



**PHOSPHATE RESOURCES**  
LIMITED

# A SOCIAL & ECONOMIC IMPACT ASSESSMENT OF PHOSPHATE MINING ON CHRISTMAS ISLAND



Report presented to Phosphate Resources  
Limited by the University of Western Australia's  
Centre for Social Impact (CSI UWA)



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**IMPACT**



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## ACKNOWLEDGEMENTS

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Within PRL we recognise Stephanie Lai, Human Resource Coordinator, and Amy Aksan, Human Resource Administrator, for their assistance coordinating contact with people on-island.

## PROJECT TEAM

Professor Paul Flatau, Director of the Centre for Social Impact at the University of Western Australia has over 100 publications in the fields of labour economics, the economics of social policy and outcomes measurement. He has made significant contributions to the analysis of social and economic outcomes and social impact and the effectiveness of interventions for a number of social issues including poverty, unemployment, homelessness, and housing. A feature of his work is that he actively engages in policy and industry discussions and believes change cannot be sustained unless we collectively build knowledge around important issues. Paul's role in this study is quality assurance, project guardianship and ensuring that a sound social and economic impact methodology is implemented.

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The Centre for Social Impact UWA has prepared the professional analysis and advice in this report for the exclusive use of Phosphate Resources Limited and for the purposes specified in it. This report has been prepared and is supplied in good faith and reflects the knowledge, expertise and experience of the Research Team involved. The Report takes into account the state of affairs on Christmas Island and evidence base as of December 2018. The report must not be published, quoted or disseminated to any other party without the prior written consent of the CSI UWA. The CSI UWA does not accept any responsibility for any loss occasioned by any person acting or refraining from action as a result of reliance on the report other than Phosphate Resources Limited.

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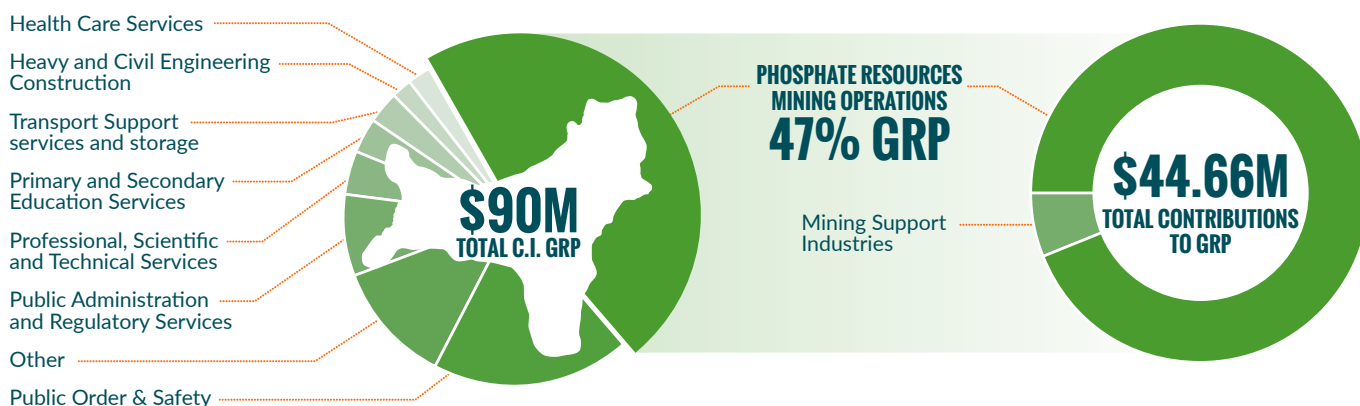


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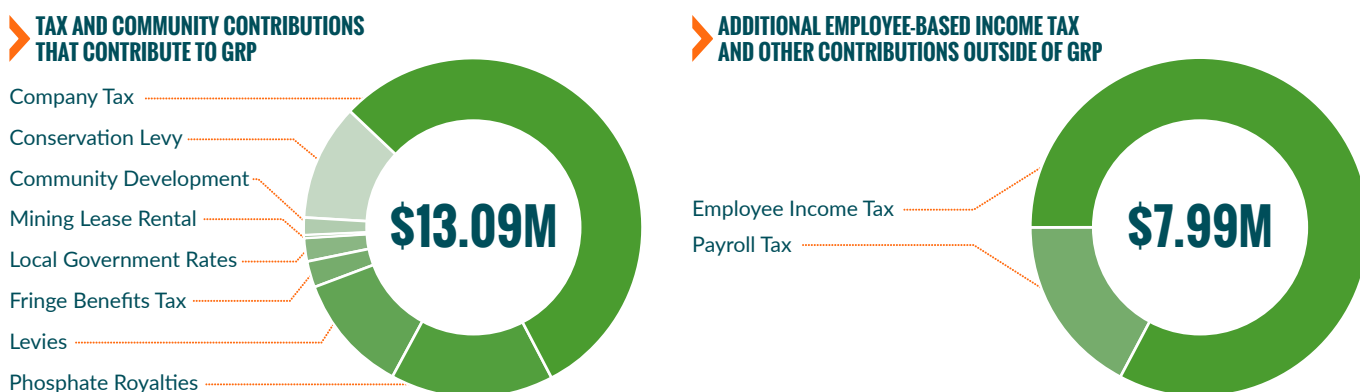
## ECONOMIC IMPACTS

### Gross Regional Product (GRP) Contributions

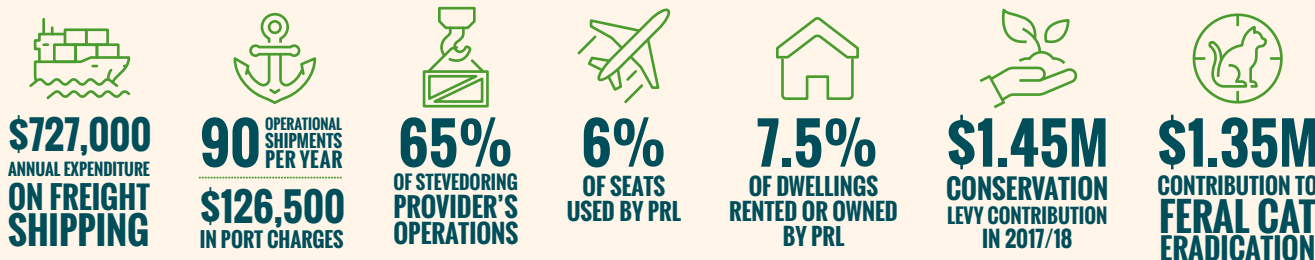


Sources: ABS Census 2016, PRL 2018, FAR lane 2018

### Public Sector Revenue Contributions

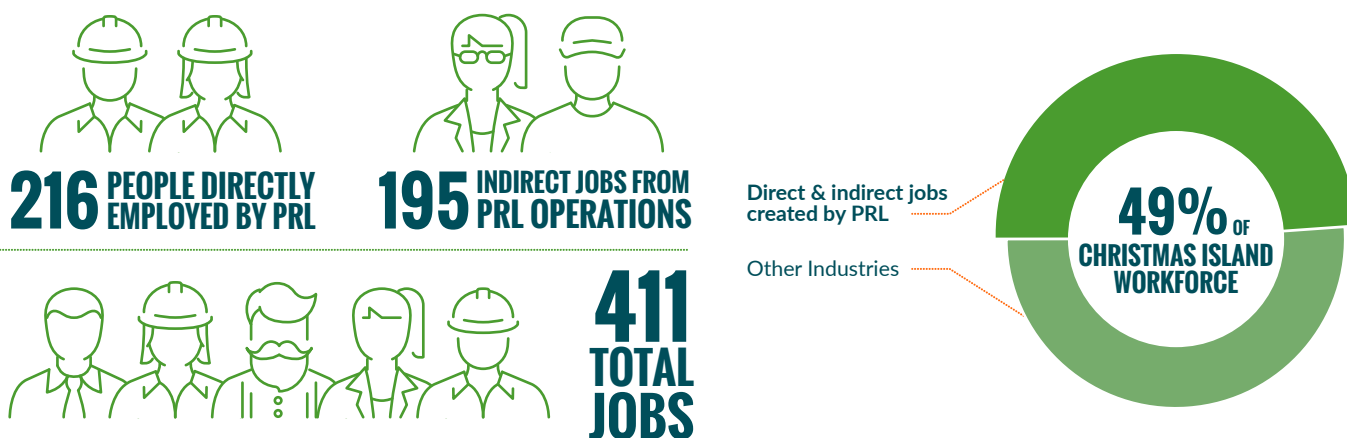


### Other PRL Annual Contributions



Source: PRL 2018

## EMPLOYMENT



Sources: ABS Census 2016, PRL 2018



## MINING SCENARIOS

1



Mine life till late 2020s, includes a three-year wind down.

2



Mine life extended 4-6 years beyond Scenario 1 due to additional leases.

3

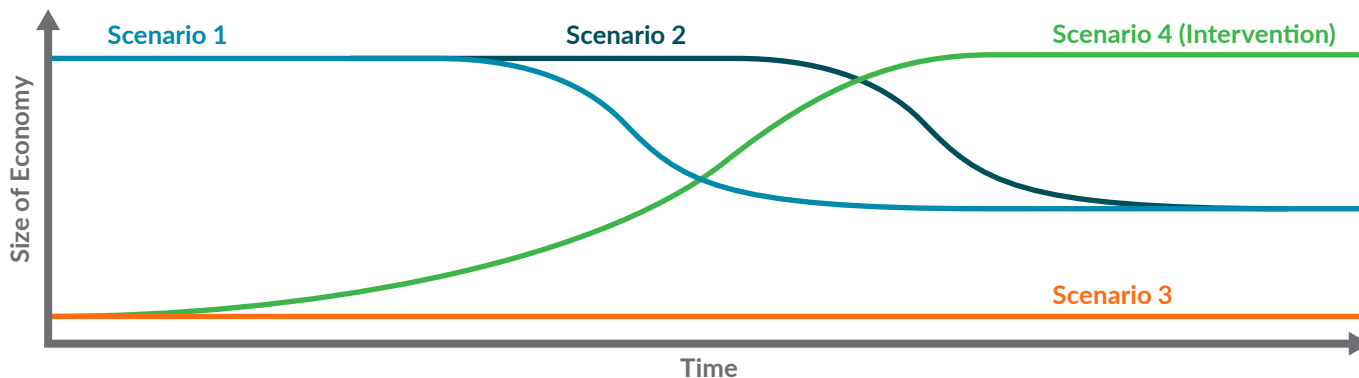


No mine operations exist on the Island.

4



Alternate industry, such as tourism.



### Impacts of Mining Shutting Down



COMMUNITY NET WEALTH DECREASES



INCREASED ECONOMIC SUBSIDISATION REQUIRED



ALTERNATIVE INDUSTRY ATTRACTION REQUIRED

## ALTERNATIVE INDUSTRIES



**\$42M P/A**  
INCOME REQUIRED TO REPLACE  
LOST MINING RELATED JOBS

**> TOURISM** HAS BEEN IDENTIFIED BY A RANGE OF REPORTS AS A POSSIBLE ALTERNATE INDUSTRY



**93,340**  
VISITOR NIGHTS  
REQUIRED PER YEAR



**560**  
ROOMS REQUIRED  
ON-ISLAND



**\$80-100M**  
APPROXIMATE INVESTMENT  
IN ACCOMMODATION



**\$100M**  
POTENTIAL SERVICES &  
AIRPORT FACILITIES UPGRADES



**15 YEARS**  
ESTIMATED INDUSTRY  
DEVELOPMENT TIME

## COMMUNITY CONSULTATION

### STAKEHOLDER GROUPS

PRL employees  
Non-PRL employees



## SOCIAL IMPACTS OF MINING



**NEGATIVE SOCIAL IMPACTS FEW AND NOT SUBSTANTIAL**



**POSITIVE IMPACTS EXPERIENCED ACROSS WHOLE COMMUNITY**



**PRL IS ACTIVELY COMMITTED TO THE COMMUNITY**



**NEGATIVE PERCEPTIONS EXIST, LINKED TO RECENT OPERATIONAL CHANGES**



**STABLE POPULATION IS MOST SIGNIFICANT POSITIVE IMPACT**

## OVERALL IMPACTS

### KEY ACTIVITY

Investment by PRL in phosphate mining

### DIRECT CONTRIBUTIONS

Flow-on investment in local business and service providers

Employment and wages investment in infrastructure. Creation of an on-island workforce. Investment in skills of workforce

Investment in community

### FLOW-ON EFFECTS

Local business viability and profit

Population with money to spend.

Connectivity of freight and communications. Population base for services.

Celebrations  
Community activities  
Off-island opportunities

### VALUE TO COMMUNITY

Thriving local economy

Employment channels

Stability and lifestyle

Broadening of skills, knowledge, experience and opportunity

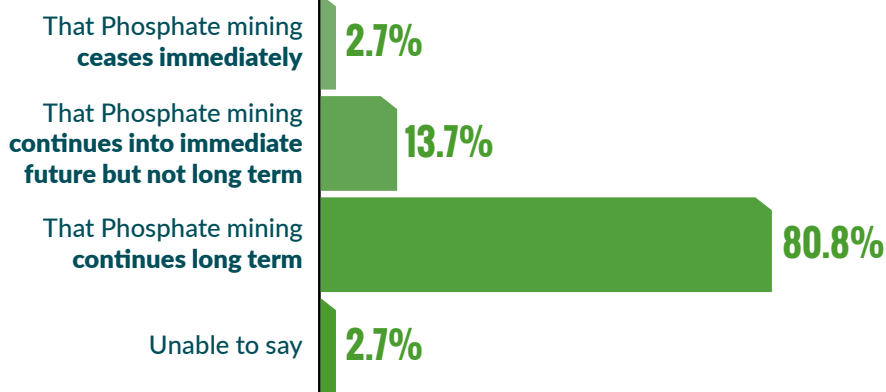
"The mine contributes through providing stability in the population, and avoiding a FIFO workforce"  
(Community consultation, Sept 2018)

"Without the mine I don't think the ship will come. There will be a shortage of food..."  
(Community consultation, Sept 2018)

"PRL provides employment in languages other than English. People can't just go to the mainland and get employment"  
(Community consultation, Sept 2018)

"It's a multicultural employer of a workforce that was once colonial - that's a major achievement...The mine is able to provide jobs across all the community, creating social unity"  
(Community consultation, Sept 2018)

### What do you hope for the future of phosphate mining on the island?



# EXECUTIVE SUMMARY

## SIGNIFICANCE OF PHOSPHATE MINING ON CHRISTMAS ISLAND

Christmas Island is an Australian non-self-governing territory located in the Indian Ocean, approximately 2,650 kilometres northwest of Perth. The Island is known for its biological diversity, providing habitat for endangered, threatened and migratory species as well as endemic species. The community highly value the beauty of the Island and the relaxed lifestyle, although they also face challenges associated with living as a small population (under 2,000 residents) isolated by long distances and expensive flights.

Rich phosphate deposits, the primary ingredient of agricultural fertilisers, have put phosphate mining at the center of the Island's history, economy and social life, and has enabled the small, remote community to be initially self-sustaining. Phosphate mining began in 1899 using indentured workers from Singapore, Malaya and China. Since this time up to four generations of Malay and Chinese families, and more recently European migrants, have made Christmas Island their home. When the Australian Government closed the mine in 1987, the community came together to form PRL in 1989 with the mine reopening in 1990.

Island economies as well as mining communities are prone to 'boom and bust' cycles, and Christmas Island, being both an isolated island and a mining community, is particularly vulnerable. In the Island's recent history a lucrative Casino and a Detention Centre brought employment and economic activity to the Island but for limited amounts of time. In 2018, the Detention Centre wound down its operation and the effect was immediately felt by Christmas Islanders; local businesses closing and people leaving the Island are quickly noticed in a small community. Islanders are in some ways accustomed to economic turbulence. However, this flux has usually been moderated by phosphate mining, which – aside from a few years when the mine was closed in the late 1980s – has always been a constant.

Phosphate mining is also significant to Christmas Island as a major industry that primarily utilises a locally-based workforce. Other major industries on the Island have utilised Fly-In/Fly-Out (FIFO) contractors in large numbers, or relied on short term visitors to the Island. The influx of large numbers of non-residents to the Island for work is commonly described by community members as having detrimental impacts on the social fabric as well as the natural environment of Christmas Island. Through employing predominantly local residents, the operations of Phosphate Resources Ltd (PRL) generates wealth for the Island with minimal disruption to community values and its way of life.

## THE PURPOSE OF THE STUDY

In July 2018, PRL commissioned the Centre for Social Impact, University of Western Australia (CSI UWA), to complete a comprehensive review of the social and economic impact of phosphate mining by PRL on Christmas Island. The aim of this study is to capture the direct and indirect economic impacts, including any multiplier effect, of the operations of PRL on the Christmas Island economy, and to capture the social impacts of phosphate mining on the community.

The economic and social contribution of mining was documented and also validated through counterfactual analysis; i.e. assessing mining's contribution by exploring a scenario of no mining. Thus, the study seeks to understand how the community could organise itself in the event that mining ceased, asking, what would the Island look like, from a socio-economic perspective, without phosphate mining?

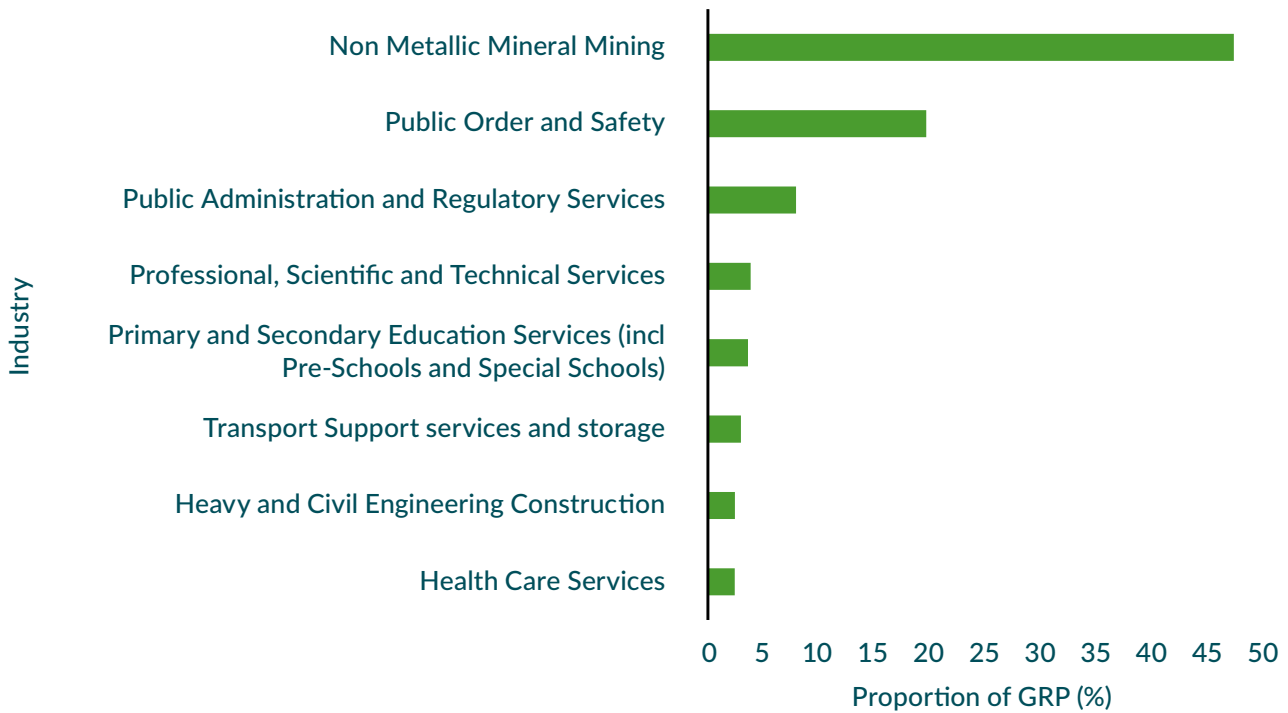
Social and the economic impacts are assessed and calculated separately, using different frameworks and methodologies. The findings from the separate social and economic impact assessments were, however, compared, and validated against one another and synthesised into overall key findings.

## ECONOMIC IMPACT OF PHOSPHATE MINING ON CHRISTMAS ISLAND

### CONTRIBUTION TO GROSS REGIONAL PRODUCT

Through economic modelling it is estimated that phosphate mining contributes \$42M to Christmas Island's Gross Regional Product (GRP), which represents almost half (47%) of the total estimated GRP for Christmas Island (\$90M). In addition, support industries directly involved with the phosphate mine, such as stevedoring, contribute an additional \$2.66M to the economy. A breakdown of the indicative contribution of various industries to Christmas Island's GRP is illustrated in Figure a) below. It should be noted that the economic analysis relied on utilising ABS Census data with a timepoint of 2016, a year during which the Detention Centre was operational. It is expected that 2018 data would not have as significant a 'Public Order and Safety' contribution, making the mining industry even more significant as a proportion of overall GRP.

Figure a) Top eight industries on Christmas Island, by proportion of Gross Regional Product



Source: ABS Census 2016, PRL 2018, FAR lane 2018.

In addition to the GRP contribution, Table a) shows estimates of the direct contributions from PRL to the local economy from relevant taxes and royalties.

## PUBLIC SECTOR REVENUE

Table a) Taxation and community contributions resulting from PRL Christmas Island operations (2018)

Taxation Type	Annualised Contribution (\$2018)
<b>1. Tax and community contributions that contribute to Gross Regional Product</b>	
Income Tax	\$7,259,000
Phosphate Royalties	\$2,031,205
Levies	\$1,487,856
Fringe Benefits Tax	\$326,377
Local Government Rates	\$298,865
Mining Lease Rental	\$33,502
Community Development	\$200,000
Conservation Levy	\$1,453,747
<b>SUBTOTAL</b>	<b>\$13,090,552</b>
<b>2. Additional employee-based income tax and other contributions outside of Gross Regional Product</b>	
Employee Income Tax	\$6,627,791
Payroll Tax	\$1,370,269
<b>SUBTOTAL</b>	<b>\$7,998,060</b>
<b>GRANDTOTAL</b>	<b>\$21,088,612</b>

Source: PRL 2018

## EMPLOYMENT

In 2018, PRL directly employed 216 Christmas Island locals (employed as permanent or contract workers within PRL and Christmas Island subsidiaries). Economic analysis indicates that PRL also indirectly creates employment of 195 Full Time Equivalent (FTE) positions, and equivalent to a total of 411 direct and indirect jobs. This is based on the multiplier effect – if you take approximately \$106.7M from the economy<sup>1</sup> and multiply by the economy wide employment multiplier 3.85 (derived from the regionalised input output model) approximately 411 jobs are linked to mining activity. If the mine closed it could be assumed that 216 FTEs would be lost, and that an additional 195 jobs would be lost indirectly (411-216=195) although the model cannot tell exactly what industries the job losses are likely to be from. It's expected that PRL subsidiaries will continue operations in the case of mine closure but with projected reduced earnings.

PRL contributes directly or indirectly equivalent to 411 FTE on Christmas Island representing almost a quarter of the total Island population of 1,843, and half of the Island's labour force of 837 (2016, Census).

## IMPACT OF CEASING MINING

To quantify the impact of ceasing phosphate mining operations on Christmas Island, a regional input output model was built utilising a distributive commodity balance method to assess the potential impacts across three scenarios:

**10 more years of mining (Scenario 1):** A mine life for ten years, including a three-year wind down. Production and export of 650,000 tonnes per year continues at a realised value of \$125 per tonne (\$2018).

**16 more years of mining (Scenario 2):** Mining continues for an additional four to six years beyond Scenario 1 due to availability of additional mineral resources e.g., new leases. Production and export of 650,000 tonnes per year continues at a realised value of \$125 per tonne (\$2018).

**No mining (Scenario 3):** No mine operations. This is a baseline scenario to illustrate the counterfactual; i.e. the Island without mining.

Table b) Key findings from scenario impact analysis (\$M)

	10 years mining	16 years mining	No mining after 2018
Christmas Island cumulative output \$M	\$961	\$1,495	-\$173
FTE as a result of mine closure (Total)	-411	-411	-411
Income of Christmas Island workers cumulative \$M	\$562	\$874	-\$62
Total taxation and contributions \$M	\$130.90	\$209.19	-\$13.09

Source: FAR lane 2018

These findings suggest that to alleviate the impact of a shutdown of phosphate mining on Christmas Island, the following would be needed:

- New economic output on Christmas Island equivalent to \$96M per annum from 2028 under Scenario 1, and \$99.6M per annum from 2034 under Scenario 2 to -\$173M from 2019 under Scenario 3 if Christmas Island is to remain as economically productive;
- New employment on Christmas Island, equivalent to, 411 full time jobs from 2028 under Scenario 1, and 411 full time jobs from 2034 under Scenario 2 and 411 full time jobs from 2019 under Scenario 3 if Christmas Island is to remain as economically productive;
- A total additional Christmas Island household income of \$56M per annum from 2028 under Scenario 1, \$58M per annum from 2034 under Scenario 2, and -\$62M per annum from 2019 under Scenario 3 if Christmas Island is to remain as economically productive.

## IMPLICATIONS

This points to three potential areas of implication (depending upon the scenario).

### Net wealth of the community decreases

The findings of the economic analysis undertaken suggests that, unless replaced by equivalent economic activity or additional public sector subsidisation, the Christmas Island community would likely lose \$62M in household income per annum.

<sup>1</sup> \$106M of output is derived by 650,000 tonnes of product sold at US\$125 per tonne, converted into AUD (assumes exchange rate of \$0.7/AUD).

**Requirement to increase subsidisation of the Christmas Island economy**

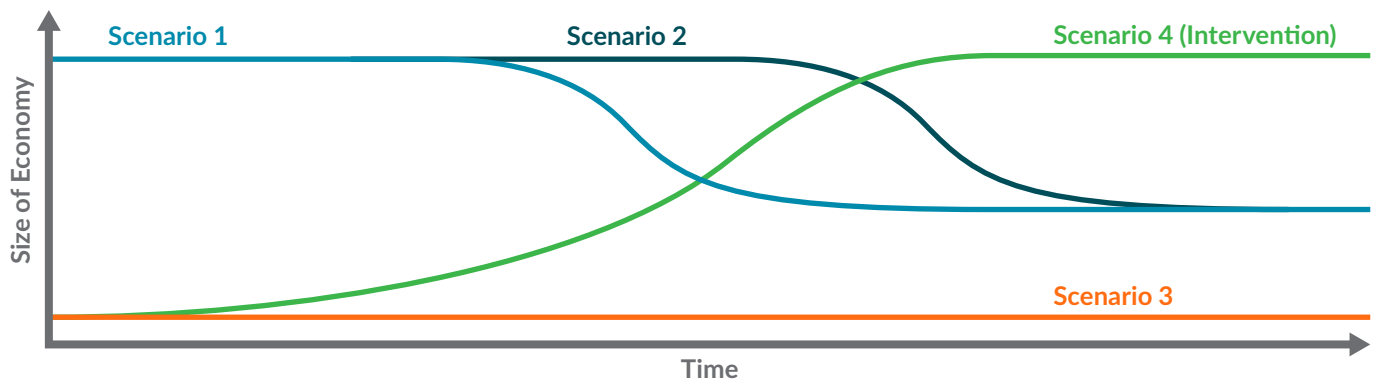
To counter the loss of patronage and investment by PRL and subsidiaries and the overall loss of employment on the Island, it is likely that there will be the need to draw upon greater support and resources from Local, State and Federal Governments.

**Requirement to facilitate alternative industry attraction**

To replace the 411 FTE jobs on Christmas Island that were supported by mining, approximately \$42M of output per annum would be required. If the industry to replace mining was to be tourism, Christmas Island would need to draw approximately 93,350 visitor nights per year. The investment of accommodation required to support these numbers (not including the investment in infrastructure, hospitality, attractions and marketing required to realise such demand) could easily equate to approximately \$80-\$100M of capital expenditure (at a cost of \$140,000-\$180,000 per room) excluding land costs. To cater for the 93,350 visitor nights a significant increase in flights would also be required, and potentially larger planes, which would require a significant expansion of the airport facilities e.g., runway expansion. There may be a significant cost in this (\$100 M).

Figure b) illustrates, an alternate \$42M industry is likely to take many years to mature and develop. This suggests investment and development of an alternate industry (such as tourism) should be established before any mining activity is ceased, to suppress the potential negative economic impacts and enable a transition period for the local economy.

Figure b) Scenario impact analysis



The key difference in the economic scenarios considered in this analysis is the time frame for the mine closing down and thereby the time available to attract investment in alternative industries. For example, using tourism as an example of an alternative industry, and assuming a cost for tourism accommodation of \$100M, the difference in annual investment required between Scenario 1 (\$10M) and Scenario 2 (\$6.6M) would be in the order of \$3.6M per annum (\$2018). When considered across the entire tourism product/market that would need to be developed, at least 15-years will likely be required to develop a sector with equivalent employment to those currently employed directly and indirectly within the mining sector.

It is clear that Christmas Island’s resource-driven economy will require a careful transition to other traded activities if the Island’s residential population is to be retained with similar levels of local prosperity and subsidy from public sector agencies over the medium-long term. Given the scale of change required, time and investment are both critical to this transformation. As such, there is a strong economic rationale to allow for a continuation of phosphate mining as per Scenario 2 as additional time will best enable the development and implementation of the strategic economic development initiatives needed to facilitate continued economic sustainability.

## SOCIAL IMPACT OF PHOSPHATE MINING ON CHRISTMAS ISLAND

*Note: The social impact consultation process aimed to capture and reflect a diverse range of voices and perspectives from across the community. The views represented in the Social Impact Assessment are not necessarily held by Phosphate Resources Limited, and have not necessarily been confirmed as accurate by the Research Team.*

Social Impact Assessment (SIA) provides a framework for understanding changes or potential changes in communities related to dimensions such as culture, power, human rights, justice, resilience and sustainable livelihoods (Esteves, 2011). The key overall findings that will be explored here are as follows:

- Negative social impacts of mining are few and not substantially adverse – which is atypical in the context of a mining community;
- Positive impacts of mining are experienced across the whole community directly and indirectly and over numerous domains of life;
- PRL's active commitment to the community is evident, and directly contributes to many positive impacts;
- Negative perceptions of the mine exist and are linked to recent operational changes;
- The most significant positive impact of mining is in sustaining a stable population base to support the existence and functioning of the community.

