaders with the flexible skills and relevant competencies needed to rapidly adapt to changing financial and market situations and to provide our leaders with the skills and experience needed to run a large, multi-geography, multi-cultural organisation.

This year we continued to focus on:

- Leader as Coach: continuing to develop leaders with the appropriate skills and competencies to deliver continuous improvement.
- Fostering an environment where, through continuous learning, employees have the flexibility, tools and freedom to realise our business objectives.
- Delivery of our current suite of learning solutions, aimed at building capability across our entire Value Chain, including technical LEAN capabilities, communication skills, problem solving, leadership and coaching.

Fostering learning culture is critical to our ongoing success. The IPL Learning Business System (LBS) embodies how we operationalise Business Excellence in a learning and capability building context.

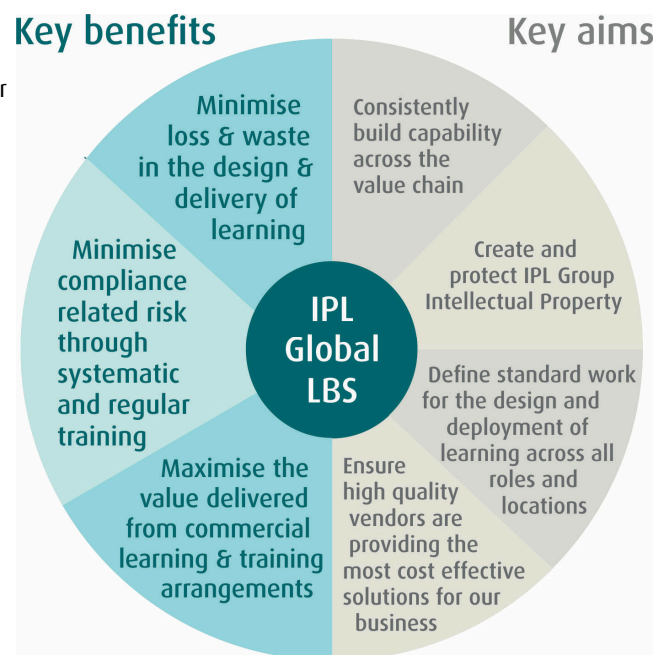
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What is BEx?

Our Learning Business System is a Group wide framework of standards, processes and tools for learning. Completed during 2017, the system is a direct enabler of our Human Capital strategies and a review was conducted during 2018 to ensure its effectiveness. The key benefits and aims of the LBS are shown in the graphic to the right.

The IPL Learning Business System guiding principles outline a clear role for leaders as coach. Coaching is integral to team based problem solving practices to bring continuous improvement across many areas of our global business. This remained a strong focus in 2018: see [Case Study: BEx processes in Global Manufacturing](#).



The results have included the elimination of waste streams, improved safety, more efficient use of raw materials and monetary savings as our employees 'Challenge and Improve the Status Quo', 'Care for the Community and our Environment' and 'Treat the Business as our own'. Engaging our employees to live our Company Values through leadership, coaching and focused improvement projects often results in meeting the 'triple bottom line' of sustainability by providing economic, social and environmental benefits and outcomes from a single project.

Coaching is a powerful learning experience for both the coach and coachee, as both participants gain a greater understanding and knowledge of themselves and their potential. Leadership as coaching also maximises the effectiveness of training events, because it assists in creating an environment of continuous learning.



To complement our training of leaders to coach, we piloted the Continuous Performance Conversations tool in 2018. This tool enables improved planning and tracking of performance and development conversations. As part of the three-year employee engagement plan, our target is to extend the use of this tool to more than 700 leaders in the organisation. The effectiveness of our Leader As Coach training will be tracked through the regular pulse surveys planned as part of our [three-year engagement plans](#).

During 2018 we completed foundational software system updates across Australia to facilitate the extension of the global One IPL Learning Management System (LMS) beyond the Americas to Australia in 2019. Supported by the standards, methodologies and tools which are part of our underlying Learning Business System, the LMS provides a platform for standardised processes to deliver, record, and report learning that is aimed at creating and sustaining competence in our people.

The updated LMS is integrated with our core systems and, once extended to Australia, will deliver a single global platform for training including safety and regulatory compliance training for all employees and contractors. It will be accessible 24/7 and will provide a new level of accountability for both web and instructor based compliance training. Initially offering over 400 compliance courses, an additional 64 courses were added in 2017, and 621 courses were available in 2018. The platform facilitates the ongoing development of our employees and provides consistency in training as well as rapid deployment of new training and Zero Harm initiatives, including process improvements and Process Safety Management.