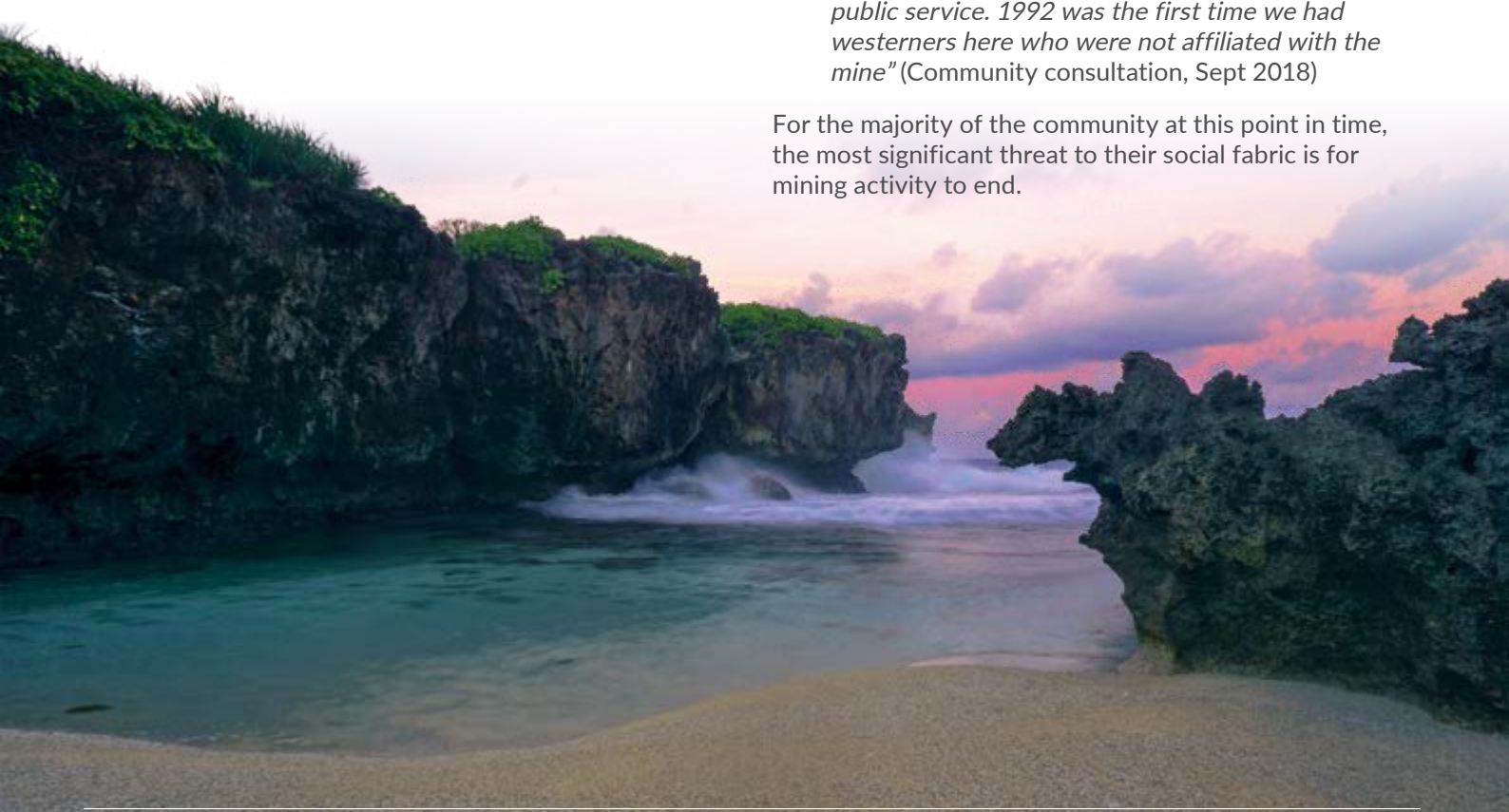
## THERE ARE VERY FEW NEGATIVE IMPACTS RELATIVE TO THE CONTEXT OF MINING

It is well documented that mining activity can lead to many negative impacts for small communities including housing affordability pressures, increased cost of living and community concerns about safety, loss of identity and loss of connection to land. Mining communities, particularly with a FIFO workforce, are also more likely to experience alcohol fuelled violence, crime, prostitution and mental health issues. In fact, Social Impact Assessment was developed originally as a tool to assist with harm minimisation, developing the evidence base for social impact mitigation programs and to securing a 'social license to operate'.

The case of Christmas Island and its relationship with phosphate mining, however, turns these assumptions around. Despite mining being the main industry on the Island, the community experiences almost no crime, and very minimal violence or domestic violence. People do not lock their doors and residents state that their children are safe to roam. This SIA has not found evidence that phosphate mining systemically undermines the social fabric of the community. In fact, it can be argued that the Island's mining operations help to provide the stability and economic resources to maintain a peaceful, cohesive, well-functioning and largely self-sustaining remote community. Mining has been enmeshed in Christmas Islander identity, history, way of life and sense of purpose for four generations.

- *"Prior to 1992 unless you were affiliated with the mine you could only come here if you were in the public service. 1992 was the first time we had westerners here who were not affiliated with the mine"* (Community consultation, Sept 2018)

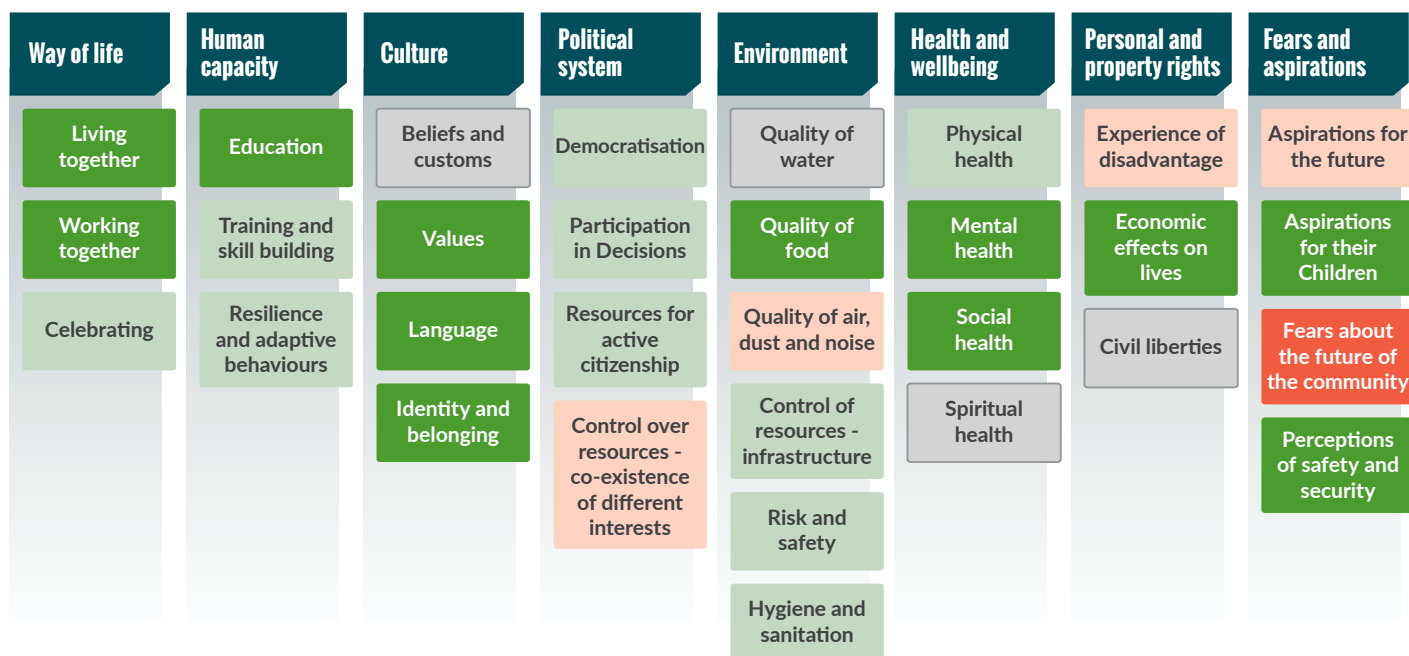
For the majority of the community at this point in time, the most significant threat to their social fabric is for mining activity to end.



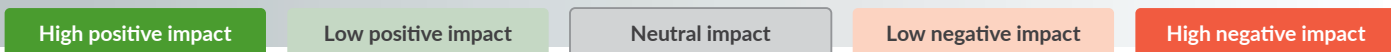
### POSITIVE IMPACTS OF MINING ARE EXPERIENCED ACROSS THE WHOLE COMMUNITY

The SIA was informed by Francis Vanclay’s (2003) model of social impact. The adapted framework, and overall findings regarding positive, negative as well as neutral impacts experienced over various domains of social life are presented in Figure c).

Figure c) Social Impact Assessment framework



**LEGEND**



Assessments were made for each sub-domain, based on consultation with a total of 174 people/roles. A mixed methods approach was used, involving face-to-face interviews, focus groups as well as an online survey and telephone interviews. Just over half of the people/roles consulted were considered to have no direct links to PRL.

Table c) Stakeholder groups included in consultation

Stakeholder Group	Data group	
Phosphate Resources Limited employees Subsidiaries	PRL employees	46.6%
Business community Service providers Government and public sector representatives Community organisations Community members	Non-PRL employees and community members	53.4%
		100%

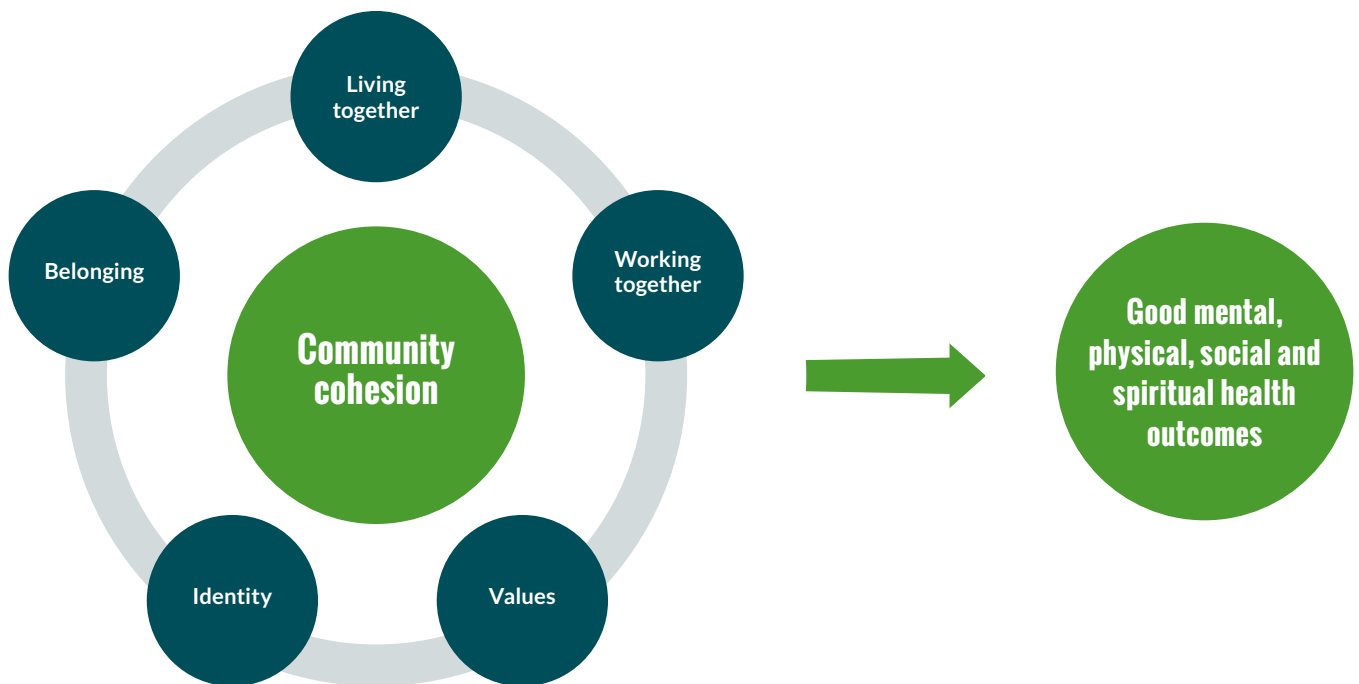


Overall, almost all of the PRL and non-PRL voices captured recognised a widespread and ongoing positive contribution of phosphate mining to Island life as a whole. To quantify this, a total of 22 of the 31 sub-domains (over two thirds) were considered to be positively affected by mining with over one third (11 of 31) assessed as benefiting from a 'highly positive' impact. This indicates that the company's contribution to the community is significant. Some examples:

<b>Social health</b>	"The mine contributes through providing stability in the population, and avoiding a FIFO workforce" (Community consultation, Sept 2018)
<b>Quality of food</b>	"Without the mine I don't think the ship will come. There will be a shortage of food..." (Community consultation, Sept 2018)
<b>Infrastructure</b>	"Many businesses rely on the mine for sourcing parts, repairs and skills for car maintenance" (Community consultation, Sept 2018)
<b>Values</b>	"It's a generous community. If someone is diagnosed with cancer, everyone steps up. People come first. The mine and how they interact with others has the same qualities. PRL goes out of its way to assist the community" (Community consultation, Sept 2018)
<b>Language</b>	"PRL provides employment in languages other than English. People can't just go to the mainland and get employment" (Community consultation, Sept 2018)
<b>Identity and belonging</b>	"It's a multicultural employer of a workforce that was once colonial - that's a major achievement...The mine is able to provide jobs across all the community, creating social unity" (Community consultation, Sept 2018)

Analysis across domains also indicates that many of these positive impacts create self-reinforcing cycles that strengthen the community, as illustrated in Figure d).

Figure d) Positive feedback loop creating a strong and healthy community



## **PRL DEMONSTRATES AN ACTIVE COMMITMENT TO THE WELLBEING OF THE COMMUNITY**

During consultations one common perception of the mine by the community was of a good, active corporate citizen. Christmas Islanders provided numerous examples to substantiate the claim – PRL was proactive in solving problems (e.g., arranging for asbestos to be removed from the Island), lending assistance (e.g., cleaning up storm water), enhancing opportunities and experiences on the Island (e.g., PRL's \$200,000 per annum community development fund that supports celebrations and recreational activities - to put this in context the local Shire provides \$60,000 for similar activities) and demonstrating values that are caring (e.g., donations for people who are in need) and that put the community first (e.g., prioritising sourcing and upskilling employees from the Island before recruiting from mainland). PRL was largely seen by others to be committed to the community:

- *“There's a level of commitment to the Island from the Board of Directors that elsewhere communities would not have”* (Community consultation, Sept 2018)

The Research Team sought to validate this claim through an adapted version of the Most Significant Change approach conducted with the PRL leadership team. During this process composite vignettes were created to illustrate various perceived impacts of mining on Island life, from various community perspectives. Putting these stories ‘under the noses’ of the PRL executive was an opportunity to explicitly discuss the values that inform the PRL leadership team, and elicit their perspectives about their responsibilities to the community. The main finding, of interest to the Research Team, was that PRL leaders are strongly committed to the wellbeing of the Christmas Island community. It was evident from discussions as well as story selections that PRL's ongoing investment in the wellbeing of the Island is beyond the financial, and genuinely held at a personal level by many on the Board, as well as shared as a consensus within the leadership group.

## **NEGATIVE PERCEPTIONS OF THE MINE EXIST AND ARE LINKED TO RECENT OPERATIONAL CHANGES**

For several domains, assessing the overall impact from mining was complex, with a mix of positive and negative perspectives. For example, there was significant evidence to demonstrate that mining in general and the direct actions of PRL contributed very positively to maintaining strong community values. However there were also some negative views of the mine regarding recent work practices that were described as not aligning with community values. Voluntary redundancies of late 2017 were seen to exclude some members of the community. This can be related to a strong community where people look after one another – and these high expectations are extended to the business community. PRL has met these expectations, although to a lesser extent in recent times.

Other negative impacts result from PRL actually fulfilling this role of a caring benefactor. There is an expectation in the community of the mine being a powerful, benevolent guardian. It is an idea that perhaps provides comfort and safety but has been considered by some newcomers to the community to have stifled other potential players and activities from emerging. The historical dominance of mining and its strong union base is seen by some as having an unintended consequence of preventing the community from being resourceful outside of mining.

- *“Union history...has led to a limited understanding of rights and responsibilities. This means we can't advocate for ourselves. It means the government can fix it, or the mine can fix it. In this frame the mine are perceived as being good corporate citizens, but there's an expectation too [that they will take care of me]. There is no reference point other than yesterday”* (Community consultation, Sept 2018)

Christmas Islanders were described by one participant as a strong, resilient population – *“When the community bought the mine off the government people raised \$5 million in one week”* – but also ‘unworldly’.

However, there is evidence that the direct activities of PRL – especially PRL's investment in the youngest members of the Island community in supporting their education, training, tertiary study and opportunities off the Island – are helping to create a population cohort of young Islanders with a much broader base of skills, expectations and experiences. For a small, remote community the National Assessment Program - Literacy and Numeracy (NAPLAN) results are excellent, and Christmas Island produces more university students proportionally per capita per year, compared to other remote towns in Western Australia (this has been anecdotally communicated but is unverified). PRL has made strategic investments that foster excellence and provide opportunities for young people. This might indicate that a new generation of Christmas Islanders could have more adaptive skills and abilities than the generations whose experiences were limited to the Island and to mining – and if so this is a credit to PRL.

The most significant negative impact related to ‘Fears about the future of the community’, which affected people across the whole community, and is related to the next finding about the mine ensuring the ongoing viability of the community.

## **THE MOST SIGNIFICANT POSITIVE IMPACT OF MINING IS TO PROVIDE A STABLE POPULATION BASE**

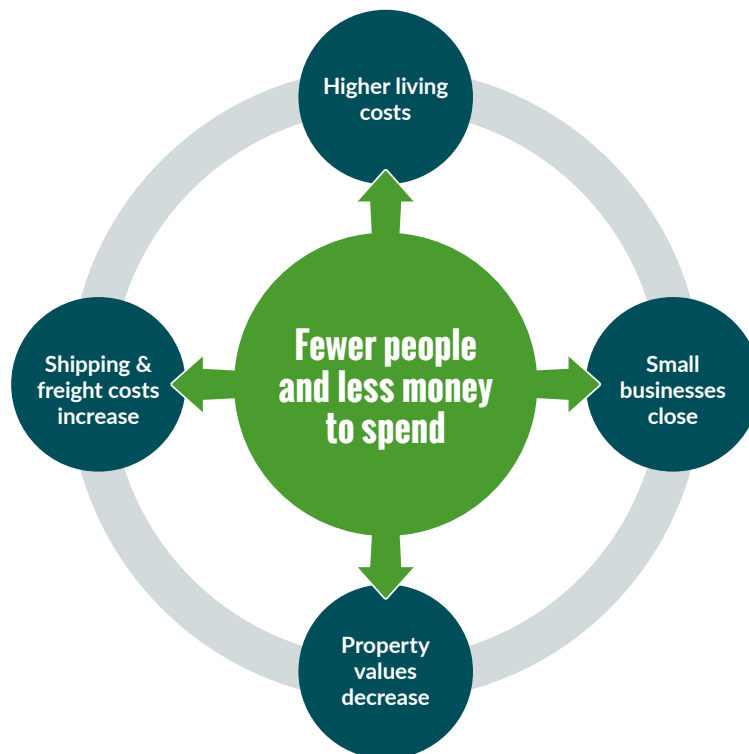
There is a widespread awareness that maintaining quality health and education services, the flow of fresh food and supplies, access to transport to and from the Island and other factors rely directly on mining activity and the existence of a large enough resident population to support the Island lifestyle. Therefore, given the significant economic and employment contribution made

by mining, in a most basic sense, the mine is considered vital for the existence of the community.

To assess the social impact of mining, the community was asked to describe the counterfactual – i.e. what would the Island be like if mining were to cease? This proposition tapped into real fears in the community about mining on Christmas Island ending. The most basic expression of this fear was first and foremost about losing the population base that supports life on the Island (i.e. fears of the mine ending were often not described by participants narrowly as a fear of losing my job, but were mostly contextualised as a fear of losing my community).

There is a sense that the day may come when phosphate mining is no longer viable. Community members also described how any negative impacts from mining ending may be amplified by the particular vulnerabilities of living on a remote Island, as illustrated in Figure e).

Figure e) Community perceptions of economic effects of mine closure on Christmas Island



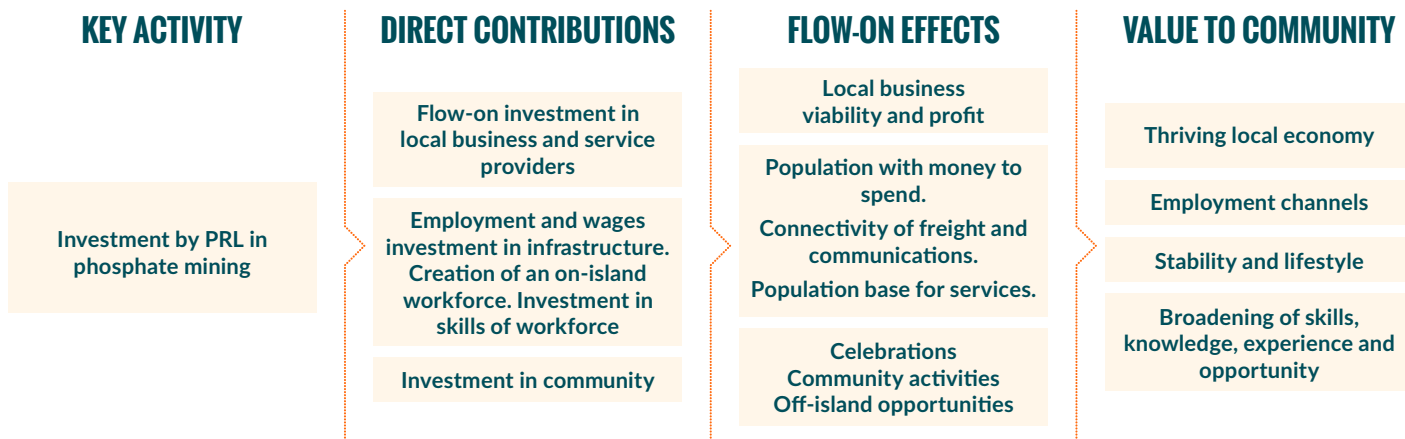
There were wide variations in levels of hope for the future. Some envisaged that a positive transition and diversification to other industries is possible, while others stated that without the mine the Island will face economic and social collapse. The Economic Impact Assessment confirms that the community's existence would be under threat should mining activity cease. For a strong community that greatly values their own home and identity as Christmas Islanders do, the worst case scenario would be depopulation and displacement.



## OVERALL IMPACT OF PHOSPHATE MINING ON CHRISTMAS ISLAND

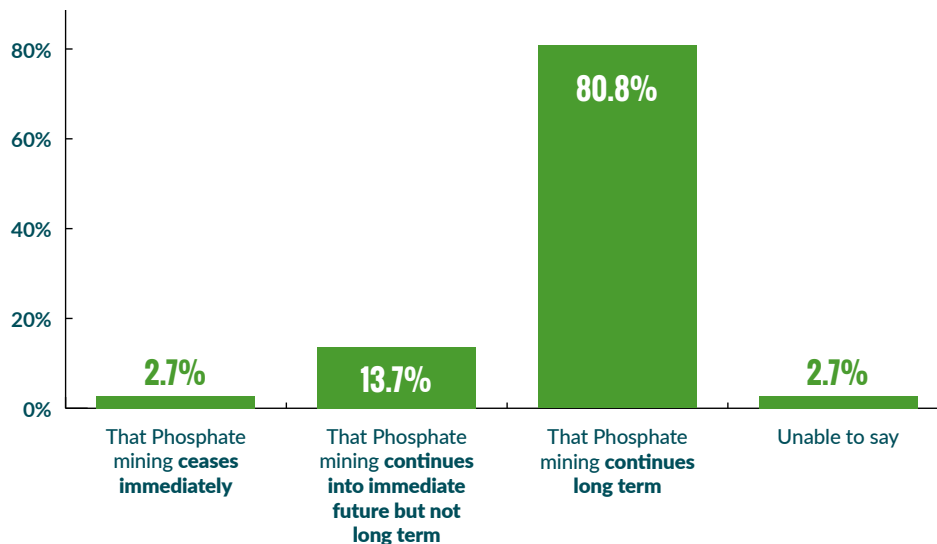
Summative findings from the SIA and EIA indicate that phosphate mining makes a highly significant and positive contribution across many aspects of the community and economy of Christmas Island. Importantly, the positive social and economic impacts interact in a small community in ways that are positively reinforcing. Synthesis of the social and economic findings can be illustrated in the following logic model (Figure f).

Figure f) Interaction of the social and economic impacts



While recognising positive contributions, it is important to note that not all community members consulted agreed that mining on Christmas Island should continue long term, as illustrated in Figure g). For example, a very small minority of the 78 respondents to a survey question ‘What do you hope for the future of phosphate mining on Christmas Island?’ expressed the view that phosphate mining should cease immediately.

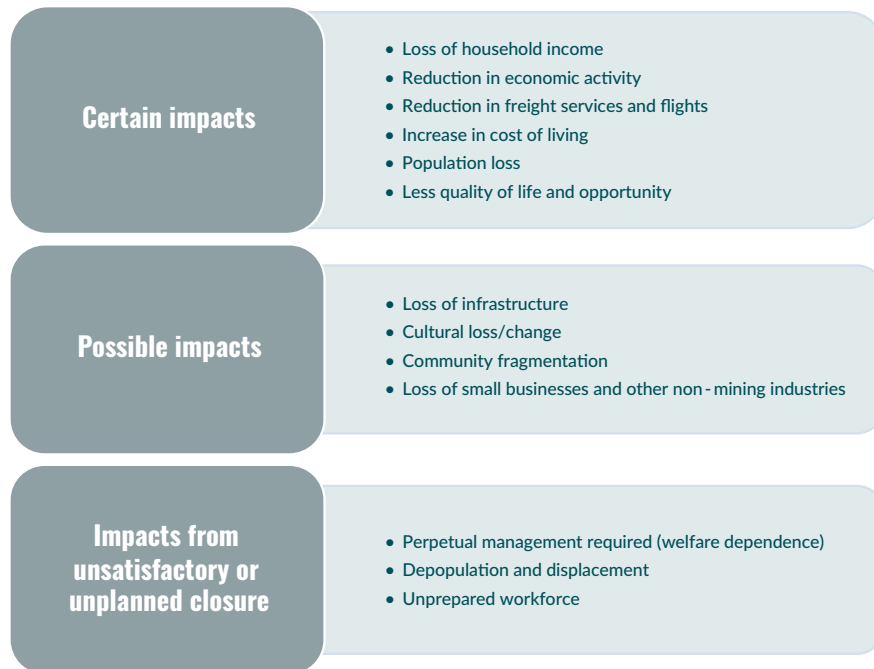
Figure g) PRL and Non-PRL responses to hopes for the future of phosphate mining on the Island



However, even among those people who do not generally support mining on the Island, there is a preference for a gradual wind down rather than an immediate cease, and this is confirmed by the economic analysis which indicates that negative impacts will be amplified if no transition time is allowed.

Whether phosphate mining on Christmas Island ends in five years, 10 years or 50 years, it is clear from this SEIA that impacts would be felt across the whole community, and well beyond the circle of people employed directly by PRL. Most Christmas Islanders, when asked, can clearly articulate negative impacts expected if mining were to cease, and several participants expressed the view that the government, and even newcomers to the Island, underestimate the significance of impacts for the community if mining were to end. Figure h) captures the views of those consulted.

Figure h) Overview of anticipated social and economic impacts of mining operations ceasing



Framework thanks to Worrall et al., 2009

The extent to which Christmas Island experiences loss in the event of phosphate mining winding down, depends to an extent on effective planning and communication, great leadership and quality partnerships between PRL, multiple community interests and the Australian Government. It is hoped that the findings of this study assist various stakeholders to understand and situate PRL's central role in sustaining Christmas Island's community and economic wellbeing, which is vital for the task ahead of maintaining a strong and stable community into the future.



# LIST OF ABBREVIATIONS

<b>ABS</b> .....	Australian Bureau of Statistics
<b>CIMS</b> .....	Christmas Island Management Services
<b>CIP</b> .....	Christmas Island Phosphates
<b>EIA</b> .....	Economic Impact Assessment
<b>FIFO</b> .....	Fly-In/Fly-Out
<b>FTE</b> .....	Full Time Equivalent
<b>GRP</b> .....	Gross Regional Product
<b>IOGTA</b> .....	Indian Ocean Group Training Association
<b>IOOC</b> .....	Indian Ocean Oil Company Pty Ltd
<b>IOS</b> .....	Indian Ocean Stevedores Pty Ltd
<b>NAPLAN</b> ..	National Assessment Program - Literacy and Numeracy
<b>PRL</b> .....	Phosphate Resources Limited
<b>SEIA</b> .....	Social and Economic Impact Assessment
<b>SIA</b> .....	Social Impact Assessment



# 1. INTRODUCTION

## 1.1. RESEARCH CONTEXT

Christmas Island is an Australian non-self-governing territory located in the Indian Ocean, approximately 2,650 kilometres northwest of Perth. Christmas Island's residents are challenged by the Island's isolation, weather and geological features. However, for most of the Island's history, rich phosphate deposits have enabled the community to be relatively prosperous and self-sustaining through phosphate mining.

The Island was first settled in 1888 by Andrew Clunies-Ross and a party of nine from Cocos Island. The first mining lease was issued to George Clunies-Ross and John Murray in 1891. Six years later it was sold to the Christmas Island Phosphate Company who operated the mine, utilising a population of indentured workers from Singapore, Malaya and China until it was sold out in 1948. For over a century mining has been at the centre of the Island's economic and social structure. The current company that undertakes mining is Phosphate Resources Limited (PRL), which has operated since the 1990s. CI Resources fully acquired Phosphate Resources Limited in 2015.

Island economies and mining communities are particularly vulnerable to 'boom and bust' cycles, and Christmas Island, being both an isolated island and a mining community, is no exception. At different points in the Island's recent history a lucrative Casino and a Detention Centre have brought employment and prosperity – both for very short-lived amounts of time. This year (2018) the Detention Centre closed down with consequent impacts for the Island. Islanders are in some ways accustomed to economic turbulence; however, this has usually been moderated by phosphate mining, which, aside from a few years when the mine was closed in the late 1980s, has always been a constant.

In recent years the phosphate market has tightened, requiring the mine to increase efficiencies to remain competitive. In 2018, the Australian Government failed to approve a request for permission to conduct further exploration. It seems the community is more conscious than ever that there may come a time when phosphate mining is no longer viable – whether due to political constraints, market conditions or the Island's natural resource no longer able to meet market demands.

Understandably, the community is 'jittery' about what this means for the future of their Island. At this stage no viable, high-value industries to replace mining have been established or invested in in a significant way.

It is within this context that, in July 2018, PRL commissioned the University of Western Australia's Centre for Social Impact to complete a Social and

Economic Impact Assessment (SEIA) of phosphate mining on Christmas Island.

## 1.2. THE ECONOMIC IMPACT ASSESSMENT

The Economic Impact Assessment aims to capture economic impacts, including direct and indirect impacts and any multiplier effect, of the operations of PRL and associated industries on the Christmas Island community and economy. The Company's key asset is a 100%-owned phosphate rock mine located on the Island. PRL exports approximately 650,000 tonnes of phosphate product each year to Australia, New Zealand, Malaysia and Indonesia.

Quantification of the economic impact of PRL activities considered impacts resulting directly from PRL operations such as employment by PRL or in PRL subsidiaries, and the output and export value of goods and services produced by the mine. Indirect impacts include such things as spending in local enterprises and infrastructure, business resulting from expenditure and revenue to public sector agencies resulting from PRL activities. Local consumption, and investment in community activities were also incorporated into the picture of the overall economic contribution of mining to the Christmas Island community.

## 1.3. THE SOCIAL IMPACT ASSESSMENT

Social Impact Assessment (SIA) considers the social issues associated with planned interventions – usually infrastructure and mining projects (Vanclay, 2003). It provides a framework for understanding changes or potential changes in communities related to dimensions such as culture, power, human rights, justice, resilience and sustainable livelihoods (Esteves, 2011).

Social Impact Assessment is a relatively standard step for mining companies at the project feasibility stage (Kemp, Clark & Zhang, 2007). Typically, the assumptions built into the SIA process focus on anticipating any negative social impacts associated with mining (offset by some economic and social gains). For example, it is well documented that mining activity can lead to housing affordability pressures, increased cost of living and community concerns about safety, loss of identity and loss of connection to land. Mining communities, particularly with a Fly-in-Fly-Out (FIFO) workforce, are also more likely to experience alcohol fuelled violence, crime, prostitution and mental health issues. In fact, Social Impact Assessment was developed originally as a tool to assist with harm minimisation, developing the evidence base for social impact mitigation programs and to securing a 'social license to operate'.

The case of Christmas Island and its relationship with



phosphate mining, however, turns these assumptions around. Rather than undermine the social fabric, this SIA indicates that mining on Christmas Island provides the stability and economic resources to help maintain a peaceful, cohesive and well-functioning remote community. For Christmas Islanders, mining has provided a supportive base for building identity, community, way of life, sense of purpose and a locally-driven economy.

## 1.4. KEY CHARACTERISTICS OF CHRISTMAS ISLAND

Christmas Island is an external territory of Australia, located in the Indian Ocean, approximately 2,650 kilometres northwest of Perth. With Jakarta, Indonesia only 494 kilometres away, Christmas Island is close to Australia's largest neighbour – and just beyond that lies South East Asia. The Island and surrounding waters are strategically important.

Since 2010 Christmas Island has been administered by the Department of Regional Australia, Regional Development and Local Government. Prior to this the Island was administered by the Attorney-General's Department (2007 – 2010) and the Department of Transport and Regional Services (before 2007).

### 1.4.1. ECOLOGY

Approximately 63% of the Island's 135 square kilometres is National Park. Christmas Island is well known for its biological diversity. A large proportion of the Island is covered by primary or secondary rainforest and the Island provides habitat for endangered, vulnerable, threatened and migratory species as well as endemic species, including seabirds and a diverse array of land crabs. The annual migration of a species of red crab across the Island is a world-famous event.

### 1.4.2. HISTORY OF PHOSPHATE MINING

The Island was first settled in 1888 by Andrew Clunies-Ross and a party of nine from Cocos Island. The first mining lease was issued to George Clunies-Ross and John Murray in 1891. Six years later it was sold to the Christmas Island Phosphate Company who operated the mine, utilising a population of indentured workers from Singapore, Malaya and China until it was sold out in 1948. After the second world war the Island was administered jointly by the British Phosphate Commissioners and district officers from the United Kingdom Colonial Office through the Straits Settlements, and later the Crown Colony of Singapore. Australia took over governance in 1958, and in 1987 the Australian Government made a decision to close the mine.

Facing a bleak future without the one industry that sustained livelihoods, a portion of the population left the Island. There is anecdotal evidence that the Christmas Island workforce was unprepared for working on the mainland (where many jobs require English proficiency). Resettlement required significant government investment

(retraining and resettlement packages) and resulted in high social costs due to the sudden erosion of social networks as people were displaced (social costs that were transferred to the mainland). During this time, however, a portion of the community refused to leave their Island home and, convinced there would still be a future of mining on the Island, the community came together to form Phosphate Resources Ltd and buy back the mine. The mine reopened in 1991 as Phosphate Resources Limited.

Considering the Island's colonial history, which involved an indentured population, subjected to human rights abuses especially in the early 20th Century, it is significant that many former mine workers, and their children, were able to become shareholders and part-owners of the mining company. This is a critical point in the Island's history and provides insight into the strong connection between the mine and the community.

In 2015, C I Resources fully acquired PRL. Since then, PRL has been managing a significant culture change involving more modernised work practices. Tighter controls and new work processes have been introduced to adhere to Federal and Western Australian legislation and workplace health and safety standards. In the last quarter of 2017, 37 permanent employees accepted voluntary redundancies. While this is fairly standard practice within mining culture and operations in Australia, some recently introduced work practices and in particular the redundancies, have been experienced as a shock to the Christmas Island community. In some ways the way the mine has operated and has been perceived by the community since 2015 represents another chapter in the history of the mine.

### 1.4.3. BUSINESS CONTEXT

Phosphate Resources Limited trading as Christmas Island Phosphates (CIP) is a leading producer of phosphate rock in the South East Asian region. The Company's key asset is a 100%-owned phosphate rock mine on Christmas Island, where it has mined and exported phosphate since 1990, and exports approximately 650,000 tonnes of phosphate product each year to Australia, New Zealand, Malaysia, and Indonesia.

In addition, PRL offers an array of non-mining services across the Island through its subsidiaries:

- Christmas Island Management Services Pty Ltd (CIMS) – provides management services to the Department of Immigration and Border Protection, to support the care-and- maintenance of the Island-based Detention Centre, along with other general on-island maintenance services, including for PRL.
- Indian Ocean Oil Company Pty Ltd (IOOC) – is the sole supplier of petrol, diesel and burner fuel on the Island and is contracted by the Federal Government to supply diesel to the navy and power station.

Additional diesel is supplied to external users on an ad hoc basis.

- Indian Ocean Stevedores Pty Ltd (IOS) – provides pilotage, agency, survey and consulting services to vessels calling at Christmas Island.

#### 1.4.4. POLITICAL CONTEXT

Australia took over governance of the Island in 1958, making Christmas Islanders Australian citizens. Democratic privileges, however, are experienced in a somewhat diluted form due to fragmented political arrangements: Christmas Islanders are represented in Canberra by Northern Territory politicians, but the Island’s school and health services are provided under applied Western Australian legislation and a service delivery agreement the Australian and Western Australian governments. They have a Shire of Christmas Island but no state government as with other Australian Territories.

Since 1990, phosphate mining on the Island has been, at times, contested. In 2010, the Federal Environment Minister Peter Garret declared the end of phosphate mining on Christmas Island in order to protect threatened species. On 31 May 2018, the Federal Government failed to approve PRL’s request for an exploration program “because it is likely to have significant and unacceptable impacts on matters protected under national environment law” (Australian Government, 2018).

#### 1.4.5. POPULATION PROFILE

Christmas Island has a population of 1,843 residents as of 2016 (Census 2016: Christmas Island). The majority live in three main settlements on the north-eastern tip of the Island.

Table 1 Christmas Island population 2016

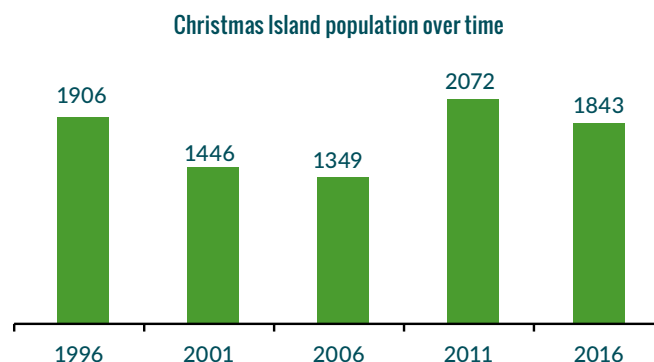
Total Population	1,843
Median age	38
Most common ancestry	Chinese
Most common country of birth	Australia
Most common religions	Islam and Buddhism
Most common languages	English, Mandarin, Malay
Median weekly personal income	\$1,164
Median weekly household income	\$2,141
Average household size	2.7 people

Source: ABS Census 2016

During the 2016 Census the Detention Centre was still in operation on Christmas Island. Since the wind down of the Detention Centre, the community have reported a drop in population and small businesses closing. This

remains anecdotal information, as 2018 population figures are not able to be accessed. However, it does align with population patterns of the past, as illustrated in Table 1. The fact is the nature of the economy is turbulent with continuing uncertainty.

Figure 1 Christmas Island population over time



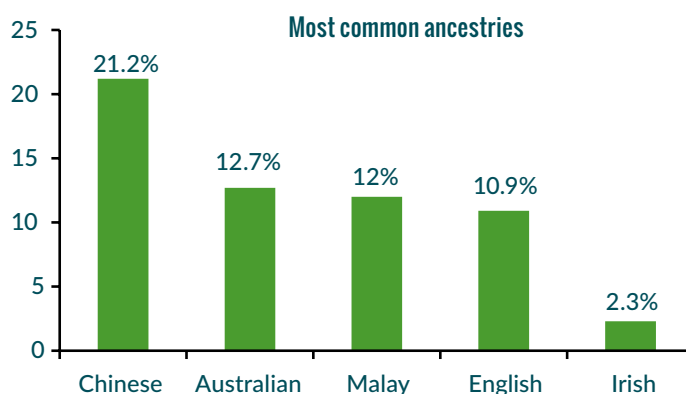
Source: Australian Government 2016

The total population has decreased since 2011.

In 2016, there were 305 families on-island. For those with children, the average number was 1.9 children.

In 2016, more than half (50.9%) of households on Christmas Island reported that a non-English language was spoken at home, and 27.8% of people only spoke English at home. Other languages spoken at home included Mandarin (17.2%), Malay (17.2%), Cantonese (3.7%), Min Nan (1.5%) and Tagalog (1.0%).

Figure 2 Reported most common ancestries



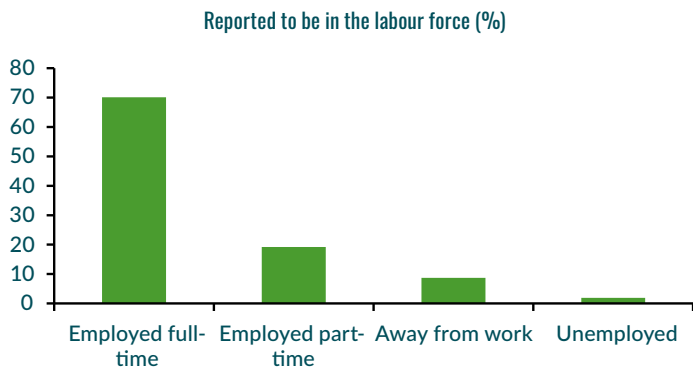
Source: ABS Census 2016

43.2% of people had both parents born overseas, while 16.7% of people had both parents born in Australia.

Islam has overtaken Buddhism as the most common religious affiliation on Christmas Island. In 2016, the most common responses for religion were Islam (19.4%), Buddhism (18.1%) and Catholic (8.9%). 15.2% identified as having no religion.

In the week before Census night 2016, 837 people reported being in the labour force (the sum of employed plus unemployed) on Christmas Island.

Figure 3 Number of people in the labour force



Source: ABS Census 2016

The most common occupations include:

- Technicians and Trades Workers: 17.7%
- Labourers: 16.1%
- Community and Personal Service Workers: 14.7%
- Clerical and Administrative Workers: 12.6%
- Machinery Operators and Drivers: 12.3%.

Of the 837 in the labour force, 70.1% were employed full time, 19.2% were employed part-time and 1.9% were unemployed (16 people) (ABS,2016).



## 2. RESEARCH SCOPE

### 2.1. OBJECTIVES

The following objectives formed the basis of the study, and provided a structure for the data collection, analysis and reporting of all findings:

1. Review the social and economic contribution of the ongoing operations of phosphate mining on Christmas Island.
2. Conduct an impact assessment of the broad economic, social and community impacts of the scenarios of operations ceasing, or continuing.
3. Model a staged economic scenario based on the 2018 wind-down of the Detention Centre;
4. Provide a comprehensive report outlining the key social and economic impacts that describes:
  - (a) The level of understanding in the community of PRL's contribution to the social and economic wellbeing of the Island;
  - (b) Any areas of difference between the community perception and the actual contribution the company provides;
  - (c) Reasons why a discrepancy between perception and reality exists (if that is the case) and possible ways to overcome it.
5. Provide recommendations to key conclusions.

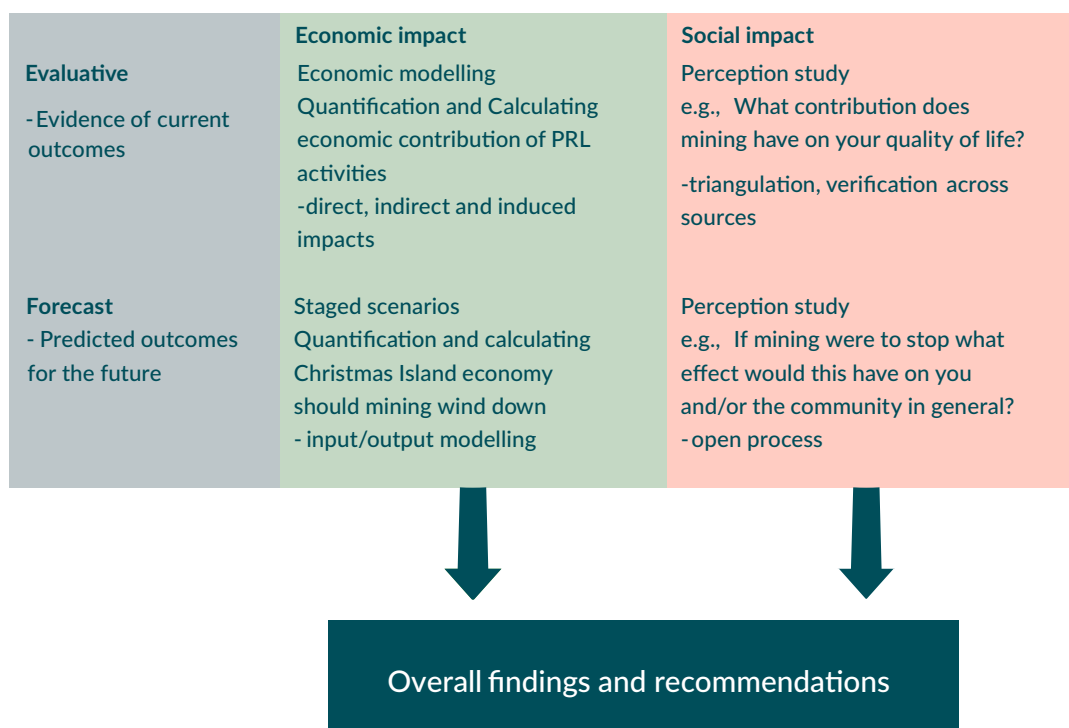
### 2.2. RESEARCH APPROACH

The research comprised two key focus areas:

- **Evaluative:** based on actual outcomes that have already taken place or are taking place.
- **Forecast:** aims to predict how much social and economic value will be created/decline based on differing scenarios/outcomes in the future.

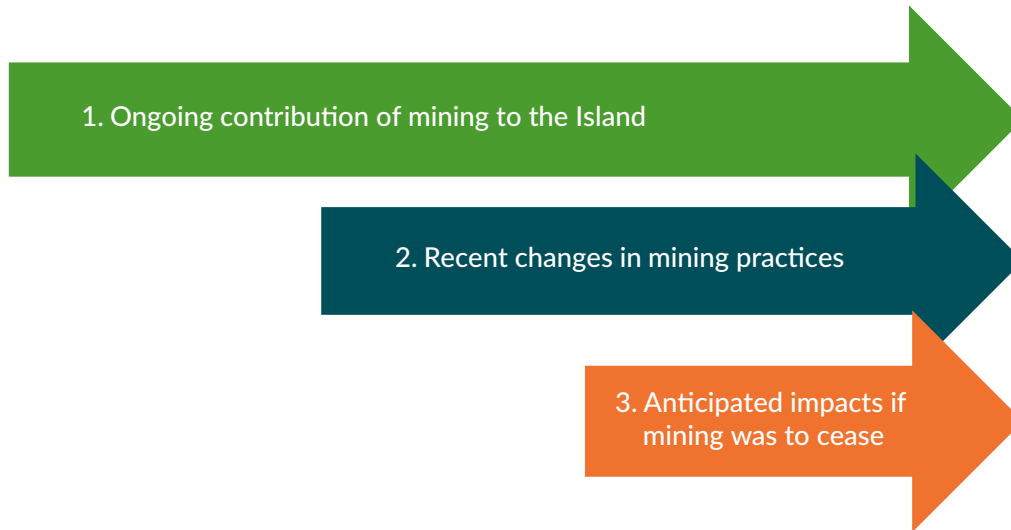
The SEIA was divided into two streams:

- An economic impact assessment based on key economic indicators and modelling of various scenarios.
- A perception study of impacts based on wide consultation across the community using a mix of traditional qualitative research methods, the triangulation of findings across various stakeholders, and substantiation with other forms of evidence.



In its analysis of key findings, the Research Team noted that the story of change, and types of impacts experienced, actually occurred across several dimensions, which are outlined in Figure 4.

Figure 4 Dimensions of change

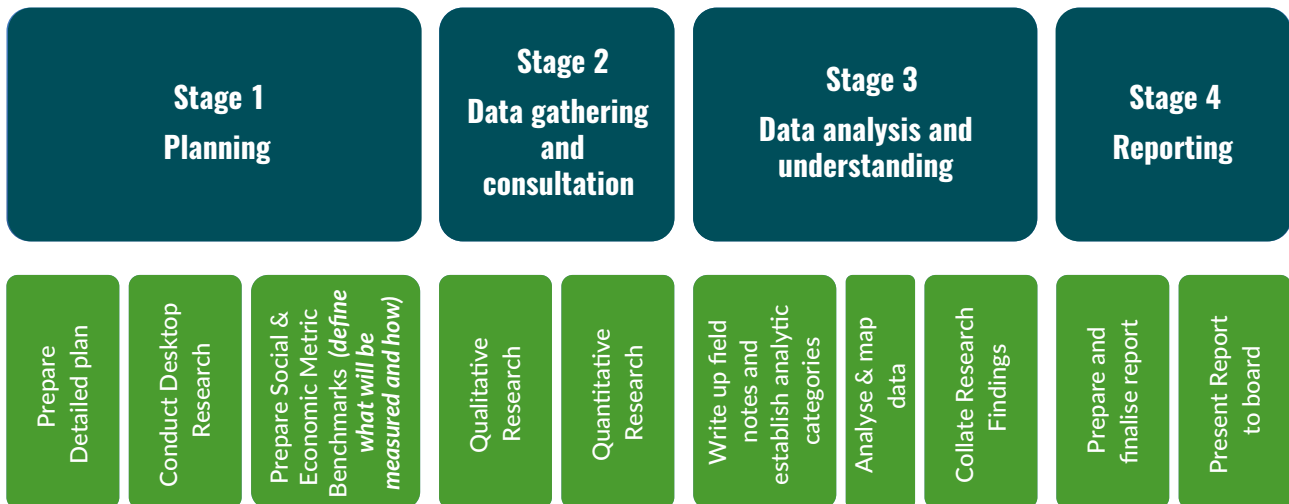


The differentiation of impacts across these three layers enabled the Research Team to design more targeted questions and also to make sense of conflicting narratives of change by situating them in reference to the above.

### 2.2.1. RESEARCH STAGES

Research was conducted in four main stages from July 2018 until November 2018. In Stage One Ethics Approval was granted by the University of Western Australia’s Human Research Ethics Committee. Fieldwork took place during Stage Two during a five-day trip to Christmas Island by two researchers on the Research Team. Figure 5 provides an overview of the main research processes.

Figure 5 Research stages



A more detailed outline of methodology and data collection processes is provided in the respective sections: for example, in the Economic Impact Assessment approach is outlined in the Economic Impact Section (Section 3.1) and details about the data collection processes and data sources for the Social Impact Assessment are provided in the Social Impact Assessment section (Section 4).

Our working strategy ensured that:

- Analysis of collected data was in line with best-practice research, evaluation and engagement principles and methodologies.
- Economic impact was measured in line with Department of Treasury economic models and budget forecast templates and standards, and Australian Bureau of Statistics statistical models and standards.
- Social and economic impact was measured in both qualitative and quantitative terms, using primary and secondary sources.
- A diverse range of stakeholders were engaged and included in the evaluation, both from within the PRL community, as well as from other stakeholders with other interests in the outcomes identified in this evaluation.
- We have endeavoured to make this SEIA more than just a social and economic profiling exercise. Fieldwork on the Island enabled rich conversations and a good grounding across different community sectors and interests.

### 2.2.2. RESEARCH LIMITATIONS

Some weaknesses in the research methodology included the lack of time to ensure the non-PRL based community was as well represented as the PRL-based community. In the end there was roughly a 50/50 split, which means the PRL voice was over-represented.

In retrospect the Research Team could have done more to engage the non-PRL community, in terms of research planning and utilising on-island translators more effectively. Two field trips would have allowed modifications to make research methods more appropriate to non-PRL community members, and, in particular, non-English speaking community members.

However, within the resource constraints of this project, the Research Team were able to capture a fair assessment of a wide sample of community perspectives, and engage in good quality, honest conversations, told directly to independent researchers in a safe environment.

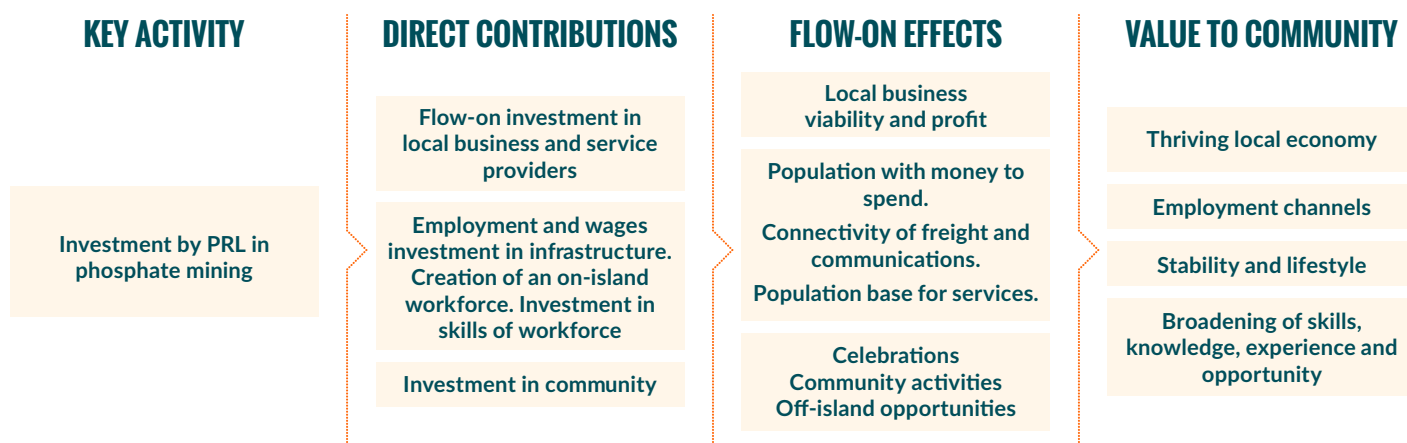
While this remains largely a perception of impact study rather than an actual outcomes study, findings are backed where possible with indicators and the process of triangulation was robust given the sample size and resource constraints. In-depth analysis was possible across some domains, to identify the “the spatial, temporal and stakeholder distribution of impacts and benefits” (Esteves, Franks & Vanclay, 2012).

Calculating socio-economic impacts is not an exact science, especially in the predictive space. Nevertheless, such calculations, undertaken as part of a study within a consultative framework, can provide valuable and useful information (Kemp, Clark & Zhang, 2007).

### 2.2.3. LOGIC MODEL

A logic model, linking mining, direct contributions from PRL, flow on effects and value to community, was developed to form a foundational understanding of how phosphate mining has been a major contributor to various economic and social dimensions of life on Christmas Island. This logic has been applied to the EIA as well as the SIA to ensure a shared understanding of the rationale, and alignment of evidence and indicators. This same logic was used to assess outcomes of alternative scenarios. The logic framework is illustrated in Figure 6.

Figure 6 Logic model



# 3. ECONOMIC CONTRIBUTION OF PHOSPHATE MINING ON CHRISTMAS ISLAND

## 3.1. ECONOMIC IMPACT ASSESSMENT APPROACH

Quantification of the economic impact of PRL activities, including phosphate mining on Christmas Island considered a range of factors and perspectives. This included:

- Impacts that result **directly** from PRL operations such as;
  - Local workers employed (FTE) by PRL and subsidiaries;
  - Income paid to workers employed by PRL and subsidiaries; and
  - Output and export value of goods and services produced by the mine.
- **Indirect** impacts that result across Christmas Island supply chains as the result of PRL operations such as;
  - Expenditure by PRL in local enterprises and infrastructure;
  - Employees of contractors /business resulting from PRL expenditure; and
  - Revenue to public sector agencies resulting from PRL activities.
- Impacts that are **induced** from economic activity that result from direct and indirect impacts;
  - Local consumption by direct and indirect workers;
  - Subsidisation/anchoring of services resulting from PRL activities; and
  - Investment in public sector revenues resulting from PRL activities into community initiatives.

## 3.2. PHOSPHATE RESOURCES LIMITED OPERATIONS

### 3.2.1. PHOSPHATE RESOURCES LIMITED ACTIVITIES

Phosphate Resources Limited (PRL) trading as Christmas Island Phosphates is a leading producer of phosphate rock in the South East Asian region. The Company's key asset is a 100%-owned phosphate rock mine on Christmas Island, where it has mined and exported phosphate since 1990, and exports approximately 650,000 tonnes of phosphate product each year to Australia, New Zealand, Malaysia, and Indonesia.

Over time PRL has expanded into other complementary activities on Christmas Island including:

- Stevedoring services;
- Provision of fuel supplies; and
- Provision of facilities management and maintenance facilities.

Each of these activities is undertaken by a subsidiary of PRL.

### 3.2.2. SUBSIDIARY COMPANIES AND SERVICES

Indian Ocean Stevedores employs 3 full time permanent workers on the Island. The company provides all the pilotage services for Christmas Island and generates approximately \$620,000 per annum from servicing 90 CIP vessels. Stevedoring services for mining operations are provided by an external company Complete Stevedoring and Freight Services.

Indian Ocean Oil Company is the sole supplier of petrol, diesel and burner fuel on the Island. In addition to supplying PRL's operations, IOOC is contracted with the Commonwealth to supply diesel to the navy and power station. Additional diesel is supplied to external users on an ad hoc basis Table 2 and Table 3 show the current internal sales from IOOC.

From the petrol station, internal sales due to PRL operations represent 17% of total diesel sales and 1% of total petrol sales. In addition to the petrol station, diesel sales due to PRL operations account for 56.5% of total sales and 73.4% of volume consumed. Given these figures, lack of alternatives, and economies of scale, fuel prices are likely to be sensitive to mine closure.

Table 2 IOOC Internal Fuel Sale Volumes and Value

	Litres	\$ (2018)
Diesel (Service Station)	49,435	\$93,940
Petrol (Service Station)	6,566	\$14,577
Burner Fuel	10,543,465	\$7,147,567
Diesel	1,043,955	\$920,544

Source: PRL

Table 3 IOOC Internal Fuel Sale Volumes and Value

	Litres	\$ (2018)
Diesel	374,378	\$708,193
Navy	2,576,472	\$2,584,393
Power Station	8,475,227	\$8,565,253
Other	1,857,172	\$2,614,142

Source: PRL

**Christmas Island Maintenance Service (CIMS)** provides facilities management and maintenance services on the Island, including potential services related to mothballing of the Detention Centre.

### 3.3. DIRECT IMPACTS OF PHOSPHATE RESOURCES LIMITED OPERATIONS

#### 3.3.1. CHRISTMAS ISLAND EMPLOYMENT

An examination of employment by industry for Christmas Island illustrates significant reliance on two key sectors for employment, these being Public Administration and Safety (290 FTE) and Mining (179 FTE). Combined, these two sectors directly account for 60% of total FTE employment on Christmas Island.

Figure 7 Christmas Island employment by industry type (2018)



Source: ABS Census (2016), modified with PRL input (2018)

#### 3.3.2. PHOSPHATE RESOURCES LIMITED EMPLOYMENT

Phosphate Resources Limited is the most significant employer on the Island, employing a total of 216 permanent and casual staff directly in mining operations and within subsidiary companies. Short-term contractors are on-island Contractors (Table 4).

Table 4 FTE Employment in PRL and Subsidiary Companies (2018)

	PRL Operations	IOS	IOOC	CIMS	Total
Permanent	156	3	7	16	182
Casual	23	0	4	7	34
<b>Total</b>	<b>179</b>	<b>3</b>	<b>11</b>	<b>23</b>	<b>216</b>

Source: PRL (2018)

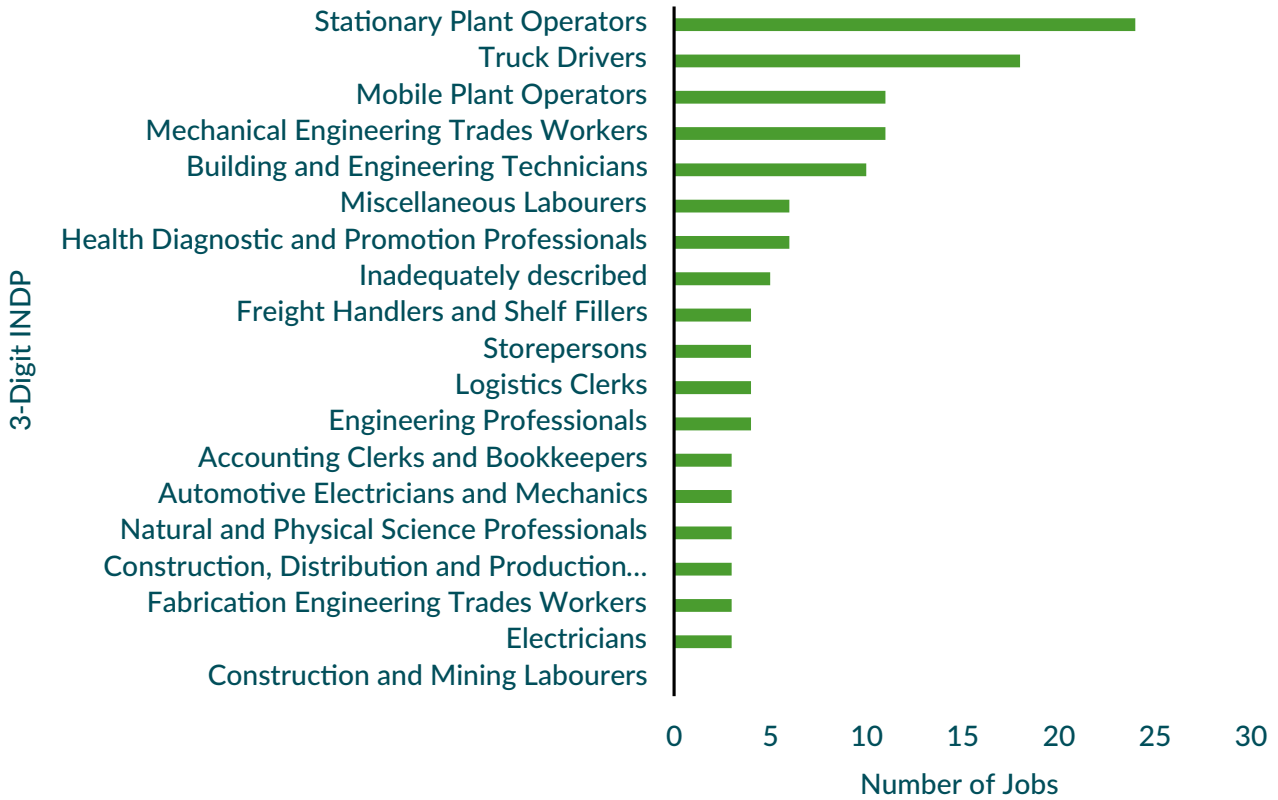
In total 185 locals are employed by PRL and subsidiaries. Casual workers equate to approximately 30 FTE positions.



### 3.3.3. PHOSPHATE MINING

Based on PRL data, 179 people were employed directly in phosphate mining on the Island, with 154 being residents of Christmas Island. These locals who are directly employed in mining operations, will be most susceptible to loss of employment on the Island should the mine close. Figure 8 provides a general indication of occupation within this sector on the Island using 2016 ABS census data.