The system allows us to:

- deliver critical compliance and safety web-based training;
- align regulatory training to specific job codes and functions, ensuring our people get the right training in the right time frames;
- provide a single source of training records and content for our instructors;
- track training completions against requirements to provide visibility of competence of employees and contractors;
- run reports of training completions on demand;
- run reports of present and future training deficits;
- allow our managers to schedule employees on training courses; and
- provide our employees and contractors with a “one stop shop” where they are able to view, track and complete all compliance training assigned to them.

The global LMS also allows us to assess the effectiveness of our training processes through the generation of reports including:

- the percentage of employees compliant;
- the percentage of leaders with compliant employee teams;
- the highest and lowest scoring teams, plants and sites; and
- the percentage of employees due for recertification in the following 30 days.

Our focus for 2019 includes:

- Completion of the global One IPL LMS through its extension to Australian employees; and
- The rollout of mobile apps within Australia to enable remote access to the LMS.

Managing Our Workforce

Diversity

◆ Material issue

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What is BEx?

At IPL, we are committed to being an inclusive and accessible organisation through the development of a culture that embraces diversity. We believe that making opportunities for the contributions of a diverse workforce which reflects our communities has benefits for our employees, our communities and our business, and can help us to grow, remain relevant and be competitive.

Our employees range in age and gender and come from many different cultures, traditions and lifestyles. It is the diversity of our people that makes our company a great place to work. IPL benefits from this variety of perspectives and ideas, experience and capabilities, all of which lead to a greater opportunity for innovation and a better workplace. Diversity at IPL is led by the Executive Team, is championed by our MD & CEO, and is supported by the Company's Human Resources function. The Board maintains oversight and responsibility for the Diversity Policy and the development and implementation by management of the Diversity strategy. The Diversity strategy includes three principles which were established to provide guidance for the Company's Diversity strategy and its relevant policies, programs and initiatives:

- Respecting our differences;
- Shaping our future organisation; and
- Building a flexible organisation.

Respecting our differences is critical to ensuring that our work places will be free of discrimination and harassment and inclusive of all people, regardless of differences. Shaping our future organisation means IPL is continually developing a more diverse workforce, creating business sustainability and strength. We also offer workplace flexibility by providing opportunities for working arrangements that accommodate the needs of the Company while balancing the diverse needs of its people at different stages in their careers and lives.

In order to progress our Diversity Strategy, this year the following initiatives were undertaken:

- Our Workplace Gender Equality Agency Report was endorsed as fully compliant by the WGEA, as in previous years. The purpose of the report is to provide an analysis of gender pay equity for IPL's Australian operations, allowing us to implement strategies to address any identified issues. For more detail, see page 3 of our [2018 Corporate Governance Statement](#);
- We used key talent management metrics and our Talent and Succession Planning process to improve gender diversity within our Management roles by almost 7 percent;
- Our 2018 intake of IPL Australian Manufacturing Graduates were 66 percent female;
- We continued to promote the IPL Family and Domestic Violence policy to provide support for our employees. This has been cascaded through the business from leaders and was promoted during [White Ribbon Day](#) in 2018;
- We continued to recruit through [WORK180](#). WORK180 (previously Diversity City Careers) is the only online job platform where employer's policies and procedures are pre-screened to ensure they support women's careers;

Organisational Tier	employees %	
Gender diversity at IPL		
Male: All	84.2	84.1
Female: All	15.8	15.9
Male: Board level	75.0	57.1
Female: Board level	25.0	42.9
Male: Executive Team level ¹	66.7	78.0
Female: Executive Team level ¹	33.3	22.0
Male: Senior management level ²	81.2	83.2
Female: Senior management level ²	18.8	16.8
Male: Management level ³	88.7	81.8
Female: Management level ³	11.3	18.2
Male: All other levels	84.2	84.1
Female: All other levels	15.8	15.9

Age diversity at IPL*	2017	2018
All employees under 30	14.2	13.4
All employees 30-50	54.3	55.0
All employees 50+	31.4	31.6

* 8 employees did not disclose their age

Salary Equity at IPL	2017	2018
Executive level (male:female)	1:0.85	1:1.03
Management level (male:female)	1:0.96	1:0.97
All other levels (male:female)	1:0.99	1:1

1. The ET includes the Managing Director and CEO.
2. Defined as roles which are 1-2 levels below the ET.
3. Defined as roles which are 3-4 levels below the ET.