Figure 8 Count of PRL Mining Employment by Occupation (2018)



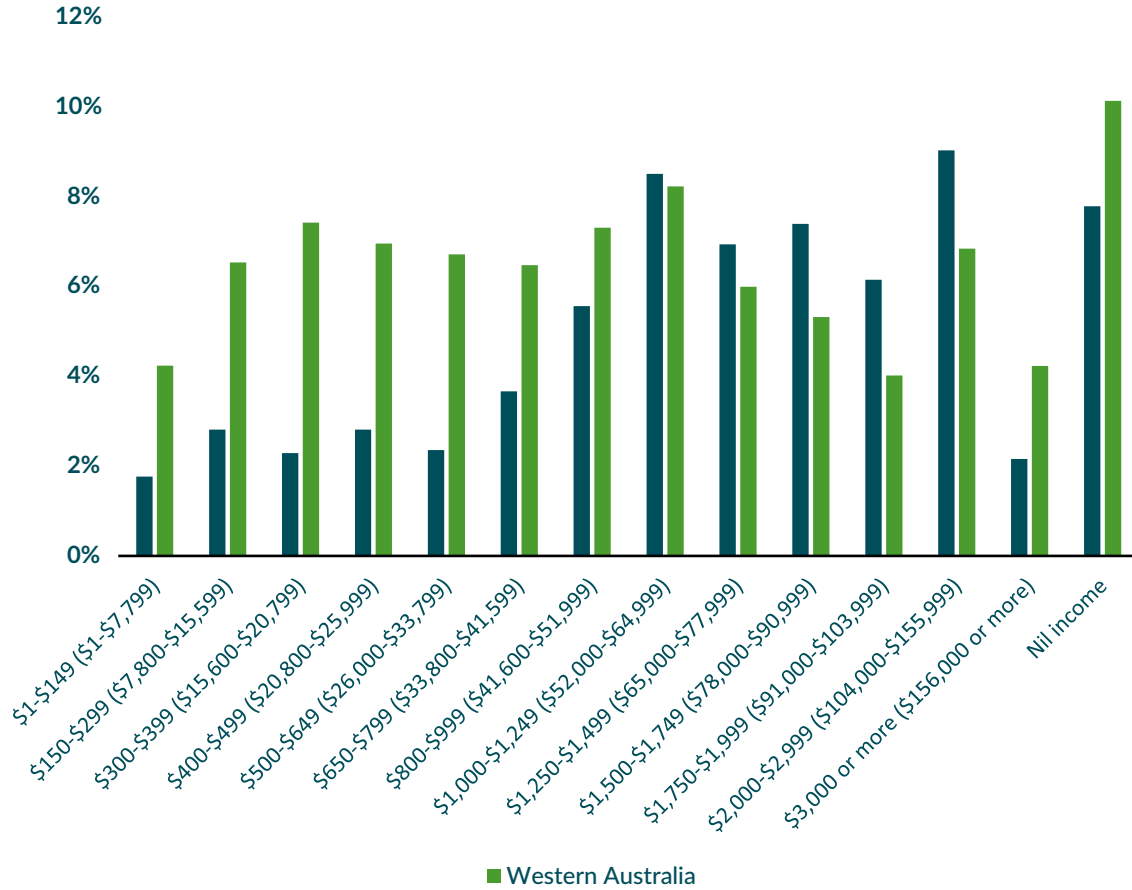
Source: Phosphate Resources Limited (2018)



### 3.3.4. PHOSPHATE RESOURCES LIMITED INCOME IMPACTS

Christmas Island has a median individual income of \$1,164 per week. This level of income is approximately 60% higher than Western Australian median individual income.

Figure 9 Christmas Island median individual income compared to Western Australia (2016)

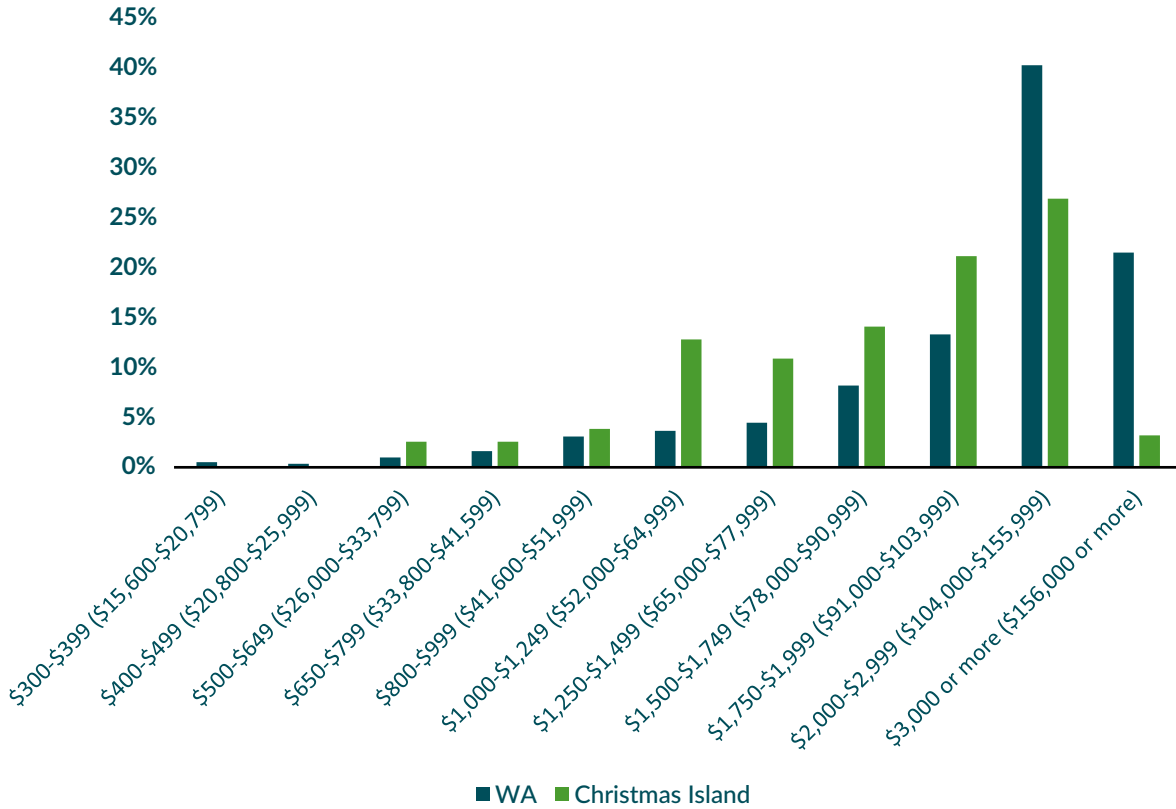


Source: ABS Census 2016



The median income for those employed on Christmas Island in the Non-Metallic Mining category, which accounts exclusively for phosphate mining on Christmas Island, was within the \$1,750 – \$1,999 bracket. This is reflected in the distribution of weekly incomes for this sector, which shows a skew to employees earning higher wages.

Figure 10 Reported distribution of weekly income for Christmas Island workers in Non-Metallic Mining Industry (2016)



Source: ABS Census 2016



### 3.3.5. DIRECT ECONOMIC OUTPUT

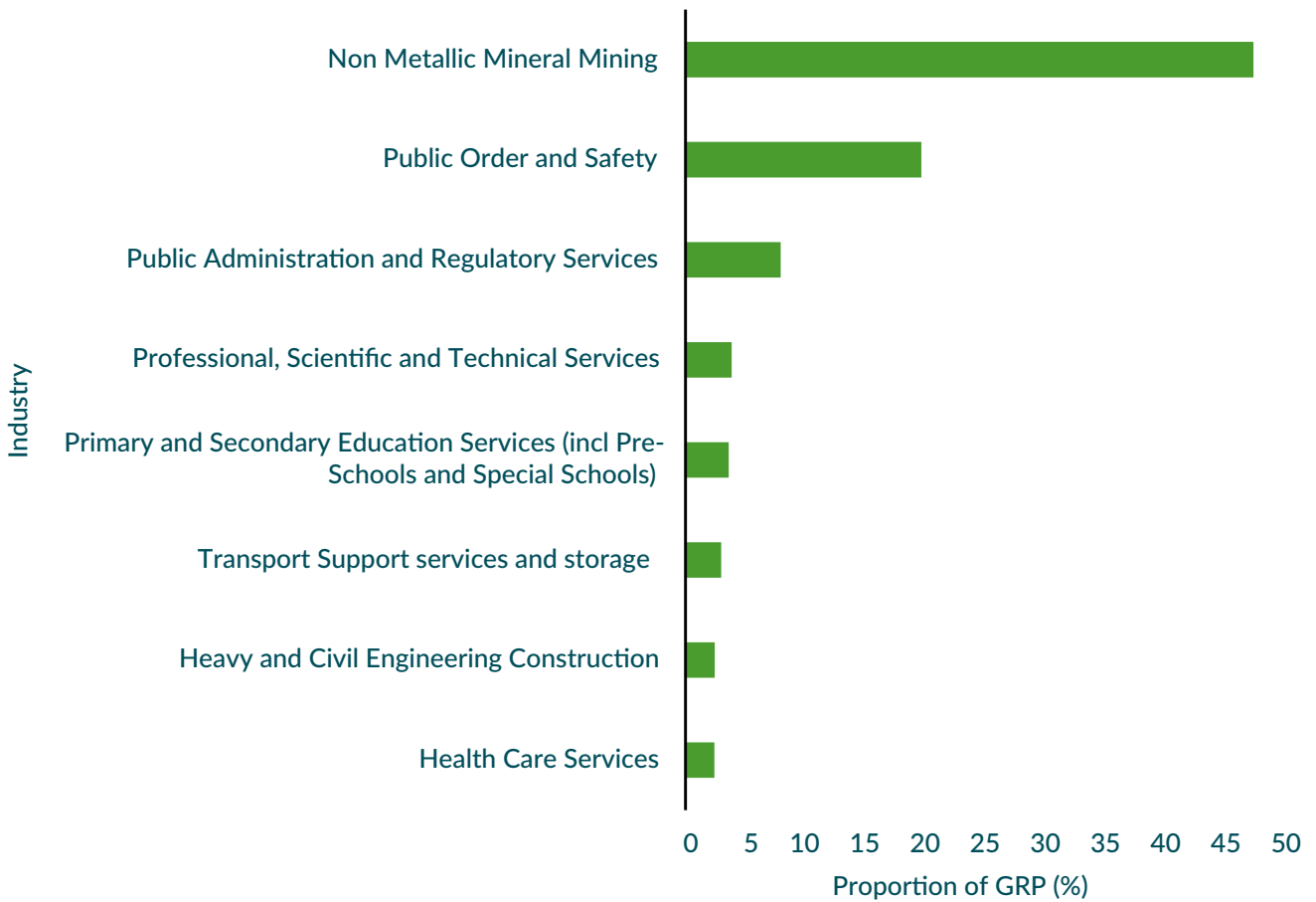
A regional Input-Output table was built to estimate the size of Christmas Island’s economy utilising a distributive commodity balance method. Based upon this analysis, Christmas Island’s current gross regional product is estimated to be \$90M.

Phosphate mining contributes \$42M to Christmas Island’s Gross Regional Product (GRP), whilst support industries directly involved with the phosphate mine, such as stevedoring, also contribute

\$2.66M to the Christmas Island economy. A breakdown of the indicative contribution to Christmas Island’s GRP is illustrated in Figure 11. A description of the methodology utilised in calculating these

figures is outlined in Appendix A. It should be noted that the timepoint for this data source was 2016, a year during which the Detention Centre was fully operational. It is expected that 2018 data would not have as significant a ‘Public Order and Safety’ contribution, making the mining industry even more significant as a proportion of overall GRP.

Figure 11 Top 8 Industries by proportion of GRP



Source: ABS Census 2016, PRL 2018, FAR lane 2018

### 3.3.6. INDIRECT IMPACTS

The impacts between the different industries on Christmas Island can be understood by considering output multiplier estimates and the extent of expenditure captured on-island.

The Christmas Island multiplier estimates (Table 5) have been derived from the Christmas Island Input Output table derived from the Australian national input-output model using a combination of 2016 data from the Australian Bureau of Statistics (ABS) and employment insights provided by PRL. The multiplier values capture the direct (Type I) and indirect effects (Type II) of an economic stimulus on a region in terms of output, income, and full-time employment. The multipliers considered in this analysis are:

- Output multiplier – the total value of output generated by all industries in the economy
- Income multiplier – the total change in compensation of employees by all industries
- Employment multiplier – the impact on FTE employment

*Table 5 Christmas Island economic multiplier estimates*

Industry (IOCP)	Output Multipliers		Income Multipliers		Employment Multipliers	
	Type I	Type II	Type I	Type II	Type I	Type II
Non-Metallic Mineral Mining	1.31	1.62	0.29	0.36	3.11	3.85
Electricity Generation	1.04	1.29	0.09	0.11	0.81	1.01
Heavy and Civil Engineering Construction	1.14	1.86	0.25	0.40	1.57	2.56
Construction Services	1.47	2.28	0.28	0.43	3.81	5.91
Wholesale Trade	1.24	2.17	0.33	0.58	2.91	5.08
Retail Trade	1.17	2.32	0.42	0.84	7.87	15.56
Food and Beverage Services	1.07	2.00	0.34	0.64	6.97	13.09
Air and Space Transport	1.21	1.85	0.22	0.33	2.19	3.34
Transport Support services and storage	1.23	1.90	0.22	0.35	2.35	3.62
Finance	1.15	1.50	0.11	0.14	1.61	2.10
Professional, Scientific and Technical Services	1.33	1.58	0.46	0.55	4.90	5.84
Computer Systems Design and Related Services	1.30	1.71	0.31	0.40	4.80	6.31
Building Cleaning, Pest Control and Other Support Services	1.13	2.18	0.38	0.74	8.69	16.82
Public Administration and Regulatory Services	1.10	2.50	0.51	1.17	5.79	13.17
Public Order and Safety	1.01	2.62	0.58	1.51	6.91	17.93
Primary and Secondary Education Services (incl Pre-Schools and Special Schools)	1.07	2.10	0.71	1.41	9.86	19.43
Health Care Services	1.11	2.51	0.52	1.17	7.89	17.77
Heritage, Creative and Performing Arts	1.14	1.70	0.19	0.29	6.92	10.35
Other Repair and Maintenance	1.07	1.77	0.25	0.41	4.57	7.58
Other Services	1.03	1.43	0.73	1.01	5.79	8.05

Source: FAR Lane (2018)

### 3.3.7. INDIRECT OUTPUT (MULTIPLIERS)

The indirect multipliers for phosphate mining activities on Christmas Island suggest that for every \$1M increase in output, an additional \$600,000 of output would be generated by industries in the Christmas Island economy.

### 3.3.8. SUPPLY CHAIN INCOME

The multipliers for phosphate mining activities on Christmas Island suggest that for every \$1M increase in phosphate mining output, an additional \$390,000 of additional compensation by all employees (Income) would be distributed throughout the Christmas Island economy.

### 3.3.9. SUPPLY CHAIN EMPLOYMENT

The Indirect Multipliers for phosphate mining activities on Christmas Island suggest that for every

\$1M increase in output in phosphate mining activities, 3.85 additional FTE jobs would be generated and distributed across the Christmas Island economy.

### 3.3.10. PUBLIC SECTOR REVENUES

Table 6 shows an estimate of direct contributions from CIP to the local economy from relevant taxes and royalties.

*Table 6 Taxation and community contributions currently resulting from PRL Christmas Island operations (2018)*

Taxation Type	Annualised Contribution (\$2018)
<b>1. Tax and community contributions that contribute to Gross Regional Product</b>	
Income Tax	\$7,259,000
Phosphate Royalties	\$2,031,205
Levies	\$1,487,856
Fringe Benefits Tax	\$326,377
Local Government Rates	\$298,865
Mining Lease Rental	\$33,502
Community Development	\$200,000
Conservation Levy	\$1,453,747
<b>SUBTOTAL</b>	<b>\$13,090,552</b>
<b>2. Additional employee-based income tax and other contributions outside of Gross Regional Product</b>	
Employee Income Tax	\$6,627,791
Payroll Tax	\$1,370,269
<b>SUBTOTAL</b>	<b>\$7,998,060</b>
<b>GRANDTOTAL</b>	<b>\$21,088,612</b>

Source: PRL 2018

## 3.4. INDUCED IMPACTS

### 3.4.1. UNDERWRITING KEY SERVICES

Phosphate Resources Limited operations utilises a range of services and supports local markets that are also critical to the communities and economies of Christmas and Cocos (Keeling) Islands. This includes

- Sea freight to Christmas Island;
- Christmas Island Port utilisation;
- Stevedoring services;
- Commercial passenger flights to Christmas Island; and
- Purchase and rental of residential properties.

Utilisation of these services by PRL are highly dependent on mine operations. In the event of mine closure, this expenditure would no longer be incurred on these services.

### SEA FREIGHT

Sea freight to Christmas Island is handled through Zentner Shipping and makes approximately 11 shipments per year. PRL expenditure on the service was \$727,000 and makes up a relatively large proportion of total supply.

### CHRISTMAS ISLAND PORT UTILISATION

Christmas Island Phosphate has approximately 90 shipments per year, with a total expenditure on port charges of \$126,500.

### STEVEDORING SERVICES

Stevedoring services are provided by Complete Stevedoring and Freight Services, with 65% of their current operations servicing PRL. Complete Stevedoring and Freight Services has a total of 20 employees.

### COMMERCIAL PASSENGER FLIGHTS

Flights to Christmas Island are underwritten by the Australian Government at a cost of \$19.8m. Flights are operated twice weekly from Perth and service Christmas Island and Cocos (Keeling) Islands with approximately 360 seats per week, of which 20 are used by PRL. This accounts for approximately 6% of total seats available on flights.

### RESIDENTIAL TENANCIES/PROPERTIES

PRL rents 30 dwellings on the Island and owns a further 6 to accommodate contractors on the Island, accounting for 7.5% of total dwellings.

### ENVIRONMENTAL ACTIVITIES

In addition to the mandatory environmental conservation levy, PRL funds the feral cat eradication program with an expenditure of \$1.35M between 2014/2015 and 2019/2020.

## 3.5. FUTURE ECONOMIC SCENARIOS

### 3.5.1. PRL SCENARIOS ASSUMPTIONS

To estimate the impacts of alternative PRL operational scenarios on the Christmas Island economy, scenarios were assessed across the following areas:

- Economic output of Christmas Island;
- FTE employment on Christmas Island;
- Total Christmas Island workforce income; and
- Total Taxation and Contributions.

### 3.5.2. PRL OPERATIONAL SCENARIOS

#### Scenario 1

A mine life for ten years, to late 2020s, includes a three-year wind down. Production and export of 650,000 tonnes per year at a realised value of \$125 per tonne (\$2018).

#### Scenario 2

Mining continues for an additional 4 to 6 years beyond Scenario 1 due to availability of additional mineral resources e.g. new leases. Production and export of 650,000 tonnes continues per year at a realised value of \$125 per tonne (\$2018).

#### Scenario 3

No mine operations exist on the Island. This scenario serves to allow for baseline impacts to be captured.

### 3.5.3. KEY ASSUMPTIONS

A number of key assumptions consistent across all scenarios in this analysis should be noted. These include:

- Continuation of 2018 economic conditions – no assumed economic boom or collapses;
- Continuation of present-day phosphate market conditions;
- No unforeseen major market entrants/changes in supply chains;
- Productivity and employment from phosphate mining activities tapers evenly in the last 3- years by one third of 2018 output per annum;
- PRL subsidiaries will continue operations in the case of mine closure with projected reduced earnings;
- No major technological changes impacting upon workforce requirements; and
- Closure of the Christmas Island detention centre - in 2016, 290 people were directly employed in the public Administration and Safety Industry, of which 173 worked within public order and safety services. Given the Centre's closure, loss of some employment in this sector needs to be acknowledged.

### 3.6. ANTICIPATED SOCIOECONOMIC IMPACTS OF SCENARIOS

#### 3.6.1. KEY FINDINGS

Key findings from the scenario assessment are described in Table 7.

Table 7 Key findings from scenario impact analysis (\$2018M)

	10 Years Mining	16 Years Mining	No Mining
Christmas Island Cumulative Output \$M	\$961.00	\$1,495.00	*\$173
FTE as a result of Mine Closure (Total)	-411	-411	-411
Income of Christmas Island Workers Cumulative \$M	\$562.00	\$874.00	-\$62.00
Total Taxation and Contributions \$M	\$130.90	\$209.19	-\$13.09

Source: FAR lane 2018

These findings suggest that to alleviate the impact that shut-down of phosphate mining on Christmas Island, there would need to be realisation of:

- New economic output on Christmas Island equivalent \$96M per annum from 2028 under Scenario 1, and \$99.6M per annum from 2034 under Scenario 2 to -\$173M from 2019 under Scenario 3 if Christmas Island is to remain as economically productive;
- New employment on Christmas Island, equivalent to, 411 full time jobs from 2028 under Scenario 1, and 411 full time jobs from 2034 under Scenario 2 and 411 full time jobs from 2019 under Scenario 3 if Christmas Island is to remain as economically productive;
- A total additional Christmas Island household income of \$56 per annum from 2028 under Scenario 1, \$58 per annum from 2034 under Scenario 2, and -\$62 per annum from 2019 under Scenario 3 if Christmas Island is to remain as economically productive; and
- The likely cumulative tax revenues and contributions realised is expected to be \$130.90M in Scenario 1, \$209.19M in Scenario 2, and -\$13.09M per annum under Scenario 3.

2 411 indirect FTEs from estimated multiplier effect of \$106M of output taken out of the economy minus the existing 216 FTEs outlined in Table 7.

\* Under Scenario 3 where 650,000 tonnes is not produced, Christmas Island is effectively not contributing \$106m of output into Christmas island's the economy. When the multiplier effect is taken into consideration, this equates to taking out \$173 of output from not only mining output, but other industries output and consumption in the local economic supply chain is taken out Christmas Island's total output. This scenario is used to communicate the annual output contribution to the economy.

#### 3.6.2. IMPLICATIONS OF FINDINGS

Three potential key areas of implication dependent upon the scenario chosen and response by decision makers:

- Net wealth of the community decreases;
- Requirement to increase subsidisation of the Christmas Island economy; and /or
- Requirement to facilitate alternative industry attraction.

##### Decreased net wealth of the Christmas Island community

The findings of analysis undertaken suggests that, unless replaced by equivalent economic activity or public sector subsidisation, the Christmas Island community would likely lose \$62M in household income per annum.

This would likely mean significant emigration away from Christmas Island by households whose income is impacted upon directly or indirectly by the mine site closure. Analysis suggests that this could impact the households of up to 411 FTE employees, including 195 indirectly throughout the local economy<sup>2</sup>. This equates to an impact on up to 60% of Christmas Island households.

Such emigration would have flow-on impacts with decreased demand across areas including:

- Education services for children of workers;
- Local goods and services; and
- Local housing (owned or rented).

In addition to household wealth impacts, local institutions would also likely suffer a decrease in income, with the Shire of Christmas Island to lose income each year, and local community groups needing to source \$200,000 of alternative sponsorship per annum.



### 3.6.3. INCREASED PUBLIC SECTOR SUBSIDISATION OF THE CHRISTMAS ISLAND ECONOMY

To counter the loss of patronage and investment by PRL, its employees and subsidiaries within the Christmas Island community and economy, it is likely that there will be the need to draw upon greater support and resources from Local, State and Federal Governments. This may include increased expenditure across a range of areas including:

- Upkeep of unsealed roads (to offset works undertaken by PRL);
- Upkeep of Port infrastructure and operations of Port (to counter loss of patronage);
- Travel/transport expenses of people and freight (to counter the greater costs to transport companies);
- Development and implementation of local employment initiatives (e.g. environmental rehabilitation);
- Operations of public services including education and healthcare (to counter loss of patronage); and
- Investment/sponsorship of local community groups/initiatives (to counter loss of sponsorship).

### 3.6.4. REQUIREMENT TO FACILITATE INDUSTRY REPLACEMENT - TOURISM

The loss of a major industry such as mining in a small, relatively isolated economy such as Christmas Island will necessitate the development of alternative 'traded' activities that realise value through the creation and export of goods and services to external markets.

Tourism has been identified in a range of government published reports as representing a significant industry that could replace/moderate the impacts of loss of phosphate mining activity on Christmas Island. Multiplier calculations were used to provide an estimate on the scale of development that would be required for tourism to replace phosphate mining under each Scenario.

The tourism employment multiplier has been identified in an economic impact assessment previously conducted by ACIL Tasman (2009) when it was estimated as being approximately 10.8 FTE jobs generated from \$1M expenditure. This is consistent with national and state multipliers. The tourism multiplier is based upon:

- 60% of restaurant activity is attributed to tourism
- 20% of retail trade is attributed to by tourism
- 20% of sport and recreational services is attributed by tourism

To replace the 411 FTE jobs on Christmas Island that were supported by mining, approximately \$42M per annum would need to be realised. Industry trends observed during previous FAR Lane projects suggest that a realistic average spend per person, per day could be approximately \$450. To realise \$42M in turnover, assuming that all sector cash flows are ultimately realised

through tourism spend, this equates to a required visitation of 93,340 visitor nights per year. Under the assumption that 75% of the tourism visitation is realised within a peak period of 3 months, 70,050 visitor days would be required to be supported over 12 weeks, based around the school holidays, with the remaining 23,350 visitor days serviced in the remaining 40 weeks of the year. Realising peak demand suggest requirement for accommodation for peak season demands, approximately 560 rooms would be required on Christmas Island.

The investment required to realise such the required supply of accommodation (notwithstanding the required investment in land, infrastructure, hospitality, attractions and marketing required to realise such demand), could easily equate to approximately \$80-\$100M (at a cost of \$140,000-\$180,000 per room) excluding land costs. Additionally, to cater for the 93,350 visitor nights a significant increase in flights would also be required, and potentially larger planes, which would require a significant expansion of the airport facilities e.g., runway expansion. There may be a significant cost in this (\$100 M).

The key difference in the economic scenarios considered in this analysis is the time frame for the mine closing down and thereby the time available to attract investment in alternative industries. At a cost for tourism accommodation of \$100M, the difference in annual investment required between Scenario 1 (\$10M) and Scenario 2 (\$6.6M) would be in the order of \$3.6M per annum (\$2018). When considered across the entire tourism product/market that would need to be developed, at least 15-years will likely be required to develop a sector with equivalent employment to those currently employed directly and indirectly within the mining sector.

# 4. SOCIAL IMPACT OF PHOSPHATE MINING ON CHRISTMAS ISLAND

## 4.1. SOCIAL IMPACT ASSESSMENT APPROACH

This Social Impact Assessment (SIA) of phosphate mining on Christmas Island is informed by Francis Vanclay's (2003) model of social impact.

When Social Impact Assessments were developed in the 1970s, they were originally tacked onto Environmental Impact Assessments to anticipate overall impacts of proposed major land use projects. At this time SIAs focused mainly on population statistics, employment and housing. Since then, however, the scope has expanded considerably to encompass broad impacts such as physical and psychological health and wellbeing.

This approach was further developed in the work of Frank Vanclay, a leading international expert in SIA. In 2003, he argued that *"all issues that affect people, directly or indirectly, are pertinent to social impact assessment"*. He argued that reviews of social impacts should be comprehensive, in recognition that *"our knowledge of the social world and of social processes is incomplete and that social knowledge can never be fully complete because the social environment and the processes affecting it are changing constantly and vary from place to place and over time"* (Vanclay, 2003). The approach of this study embraces Vanclay's full range of social impacts, especially as mining has been part of Island life for over a century so its reach into social life is embedded. Moreover, a small community situated on an island can be like an echo chamber, with many impacts effecting each other.

Vanclay identified seven domains of social life, with 28 sub-domains. To this framework the Research Team has added 'Human Capacity' which includes 'Education', 'Training and skill building' and 'Resilience and adaptive behaviours' as subdomains. The addition captures a critical element to PRL's investment in community (and particularly in young people), and hints as to what is needed going forward. The complete adapted model of the SIA framework is provided in Figure 12 and will inform the data analysis for this section.

While originally focused primarily on impacts to such variables as population, employment, and housing, the scope of social and economic variables analyzed through SIA has greatly expanded, especially overseas while the practice of SIA in the United States has waned, with new attention paid to the unique contexts of indigenous populations, forced resettlement, military conflict, impacts to physical and psychological health and wellbeing, and a new consideration to very long-term impacts related to community sustainability (Esteves, 2011).

## 4.2. METHODOLOGY

### 4.2.1. DATA COLLECTION

Data collection involved a mixed methods approach that included primary and secondary sources.

**Primary data sources:** included interviews with PRL executives and key stakeholders representing non-PRL interests on the Island, focus groups with PRL employees and the community, a community meeting, one-to-one conversations with community members and an online survey for PRL employees and community members.

**Secondary data sources included:**

1. Document review incorporating strategic reports and narratives
2. Statistical sources
3. Academic sources

See the reference list at the end of the Report for further details.

### 4.2.2. COMMUNITY CONSULTATION

Community consultation took place to identify impacts of phosphate mining across a broad range of interests. The Research Team ensured early engagement of diverse sections of the community, involving representatives from:

- those who benefit from mining;
- those who perceive they are adversely affected from mining; and
- those who experience mixed outcomes.

Communication about the research comprised a range of methods to reach as many potential stakeholders and community members as possible. Initial contact was via telephone, email, in-person, flyers, word of mouth, and a Participant Information Sheet translated into three languages (the consent form was also translated).

A community engagement and communication strategy ensured consultation was as wide as possible. However, with only one field visit and time limits of the project, the Research Team did rely on PRL as a conduit to assist with access to the community, to provide suggested contacts, and to provide advice and administrative support when arranging events such as focus groups and interviews. This may have influenced the sampling, as well as the communication strategy which may have led to the study being perceived to be driven by PRL and not an independent Research Team. This was mitigated as much as possible through independently contacting different

interests via telephone prior to arriving on the Island. A Participation Information Form was provided that stated that PRL commissioned this research but it was conducted by an independent Research Team.

Stakeholder groups who participated in the research are outlined in Table 8.

*Table 8 Stakeholder groups included in consultation*

Stakeholder Group	Data group	
Phosphate Resources Limited employees	PRL employees	46.6%
Subsidiaries		
Business community	Non-PRL employees	53.4%
Service providers		
Government and public sector representatives		
Community organisations		
Community members	<b>100%</b>	

A total of 174 people/roles contributed to the data collection during the period 20 August to 19 October 2018. During a field visit to the Island from 28 August and 1 September 2018 a total of 82 people/roles were directly consulted. In total 53.4% of those consulted identified as community members (non-PRL employees).

A mixed method approach was adopted involving semi-structured face-to-face interviews, focus groups, telephone interviews and online or hardcopy surveys. Generally, all options were offered to all participants, and some participants may have contributed to more than one data collection process (this was not tracked). Some research participants, wearing multiple hats, were consulted more than once and were specific about which role they were speaking from. The breakdown of those consulted is set out in Table 9.

*Table 9 Breakdown of consultation*

Total included in Consultation	
Online or hardcopy survey	78
Face-to-face and telephone interviews and focus groups	96
	<b>174</b>

Breakdown of Totals			
PRL employees and subsidiaries	Online or hardcopy survey	55	81
	Face-to-face/telephone	26	
Community/key stakeholders	Online or hardcopy survey	23	91
	Face-to-face/telephone	70	
			<b>174*</b>

\*Note: this represents the number of roles represented, rather than the number of individuals. Also individuals may have participated across a number of different data collection methods.

The Research Team is comfortable that data collected reflects a diverse range of community perspectives and interests. This broad base also provides a potential audience for the distribution of findings and engagement in potential conversations about next steps.

When reporting quotes from individuals in the text we never identify who the respondent is and do not identify the organisation of that respondent of any background on the respondent. Exceptions are when quotes relate specifically to PRL employees (or whether quotes are derived from a non-PRL group) or PRL executives or where the context of the discussion makes it clear the organisation or status of the respondent.

#### **4.2.3. AN ADAPTED VERSION OF THE MOST SIGNIFICANT CHANGE APPROACH**

An adapted form of the 'Most Significant Change' (MSC) approach was utilised as a data synthesis technique. One objective in scope for this study was understanding community perceptions of phosphate mining and its impacts. Consultation across a broad range of community interests quickly uncovered a large degree of variation in community perceptions, including misinformation, exaggeration and different perspectives on the same event. Analytic processes (e.g., triangulation) found that some perspectives expressed were deemed to be 'invalid' technically. However, community perceptions that were divergent from what the mining company stated were also considered to be highly valuable and relevant for understanding the community's relationship with the mine. Some of these views formed the basis for an analysis of community perceptions, presented in Section 8.