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- We continued to facilitate Indigenous cultural awareness for our employees through direct engagement with traditional owners, [cultural surveys](#) and participation in events such as [Reconciliation Week](#) and [NAIDOC Week](#);
- We continued our involvement with organisations such as the National Association of Women in Operations (NAWO), the Australian Women in Resources Alliance (AWRA), Diversity Council Australia (DCA) and Women in Mining and Resources WA and QLD, which provide IPL with support and resources to attract, retain and develop female talent specific to our industry;
- We supported Austmine's '[Women in STEM: METS Career Pathway Program](#)' through the Dyno Nobel Vacation Program; and
- Our My Potential Alumni in Australia encouraged change through taking [STEM into local schools during Science Week](#).

IPL's My Potential program has been specifically developed to support female employees to progress and thrive in their careers.

Using our Talent Metrics, we track the progress of female employees who participate in the program and have seen an increase in both promotions and role enhancement in comparison to non-participants. Considering the positive results and overwhelmingly positive feedback from the program participants, this program continued throughout 2018 in the Americas and will be reintroduced in Australia in 2019 for women across the middle and senior management levels within the Company. We recognise that female employees can face actual and perceived challenges to career development and progression which are not immediately apparent to their leaders. Our successful co-program helps leaders to gain insights and coaching skills to assist their female team members in overcoming some of the challenges they face, and aims to build our leaders' capability to support female employees within their teams and across IPL.

In February 2018, IPL hosted a National Association of Women in Operations (NAWO) event in Brisbane. The theme of the event was 'Goals, Obstacles and Transitions - Having what it takes'.

The guest speaker was Jade Edmestone, an accomplished athlete who has represented Australia in swimming at the Commonwealth Games and World Championships. Jade shared her experiences with success, but also her struggles with mental health, which were a challenge for her as she transitioned from her role as a professional athlete to her next steps.

"Jade's insights highlighted that failures can lead to success" said Davina Shearer, IPL's Diversity and Inclusion Adviser, who organised the event. "Being mentally healthy is essential to navigate through obstacles and difficult transitions, both in our careers and our lives generally."

Read about IPL's promotion of mental health initiatives to our employees and contractors under [Health and Wellbeing](#).

Dyno Nobel Moranbah proudly sponsored the 2018 Women in Mining and Resources Queensland event 'Discovering Your Superpower' held at Moranbah.

The speaker was Jo-Anne Dudley, winner of the 2018 WIMARQ exceptional woman of the year award. During her career, Jo has worked in underground mines across Australia, South Africa and in the USA, and currently works a reverse FIFO arrangement from Brisbane managing Strategic Mine & Resource Planning for the Oyu Toigoi Mine in Mongolia. Jo-Anne spoke about the steps she followed on her path to finding her superpower, with tips for our female employees on how to find theirs.

IF I HAD A SUPERPOWER

Join Jo-Anne Dudley in a discussion on her path to finding her superpower and how to find yours.

DISCOVER WHAT IS YOUR SUPERPOWER

Join us Thursday 19 July from 6.00pm at Moranbah Workers Club, Mills Ave

(Wednesday 18 July at the Dysart Bowls Club)

Get your ticket from Eventbrite

DYNO Dyno Nobel Groundbreaking Performance

Proudly sponsored by **Dyno Nobel**

wimarq Women in Mining & Resources Queensland

JO-ANNE DUDLEY WIMARQ 2018 EXCEPTIONAL WOMAN OF THE YEAR

Jo-Anne graduated from UNSW as a mining engineer in 1994. During her career she has worked in underground mines in QLD, NSW, Tasmania and the NT as well as in South Africa and the USA. Jo currently works a "reverse FIFO" arrangement from Brisbane managing Strategic Mine & Resource Planning for the Oyu Toigoi Mine in Mongolia and loves working with a diverse group of people stewarding planning and compliance for this ~100 year life asset. Outside of work, Jo and her husband are celebrating 20 years of marriage this year, and they are parenting two teenage daughters, one of whom has just started her own journey in engineering. Jo was recognised for her work in mining industry recently at WIMARQ International Women's Day awards where she won Queensland Exceptional Woman of the year.

In 2018, Dyno Nobel Asia Pacific employees across Indonesia celebrated diversity at their sites as part of Kartini Day celebrations.

The day celebrates Kartini, an Indonesian heroine, for her work in supporting education and the rights of women and girls. Our employees met to participate in the day's celebrations and to continue the conversation on diversity.



Managing Our Workforce

Australian Indigenous Employment

◆ Material issue

◆ Managing Our Workforce

- > Attracting and Developing Talent
- > Engaging Our Employees
- > Learning and Development
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What is BEx?

In line with our commitment to Value People – Respect, Recognise & Reward, IPL’s Indigenous Employment Program aims at increasing the number of opportunities for Indigenous Australians by providing access to employment, education and training as well as focusing on developing cultural understanding and respect within its workforce.