These views were written into composite vignettes which were then presented to the PRL Board using an adapted version of the MSC process. This was an opportunity for PRL executives to become familiar with the diversity of views that exist on the Island and to discuss their significance for PRL’s responsibilities. Putting these stories ‘under the noses’ of the PRL executive team was an opportunity to explicitly explore the values that inform the culture of PRL. The main finding, of interest to the Research Team, was that PRL see their role as looking out for the community and their investment in the health and wellbeing of islanders is beyond financial. The idea that PRL is active in keeping the social fabric on Christmas Island strong, was confirmed through the story selection process and discussion of reasons for the selection.

Of surprise to some Board members was the extent to which residents see PRL as a dominant player in areas outside of mining; that the community sees PRL as natural leaders and, in some respects, their best prospect for actioning ideas and meeting community needs. After discussion Board members acknowledged the logic of this view, although it was interesting to discuss broadly the limits to this responsibility and how PRL can define those limits more clearly.

The MSC process is normally a long process, facilitated across multiple sites and over several different points in time. However, due to time limitations in the overall project scope, as well as personal time limitations for all Board members participating, a truncated version was conducted. The group worked through to prioritise and select the most significant stories for them as a group, with their thoughts documented. This data has been utilised within the data analysis process and findings inform Section 8 of the report. Details of the workshop are provided as Appendix B.

### 4.3. DATA ANALYSIS

Once data was collected various analytic techniques were employed, as outlined in Table 10.

*Table 10 Summary of techniques used throughout the analysis*

Data source	Technique	Analytic framework
Qualitative data from interviews, and focus groups and qualitative data from online survey	Thematic analysis with thematic coding Cluster analysis	Vanclay’s Social and Economic Impact Assessment model (2003) Criteria for making assessments (see below) Emergent thematic coding
Composite vignettes for Most Significant Change Stories	Thematic Analysis (including axial coding)	Most Significant Change Story Process (adapted)
Quantitative data from online survey	Cross tabulation, filtering	Quantitative methods

#### 4.3.1. CRITERIA FOR MAKING ASSESSMENTS

The following criteria were used by the Research Team to translate findings into an overall summative assessment of impact.

**High positive impact:** the operation of the mine makes a significant impact on the quality, extent, scale and/or sustainability of this domain; without the mine this domain will be very much diminished.

**Low positive impact:** the operation of the mine contributes to the quality, extent, scale and/or sustainability of this domain; without the mine this domain would continue to be experienced positively, but most likely in a lesser form and/or with less positive or widespread outcomes.

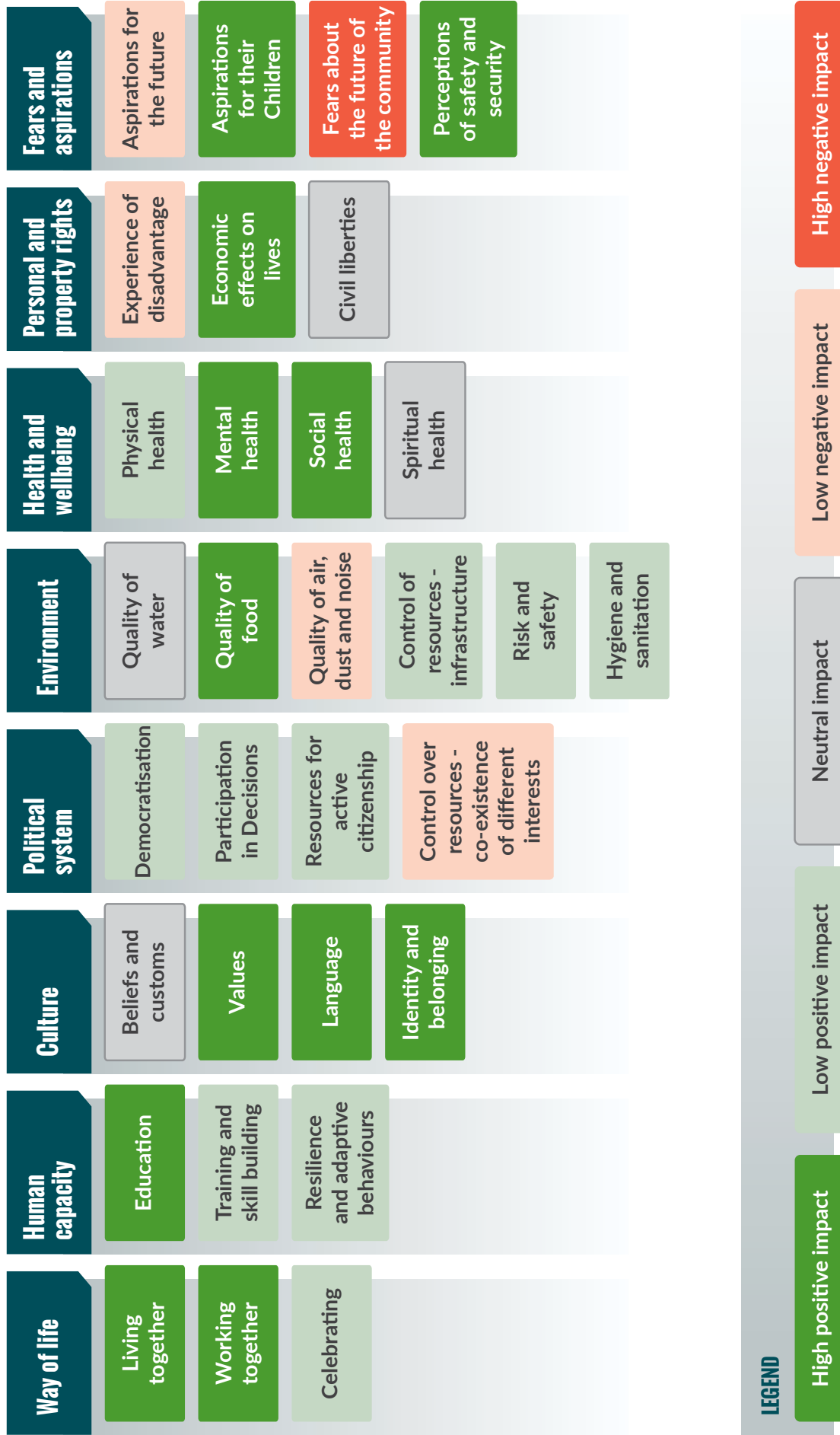
**Neutral impact:** this domain is relatively self-sustaining, and the operation of the mine is not likely to make any impact in this domain.

**Low negative impact:** the operation of the mine has slight negative consequences, and/or prevents the potential of this domain from being fully realised and/or experienced as optimal by the community.

**High negative impact:** the operation of the mine has significant negative consequences, and/or prevents the potential of this domain from being fully realised and/or experienced as optimal by the community.

## SOCIAL AND ECONOMIC IMPACT ASSESSMENT OF PHOSPHATE MINING ON CHRISTMAS ISLAND

Figure 12 Conceptual model for understanding social impacts of phosphate mining on Christmas Island, with summative assessment of impacts



Adapted from Vanclay's (2003) Social Impact Assessment model (Reference: Vanclay, F. (2003) International Principles for Social Impact Assessment, Impact Assessment and Project Appraisal, 21:1, 5-12)

## 4.4. OVERVIEW OF FINDINGS

This section presents findings across all domains. As many of these areas influence one other, they have been analysed, examined and summarised in four main sections:

*Table 11 Reporting structure in relation to Vanclay’s model*

Section	Domains in Vanclay’s analytic framework	
4.5 Resources for survival	Environment	Quality of water Quality of food Quality of air, dust and noise Control over Resources – Infrastructure Risk and safety Hygiene and sanitation
4.6 A healthy community	Way of Life Culture Health and wellbeing	Living together, Working together, Values, Identity and belonging Celebrating Beliefs and customs Language Physical health, Mental health, Social health, Spiritual health
4.7 Inclusion and participation	Political system Personal and property rights	Democratisation, Participation in decisions, and Resources for active citizenship Control over resources – Co-existence with different interests Economic effects on lives Experiences of disadvantage Civil liberties
4.8 Future proofing	Fears and aspirations Human capacity	Aspirations for the future Aspirations for their children Fears about the future of the community Perception of safety and security Education Training and skill building Resilience and adaptive behaviours

## 4.5. RESOURCES FOR SURVIVAL

This section explores mining’s impact on the built environment of Christmas Island and community perceptions of impact on the quality of water; the availability and quality of the food; managing safety and risk; levels of dust and noise people are exposed to; the adequacy of sanitation; and, access to and control over resources.

### 4.5.1. ENVIRONMENT

Typically, Environmental Impact Assessments are conducted separately to Social and Economic Impact Assessments, and the impacts of phosphate mining on the natural environment are not in scope for this study. The natural environment is not included within Vanclay’s SIA framework except where it interacts with social life such as through the human need for air, water and food.

However, the Research Team considers the environmental voice on Christmas Island an important consideration in how

views of mining, the co-existence of different interests on the Island, and the future of the Island play out. Therefore, while research regarding actual environmental impacts of mining remain out of scope for the study, a discussion on the environmental views of Island residents is included in the study and outlined in the section below.

It should be noted in this section that PRL provides a conservation levy for conservation purposes for the national park on Christmas Island.

**“Without mining would there be the ability to fund environmental practices and the national park at this level?”**

(PRL Executive, Community consultation, Sept 2018)

**“Royalties from PRL are paid to the Commonwealth to provide much needed funding for Parks to administer management plans. This is aimed at the protection and sustainability of conservation values, mine site rehabilitation, horticultural/agricultural developments and Park visitor access, which includes infrastructure maintenance necessary for developing the tourism industry”**

(PRL Executive, Community consultation, Sept 2018)

In terms of the built environment, it is fair to say that mining infrastructure – a conveyor leading down to the port, silos, machinery and equipment – visually dominates the settled areas of the Island. This is described as a sore point for some, especially those who have a vision for attracting a particular type of tourist (eco-tourism). Others see it as exotic and of great heritage value.

**“People say the town is ugly, but it’s part of us. It’s our history”**

(PRL Executive, Community consultation, Sept 2018)

## QUALITY OF WATER

In consultations with Christmas Island residents, which included the Water Corporation, no evidence was found to suggest that phosphate mining affects the residential water supply. One individual mentioned being concerned about phosphate dust on water, but this was in relation to still, open water sources and no concerns were expressed about phosphate dust being in tap water.

### Impact assessment of Quality of Water – Neutral Impact

Mining activity is not considered to have any impacts, positive or negative, on the quality of water on the Island, or residents’ access to water.

## QUALITY OF FOOD

### Regular supplies

On Christmas Island there’s a lack of fresh food which needs to be imported at a huge cost. Mining helps facilitate more frequent and accessible freight and transport services (for example, it is estimated that on every flight there are approximately 10 PRL employees), which helps to reduce the price of groceries. More regular shipping as a result of mining (i.e. mine activity bringing more ships, and the mine sustaining a population base to make more frequent supply ships viable) means food is in more plentiful supply and of better quality (freshness) than it would be otherwise.

**“Ships come nine times a year (every six weeks). Without mining, ships would come every three months”**  
(Community consultation, Sept 2018)

**“Without the mine I don’t think the ship will come. There will be a shortage of food. It will be back to once every three months. Ten years ago, it was very quiet, and we noticed a shortage of fresh food. Now it’s six times a year”**

(Community consultation, Sept 2018)

**“Just for shipping the mine generates \$400,000 for stevedoring. The mine subsidises the Island’s supply of goods, and the mine provides the pilot for this”**

(Community consultation, Sept 2018)

This benefit also flows onto Cocos (Keeling) Islands, who share the supply shipping lines with Christmas Island.

It is for this reason that economic ebbs and flows are felt directly by locals – at the supermarket. With the Detention Centre closing, many people are already nervous about the effect of the economic slowdown on food quality.

**“SERCO closing is already having a huge effect on food. Lots of restaurants and cafes are closing down. Food vendors have closed, a supermarket closed. We know small businesses are facing supply issue”**  
(Community consultation, Sept 2018)

**“We have seen a reduction in freight services already”**  
[due to the Detention Centre closing, and 2017 retrenchments]

(Community consultation, Sept 2018)

Mining has been the constant that enables a regular, affordable supply of food to reach the Island.

## RESOURCES TO PAY FOR FRESH, QUALITY FOOD

Anecdotally, it is estimated that a significant number of households on Christmas Island are supported by at least one mining salary (which usually equals a high salary). This means that most households can afford fresh fruit and vegetables, which was pointed out by several sources.

“Diabetes rates are higher on Christmas Island than the mainland as it is difficult to access fruit and veggies. But lucky for us, we have high wages supported by mining, so people can afford the good fresh food. On Nauru people live out of cans and eat fried food mainly, and there is a huge diabetes problem. Compared to Nauru we don’t have much of a diabetes problem. We have good health”  
(Community consultation, Sept 2018)

According to some local people, households without at least one mining wage struggle to afford life on Christmas Island, and in particular fresh, quality food.

### Impact assessment of Quality of Food – High Positive Impact

Mining has a significant and direct effect on food supply. Strong economic activity means ships arrive with a frequency that enables a constant supply of fresh food. Mining also provides many local households with salaries that adequately cover the cost of expensive fresh produce. Without mining locals anticipate the supply of fresh food to diminish, hence this was assessed as a high positive impact.





## QUALITY OF AIR, DUST AND NOISE

One negative impact of phosphate mining identified by the Christmas Island community was the dust created by mining. Noise was not mentioned as an issue, although the port manager reported that ships were not unloaded on Sundays when people use Flying Fish Cove (due to impacts of both dust and noise).

Table 12 presents an overview of all responses received about the dust issue via interviews, focus groups and online survey responses, broken down with a rough count of approximately how many different sources relayed this message (and if they identified as non-PRL members of the community, or a PRL employee/PRL subsidiary employee). The count is not necessarily an accurate count of the number of people who have indicated this but is indicative only – to give some insight into the weight this issue may hold for the community.

Table 12 Overview of responses in relation to dust

Unconcerned about dust	Concerned about dust
No health concerns about effects of dust: (4 sources – 1 PRL)  “There is no evidence of any higher incidence of any disease” (Christmas Island Health Services)	Health concerns about effects of dust: (6 sources – all non-PRL)  “The mine does not care about environmental health or human health, if it did it would stop the amount of dust being blown into the settlement ”
No concerns about dust: (2 sources – 1 PRL)  2 comments mention dust in a neutral way; that it is part of life on the Island.  “It is noticeable, but I just brush it away”	General concerns about dust: (14 sources – 13 non-PRL)  14 comments describe how dust on the Island can lead to discomfort or inconvenience. Included in this section are comments that if the mine closed there will be less dust which will improve quality of life and the environment.  “I’m on my third TV and second fridge. It’s from the fine dust particles getting into appliances, plus rust from sea air too”
PRL makes efforts to minimise dust: (5 sources – all PRL)  “There are times we don’t bring the ship in because the wind is in the wrong direction...there are environmental reasons for this and the dust also affects the community... of the 100 ships per year this affects about 30 ships and means 30-40 days lost productivity. Each delay costs about \$7,000. So PRL makes a financial sacrifice to make it easier for community to live here with mining”	PRL should do more about the dust: (14 sources – 8 non-PRL, 6 PRL)  In these comments PRL are urged to consider dust impacts on health, in particular, cadmium content, and undertake medical research into local health issues to show any trends in medical histories of Islanders.  “There’s a need to upgrade the infrastructure to stop dust emissions provide better conditions”
11 (4 non PRL)	34 (27 non PRL)

Some patterns identified in the data are as follows.

- Dust is a commonly-described impact, especially for non-PRL community members
  - In total about 45 sources in interviews, focus groups or surveys, commented on the dust in relation to mining (although there may have been double-counts and overlaps).
  - The majority of people who commented on dust identified as non-PRL members, and generally, non-PRL people showed more concern about the dust or stated that more should be done about the dust, than was indicated by PRL sources.
  - People who commented on dust were not necessarily concerned about it and a large portion of comments indicated that dust was not

a significant issue at all (“it is noticeable, but I just brush it away”). Only a small minority raised significant environmental and health concerns.

- In the online survey community members with no direct links to the mine were more likely to raise the concern about dust. For example, when asked to ‘describe how Phosphate Mining conducted by PRL, currently effects your life on Christmas Island (directly or indirectly)’, none of the 52 PRL employees mentioned dust in their comments, whereas nearly one third (29%) of the 21 community members who responded mentioned dust in their comments. This could perhaps be due to PRL affecting lives of employees more directly and in stronger ways than just air quality.

- Only PRL employees seemed aware of the extent of existing strategies to address dust

The Research Team became aware that PRL made ongoing efforts to minimise phosphate dust, for example:

- Studies to show no harmful substances in emissions
- Monitoring program – **All personal sample results tested are significantly less than proscribed Action Levels**
- Putting in new chutes
- No unloading on Sundays when locals enjoy Flying Fish Cove.
- Delaying ships when wind is high or northerly

These strategies, however, were not translated into general non-PRL community knowledge by people who responded to the survey, focus groups or interviews. It is not clear whether non-PRL members of the community are aware of the measures taken to monitor and minimise the impact of dust, or medical studies to demonstrate there are no health consequences.

### **CONTRADICTIONARY VIEWS ABOUT THE HEALTH EFFECTS OF PHOSPHATE DUST**

The most divergent findings on community perceptions of dust were regarding health effects. A small minority in the community expressed concern about the potential health effects of dust. Those who stated that dust did not create health concerns were able to refer to either a doctor's advice or medical studies as the source of their view.

In discussions with PRL they indicated that on a regular basis they undertake Contam air sampling testing and noise dosimetry at its Christmas Island operation through an independent industrial hygienist. This includes testing of cadmium exposure. All personal sample results tested are significantly less than the proscribed Action Levels of 0.005mg/m<sup>3</sup> and the ES TWA of 0.01 mg/m<sup>3</sup> and there is no evidence of any health effects to employees resulting from exposure to cadmium or any other elements.

#### **Impact Assessment of Quality of Air, Dust and Noise - Low Negative Impact**

Due to some negative perceptions of mining's effect on air quality, especially for non-PRL related community members, this domain was assessed as having an overall low negative impact. It was not assessed as a high negative impact as the concerns expressed were not serious concerns and there was no scientific evidence of any health effects despite over a 100 years of mining. Studies by PRL indicate no evidence of ill health from dust exposure to employees and that levels of exposure are within acceptable industry standards.

### **CONTROL OVER RESOURCES - INFRASTRUCTURE**

Much of the infrastructure and visual environment around the Christmas Island port and townships bear the marks of an island with historic links to mining. From the Research Team's direct observations, it is evident that beautiful, inviting and functional amenities such as playgrounds, footpaths, public toilets, community precincts, recreational areas and civic spaces are scarce. For a relatively wealthy community this is somewhat surprising.

Due to the Island's isolation, large scale improvements in the built environment need significant investment.

For example, a recent project to remove asbestos from the Island was undertaken with PRL as the initiator and lead agency. Stakeholders in the community explain that having a large economic player such as PRL to back this was critical and allowed smaller businesses and private home owners to piggyback on the initiative.

PRL's ongoing direct investment in upgrading roads and other infrastructure is also recognised:

**"The mine is trying to fix infrastructure"**  
(Community consultation, Sept 2018)

Examples of recent infrastructure upgrades and PRL's contribution are outlined in Table 13.

Table 13 Examples of infrastructure upgrades and views of PRL's contribution

Example	Contribution described through comments from Community Consultation - September 2018	Themes
Crane replacement	"18 months ago, the Island's main crane broke down. The mine stepped in to replace it, even though it wasn't their job to. They supported the community to unload the freighter ship – they were very modest about it, it is not widely known"	PRL showing initiative
Roads	"PRL maintain roads beyond what they need to do." "The road needed to be redone and the mine owns the cantilevers and we got together to work out where our responsibilities lie...it's an easy relationship, not without differences, but they are good to work with"	PRL going above and beyond
Asbestos	"PRL initiated a program to replace all asbestos on island, costing \$10 million. Many people piggybacked on this – privately owned houses that got a roof replaced, Government got buildings upgraded too for much cheaper than it would otherwise cost them. PRL initiated it but also bore a lot of the costs"	PRL sharing benefits across the community
Car and machine maintenance	"Many businesses rely on the mine for sourcing parts, repairs and skills for car maintenance. Without the mine I'm not sure what would happen"	PRL being cooperative and easy to work with on infrastructure issues
Feral cats program	"Initiated by PRL at a cost of \$1.5 million"	
Scrap metal	"At the local level we work with the mine to do different things like getting scrap metal off the Island"  "The Shire had 150 old cars and batteries. Power station has old machinery. However, crane charges were not wavered. We subsidise others, but they see us as a business" (PRL Executive)	Appreciation for PRL  PRL is subsidising others – no reciprocity
Mining machinery upgrades	"The company are spending money in improving – they don't look like a company closing down"	Infrastructure improvement gives community hope
Skate park	"Lotterywest community grants cannot apply to Christmas Island because it does not have a State Government...PRL steps in to fill gaps and meet community needs – this is a historical role the mine plays"	Community relying on PRL

There were no direct negative impacts of PRL's contribution to this domain. However, there was confusion expressed about who was ultimately responsible for certain infrastructure projects, bringing up issues of boundaries, jurisdiction and responsibility. The community seem concerned about who does what, and yet information the Research Team received during consultation was often inconsistent (for example, some people told us the mine ran the Recreation Centre and if the mine closed there would be no more centre, whereas others told us it was an asset of the Federal Government and operated by the Federal Government – which the Research Team understand is the case).

PRL's approach seems to be to get it done without resolving deeper problems of why there is a general lack of investment in Island infrastructure and a lack of responsiveness by others such as the Shire or government agencies to important and sometimes urgently needed upgrades.

Confusion exists about what is appropriate regarding the expected contribution of the Federal Government versus the responsibilities of PRL. There is evidence that this is worked through some of the time, but not all of the time.

The possibilities of an island community that can enjoy functional, beautiful and inviting amenities that complement the stunning natural environment are not yet realised (but may become more important if tourism is to be developed). Where this conversation begins, who the investor/s will be, and what level of contribution and goodwill would be needed is outside the scope of this study but are questions worth considering. Good collaboration, negotiation, communication and cooperative skills need to be honed for PRL to make a significant positive impact in this area.

### **MINING AND ENVIRONMENTALISM ON THE ISLAND**

The impact of a century of mining on the natural landscape is felt acutely by parts of the community and does influence community perceptions of the mine and the way different interests coexist. This can be characterised by an ideological splitting between 'mining interests' and 'environmental interests'.

The assumption is that one is protected at the cost of the other. Environmentalists argue that mining puts a strain on the natural assets, including rainforest and threatened animal species. Legacy mining has left pinnacles. PRL pays a conservation levy towards the remediation of legacy mining areas and remediates its own mining as required under the WA Mining Act. However, environmentalists do not agree; just adding vegetation is not adequate, the rainforest and the biodiversity it supports takes thousands of years to be replaced. One environmental voice suggested that PRL have had a good run but "phosphate is running out anyway, so let's preserve what we can of the environment. Is it worth destroying more rainforest for just ten more years of mining?"

Several people within PRL stated that 63% of the Island is National Park, which (they imply) adequately covers conservation needs. Some also state that, when compared with tourism, mining is relatively respectful of the natural environment, due to the industry being heavily regulated, contained to certain areas, and utilising a local community-based workforce.

"SERCO [their FIFO workforce] did a lot of damage to the crab population. Industries that bring outsiders to the Island cause the damage. Mining is careful, we are locals and know how to look after the Island"  
(Community consultation, Sept 2018)

"More damage is done through the airport and soft port due to a lack of control over what comes in. Mining's impact is controlled and regulated"  
(PRL employee, Sept 2018)

"I don't personally see any issue with mining and the environment co-existing, it has been the case for a long time"  
(Community consultation, Sept 2018)

"A lot of people see tourism as more of a threat to environment"  
(Community consultation, Sept 2018)

The Research Team notes that both the pro-mining and the conservation groups provided balanced, informed and respectful views regarding mining and the effect on the environment. We suggest that to some extent the division in the community is less dramatic than is commonly understood. (Or the drama is in the politics, not the views per se.)

"There's been an emotional campaign about the environment and protection of species. This has blurred some of the facts about why decisions are made. It also creates a hard core 'this is wrong' attitude to mining, which can mean facts are presented in an explosive way. The community feel like they have to take sides rather than understanding"  
(Community consultation, Sept 2018)

It is the impression of the Research Team that the division that pits 'mining' against 'environment' is not widespread. It may be limited to those individuals who have a vision for the Island as a pure, ecological sanctuary which they do not see as compatible with mining. However, this does not seem to be a shared vision across large sections of the community. Some describe the stronger environmental voices to be from 'non-locals' or 'not balanced'.

Interviews with school staff describe a generation of children who have grown up with the mine. For many students, one of their parents may work in the mine, they visit the mine regularly, and the mine supports many school activities. The school is also very strong on environmentalism, with students driving conservation projects to explore and protect the Island's natural assets.

“The environmental study – in weighing up environmental impacts, the community really want to know what’s in the study. Did they include people on Island when making that case?”

(Community consultation, Sept 2018)

“There is a perception that all development is anti-environment. That means we can’t co-exist and can’t have an economy”

(Community consultation, Sept 2018)

“Some people who have been here a few years, who are on the fringe, are anti-mine. People who grew up here don’t hold that view”

(Community consultation, Sept 2018)

“We live in balance, here in the school”

(Community consultation, Sept 2018)

This sense of balance was noticed in community and PRL employee perspectives as well.

### Impact assessment of Control Over Resources: Infrastructure – Low Positive Impact

This domain had mixed results – positive in terms of PRL’s ongoing investment in infrastructure and taking responsibility for the natural and built environment of the Island, as well as their own upgrades to mining infrastructure. There was some negative feedback regarding clarity around responsibilities for maintaining infrastructure that may be outside of PRL’s responsibility and yet utilised by PRL considerably (such as roads, cranes and port facilities). This domain was assessed as an overall low positive impact.

## RISK AND SAFETY

### Contribution to emergency management

Outside its core business, the mine supports the overall emergency management response on the Island. PRL provide human resources in the following emergency services:

- Ambulance Service: three volunteers;
- Volunteer Marine Rescue: four volunteers; and
- Volunteer fire fighters: not currently providing volunteers but have done so in previous years.

For any employee engaged in volunteering for emergency services, PRL allows 38 hours per year of paid leave to attend required meetings or training sessions.

“They provide capacity to respond to rock falls, cyclones, and search and rescue”

(Community consultation, Sept 2018)

This fact is known by service providers (Australian Federal Police, Water Corporation) and PRL employees, but some indicate that the community are not aware of the role PRL plays in protecting the community.

“Not a lot of people are aware that PRL is one of the first go to people to help clean up the Island”

(Community consultation, Sept 2018)

PRL also provides equipment; one example given was of PRL providing equipment during a cyclone clean-up operation.

“There was a problem at Drumsite with storm water. The government funded the clean-up, but the mine helped”

(Community consultation, Sept 2018)

## IMPROVEMENTS IN MINING SAFETY IN RECENT YEARS

Within the realm of mining operations there have been concerns raised around the safety standards, although some of these concerns are based on past practices. With the increasing need for full compliance with the Mining Act 1978 (WA) in recent years, safety standards have improved.

“Bad habits of those who work for PRL for long time – there are new faces coming through so we may see (may already be seeing) some changes/approaches”

(Community consultation, Sept 2018)

“They do a massive amount of training, safety training”

(Community consultation, Sept 2018)

There are however, concerns regarding the past safety standards and accepted practices in the health and safety in the work of employees on the mine.

“OHS and work practices – We know it’s inadequate because we have eyes”  
(Community consultation, Sept 2018)

“There are no warning signs, no one’s wearing PPE, people are on roofs without harnesses, not a huge number of workplace incidents. ...An external electrical supervisor came for a week and left due to unsafe work practices”  
(Community consultation, Sept 2018)

This issue was discussed at some length between PRL and the Research Team and it has been recognised that PRL executive and management team have significantly improved safe working practices. PRL expectations have changed considerably to ensure safe working habits and adherence to health and safety legislation are non negotiable.

#### Impact assessment of Risk and Safety – Low Positive Impact

This domain was assessed as an overall low positive impact through their support of trained, on-island emergency response personnel, their active role in emergency clean ups and responses, skills and abilities to maintain equipment and cars to a safe standards, and their increasing contribution to improving safety standards within the mine.

#### HYGIENE AND SANITATION

Very little evidence from the data collections was available to examine PRL’s positive or negative contribution to hygiene and sanitation. However, PRL do play a minor role in cleaning the cricket ground toilet block, where no other agent stepped in to do so.

PRL has also shown willingness to participate in helping clean storm water.

#### Impact assessment of Hygiene and Sanitation – Low Positive Impact

This domain was assessed as having low positive impact, to reflect PRL’s small contribution to improving aspects of hygiene and sanitation on the Island.

### 4.6. A HEALTHY COMMUNITY

This section explores the impact of mining on how the community live, work, play and interact. We consider community cohesion, stability and character, as well as the physical, mental, social and general wellbeing of Christmas Islanders.

#### 4.6.1. WAY OF LIFE

##### Living together, working together, values, identity and belonging

On Christmas Island the mine plays an integral part in those non-directional cycles of living, working and creating a life and community together. PRL is not a

corporate giant inserting itself into a community. Mining is intrinsic to the community’s sense of purpose and identity, and PRL is a respectful ‘host’ for the values – inclusion, belonging – that underpin this lifestyle. Due to the positive feedback loop between all of these factors, a strong social fabric is created, which ensures high levels of mental, physical and social health (see Figure 13).

Figure 13 Positive feedback loop of factors creating a strong and healthy community



“It’s a unique community – everyone knows everyone. We live, work, socialise together”  
(PRL Executive, Sept 2018)

Mining began in 1899 using indentured workers from Singapore, Malaya, and China. In the early days British and Singaporean authorities administered the Island, and parts of this history have been described as ‘dark’, characterised by human rights abuses.

However, the community turned this story around. After the Australian Government closed the mine in 1987 the community formed a consortium, which included many of the former mine workers as shareholders and raised \$3.6 million to buy the mine. The mine was reopened in 1991. This is a critical point in the history of the mine and explains the strong connection between mining, the community, and the collective sense of solidarity and purpose.

Phosphate mining is the settlement story of Christmas Island, and feeds into the Island’s identity. The mine is the unifying story. It is memories of the struggles, self-determination and extraordinary success. It is linked to ideas of ‘who we are’, ‘why we are here’ and ‘home’.

“Everyone who lives on the Island has co-existed with mining for years”  
(Community consultation, Sept 2018)

“Prior to 1992 unless you were affiliated with the mine you could only come here if you were in the public service. 1992 was the first time we had westerners here who were not affiliated with the mine”  
(Community consultation, Sept 2018)

As the Christmas Island Shire explains, “Islanders see the mine as part of their history, identity and future”.

As a company that emerged from the community and has been community-led for most of its existence, PRL operates in a way that aligns with community values. The workforce stops for prayers to accommodate the needs of Muslim workers.

### Working life is social life

“Miners meet together at 5am before work”  
(Community consultation, Sept 2018)

“Beautiful moments are the products of mining. Chinese men sit outside the café at sunset – they are all PRL workers and their families have worked there for generations – all that experience disappears [if mining ends]”  
(Community consultation, Sept 2018)

The quotes above may explain why the redundancies of 2017 were experienced so negatively. Although PRL offered generous severance packages to older workers

(on the mainland the same conditions might be viewed favourably), on Christmas Island working at the mine can be the foundation of one’s social network. Redundancy may have been experienced by some as a form of social exclusion. (There is no direct evidence for this viewpoint, which was informed by several conversations. For example the Research Team were told that some people who were made redundant ‘still want to work’).

### Island as a family

The Island is a large family, is the sentiment expressed by those who attended the community focus group.

“This is my home”  
(Community consultation, Sept 2018)

“We are fourth generation..... why should we be forced to leave?”  
(Community consultation, Sept 2018)

### PRL’s contribution to community values

There are many ways that PRL supports social health and cohesion. However, in recent years there have been changes to mining practices that are seen by some as disrupting the alignment between PRL and community values.

Table 14 captures the ways PRL is seen to both actively support as well as disrupt community values.

Table 14 How PRL is seen to be supporting, or disrupting, community values

Community values/characteristics	Ways in which PRL aligns and supports these values	Ways in which PRL disrupts these values
<p><b>Inclusion and diversity</b></p> <p>“Living with each other is normal, as they grow up with this at school and in the mine. It’s normal for them, there are different beliefs and values, but kids are not exposed to racism.... Diversity is entrenched, a way of life”</p>	<p>An inclusive employer (tri-lingual, the oldest mine workforce in Australia)</p> <p>“PRL provides employment in languages other than English. People can’t just go to the mainland and get employment”</p> <p>“It’s a multicultural employer of a workforce that was once colonial – that’s a major achievement”</p> <p>“Multiculturalism has significant impact; the mine is able to provide jobs across all community, creating social unity”</p>	<p>“Workers had to sit safety tests, but they were 100% in English... Some of the workers were founders of this mining company and expected a guarantee of work. We are sick of the new rules”</p>

Community values/characteristics	Ways in which PRL aligns and supports these values	Ways in which PRL disrupts these values
<p>Caring for one another</p> <p>“There’s a lot of love on this Island”</p>	<p>“It’s a generous community. If someone is diagnosed with cancer, everyone steps up. People come first. The mine and how they interact with others has the same qualities. PRL goes out of its way to assist the community”</p> <p>“PRL do contribute without publicity. If we raise \$3000 for someone with cancer, the mine will double it. They don’t want to be seen as the great benefactors people think”</p>	
<p>Purpose and work ethic</p> <p>“I need to work. My husband is from Cocos but that’s boring for me; when I visit and no one is working.”</p>	<p>PRL providing long term employment and opportunity which is valued by Christmas Island residents</p> <p>“We provide employment. Most locals are looking to be employed long term”</p> <p>“Jobs are for community and not about money”</p>	<p>Redundancies have deprived locals of the opportunity to work</p> <p>“They still wanted to work”</p>
<p>Stability and safety</p> <p>“This is home for us. Four generations are here”</p>	<p>People seem assured that PRL wants to continue to invest in the community</p> <p>“There’s a level of commitment to the Island from the Board of Directors that elsewhere communities would not have”</p>	<p>There is a lack of certainty about for how long the mine will be around</p> <p>“The biggest plus is that the Board have been there and know us. Shareholders don’t – that’s our concern”</p>
<p>Community cohesion</p> <p>“That’s one of the big things about here, includes respecting property, belongings, and people. Part of the lifestyle and cohesion of the community”</p>	<p>“PRL does not bring in foreign workers to undercut its costs or increase its profits. Instead PRL employs and trains local people”</p>	<p>“They are flying them in now. The effect of FIFO will have impacts on the community”</p>
<p>Relaxed lifestyle</p> <p>“In Malaysia there is no time to spend with family. There’s a two hour commute. Lifestyle here is nice to bring up small children, more relaxed to let children run around. They go fishing and swimming, people watch out for each other”</p>	<p>PRL does not require excessive work hours and supports the relaxed island lifestyle</p> <p>“We stop work [at the port] on Sundays and public holidays so as not to disturb people”</p>	<p>PRL employees report they are under more stress managing various tasks and facing new efficiency pressures</p>
<p>Family values</p> <p>“I am raising my kids here. The kids are safe to run around. There is peace, culture, we are safe and remote, there is no crime. We are fourth generation” “This is where kids can be kids..”</p>	<p>PRL provides housing for families, are very active in supporting the local school and investing in opportunities for children to broaden their skills and experiences (including off-island trips) which helps to offset living remote</p>	<p>Questions about job security weight heavily on families</p> <p>“I worry about it. I’ve moved my family and everything here and I’ve also worked for a mine where everything shut that morning”</p>
<p>Home</p> <p>“This is my home”</p>	<p>“Where possible, PRL sources employment on-island, and if not possible requires staff to live on Island. FIFO is avoided”</p>	<p>“Lot of shorter-term contracts/ FIFO so the workforce not investing themselves into the community”</p>



The main tensions are around local jobs being given to FIFO workers (the community noticed FIFO workers especially after locals were made redundant). One community focus group participant pointed out, “People from the community see FIFO workers coming and going and have no understanding of why. Those people who were let go do not feel appreciated”.

It is clear that some tensions cut across some of the values outlined in Table 14. Many of these arise from the recent modernisation of mining practices which have led parts of the community to question whether the mine (still) reflects community values. This can be seen as a sign that community values are contested, as well as carefully and actively guarded by all residents.

“That’s mainland practices. That’s not who we are”  
(Community Focus Group, Sept 2018)

Although these are legitimate concerns, the Research Team believes that some of the negative perceptions of PRL in terms of the company values are partly due to misunderstanding or lack of knowledge about what is behind the decisions made and can be rectified through better communication. See ‘Section 6. Community perceptions of mining’s contribution to Island life and economy’ for more analysis.

Discussions from the Adapted Most Significant Change Workshop provided evidence that the PRL Board considers community values when making decisions of ‘significance’. Several comments from Board members indicated that they see supporting the community as part of their role and remit.

“We need to keep the community alive”  
(PRL Executive, Sept 2018)

“Some families who have been here for generations, they make up most of our workforce...this is their home, and they don’t always have a voice”  
(PRL Executive, Sept 2018)

Efforts continue to be made to maintain a community company with a ‘from the ground up’ workforce. SERCO, who maintained the Detention Centre, provides an interesting contrast; they employed a workforce of FIFO workers who were seen to have a ‘work hard/play hard’ attitude. This was at odds with the local culture and their presence on the Island was unsettling for locals. This will be explored below in the social health topic area.

### PRL’s contribution to lifestyle and cohesion

PRL makes an annual contribution of between \$200,000 and \$250,000 through their Community Sponsorship and Donation program. This supports the community to live, play and celebrate together. (To contextualise this, this is nearly three times the contribution the Shire makes of

\$60,000 per year for events.) Events include (but are not limited to):

- Sponsorship of fun runs
- Sponsorship of open-air movie nights
- Contribution to Island sports and social clubs
- Organisation and celebration of key events i.e. Territory Day, Seniors Week
- Sponsorship of school and educational activities i.e. ANZAC Day Field Trips, Cocos (Keeling) Islands trip
- Sports clubs
- Contributing to religious celebrations (see below)
- Support for cultural groups – Kung Fu, Religious groups, dance and languages.

### Livelihoods

Finally, at a most basic level, the mine enables the community to thrive by maintaining the population:

“The mine also keeps a population base that allows us to live here. We are even upset with SERCO going, shops and restaurants have closed, already lost a café recently”  
(Community consultation, Sept 2018)

“The mine needs to stay in business– it’s how community exists”(Community consultation, Sept 2018)

The mine is the foundation for living and working together. About 90% of PRL employees have family on the Island. It is the glue holding everyone together. One community member explains that the mine has generated enough wealth and opportunity for the Island community to be middle class.

“If the mine was gone I wonder if our traditional values would carry us through”  
(Community consultation, Sept 2018)

“We live on the Island, we love the Island and want to stay here”  
(PRL Executive, Sept 2018)

### Impact assessment of Living Together, Working Together, Values, Identity and Belonging –High Positive Impact

The presence of the mine makes a significant positive contribution to the community, providing a population with the opportunity for living and working together through employment inclusive of all sectors of the community. PRL also demonstrate strong community centred values via their workplace culture and contribution to community life.

## Celebrating

In terms of celebrating, PRL makes a direct, measurable and widely recognised contribution. A proportion of their \$200,000 community development fund goes to supporting celebrations such as cultural events, religious festivals, events at the temple and community events such as the Ball.

“Community events would still happen if PRL made no contribution, but events are expensive on the Island – it can cost up to \$10,000 - so their contribution helps to make it a good event”  
(Community consultation, Sept 2018)

This enhances cultural cohesion on the Island, as all locals (Chinese, Malay and European) tend to go to each other’s cultural and religious celebrations (and due to sponsorship, the events have the capacity to cater for these numbers).

All public holidays of all cultures are celebrated and honoured by PRL.

### Impact assessment of Celebrating - Low Positive impact

This domain was assessed as having low positive impact. While PRL’s regular contribution to enhancing celebrations is widely recognised by the Island community, this was not considered a high positive impact because without PRL’s input the celebrations would still happen, just on a reduced scale.

## 4.6.2. CULTURE

### Beliefs and customs

The Malay and Chinese communities on Christmas Island, often fourth generation Islanders, are seen as strong traditional communities. There are 39 temples on the Island, and all Buddhist and Islamic festivals are celebrated. While the mine contributes funding to religious celebrations, and honours prayer times during the work day, without the mine these activities would still be practiced by the community. Given this, this domain is assessed as neutral, although it should be noted that the mine has a role in supporting the strong social fabric which enables beliefs and customs to be fostered. Also, some state that if the mine closed the ethnic makeup of the Island would change.

“Many people say one impact of the mine closing will be that it disproportionately impact different populations (e.g., Chinese may leave the Island and Malay people may stay), and therefore will have an effect on the ethnic make-up of the Island”  
(Community consultation, Sept 2018)

“Without the mine the whole culture will change – the diversity and the balance”  
(Community consultation, Sept 2018)

“The mine adds donations and funding to temple, festivals” (Community consultation, Sept 2018)

### Impact assessment of Beliefs and Customs - Neutral

Mining activity is not considered to have significant impacts on beliefs and customs.



## Language

In 2016, more than half (50.9%) of households on Christmas Island reported that a non-English language was spoken at home. About 27.8% of people only spoke English at home. Other languages spoken at home included Mandarin (17.2%), Malay (17.2%), Cantonese (3.7%), Min Nan (1.5%) and Tagalog (1.0%) (ABS 2016 Census). According to the My School website, 60% of the children at the Christmas Island District High School have a language background other than English.

PRL is a tri-lingual employer that accommodates for the linguistic diversity of the Island. All organisation-wide correspondence within the workplace is written in Malay, Chinese and English, thus enabling the inclusion of all community members and sustaining a shared life and purpose across different linguistic communities.

“PRL provides employment in languages other than English. People can’t just go to the mainland and get employment”  
(PRL Focus Group, Sept 2018)

“Many in our workforce don’t speak very good English”  
(PRL Employee, Sept 2018)

This fits with Island life where the population lives in harmony across the three language groups. The school also fosters a tri-lingual community, and children learn to code switch and understand one another from a young age.

“At the school instruction is in English but we support Malay and Chinese too. Kids code switch, they all understand each other. It’s natural and comfortable. For our kids multiple languages is normal”  
(Community consultation, Sept 2018)

However, it was recognised that in connecting and communicating to all Islanders, some additional thought may need to be given by PRL regarding connecting to older generations.

### Impact assessment of Language – High Positive Impact

The presence of the mine makes a significant positive contribution to maintaining linguistic diversity by not privileging one language group over another.

“PRL communicates on Facebook and social media – for the older generation English is their second language so communication on social media doesn’t reach them”  
(Community consultation, Sept 2018)

## 4.6.3. HEALTH AND WELLBEING: PHYSICAL HEALTH, MENTAL HEALTH, SOCIAL HEALTH AND SPIRITUAL HEALTH

Health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity.

The community of Christmas Island have good health indicators. According to the health services manager at the Christmas Island Hospital, the strong community and high employment contribute to the good **physical health** in the community:

“It’s a close community, which is healthier. Also, there is virtually no unemployment, and people who are employed are far better overall than unemployed people”  
(Community consultation, Sept 2018)

One potential barrier to good health is that there is no tax on cigarettes. However, the Christmas Island Hospital Services Manager explains that strong community cohesion on Christmas Island is a protective factor against this.

“Smoking rates are elevated (cigarettes are \$2.50 a packet). Alcohol is cheap and fruit and veggies expensive. However, the community is well functioning, and actually usually it is the contractors who are vulnerable to these associated health risks”  
(Community consultation, Sept 2018)

Diabetes and breast cancer are slightly elevated on the Island compared to the mainland. Diabetes rates may be affected by the high cost of fresh fruit and vegetables.

In terms of physical health, the mine also supports health services by providing a higher than otherwise population demand base. According to Christmas Island Health Services, health services provided for Christmas Island are based on the 1800 people calculated in the 2016 Census, which at the time included 250 people in detention.

“The mine gives us a lot of customers, which is not a bad thing. We actually need a critical mass to enable us to be here and the mine provides us with a population base. Cocos Island has 650 people and they have no overnight facilities and limited respite, far less services than Christmas Island”  
(Christmas Island Health Services, Sept 2018)

Christmas Island does have deficits in terms of health care (e.g., there is a great need for aged care facilities and a dialysis machine) but as Indian Ocean Territories Health Service point out, Christmas Island does have more facilities than Cocos (Keeling) Islands due to the population base. Indian Ocean Territories Health Service recognise they will need to adjust their health service planning based on the Detention Centre closing and will probably do the same if the mine closes.

“When the Detention Centre closes in October, 200 people will leave the Island. So 1600 minus 200 is 1400. But then take family members too so that will be 1200. This slow depopulation process will result in questions being asked such as why is there a need for three doctors? Why do medical facilities need to stay open at night?”  
(Indian Ocean Territories Health Service, Sept 2018)

“There are significant concerns about aged care, and supporting adequate aged care to meet demand, if the mine closes”  
(Indian Ocean Territories Health Service, Sept 2018)

The issue of phosphate dust as a health concern was raised by small proportion of people included in the consultation. This was examined in Section 4.5.1.

The **social health** of Islanders is enhanced by a number of key factors which have previously been identified in other areas such as **living and working together** and **celebrations**. In addition, PRL supports social health by employing a local, community-based workforce rather than mobilising a FIFO workforce. (The mine employs 168 local people (both permanent and casual) and a limited number of FIFO workforce.) Some members of the community are concerned about an increase in FIFO workers, and these legitimate concerns will be explored more in ‘Section 6. Community perceptions of mining’s contribution to Island life and economy’. However, in this domain the Research Team consider it important to recognise that PRL have traditionally always employed and preferred a local permanent workforce. Not only does this create a stable and cohesive community, it also prevents the social problems associated with a FIFO workforce (e.g., anti-social behaviour, addictions and mental health issues).

“They [FIFO workers] are here for the ride”  
(Community consultation, Sept 2018)

“SERCO’s FIFO workforce, they work hard and play hard: they are not integrating into the culture”  
(Community consultation, Sept 2018)

The community are aware that FIFO workers do not fit into their strong local community and have observed this with the SERCO FIFO workforce.

The strong sense of **spiritual health** is present on the Island, with 39 temples and a population that are very active in terms of religious practice. The spiritual connection of people to the Island, their home, emerged throughout consultations.

“People live here because they have a spiritual connection to the Island and an obligation to each other”  
(Community consultation, Sept 2018)

The mine may have brought this community to the Island.

However, this spiritual connection, in particularly of the Malay population, to their Island home is strong, and the connection would continue to exist beyond the life of the mine.

### Impact assessment on Physical, Mental, Social and Spiritual Health - Low Positive Impact

The provision of on-island employment for the local residents in itself goes a long way to support social and mental health. Physical health is well provided for with medical facilities and is contingent on a population base that is supported by the mine. A strong spiritual connection to the Island as ‘home’ would exist for a large proportion of the community even if the mine closed. On balance this domain was assessed as being a Low Positive Impact.

## 4.7. INCLUSION AND PARTICIPATION

This section involves the extent to which people can participate in decisions that affect their lives, the level of democratisation that is available to the community, and the resources available for active citizenship. Dimensions explored in this section also include people's economic wellbeing and experiences of disadvantage.

### 4.7.1. POLITICAL SYSTEM

#### Democratisation, participation in decisions and resources for active citizenship

PRL stand out as one of the few players on the Island who can access official political channels for lobbying (often for their own interests, but also for matters that benefit the Island as a whole). PRL can mobilise human and financial resources to address issues as they arise, at times when government or the Shire fails to, or are unable to. In fact, the Commonwealth Administrator of Christmas Island themselves recognise PRL as "key in unifying the community".

Christmas Islanders exist in a political vacuum. Australia took over governance of the Island in 1958, and yet residents waited another 26 years before basic rights such as citizenship and voting rights in Federal elections were granted. Democratic privileges, however, are somewhat diluted by fragmented political arrangements: they are represented in Canberra by Northern Territory politicians, but the Island's school and health services are provided under the Western Australian legislative framework. They have a Shire of Christmas Island but no state government. As one community member expressed, "The governance arrangements make this a no man's land" (Community consultation, Sept 2018).

Locally the mechanisms for democracy are also ineffective:

"The community is dysfunctional - there is poor leadership at the Local Government and Administration levels. There are no town hall meetings, no opportunity to collectively speak. Everyone is saying the same thing, they are just not saying it together"  
(Community consultation, Sept 2018)

At a Federal level, and as noted in previous reports on Christmas Island (e.g., Indian Ocean Territories Regional Plan; RDA Midwest Gascoyne; October 2012), there are challenges navigating the complex legislative and administrative arrangements that underpin the Administration of Christmas and Cocos (Keeling) Islands. This breeds misinformation, misunderstanding and confusion about how information is used to inform decision making.

"There are gaps and inconsistencies in the way government treat PRL and others"  
(Community consultation, Sept 2018)

Table 15 outlines some reasons that community members (PRL and non-PRL) have a frustrated sense of empowerment.

*Table 15 Community views of democratic deficits*

Factors seen as frustrating normal democratic processes and/or enhancing a sense of disempowerment	Example quotes
Off-Island populations having influence in mining lease decisions (e.g., Birdlife Australia submitting a petition to protect a bird species Abbott's Booby)	"Only non-locals or newly arrived residents are against mining, and they are given more of a voice than we are"
Feeling disconnected from electorate in the NT	"By the time we vote the election has already been called"
Small voting population	"One third of the population are Malay citizens, so our voting population is only 500 – we have no voice"
Excessive bureaucratic processes	"We just want to work. There's endless red tape and green tape"
Ineffective Shire	"There is a very small rate base, and a Shire President who is also a Union Secretary, meaning the local government is not functioning effectively as a serious democratic force"
Lack of continuity of representation	"The frequent turnover of Ministers mean efforts to lobby the government are not lasting"
Lack of avenues for feedback to Government	"The Department of Infrastructure, Regional Development...is delivering services on behalf of the Commonwealth Government. As a Commonwealth Public Servant, the line is 'that at no time can I comment on government services'...they are heavy handed about that here. Where is a Christmas Islander's ability to provide feedback on government services?"
Lack of transparency over decisions made	"There's fatigue – no transparency about the funding from Commonwealth – it's unclear about what is funded where"
Fragmentation of political structures	"WA state legislation applies, and we vote in Federal elections as Northern Territory constituents. Any more than 2 levels of government for a population of 1800 may be considered as excessive. [ACT has a population of approximately 400,000 people (Census; 2016)]
Uncertain governance arrangements	"There's debate over the definition in the UN Charter of non-self-governing territories and how it applies to Christmas Island...makes things unclear but also distracts from the real day-to-day issues"

## Community views of Government

The Federal Government is seen by the community as a powerful, inaccessible force that can make or break the future of the Island (through rejecting an exploration lease, for example). While the community enjoys a good working relationship with the current Administrator, Natasha Griggs, who is able to effectively communicate a sense of support and shared investment in the future of the Island, the community are aware that her power has limits. The decision making happens in Canberra:

“Everything [from the government] is tokenistic”  
(Community consultation, Sept 2018)

“There’s a disconnect between passion and actual input at the Commonwealth level”  
(Community consultation, Sept 2018)

The power and information gap between the community and Canberra breeds a certain level of vigilance and speculation – at times even paranoia – about what agendas these outside decision makers have for the Island.

“We are of military importance. So why are government even consulting with us? They just do what they want anyway. Clive Brown asked previously ‘Are we open for business?’ Who knows? The motivation to do anything is reasonably low (as a community)”  
(Community consultation, Sept 2018)

There are sensitivities about decisions made by people who do not live in the Island.

“Like the environmental study – in weighing up environmental impacts, the community really want to know what’s in the study. Did they include people on Island when making that case? There will always be environmental damage that comes with industry, with tourism too. The barriers to continue mining are in Canberra, not in the community”  
(Community consultation, Sept 2018)

“We have no say. Bureaucrats ignore the community. The Detention Centre was put in without us being consulted”  
(Community consultation, Sept 2018)

There is some cynicism in the community about being over-consulted (a long history of ministerial visits, reports and strategic plans, and often duplicated and un-actioned recommendations). At the same time highly political decisions are imposed without consultation (the Island hosted an off-shore Detention Centre without being asked), and Ministers turn over at such a high rate that representation at the Ministerial level is almost meaningless (and yet Ministers can make or break future mining opportunities).

Some in the community are mystified as to why the government is ‘against mining’ and does not recognise the importance of mining for continuing life on the Island.

“Without the economic base from the mine how much more would the government need to contribute to subsidise life here, or fund a depopulation strategy? It makes me angry...they try to stop mine, but not help the community, not help attract investor”  
(Community consultation, Sept 2018)

“Who is going to look after the community when we are gone?” (Community consultation, Sept 2018)

“Government underestimate level of impact on the community if the mine closed”  
(Community consultation, Sept 2018)

Interviews with the Administrator of Christmas Island indicated a great deal of support for and respect for PRL, and an understanding of the extent to which the mine contributes to a stable prosperous community.

“It was disappointing the lease application did not get cleared”  
(Administrator of Christmas Island, Sept 2018)

When supportive conversations between government officials and community representatives are not translated into positive outcomes for the mine the community are bewildered.

## PRL’s contribution within the political landscape

PRL plays a significant role in the strategic direction of Christmas Island and are one of the key influencers on and off the Island. PRL can be trusted by locals; they have on-island interests and have demonstrated their intent for doing what is best for the Island.

“Their goal is to protect and improve the community”  
(Administrator of Christmas Island, Sept 2018)

The continuation of a Board made up of several members with extensive on-island experience and links to the community is seen by the Research Team as essential for maintaining legitimacy and a sense of empowerment and meaningful representation for the community.

For the community PRL is in touch with local issues and can make high impact decisions to benefit the community, without bureaucratic impediments. For example, the community wanted mountain bike tracks or a skate park but could not access funding (Lottery West community grants cannot apply to Christmas Island because it does not have a State Government). PRL is not bound by red tape and may be able to step in and fill this gap.

“PRL steps in to fill gaps and meet community needs – this is a historical role the mine plays”  
(Shire of Christmas Island, Sept 2018)

### Impact assessment of Democratisation, Participation in Decisions and Resources for Active Citizenship – Low Positive Impact

Government representatives show appreciation for the extent of PRL's contribution to the functioning of the Christmas Island community. The government is seen as a collaborator and key partner. However, the government is also seen as mystifying and inaccessible; a body with the power to 'impose' decisions without considering the needs of the community. In contrast PRL are relatively transparent and their agenda is understood by the community. PRL wield considerable power and assists to counter the community's frustrated sense of empowerment.





### Control over resources - Coexistence of different interests

Mining is such a dominating force on the Island that there is a sense of non-mining interests playing a diminished role. It is possible that PRL's power is not as great as their perceived power, as viewed by those outside of PRL. Positive and negative perceptions captured during the consultation are outlined in Table 16.

Table 16 Positive and negative perceptions about PRL co-existing with other interests

Positive Perceptions	Negative Perceptions
Mine is powerful player and contributor across many domains of the community ("gets things done")	Mine seen as fixing everything, or as dominating
Mine can be flexible and act outside of frameworks and restrictions that typically face government	Mine lacks understanding of restricted legislative environment government bodies operate in (e.g., approving permits)
Mine sees themselves as co-existing well with tourism	Many are 'waiting' for mining to cease, after which tourism will be able to flourish
Mine would definitely support a tourist industry if it were to happen	People are waiting for PRL to lead in the tourism space

This domain, 'co-existence of different interests' has been assessed as low negative. Not because mining is directly or deliberately inhibiting other interests, but because the community mindset seems to elevate the mine as 'Island Chief'. PRL have been the main player on the Island for so long that perhaps people have come to assume PRL will take responsibility for something (assumptions that are not always known by PRL). Also, others may (wrongly) assume there is no room for any other interests besides mining.

For example, interviews with PRL indicate a positive, supportive and open mindset to tourism being developed on the Island (but not within the scope of their core business). Whereas outside PRL some are 'waiting' for either PRL to get tourism going, or 'waiting' for mining to cease so that tourism can start.

"The tourism industry is currently built on marketing Christmas Island as a unique natural environment, red crabs etc. So, tourism and mining are competing for the same natural resources"  
 (Community consultation, Sept 2018)

"Currently there's enough for everyone but if mining is expanded it will impact on what we want to sell"  
 (Community consultation, Sept 2018)

One PRL employee pointed out that mining co-exists with the environment and the social fabric quite gently on the Island, especially compared with the Detention Centre. The Detention Centre brought in a large FIFO workforce that did not integrate with the community, environmentally had a devastating impact due to non-Islanders not understanding how to protect the natural environment and produced many years of negative press that inhibits tourism.

A wider understanding of how all interests can co-exist may be needed. In addition, PRL may need to:

- Communicate enabling messages of support for other interests e.g., 'How can we help you with developing tourism?';
- Communicate to manage expectations that are outside the scope of mining;
- Define and communicate PRL's role in the future economic strategy of the Island;
- Continue to work in partnership with government; with time and effort put into defining roles and responsibilities.

The relationship between PRL and the government seems to have a healthy foundation of mutual respect and goodwill. However, the government's ability to form a functional, working partnership with PRL at times is frustrated by regulatory processes, and layers of bureaucratic and political complexity, which are not always clearly communicated. As one PRL employee pointed out, people in the community "don't understand the amount of legislation...".

#### Impact assessment of Control Over Resources – Co-existence of Different Interests – Low Negative Impact

The community perception of PRL appears to place the organisation as the main player on the Island, assigning responsibility (or unconscious expectations) to PRL to step in and take control of Island issues. This may cloud the view of for the capacity and capability for others to step forward within and across the community. It also may encourage assumptions and mindsets about there being limited room for any other interests besides mining.

#### 4.7.2. PERSONAL AND PROPERTY RIGHTS

Most of the population are adequately housed, and the steady employment provided by the mine to a substantial portion of the population keeps the rental market stable. It was noted that the value of this housing is dependent on mining: "For people who own houses, the value will decrease if the mine were to close."

"Housing market – we are already seeing a decline in market of housing – value of property market already starting to decline"  
(Community consultation, Sept 2018)

Residents do not lock their doors, they can leave their cars running in the streets and respect one another's property. There is very low crime, and any crimes are usually low level, petty crime.

#### Economic effects on lives

PRL is one of the largest employees on the Island. Benefits of employment at the mine include a generous salary, cost of living allowances and flight allowances for self and family and 11.5% superannuation. It is estimated that for every 1 employee, the on-flow impact will touch 3 or 4 people because 90% of PRL employees have family on the Island.

"Everyone is well paid – there are allowances, and PRL provides housing for families"  
(Community consultation, Sept 2018)

#### Continuous source of wealth

Island economies can be vulnerable to boom and bust patterns and Christmas Island has experienced this in recent history with the Casino (closing after a few years of operation) and now the Detention Centre closing. Phosphate mining has helped to mediate this effect by being a steady source of income for the community.

A clear, direct and positive relationship exists between PRL and the economic effects on the lives of Christmas Islanders. It is estimated that PRL spends \$16 million per year on wages. In addition, economic investment includes:

- Money spent on community activities – local religious and cultural celebrations, school, Seniors Week (\$200,000 pa.)
- PAYG tax
- Payroll tax
- Parks Australia Conservation Levy (\$1.5 million)
- Royalties from mining (\$2 million to Federal Government)
- Flow on economic investment, PRL contribute over \$10 million to on-island through wages and investment in local businesses – subsidiaries of PRL,

groceries, housing, water, restaurants, travel and hotel accommodation, training and apprenticeship and traineeships.

As an island, there have been boom and bust cycles, but underneath that a steady level of prosperity has created a sense of stability.

"Christmas Island has been lucky because the mine has enabled a middle class on the Island, a middle class social economic class"  
(Shire of Christmas Island, Sept 2018)

"The mine provides local families with an income that supports a better-quality lifestyle"  
(Community consultation, Sept 2018)

"To maintain this life, we need a high value industry to replace mining"  
(Community consultation, Sept 2018)

There is recognition, however, that although mining is keeping the community afloat and has been steady, there are vulnerabilities in relying on mining.

"It is not healthy to have an economy based on one or two key operators – we need balanced development"  
(Administrator of Christmas Island, Sept 2018)

#### Economic effects on lives if mining were to cease

The flip side to the significant economic contribution made by PRL are the consequences if mining were to cease, which are illustrated in Figure 14.

Figure 14 Economic effects for Christmas Island with a mining closure



### People noticing economic downturn already

Anecdotally people are responding to a downturn in the economy based on the closing of the Detention Centre as well as uncertainties about the mine (“there are rumours it is closing”).

“I have been here three years and my family has seen a change in the local economy, it is now slow, there are lesser people on the Island. People have sold or closed their businesses”

(Community Focus Group, Sept 2018)

“People are watching their money as they don’t know what is going to happen next”

(Community Focus Group, Sept 2018)

“It’s worrying businesses, there are worries about land & property – people bought property for \$500k but recently sold it for \$330k”

(Community Focus Group, Sept 2018)

“If the mine wasn’t here the quality of life would be a lot poorer, because so much money and jobs are provided through mining”

(Community consultation, Sept 2018)

the Cocos (Keeling) Islands, the community of Cocos (Keeling) Islands are seen as more disadvantaged due to lack of economic opportunity on that island compared to Christmas Island. Thus, mining-related income is a contributor to a quality lifestyle.

Despite this recognition, during the consultation process it was discovered that a minority in the community feel excluded from the ‘shared wealth’ that has traditionally been the mine.

“Prior to 2015 the company was owned by the Island. Then it went out to shareholders. Prior to that people on the Board were all Islanders. Once it changed the Board were off-shore, in Malaysia. It was an opportunity for growth, but people were sold short”

(Community Focus Group, Sept 2018)

There is also an idea that the majority of PRL’s profits are invested off-shore, rather than being re- invested on Christmas Island. “This is a sensitive issue for the local residents who in the past not only supported the mine but also made financial sacrifices to keep the mine open.”

### Impact assessment of Economic Effects on Lives – High Positive Impact

On an Island vulnerable to boom and bust cycles, the steady contribution of the mine has been extremely important in stabilising people’s economic wellbeing, supporting small businesses and enabling spending confidence. Due to the vulnerability of Island economics, the population is sensitive to change. Even the rumour of the mine closing is said to have an impact on the local economy. Our assessment is that the mine has a very high positive impact on economic lives.

### Impact assessment of Experiences of Disadvantage – Low Negative Impact

While the history of PRL involves a strong narrative of shared prosperity, there are more recent perceptions in the community that what began as an equal and fair distribution of wealth and opportunity has now deteriorated due to selling the company to off-shore interests and shareholders. A minority indicated this to be very negative. However, this is assessed as a low negative impact overall, as some of this is about history and unmet expectations. Generally, the wealth is shared in the Island, and very few people are actively excluded from employment on the mine. Also, salaries and working conditions offered to locals by PRL are good and provide a population with a good quality lifestyle.

### Experiences of disadvantage

The story of PRL is a story of shared prosperity – literally, the community owned the mine.

“Every member stayed back on the Island to invest money. In 1990 they successfully lobbied the government for the mine to be reopened. They went to the bank to borrow money and fight for the mine. They introduced permanent workers”

(Community consultation, Sept 2018)

“In 1990 everyone bought shares and contributed to open the mine – but there were not enough jobs for all members to work on the mine. We rotated three months on, three months off so everyone had an opportunity”

(Union of Christmas Island Workers, Sept 2018)

Since then the mine has generated enough prosperity for the population to be largely middle income earners. There is virtually no poverty or entrenched disadvantage on the Island. When comparisons are drawn with

## 4.8. FUTURE PROOFING

This section explores community and stakeholder perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children. Human capacity examines a community’s resilience in managing their choices and challenges. We look at the impact of PRL on how individuals, community groups and organisations develop their abilities - both individually and collectively - to achieve objectives and solve problems.