The program is also a key component of IPL’s approach to Diversity and is continuing to help our business to develop stronger relationships with the community. This year we increased our Indigenous Employment across the Australian businesses to 2.6 percent, which positions the Company well to achieve our target of 3 percent by September 2019. Initiatives undertaken as part of our Indigenous Employment Strategy are described below.

The IPL Australian Indigenous Relations Policy

The IPL Australian Indigenous Relations Policy was developed in 2013 to provide guidance to the organisation as to how to strategically increase engagement opportunities with Indigenous Communities so as to benefit Indigenous Australians as well as IPL. The Policy provides a valuable opportunity for IPL to work in genuine partnership with Indigenous Australians and live the IPL Values of “Care for the Community and our Environment” and “Challenge and Improve the Status Quo”.

IPL is taking a best practice approach to improving Indigenous engagement outcomes. Our approach is based on:

- research into organisations who have been working successfully in the area of Indigenous engagement for many years;
- an examination of our organisation’s current cultural capability;
- working with Indigenous Communities to clarify expectations of IPL; and
- recognition that reconciliation and self-determination are integral to improving engagement outcomes.

As a product of these learnings and to achieve Policy objectives, IPL has identified five organisational policy investment areas and is committed to changing the culture around diversity, policies and practices of IPL where required. These five areas are:

1. Leadership
2. Community Development and Engagement
3. Education and Training
4. Indigenous Employment Program
5. Business Development (including sub-contract opportunities)

Celebrating the success of our first three-year Australian Indigenous Reconciliation Action Plan (RAP)

In 2015 the IPL Board approved our first Reconciliation Action Plan, which was also endorsed by [Reconciliation Australia](#). The RAP was launched in 2016 and provided us with a framework to outline our vision for reconciliation. It was also a public commitment to implementing and measuring practical actions that build respectful relationships and create opportunities for Australian Aboriginal and Torres Strait Islander peoples. The RAP will be reviewed in 2019.

IPL identified five organisational program investment areas and committed to undertaking a significant body of work across these areas, developing the [Australian Indigenous Employment Strategy](#) and the [Australian Indigenous Relations Policy](#). IPL’s Indigenous Recruitment Strategy gave effect to IPL’s long-term sustainable commitment to increasing the participation, retention and advancement of Indigenous people within its workforce. It is different from many other Indigenous employment initiatives in that it is not a dedicated stand-alone Indigenous program. Instead, it comprises systematic changes, designed and implemented to embed leading Indigenous engagement and recruitment practices into IPL’s existing recruitment processes.

During the past three years, IPL has modified its existing Human Resources (HR) and recruitment practices to build the recruitment team's capability to undertake targeted Indigenous recruitment. This has involved a range of policy, procedural and systems changes to incorporate and embed leading Indigenous recruitment practices into the existing IPL HR and recruitment process, including:

- the modification of advertisements, including where these are advertised, to increase the sourcing of quality Indigenous candidates, which has led to a dramatic increase in the number of applications received by Indigenous candidates; and
- implementation of cultural capability training across the IPL workforce to create a more culturally competent organisation and be seen as an employer of choice for Indigenous candidates.

The Strategy has been an overwhelming success, leading to an increase in the number of Indigenous employees across IPL's Australian operations from 1.76 percent in March 2015 to 2.6 percent in 2018. This represents an increase of 47 percent over the period of the RAP.

Since 1 October 2017, these efforts have resulted in Indigenous candidates representing 5.46% of all applications. This high application rate demonstrates we are seen as an employer of choice for Indigenous candidates.

A flow-on effect of this success is the number of Indigenous candidates being shortlisted, many of whom have never been exposed to such a robust recruitment and interview process. This has assisted a large number of Indigenous candidates to further develop their interview techniques and become more familiar with the cognitive, numerical and medical testing associated with the recruitment processes of larger companies.

As an organisation, we continue to be committed to working in partnership with Aboriginal and Torres Strait Islander peoples and communities, other key stakeholders and government agencies to extend the goals set out in our first three-year RAP. We aim to continue to find the most innovative and efficient solutions to our challenges by exploring opportunities within the industry, partnering in other stakeholder initiatives, seeking out opportunities across both the private and public sector.

We are delighted with the success of the 2015-2018 RAP and aim to build upon these successes as we design IPL's new RAP during 2019. The Company will continue to implement strategies to attract Indigenous employees, including continuing our partnership with Career Trackers, a not-for-profit organisation that creates internship opportunities for Indigenous university students.