### 4.8.1. FEARS AND ASPIRATIONS

“The mine was never going to be an infinite resource,” are how one focus group member expressed their concern about the future. This is a truth that Islanders seem both acutely aware of and absolutely naive too. This

domain – aspirations for the future and the capacity of a population to meet future demands – is hugely significant for Christmas Island as PRL enters a period of uncertainty regarding the remaining tenure of the mine.

There are tensions ('jitters') running through the community; about 'who is going to look after us', and 'what next?' Alongside this is the expressed desire (and human right) for people to remain in their home and not be 'forced to leave'.

### Fears about the future of the community

The most basic expression of fear about mining ending, is first and foremost about losing the population base that supports life on the Island (i.e. it is not described narrowly as a fear of losing 'my job', but a fear of losing the community around one). This concern is expressed by many within PRL and in the community generally.

"The population will decrease if the mine closes. People will go where the jobs are"  
(PRL Executive, Sept 2018)

"[Island population] will go from 1200 to 700 people"  
(Community Focus Group, Sept 2018)

"There is a lot of hesitation among long term families about the future"  
(Shire of Christmas Island, Sept 2018)

Metaphors for the mine closing include "shutting off the tap". The vision is of a lifeless Island and a dystopia.

"So many businesses would go, so many people would go. No people, no business"  
(Community Focus Group, Sept 2018)

"Houses will be empty"  
(Community Focus Group, Sept 2018)

"If they ever shut down I wouldn't like to see what would happen here"  
(Community Focus Group, Sept 2018)

Changes in the last few years with the Detention Centre closing and the economy slowing down have precipitated fears. People can substantiate their fears with experience:

"It's my third year. Even in just a short time there are less people on the Island and a less strong economy since the Detention Centre closed"  
(Community Focus Group, Sept 2018)

"We are even upset with SERCO going, shops and restaurants have closed, already lost a café recently"  
(Community Focus Group, Sept 2018)

"PRL are massive employers and when lease got knocked back we were jittery. We already see that people whose contract is coming to an end are making plans for to go back to the mainland"  
(Community Focus Group, Sept 2018)

"Five years ago, you could get a loan, but now no. There are rumours that the mine will go"  
(PRL Employee Focus Group, Sept 2018)

A significant portion of the population want to stay, and they need jobs:

"It is hard for us to find a permanent job on the mainland"  
(Community Focus Group, Sept 2018)

"We deserve to live here, we've fought hard to live here, there's a sense of patriotism"  
(Community Focus Group, Sept 2018)

Phosphate mining plays a centre stage role in keeping the community viable. There have been several peaks and troughs in the local economy, but mining has been the constant. It is "mining that has survived over all else".

### Different impacts across ethnicities

During the consultation period various people expressed the view that they believed that different cultural groups may respond in different ways to mining ceasing. The most significant cultural groups on Christmas Island are Chinese, Malays and to a lesser extent Anglo-Celtic Australians. A consistently expressed view is that if the opportunities that mining provides is no longer available the Chinese population may be likely to leave the Island. The Malay population are described as having a strong attachment to the Island and, therefore, it is anticipated that they will not easily leave and the Island will remain their home long term no matter what happens economically. These opinions obviously would require further research to confirm their validity. However, it is noteworthy that a sense of home and place, and the likeliness that people will leave the Island to pursue alternate economic opportunities does vary across the Island and may be influenced by cultural factors.

### Different impacts across generations

It is anticipated that a mine closure would impact older people more than young people. There's a sense that older people are more fearful, vulnerable and have limited options besides working in the phosphate mine.

Young people are described as being more resilient, with diversified skill sets and off-island dreams. As a Community Youth Representative stated:

“Young people are more go with the flow, more flexible. They could be relocated. All young people speak English, there are no barriers for them going elsewhere, and you could retrain them. If the mine closes, it’s not a catastrophe”

(Community consultation, Sept 2018)

“The young people working at PRL, when they talk about the shut down only those who have kids are concerned. But others, without babies, are OK with whatever happens”

(Community consultation, Sept 2018)

“Young people – they are resilient and happy if new industries come here”

(Community consultation, Sept 2018)

Older people are considered to be more attached to the mine and mining work on Christmas Island.

“People are 50 or 60 years old and love to work here, and still have children to support. Not all our employees are skilled so in the mainland there are no jobs for them”

(PRL Employee Focus Group, Sept 2018)

### Impact assessment of Fears About the Future of the Community – High Negative Impact

With rumours that the mine will close, but uncertainty about when, phosphate mining on Christmas Island has a high negative impact on fears about the future of the community. The mine is the basis for the existence of the community and ensures it is viable. Without alternative industries that can fill this gap a large number of people are fearful there may soon be no community at all.

### Aspirations for the future

A number of options for the future of Christmas Island were presented including:

- mining to continue
- tourism
- casino
- education hub
- local produce
- coffee
- property development.

The community seem measured in their evaluation of options; they have thought about it. However, there does not seem to be high levels of confidence or optimism across the community in any one option.

“Diversification: There is MINTOPE – that’s a commercial venture in local produce. They [PRL] are trying. Construction and maintenance are also options and PRL tender for other projects. We could do maintenance on a resort if it reopens. But all this relies on outside projects existing”

(PRL Employee Focus Group, Sept 2018)

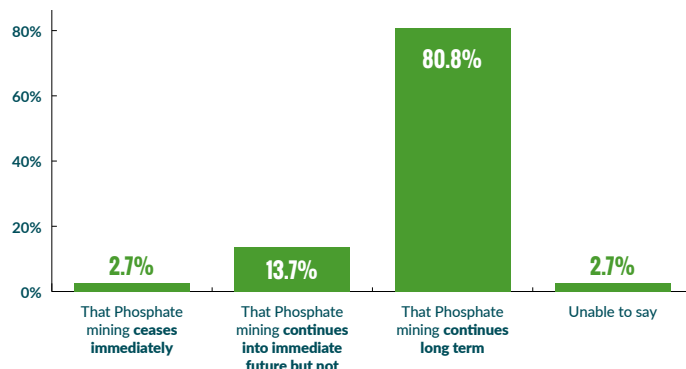
“In diversifying, PRL have looked at property development. But if there is no mine and no Detention Centre no one will live here. There’s some work in maintenance and landscaping. There’s some work supplying fuel for navy and custom vessels”

(PRL Employee Focus Group, Sept 2018)

### Mining to continue

In the online survey completed by PRL and non-PRL employees, there was clear message when asked ‘What do you hope for the future of phosphate mining on the Island?’ – with 80% of respondents expressing the desire for mining to continue long term into the future as shown in Figure 15.

Figure 15 PRL and Non-PRL responses to hopes for the future of phosphate mining on the Island



The survey findings were reinforced through consultation with community members.

“They are the only private sector organisation that is significant for the economy of the Island, the longer it continues the better”

(Community consultation, Sept 2018)

“I hope they can get new lease and keep going”

(Community consultation, Sept 2018)

“We don’t want employees to be in a short-term mindset” (PRL Executive, Sept 2018)

“Don’t believe community sustainable if there is no mine” (Administrator of Christmas Island, Sept 2018)

## Tourism

Tourism has widespread appeal and in theory is supported by almost every interest on the Island. However, whether it is seen as achievable or not varies significantly, and there are many who may want to support tourism, but do not believe it can actually be viable, or even begin to replace the contribution mining makes.

Aside from one or two hopeful voices (“The future is in rising middle class in Malaysia”), the large majority of people consulted across various community interests were not convinced by tourism. There’s a sense that people have been thrown the idea as a comfort, but locals cannot actually imagine how it will work.

“Tourism – the idea is deluded...we would need to get 1600 tourists a year. The diving company underwrites flight from Indonesia and gets 30 tourists a year”  
(Community consultation, Sept 2018)

“Tourism – there’s been talk about it for a very long time but it’s never come to fruition”  
(Community consultation, Sept 2018)

“For high end travellers there are no facilities”  
(Community consultation, Sept 2018)

“At the end of the day you need something to sustain the community. We compare ourselves to Cocos. And they have had massive marketing for tourism, and even so they are not thriving”  
(Community consultation, Sept 2018)

Other words to describe the feasibility of tourism on Christmas Island are ‘naïve’ and ‘unrealistic’.

The standard arguments presented with respect to tourism taking a bigger role are that the costs for tourists to get to the Island are prohibitive, infrastructure is needed (including airport extension), and as an economy it will never replace the scale of mining. The diversification message has been one that is well recognised in the community, and yet the community is unsure what to do. As one PRL Executive puts it:

“We are advised to reinvest, but invest in what? A hotel, for who? Is this the mine’s business?”  
(Community consultation, Sept 2018)

One stakeholder suggested that PRL can support a future diversification into tourism through preserving products of the mining culture and history (preserve mine assets and infrastructure) and collecting oral histories of older workers.

## Human assets

One interesting perspective on future prospects of the Island, was that phosphate was not the most important

resource. They see the human assets at PRL as a valuable resource. PRL is seen to have a highly connected local workforce capable of being mobilised to do other work.

“PRL are trusted – they understand the Island and community. Credibility has been gained in other areas i.e. maintenance. They have got the local knowledge plus an engaged workforce. That’s a tremendous asset”  
(Community consultation, Sept 2018)

Just how this asset can be used after a mine closure is yet to be decided.

### Impact assessment of Aspirations for the Future – Low Negative Impact

This impact was assessed as low negative due to the lack of hope around what to do after mining. However, there is at least an engaged conversation about options, and messages are getting through that mining may not last forever, and diversification is essential for survival. There is just not yet a viable option that people have any sense of consensus or confidence about. The community is fragmented; there is not yet any unifying vision that people can believe in.

## Aspirations for their children

Despite the pessimistic view that some Islanders have of the future, PRL should be commended for their continued interest and investment in the youngest members of Christmas Island. During the first round of data analysis this domain was flagged as ‘low negative’. However, after more and more data was synthesised it became clear that something different was happening across the generations, and that it can be directly attributed to PRL’s contribution.

Phosphate Resources Limited makes a significant contribution to the education of the children on Island. Of particular interest in this domain is how PRL assists not just in supporting and enhancing educational outcomes through quality education, but how PRL helps generally broaden young people’s perspective and experiences.

## Investment to broaden the mindset and skill base of young people

Phosphate Resources Limited provides funding for school trips off-island: to Country Week and overseas on the ANZAC trip. Both these trips are broadening and seem to be about seeing oneself as an Australian citizen beyond the Island – situated on the mainland or overseas in the context of an historic world war.

To win these opportunities children are expected to deliver a quality presentation, show creativity and “to step up and show leadership”. A culture of high expectations is fostered.

There is also a long term understanding and support for the need for students to leave and live on the mainland, to gain skills and qualifications. Scholarships to university are supported and this is working to enable many students to go to university in Perth, and to grow up with an expectation that they will. For a very remote school these outcomes are impressive.

The training organisation speaks highly of the contribution of PRL to pathways available to young people – both for young people who might leave the Island and others who want to come back and work.

“If a kid is interested in training, the answer is yes”  
(IOGTA, Sept 2018)

“PRL are in school for one day a week, doing school-based traineeship. They are very supportive of any local kids who want to be involved. If a kid is interested the answer is yes. The mine never says no, to a local interested kid”  
(Community consultation, Sept 2018)

“Lots of locals don’t want to move, are family oriented. If people go away they come back here. [Kids need jobs and training on-island, which PRL provides]”  
(Community consultation, Sept 2018)

“We offer apprenticeships, and we do give children of employees work experience: finance experience, or in geology. Those kids that want a trade or a traineeship, there are not many other organisations on the island that offer apprenticeships. PowerStation does, maybe one per year” (PRL Executive, Sept 2018)

“There’s a sense that they would like to capture future investment back on the island i.e. kids go to UWA, broaden their opportunities other than the mine – broader base of support and opportunities – MINTOPE, educational tourism”  
(Community consultation, Sept 2018)

Current enrolments for school-based apprenticeships and traineeships indicate a range of interests outside mining.

- Mechanical and Industrial Engineering and Technology – 5 enrolments
- Sport and Recreation – 7 enrolments
- Food and Hospitality – 9 enrolments (My School website).

A Community Youth Group Representative was consulted, and they reported that young people do not feel too vulnerable about the future:

“Young people more go with the flow, more flexible. They could be relocated. All young people speak English, there are no barriers for them going elsewhere, you could retrain them. If the mine closes, it’s not a catastrophe” (Community consultation, Sept 2018)

### Impact assessment of Aspirations for their Children – Low Positive Impact

PRL make a considerable contribution (not only financially) to the future of the children of Christmas Island. This is evidenced their investment and commitment to education, skill building through traineeships and apprenticeships, scholarships and encouraging the broadening of young peoples’ interests and experiences off-island.

PRL should be commended for their focus on preparing young people for a future with options. This has long term benefits for the community if students come back to live on the Island (and bring diverse skills) and counters the negative effect of growing up in an isolated one-industry community.

### Perceptions of safety and security

The unique nature of the community, its stability, remoteness and limited influence of external factors have meant that the community is a place of safety and security. This idea was expressed and held dear by most members of the community the Research Team interacted with.

“Domestic violence is minimal, theft is minimal”  
(Community consultation, Sept 2018)

“Nothing bad happens, sometimes if people are drunk they go into other people’s houses. It is a very safe community. Kids grow up here feeling safe”  
(PRL employee, Sept 2018)

“Mine contributes through providing stability in the population, and avoiding a FIFO workforce”  
(Community consultation, Sept 2018)

As this sub-domain is in the ‘Fears and Aspirations’ domain, it points to a community’s sense of continuity. Although there are fears for the future, at the same time there seems to be a ‘we are all in this together’ feeling, and also a sense that someone will fix it (the government or the mine). People have been taken care of for so long, that despite fears of the mine closing, there is a continued sense of stability.

### Impact assessment of Perceptions of Safety and Security –High Positive Impact

This domain relates to the strong social fabric that was explored in the Culture and Health and wellbeing domains. Furthermore, the enduring presence of the mine and its long term impact on sustaining livelihoods across the community creates a sense of a stable, enduring base, even when it is threatened.

## 4.8.2. HUMAN CAPACITY

Here the report will explore the impact of PRL and phosphate mining on the process by which individuals, groups, organisations, institutions, and the community develop their abilities - both individually and collectively - to set and achieve objectives, perform functions, solve problems.

### Education

Christmas Island High School is classified as 'very remote', with 60% of students have a language background other than English (My School Website). Despite these challenges, the school is considered, "One of the best Regional High Schools in WA".

Attendance rates are high at 95% (2017, My School Website) and the National Assessment Program - Literacy and Numeracy (NAPLAN) results are strong (above average across most areas) – see Figure 16.

Figure 16 NAPLAN Results for Christmas Island District High School 2017

The figures below were sourced from The National Assessment Program – Literacy and Numeracy (NAPLAN) which assesses all students in Australian schools in Years 3, 5, 7 and 9



Source: The Good Schools Guide

The fact that the school is rated as an excellent regional school is not taken for granted and the community have worked hard to achieve a quality school (including a Year 11 and 12 Program) for the families on Christmas Island.

"12 years ago, we went from being a Year 10 school, to Year 11 and 12 school too. We had to jump through a lot of hoops to prove we could provide quality education at this level (which was complicated due to legislative complexities). We had to buy in specialist teachers for the ATAR level.

"Parent community had doubts about us providing a quality education. But now families do not go off the Island for school. We have a strong ATAR connection and our first student got into UWA a few years ago.

"This Island was missing kids from 15-19 years old. Now there are 40 kids here in year 11 and 12. Social impact is their presence on the island now. 14 kids in Year 12 are on the 5 University Band. Next year 80% have been successful in getting into their first choice.

"We needed to prove we could attract the skills, provide help for graduates. Curriculum very regulated in year 11 and 12, moderated. We have stood up to this rigour. Help through School of Isolated and Distance Ed. Certificate courses-qualifying. This is part of kids doing WACE.

"The mine contributes a lot to these outcomes. We provide excellent education in a remote place, and the mine promotes excellence. Mine will come and watch kids present. They invest in kids and expect a lot of kids in return"  
(Christmas Island District High School)

Christmas Island produces more university students proportionally per capita per year, compared to other remote towns in Western Australia (this has been anecdotally communicated but is unverified). The school interview provided



evidence that this is linked to the way PRL have supported the school, in a way that promotes excellence and enables students in a very remote community to aspire to reach their potential. They provide funding for the Dux of the school, and school laptops. And fund a trip for 33 students overseas for an ANZAC trip (but only for students with the best presentations), and other off-island trips.

“The mine started to give incentives: \$7,000 scholarship to assist university studies (and the Shire gives \$5000)”  
(Community consultation, Sept 2018)

“The mine provides money and promotes excellence. They are whole-hearted supporters of the school. They don’t ask a lot of us. Some sponsorship deals for example ask us to promote their line but with them we never feel compromised”  
(Community consultation, Sept 2018)

“They promote leadership, creative thinking and are starting to look at sustainability (food growth and tourism). The Year 11 & 12 program, and opportunities through PRL adds a lot to the community – we need these kids to step forward to be leaders in the community.

“Mine is communicating new expectations about sustainability, sustainable food, initiatives to link tourism and history, videos on crabs. New expectations. Mine is trying to broaden base. Kids want to stay on island and not everyone can be a diesel electrician. Looking at supporting coffee beans, tourism, off-shore university”  
(Christmas Island District High School)

According to the school, the mine promotes excellence, sees results, and Christmas Island students get an equivalent (or better) education that what they would get in Perth.

These are achievements to celebrate, but at the heart of it, the most important contribution the mine makes to the school is to provide the students. As with other services on the Island, the school is driven by numbers, and a population base is critical (and specially to ensure the Year 11 and 12 program continues). Approximately 50% of 267 students enrolled at the school are from mining families.

“If the mine closed people will leave the island, they have got homes in Perth, 50% of island will leave. That’s 120 less kids, no year 11 and 12 program, which means more families leave”  
(Community consultation, Sept 2018)

The existence of the school depends on the existence of the mine, which Islanders are keenly aware of. As one stakeholder reported:

“Every time we hear that a worker is going to move to Christmas Island from the mainland, we check whether they have any kids, and hope that they do”  
(Community consultation, Sept 2018)

### Impact assessment of Education – High Positive Impact

The existence of the school and the ability to offer a Year 11 and 12 program would not be possible without the current population on island – this population base is maintained by the presence of the mine. In addition, PRL makes a significant and thoughtful investment in the school with the aim of bringing out the best in students and offering them broadening experiences that only add to the quality of their education. This also sets them on a path of realising their potential.

### Training and skill building

Phosphate Resources Limited provides education, training and employment opportunities to local residents and upholds the Australian Fair Work Commissions laws and requirements for training. According to the training organisation, PRL is the largest company on the island that offers the largest number of traineeships and apprenticeships – mainly electricians and diesel mechanics. PRL currently has 4 apprenticeships and 3 trainees.

“If PRL was to go that could be a massive hit and young people would really suffer. They do a massive amount of training, safety training. They put things into action, like first aid; they have a good grasp on their workforce”  
(IOGTA, Sept 2018)

A PRL executive explains the company’s commitment to investing in traineeships/ apprenticeships is about encouraging youth, keeping people motivated (not a short-term mindset) and also, if the mine does close, they “*want people to leave with the best skills*”.

The 2017 retrenchments, followed by PRL bringing in skilled workers from off-island, raised questions from within the community about the investment being made by PRL about the training and skill building of locals.

“There were redundancies, and then FIFO workers came...were the people they lost the ones needed? Were contractors brought in to fill in the gaps?”  
(Community consultation, Sept 2018)

“They are bringing in FIFO. This means that young people have no chance to go through training to occupy the mine”  
(Community consultation, Sept 2018)

The Research Team raised these community concerns with IOGTA (Indian Ocean Group Training Association) (who assist with labour hire processes) for some perspective. IOGTA reported that PRL were diligent in sourcing skills on-island as a preference. IOGTA specified that:

“When doing labour hire, rather than getting someone off island PRL will always first:

- Look local
- If there’s no one, they then investigate if there are any husbands or wives who do not work who might be interested in the role. They always put it out into community first, and they do a thorough skills audit of community
- Then if skills aren’t available they try to get a mainland person to move here
- If they have to do FIFO they put a time limit on it, so after a certain time the contract expires, or the person has to move to the island
- Will only consider FIFO for specialist roles” (IOGTA, Sept 2018)

In terms of supporting young people interested in working in the mine, IOGTA claims that PRL ‘always say yes’. It seems that community understandings about PRL’s handling of the workforce are overly simplistic and do not reflect PRL’s internal pressures and priorities.

Community members who are looking at a post-mining future speak about diversification and the need for trained people. Mine supports school pathways into hospitality and other areas outside mining.

“For tourism, we will need stevedores and airport workers. We get skilled people through the mine and the training they provide through subsidies”  
(Community consultation, Sept 2018)

PRL employees also note that PRL is investing in the future. “Through OHS and HR, they are offering more training and up skilling, they are making an effort” (PRL Employee Focus Group, Sept 2018)

### Impact assessment of Training and Skill Building – Low Positive Impact

PRL is one of the major organisations that promote, subsidise and encourage Christmas Islanders to complete traineeships and apprenticeships. This supports PRL’s investment in future generations in mining, but they also support the up skilling of the population in skills outside of mining. The reason for low positive is the community perception of bringing in the FIFO skilled workers above islanders.

As the Research Team observed and reflected on the relationship between the mine and community, some ‘parent-child’ like dynamics were observed. For example, there seems to be at times an expectation that PRL will fix things, and deal with any future foreseeable challenges. Like a ‘good parent’, PRL has been a constant and all-powerful benevolent force keeping everyone safe and provided for. At times the mine is taken for granted too.

This has been positive in creating stability, safety and inclusion. However, the downside is a dependency and inability for the community to diversify, take risks and ‘try, test and fail’ in alternatives to mining.

Island communities all over the world are perhaps more likely to be insular and protected from external influences, so this does not necessarily imply a failing on the part of the mine. Also, both the mine and administering bodies historically (before PRL) were paternalistic towards the community.

“There are still paternalistic patterns stemming from original mine owners, then government took over role of mine in providing for the community”  
(Community consultation, Sept 2018)

There are some traditions remaining from the past (for example in the past the Administration maintained all the 39 temples on the island, ran a lawn mower over the grass or painted them (“In no other place does the government do lawn mowing for the community assets”)).

“Union history and the ethnic makeup of the Island has led to a limited understanding of rights and responsibilities. Union=good and employer=bad. It means we can’t advocate for ourselves. It means the government can fix it, or the mine can fix it. In this frame the mine are perceived as being good corporate citizens, but there’s an expectation too [that they will take care of me]. There is no reference point other than yesterday”  
(Community consultation, Sept 2018)

Historically Christmas Islanders have enjoyed a stable, prosperous industry on their Island, and that combined with their geographical isolation means that Christmas Islanders are not practiced at adapting to external influences or stretching their skills in new directions.

The population are recognised as strong and resilient – “When community bought the mine off the government people raised \$5 million in one week” – but also ‘unworldly’.

## Resilience and adaptive behaviours

"We have a wealthy, functioning, peaceful community, and yet on a Sunday when everyone is at Flying Fish Cove, there is no ice cream truck or anything like that. There's a very low entrepreneurial spirit"  
(Community consultation, Sept 2018)

"It's a tri-lingual school, kids code switch, 3 languages interconnect, could this be an educational asset? Such as an intensive language centre? We have a unique talent; how can we use that as an asset?"  
(Community consultation, Sept 2018)

"Why was the shipwreck moved away from the shore? It would have been perfect for diving, an asset to attract diving tourists?"  
(Community consultation, Sept 2018)

These questions indicate that people are exploring the potential outside of mining.

"If diversification is going to happen, they need help to look outside the box"  
(Community consultation, Sept 2018)

In recent years there has been talk about next steps, and government have facilitated conversations as well. PRL have used their influence to foster new skills and new thinking, through three main areas of influence:

- Partnerships through the community development fund
- Support of the school and encouragement for young people to travel and attend university (explored above)
- Workforce development and training (explored above).

#### Partnerships through the community development fund

PRL have changed the nature of engagement around donating money to the community for events and programs. In the past PRL just gave money without questioning. In recent years they have redefined this relationship in more 'adult to adult' terms: with expectations about explaining needs and using money in a sustainable way that benefits the whole community.

"We engage more with the community to get to their needs rather than just give them money. It's not just a donation but more of a partnership"  
(PRL Executive, Sept 2018)

"There's a process, and a committee. Before we just gave money, now we assess applications across sport, legacy, community, religious purposes. And we want the money to benefit the community and not just the group. Also, we contribute but now we want to see recognition for it"  
(PRL Employee, Sept 2018)

The community development fund also helps a remote community access opportunities they would not otherwise. They provide generous contribution to clubs, activities, learning, travel and culture and large-scale celebrations, all of which provide a broadening out of activities, interests and experiences beyond the Island and the mine.

#### Attitudinal shift needed

During the consultation many people – in particular people with more mainland experience – describe the Christmas Island community as one that struggles with change.

"There needs to be an attitudinal change across the whole community"  
(Community consultation, Sept 2018)

"The community won't respond to the mine closing until it's an actual fact. They take the mine for granted"  
(Community consultation, Sept 2018)

Some describe the inertia about creating a post-mining future:

"The mine was reopened in 1998 to transition to another economy. There have been lots of chances, but what's happened?"  
(Community consultation, Sept 2018)

"The mine gave us so many chances ...but there are no industries popping up, still no long-term plan"  
(Community consultation, Sept 2018)

Some describe a mindset of resignation, apathy or entitlement:

"We have limited choices"  
(Community Focus Group, Sept 2018)

"Community are used to having no change, only the mine keeps things going"  
(PRL Executive, Sept 2018)

"Entitlement mentality needs to be turned on its head. Entrepreneurial – how can we do this together"  
(Community consultation, Sept 2018)

"People on the Island need to wake up and say what next?" (Employee Focus Group, Sept 2018)

Figure 17 Suggested existing barriers to diversification:

Barrier	
Lack of clarity about when mining will cease	Mine says 5-7 years – 15 years ago – opened on basis that would help community/economy transition to other projects.  “When the five-year plan was developed we got together, everything was documented, we were working towards mine closure, but people did nothing. I have Strategic Plans coming out of my ears. The thing is that while the mine is operational, people are going to rely on the mine” (PRL Employee Focus Group, Sept 2018)
Lack of clarity/vision about what next	“There is no consensus about what next steps is no unifying vision. The Administration is taking a leadership role in promoting tourism, but many in the community cannot see that it could be viable” (Community consultation, Sept 2018)
Lack of supporting mechanisms for small business	“Small business association used to come up here, but small business died down (can’t function here)” (IOGTA, Sept 2018)
Outsourcing skills	“Admin is outsourced, property management is outsourced” (Community consultation, Sept 2018)

### Impact assessment of Resilience and Adaptive Behaviours – Low Positive Impact

In terms of mining’s contribution to this domain, this is a mixed and layered story. In some ways ‘mining’ is the cause of the problem as it has been a dominating force for so long. When PRL was formed, the mine was a vehicle for self-determination, but as it empowered the community it also accommodated their needs perfectly, creating permanent employment for most locals who want it, and a comfortable middle-class lifestyle across the Island.

This has created a mindset where the mine is everything. There are (unconscious) expectations in the community for the mine to either go on providing, or, if that is not possible, then to solve the problem. This domain has thus been assessed as an overall ‘low negative’ impact.

However, within this it is important to recognise PRL’s contribution to turning this around. In recent years PRL have engaged in various culture change initiatives that are seen as fostering new skills and capabilities on the Island, and a broadening out of viewpoints and experiences.

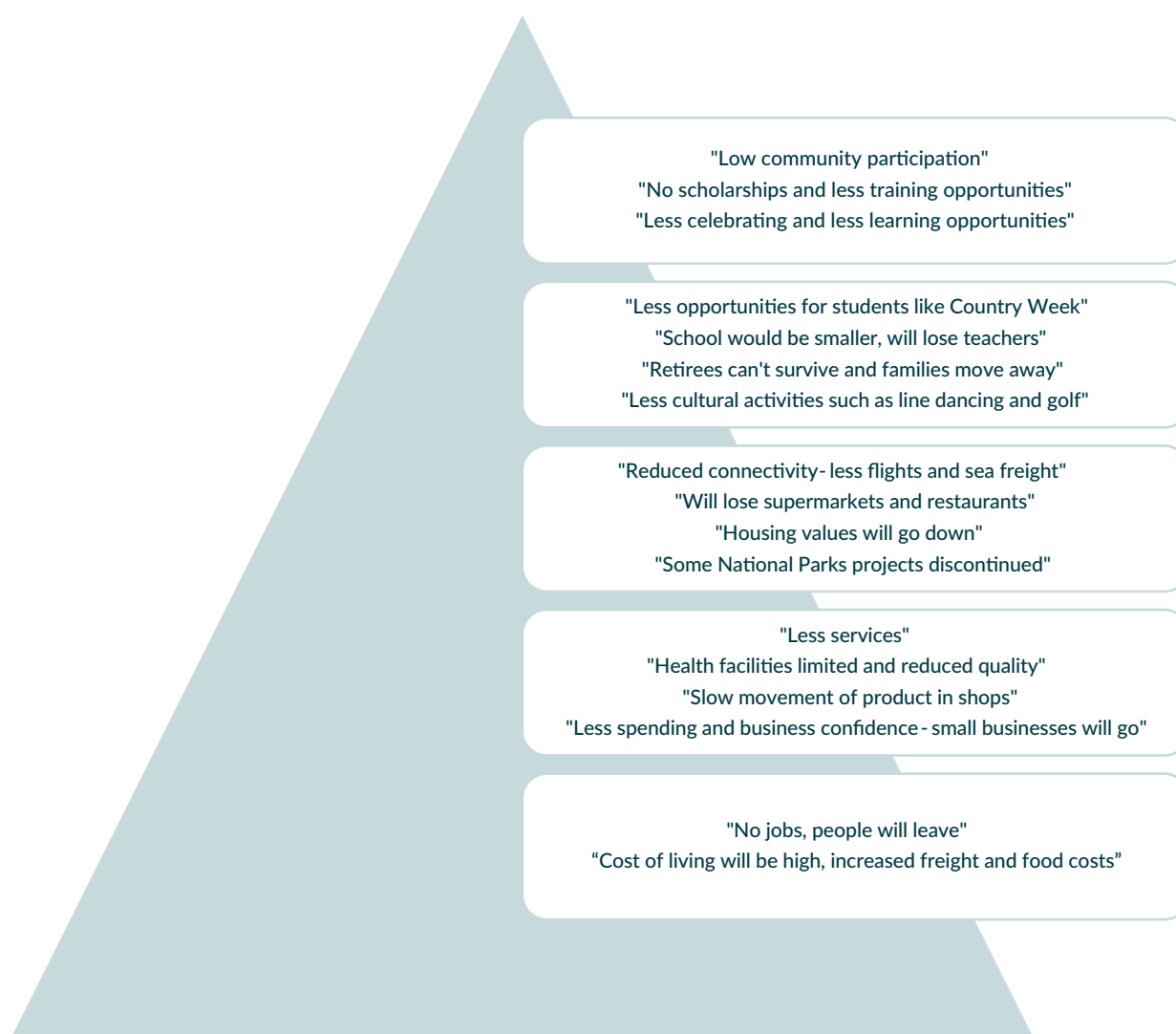
## 5. ANTICIPATED SOCIAL AND ECONOMIC IMPACTS OF MINING OPERATIONS CEASING

The economic and social contribution of mining was documented and also validated through counterfactual analysis; i.e. assessing mining's contribution by exploring a scenario of there being no mining. Thus, in scope for this study was to imagine how the community could organise itself in the event that mining ceased, asking, what would the Island look like without phosphate mining?

Most Christmas Islanders, when asked directly, could clearly articulate negative impacts expected if mining were to cease. A few people described positive impacts if mining were to cease – mostly centred around a potential eco-tourist industry that would be more able to flourish due to the Island being more attractive to those interested in eco-tourism.

A summary of comments from community members about anticipated impacts are presented here, organised loosely from basic, survival impacts to impacts on quality of life.

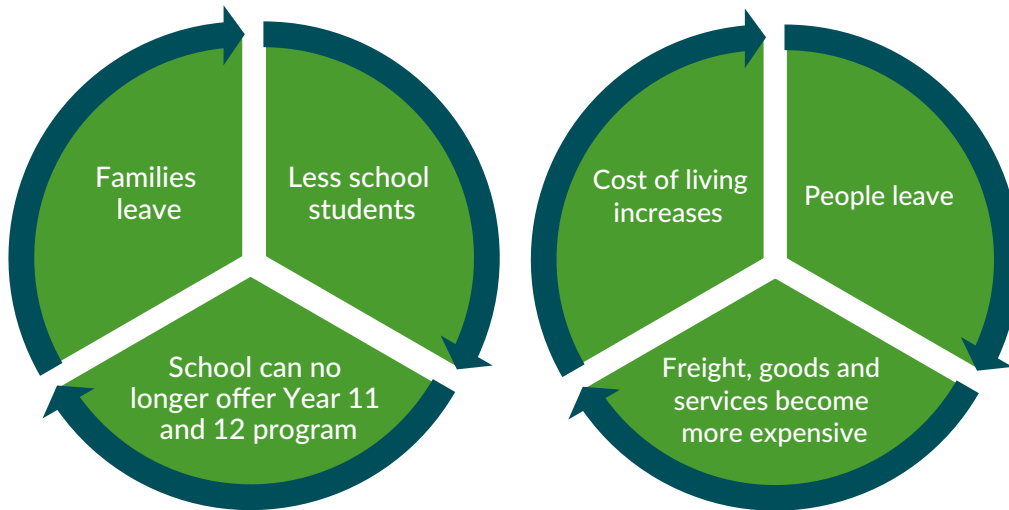
*Figure 18 Anticipated impacts of mining closure as described by the community*



It is clear that impacts would be felt right across the community and well beyond the circle of direct PRL employees. Impacts described here are not abstract but are tangible and based on experiences that make a difference to how people live.

Of particular concern for Christmas Island is that it is a relatively small island, and isolated by long distances and expensive flights (and poor weather making it inaccessible for much of the year). This makes the community particularly vulnerable to negative spirals, which are described readily by community members. A few examples based on community comments are provided below:

Figure 19 Examples of potential negative spirals identified by the community



The basis for the community existing would be under threat, which is understood by some community members, and in part confirmed by the economic analysis of this study. Several voices in the community stated that the government, and even newcomers to the Island, underestimate the level of impacts on the community if mining was to end.



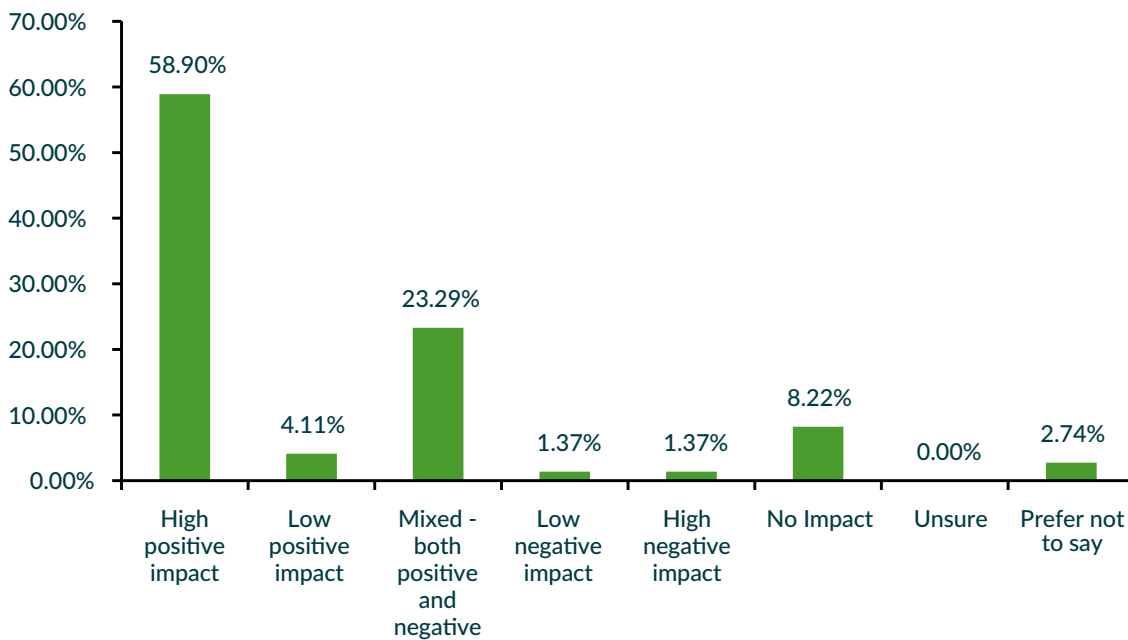
## 6. COMMUNITY PERCEPTIONS OF MINING'S CONTRIBUTION TO ISLAND LIFE AND ECONOMY

Generally, PRL is seen positively across the community. Almost all people consulted, as a minimum, acknowledged PRL's role as a 'good corporate citizen' (words we heard over and over again).

Almost 60% of participants who completed the online survey reported that phosphate mining had a high positive impact on their life. Less than 3% reported any negative impacts (low or high).

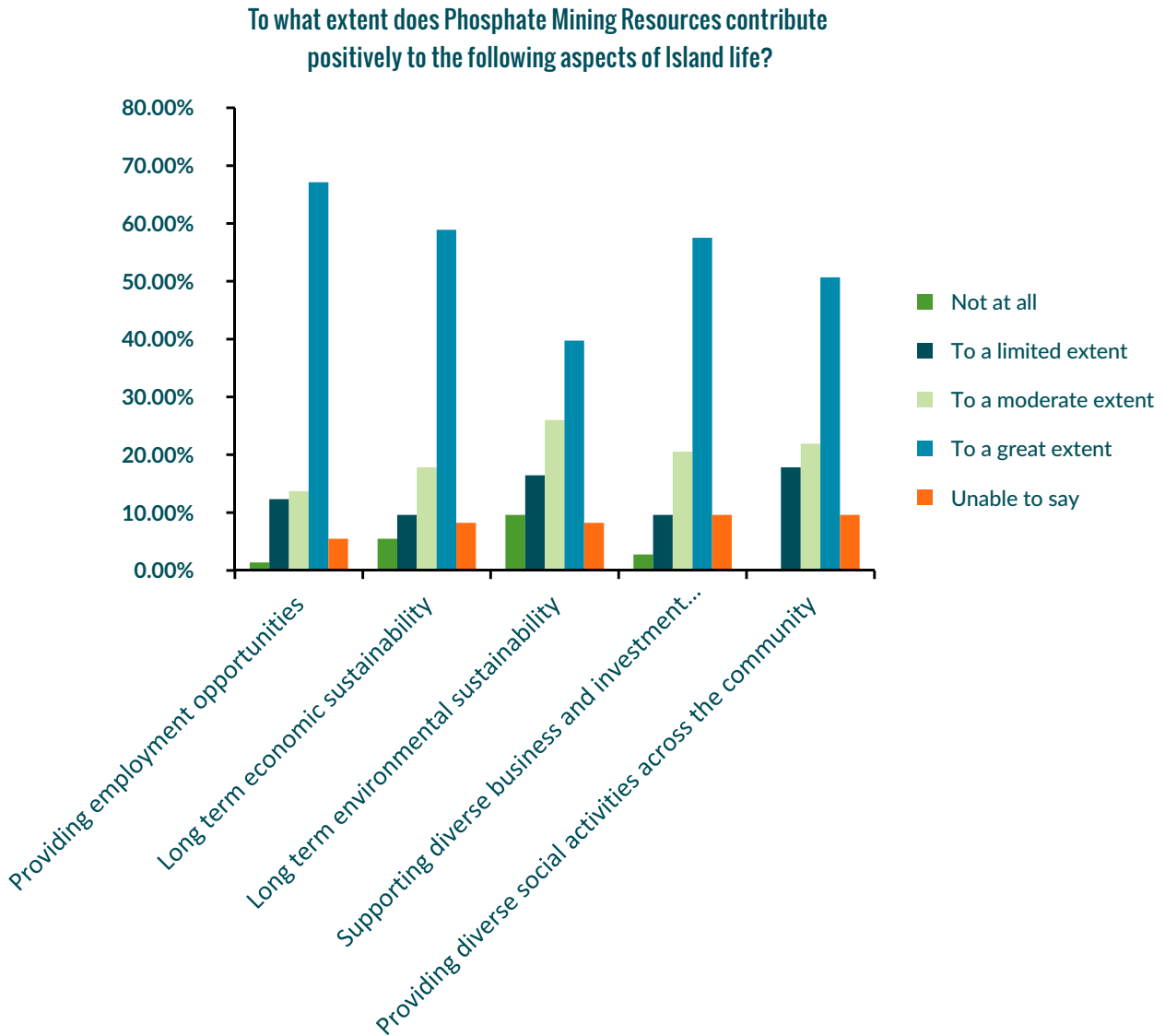
Figure 20 Survey results of effect of mining on life on Christmas Island

**How does Phosphate Mining conducted by Phosphate Resources Ltd, currently effect your life on Christmas Island? (directly or indirectly)**



When asked to substantiate the various ways that mining contributed positively, generally responses remained at “to a great extent” level across all domains.

Figure 21 Summary of survey results on the Extent of positive mining contribution to life on Christmas Island





Negative perceptions of the mine were picked up in both the survey and interviews. The key causes of discomfort with mining are outlined in Table 17.

Table 17 Causes of negative perceptions towards the mine

Concern expressed	Estimated extent of this view across the community
Dust impacts	Estimated to be considerable <sup>3</sup>
Environmental damage from mining	Estimated to be a small minority
Employment of FIFO workers	Estimated to be a small but vocal and influential minority
Retrenchments from 2017	Estimated to be a small but vocal and influential minority

Concerns about environmental damage from mining are difficult to address in this report as the question of any actual environmental damage from mining was out of scope for the present study and the subject of separate technical analyses.

The dust issue was explored in Section 4.5. Although a considerable number of people (mainly through the anonymous online survey) identified dust as an issue, not many people mentioned dust in any substantially negative way. One finding was that there did not seem to be awareness in the community about any of the ways in which PRL actively reduced and monitored the dust impacts, or that some Christmas Islanders state that current medical understandings indicate that there is currently no evidence to confirm that dust is a health risk. There may be some scope to communicate more openly with the wider community about the issue of dust in order to manage any potential negativity or unwarranted concern.

Negative perceptions about FIFO and retrenchments were summarised in Section 6, but are explored further here in relation to a wider change management agenda at PRL. If PRL are to continue down the path of modernising and introducing more efficient work practices, these negative perceptions need to be understood and addressed.

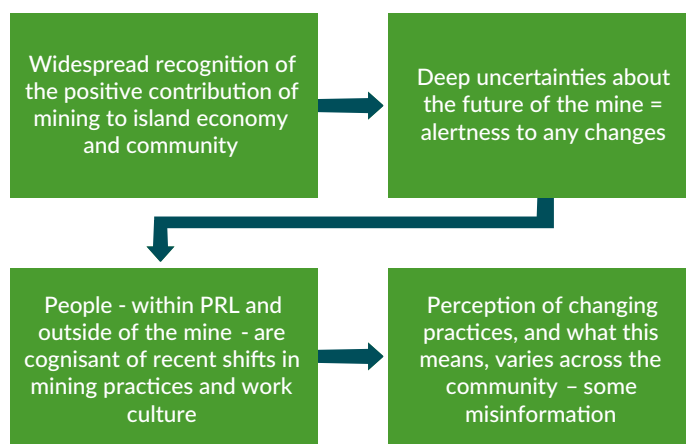
## CONTEXT

In the last three years PRL have made changes to their work culture and systems. Dramatically (from the perspective of the community), in the last quarter of 2017, 37 permanent employees took voluntary redundancy and tighter controls in working practices have been gradually introduced to adhere to Federal and Western Australian Legislation and Workplace Health and Safety compliance.

These actions, combined with increasing competitive pressures facing the phosphate market, have brought about the need to operate in a more cost efficient ways.

The importance of the mine for the community means it is subjected to an intense level of scrutiny, and an uncertain future for the mine and the Island means there is an amount of vigilance around any perceived changes, and what they might mean. A model for this dynamic is outlined in Figure 22.

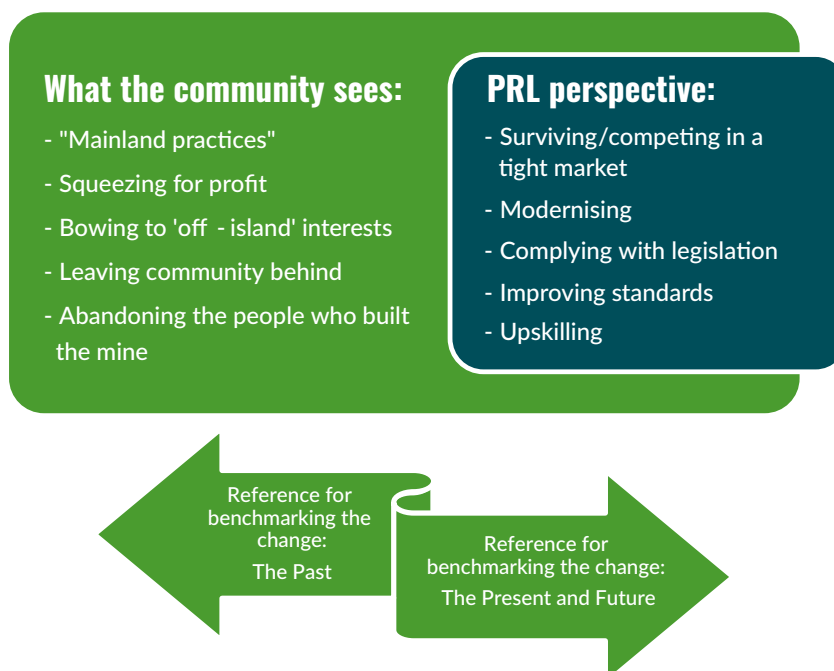
Figure 22 Perception of changes



<sup>3</sup> This assessment is based on the large number of comments regarding dust in response to open ended questions about general impacts of mining (in both survey and consultation sessions). Overall, about one quarter of those interviewed mentioned dust as a negative impact (unprompted), and one third of those surveyed mentioned dust as a negative impact (unprompted). To more accurately understand the extent of this perception, more research utilising a targeted question about dust is recommended.

One persistent theme of the SIA was that the view from 'inside' PRL looked quite different to the view from 'outside', as illustrated in Figure 23.

Figure 23 Community vs PRL perception



Some specific examples of this gap between community perception and the 'front-line' view, are presented in Table 18.

Table 18 PRL and Community views

Change	PRL rationale	Community view
New employees	"Employ new people with highly specialised skills from the mainland to help invigorate the business, bring up the standards, so the mine has a better chance of surviving"	"Why are PRL employing new people when there are locals who want to work, and they made locals redundant last year?"
FIFO workers	"We do not have a FIFO workforce, it's virtually zero. We do have some contractors who visit for specialised projects when we can't get the skills on-island. We always first try to get skills on the Island, then try to get someone to move to Christmas Island but it's difficult to attract people to live here sometimes due to poor housing and amenities"	"PRL are employing many FIFO workers so they can easily sack them. FIFO can't adapt to Island culture. If it's raining they say it's too slippery, but it rains from October to February. Directors want to diminish workforce and workers' rights. We want the community/locals to have jobs. People from the community see FIFO workers coming and going and have no understanding of why. Those people who were let go do not feel appreciated"
Increased efficiencies	"Increasing efficiencies, our skill base and capacity to make a more dynamic workforce that can survive, even if the mine closes"	"Retrenchments, multiskilling, FIFO – these are mainland practices. This is not who we are"
Redundancies	"PRL offered generous redundancies in 2017 – they were voluntary and very well paid. 37 employees took voluntary redundancies"	"Retrenchments mean that local workers are now unemployed, some still fit to work, it is puzzling. There were 50-70 voluntary redundancies"

Focus Group discussions with PRL Employees indicated that employees think the community do not necessarily have a grasp of the reasons for changes.

"We are facing a tough market – have to keep operating costs low/compliance of legislation/stakeholder response. Have to respond to a changing market place but community not understand that"  
(Employee Focus Group, Sept 2018)

As mentioned before, push back against recent changes to PRL seems limited to a small minority. There are also positive perceptions in the community about PRL's recent changes:

"Mainland practices are different. Last year, the scale of retrenchments, actually good for seniors, they are old, and they needed to carry heavy things. Some people were happy. Even young people took redundancies and then got another job on the mine two years later"  
(Community Focus Group, Sept 2018)

"They want to change to keep production happening"  
(Community Focus Group, Sept 2018)

"PRL is very fair, even though sometimes the union are strong, but that was about last time, not this time"  
(Community Focus Group, Sept 2018)

There is a need for PRL to explicitly communicate with the whole Island community about the changing conditions and pressures of the present, so that any changes can be understood within this shared frame of reference.

The gap between the community version and PRL version can be bridged through strong communication and applying change management principles. Some suggestions are to:

- Clearly and widely communicate reasoning behind changes in workplace practices; even if it means admitting vulnerability (i.e. admitting uncertainty, or not in a strong position);
- In communications acknowledge how things were done in the past, and celebrate that;
- Provide the community with reference points other than yesterday: facilitate their understanding of global phosphate markets, the Mining Act 1978 (WA) etc.

#### **"The mine will fix it"**

Another area where there is a gap between community and PRL perceptions, is in perceptions of the mine's roles and responsibilities (for the community).

The mine has historically stepped in to provide for the needs of society and this sense that the mine is

responsible for the community outside of the mine continues into present day.

Whether PRL accept this as appropriate or not, they do seem to carry a heavy load. To what extent PRL wish to shake off some of these expectations is up to the company, but it may be useful to be aware that the community currently looks to PRL as a natural leader on the Island. Even the Federal Government seems to look to PRL as the ultimate adaptive organisation capable of driving the next big industry. A credit to PRL is the obvious trust and respect with which the company is viewed by all in the community. However, it may be timely for PRL to more clearly reflect on, define and articulate the limits of their responsibilities with others on the Island.

## 7. CONCLUSIONS AND RECOMMENDATIONS

Through Vanclay's comprehensive Social Impact Assessment methodology, phosphate mining on Christmas Island was found to be recognised by the community as having a widespread and positive contribution to Island life. To quantify this, a total of 22 of the 31 sub-domains (over two thirds of all domains of social life) were considered to be positively affected by mining, with over one third (11 of 31) assessed as benefiting from a 'highly positive' impact.

High positive impacts were around those domains associated with social cohesion – living together, working together, values, identity and belonging, language and perceptions of safety and security. Quality of food was considered to be highly dependent on mining for enabling shipping of fresh produce, and high incomes to pay for costly quality food. PRL's contribution to education was noted as creating high positive impacts based on PRL's active, purposeful investment in young people.

An obvious high positive impact is around economic effects on lives – phosphate mining is critical in enabling Christmas Island residents to have a livelihood and sustain their existence on the Island.

Low negative impacts were about phosphate dust and difficulties with different interests co-existing due to mining being/or being seen as a dominating industry and influencer on the Island. Although there is little or no poverty or entrenched disadvantage on the Island and mining has allowed a very remote community to prosper as middle class across the community, one low negative impact was 'experiences of disadvantage'. This is not widespread but as everyone is so closely connected to the mine (and many in the community once had a stake in the company) there is a feeling that some people have gained more than others from mining. Aspirations for the future was a low negative impact as dependence on mining has overshadowed the emergence of other skills, interests and directions for the Island.

Recommendations identified based on the findings of this SIEA, fall into three categories:

1. Addressing negative perceptions of the mine and utilising change management principles within and outside of PRL
2. Addressing inertia and managing expectations
3. Planning together

### 7.1. ADDRESSING NEGATIVE PERCEPTIONS OF THE MINE

Negative perceptions of the mine were frequently based on misunderstanding or lack of clear or complete information, which invites others to fill in the gaps. Addressing this involves clear, consistent communication

across the community, especially in assisting people outside of PRL to understand present conditions that the mine faces, and planned responses to change. Some tips based on change management principles include:

- Clearly and widely communicate reasoning behind changes in workplace practices; even if it means admitting vulnerability (i.e. admitting uncertainty, or not being in a strong position)
- In communications acknowledge how things were done in the past, and celebrate that
- Provide the community with reference points other than yesterday: facilitate their understanding of current global phosphate markets, the Mines Act etc.

The community need and deserve high level transparency and plain speak. Communication formats need to be considered to reach older workers – perhaps whose first language is not English. Face to face is preferable to social media or formal communication memos.

Employing a permanent Community Liaison Officer, who has qualifications in community development, or who is otherwise well placed in the community, is recommended to help manage change, if change is going to continue at the current pace or involve unexpected scenarios.

### 7.2. ADDRESSING INERTIA AND MANAGING EXPECTATIONS

Whether phosphate mining on Christmas Island ends in five years, 10 years or 50 years' time, it is clear that the loss of mining, without a substantial, viable alternative industry to fall back on will disrupt life on Christmas Island. Current thinking in the community varies in the levels of hope for a positive future. Some express confidence in a positive transition and diversification into alternate industries ("All it would take is to get three or four investors to make the right decisions"), while others state that the Island will face economic and social collapse, depopulation and displacement ("There will be no future – nothing to look forward to").

The community are perhaps looking for a leader to address their uncertain future and may have expectations for PRL to resolve this uncertainty.

"We are like a family. Connections are very strong, but it also can be a nightmare. We need a collective goal – everyone needs to work together like in the past. This needs to happen again. There could be a drive right now"

Addressing fears of the future and dependency on the mine is a shared responsibility. From PRL’s sphere of influence, this could be supported through consistent messaging around when the mine is expected to close, mechanisms to support small business, encouraging risk taking.

The community are resourceful and resilient but may need a unifying vision to organise around before this potential is realised.

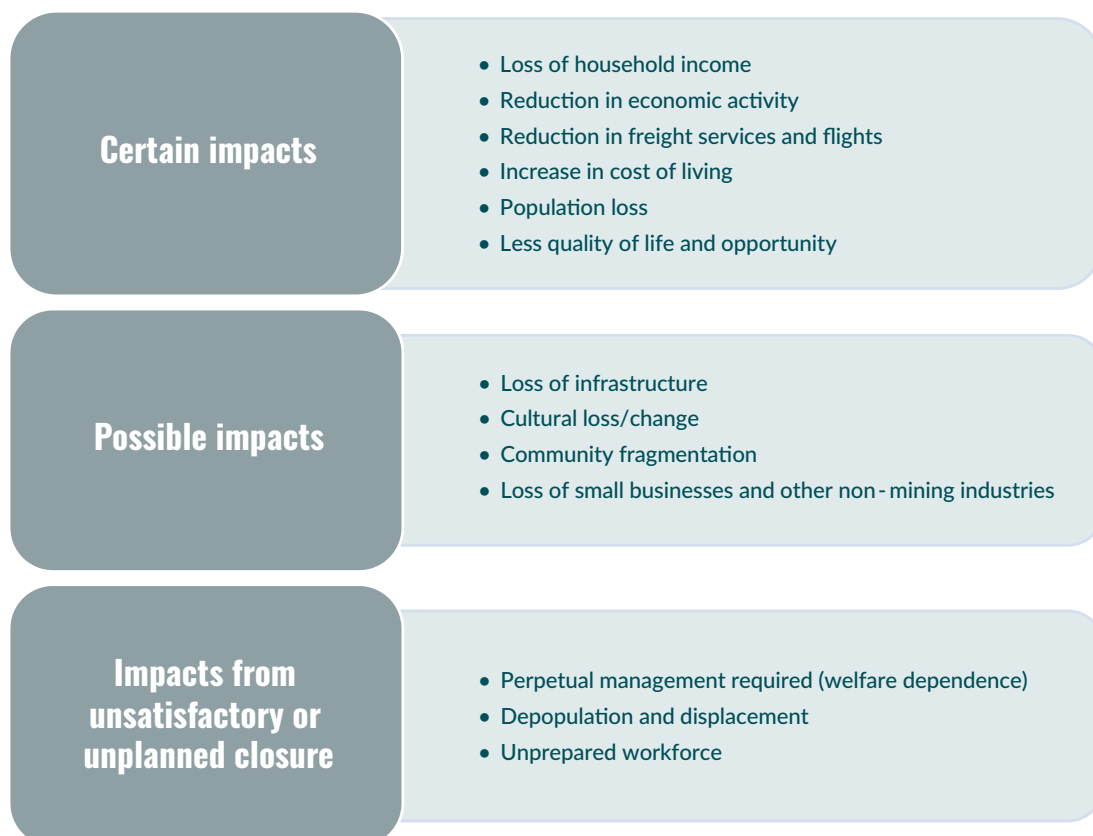
### 7.3. PLANNING TOGETHER

This SEIA has uncovered more questions about the future of Christmas Island than answers. The Research Team understands that in an environment of uncertainty there can be many divergent conversations, fears, aspirations as well as misunderstandings. There seems to be a lack of a platform or a clear ‘host’ for an organised conversation about the mine’s role in the future of Christmas Island. It is the hope of the Research Team that this study has enhanced understanding and helped to insert a small locus of control for PRL and Christmas Islanders when it comes to planning for the future. As Worrall et al. (2009) have expressed, when it comes to predicting impacts of the future, there are not just ‘impacts’, there are in fact:

- certain impacts
- possible impacts, and
- impacts from unsatisfactory or unplanned closure.

Worrall’s categories are valuable for considering which impacts are out of one’s control, and which impacts may be possible to plan for, prevent or mitigate.

*Figure 24 Anticipated social and economic impacts of mining operations ceasing overview*



Framework thanks to Worrall et. al, 2009

There is growing recognition of the role of mining companies, communities as well as government bodies in instigating positive, sustainable mine closures. As described by Roche, Judd & Bista (2016), attention to what a post-mining future looks like is needed to enable mines and communities to make a positive transition, because “these ticking time-bombs of environmental, cultural and social impacts will ultimately interact and accumulate and will require technical and political solutions of great complexity”.

Positive planning could include the following elements:

- As much lead time as possible to support a positive transition.
- A futures fund or ongoing community trust will ensure longevity of programs that are working and that are valued by the community (i.e. ANZAC trip)
- Planning should be done collectively and quality relationships with positive communication feeds are essential.

Lacey & Haymont (2005) argue for the importance of closing a mine with pride, so that any closure can be experienced not just as a loss, but as a 'unifying moment' that is validating for those who have worked in the mine their whole lives. This is especially pertinent to phosphate mining on Christmas Island.

The extent to which Christmas Island experiences loss once phosphate mining is no longer viable, depends to an extent on effective planning and communication, great leadership and quality partnerships between PRL, multiple community interests and the Australian Government.

Levels of hope on the Island are currently low. However, despite negative perceptions of the future, the investment of PRL in young people and a broadening out of their experiences, off-island opportunities, skills, promotion of excellence and expectations to reach their potential, means that generational change is indicated. While older generations may be floundering about the idea of a future without a mine, young people are beginning from a more diverse skill base, have optimism, and, based on the findings of this study, do not seem as dependent on mining as their only option.



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# APPENDIX A: TECHNICAL APPENDIX

## REGIONAL INPUT OUTPUT MODEL METHODOLOGY

The Christmas Island's regional input-output table (IO) build for the economic impact aspect of this report was derived using the distributive commodity balance (DCB) method outlined by the 2010 *disaggregation: the case of Penrith LGA* by Julianne Christie and Maria Varua<sup>4</sup>. The DCB method effectively takes a base input output table and uses location specific industry shares to produce a state and regional IO table, which ultimately serves as the basis for estimating the output, income, and employment multipliers and gross regional product.

The Australian National Accounts: Input-Output Tables, 2015-16, published by the Australian Bureau of Statistics published in June 2018 was used as the primary base table. From this table an IO table for Western Australia was derived and then used to generate an Input Output table for Christmas Island.

The DCB method requires the share of a regional industry in the base economy (WA) be estimated. Where specific output information is not available or provided, employment shares are used to estimate the share of output attributed by the region. The combination of 2016 census data and employment information provided by PRL was adjusted to FTE and used to estimate Christmas Island industry shares in the Western Australian economy. A key advantage of the DCB method is that it allows significant analyst input and regionally specific data insertion such as employment, output, and consumption data to further tailor influence and improve the development of the state and sub- state tabs.

### TO DERIVE THE STATE TABLE:

Calculate state industry share of output from the national industry output using cross-industry location quotients for each Input-Output cell. Output data is used as the preferred data source where available, and for the industries where it is not available, EFT employment data is used to calculate the quotients.

The DCB method allows for another insertion of regionally specific data in the way of sales and consumption data from the ABS state and national accounts. If available, the data is adjusted to conform with 114 industry classifications (using the ABS ANZSIC to IOGP concordance tables) and inserted as an override to substitute the original demand and supply elements of the table.

Excess supply of the production industries is then calculated, along with the excess demand of the using industry. Assuming there is excess supply of an industry, the analyst can decide whether this excess supply will be redistributed to meet all, some or none of the excess demand of the using industry. On that basis, the remaining excess supply available for export is then calculated, and the remaining excess demand is calculated for complimentary imports. All excess supply of Western Australia is assumed to be exported and excess demand is met with imports- this is particularly relevant for a closed, and specialised small economy such as Christmas Island.

### TO DERIVE THE CHRISTMAS ISLAND TABLE:

To derive the Christmas Island IO table, the above steps are repeated, but using the Western Australian IO table as the base table.

## DATA SOURCES USED

2016 ABS Census – Compiled using Tablebuilder

Australian National Accounts: Input-Output Tables, 2015-16 (5209.0.55.001) - Table 8

Australian National Accounts: State Accounts, 2016-17 (5220) -Tables 1, 6, 10

Additional employment and output data provided by PRL

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<sup>4</sup> Christie, J., & Varua, M. (2010). Application of the distributive commodity balance method approach to regional disaggregation : the case of Penrith LGA. Proceedings of the 39th Australian Conference of Economists (ACE10), Sydney, Australia, 27-29 September 2010.

## APPENDIX B: ADAPTED FORM OF THE MOST SIGNIFICANT CHANGE APPROACH WORKSHOP

An adapted form of the Most Significant Change workshop took place on the 16 October 2018 with Board and Executive Team members of Phosphate Resources Limited. Present at the workshop were:

- Mr. Ah Hong Lai – Managing Director
- Mr. David Somerville – Board Chair Christmas Island Resources
- Mr. Clive Brown – Executive Director
- Mr. Adrian Gurgone – Non-Executive Director
- Mr. Nicholas Gan – Chief Operating Officer
- Mr. Eric Chong – Resident Manger
- Mr. Darren Gold – Chief Finance Officer
- Mr. David Lee - Consultant
- Ms. Susan Chong – Executive Assistant/Office Manager
- Ms. Stephanie Lai – Human Resources Co-ordinator

The workshop was facilitated by Lisette Kaleveld, Kelli Pickford and Margaret Gibson on behalf of the Centre for Social Impact, UWA.





**PHOSPHATE RESOURCES**  
LIMITED

Report presented to Phosphate Resources  
Limited by the University of Western Australia's  
Centre for Social Impact (CSI UWA)



**CENTRE**  
for **SOCIAL**  
**IMPACT**



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