umwelt

Inspired people | Dedicated team
Quality outcomes

IDEMITSU

SOCIAL IMPACT ASSESSMENT

Ensham Residual Void Project

FINAL - CONFIDENTIAL

February 2019

SOCIAL IMPACT ASSESSMENT

Ensham Residual Void Project

FINAL - CONFIDENTIAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Idemitsu Australia Resources Pts Ltd

Project Director: Bret Jenkins
Project Manager: Andrea Kanaris
Technical Director: Dr Sheridan Coakes

Report No. 4241/R01/SIA
Date: February 2019

Newcastle

75 York Street
Teralba NSW 2284

Ph. 02 4950 5322

www.umwelt.com.au

Disclaimer

This document has been prepared for the sole use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Umwelt (Australia) Pty Ltd (Umwelt). No other party should rely on this document without the prior written consent of Umwelt.

Umwelt undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. Umwelt assumes no liability to a third party for any inaccuracies in or omissions to that information. Where this document indicates that information has been provided by third parties, Umwelt has made no independent verification of this information except as expressly stated.

Document Status

Rev No.	**Reviewer**		**Approved for Issue**	
	Name	**Date**	**Name**	**Date**
FINAL	Dr Sheridan Coakes	19/12/2018	Dr Sheridan Coakes	25/02/2019

Executive Summary

Umwelt (Australia) Pty Ltd (Umwelt) was engaged by Ensham Resources Pty Ltd (Ensham), to prepare a social impact assessment report for Stage 3 of the Residual Void Project (RVP) for the Ensham Mine.

Ensham Mine is an open cut and underground bord and pillar coal mine located approximately 35 kilometres (km) east of Emerald in Queensland. The mine, which commenced production in 1993, consists of 7 pits; A Pit to F Pit and Y Pit. Pits A and B lie south of the Nogoa River, and Pits C, D, E, F and Y lie to the north of the River (refer **Figure 1.1**). Flood protection levees are in place near Pits B, C and D.

Current operations at the mine are authorised under Environmental Authority (EA) EPML00732813 (dated 28 July 2017). Conditions G16-G19 of the EA state that the RVP must be completed in accordance with approved Terms of Reference (ToR). A ToR for the RVP was developed by Ensham Resources (2017c) dividing the RVP into five stages:

- Stage 1 – Project Definition and Options Identification;
- Stage 2 – Preferred Options Technical Studies;
- Stage 3 – Preferred Options Detail Design;
- Stage 4 – Triple Bottom Line Assessment; and
- Stage 5 - Regulatory Documentation.

As a part of Stage 1, an Options Analysis workshop was held which identified two options for investigation for the RVP, namely:

- Option 1: Landform Levee – the development of permanent landforms along the existing levee alignment to provide flood immunity for the 0.1% Annual Exceedance Probability (AEP) flood event.
- Option 2: Flood Mitigation and Beneficial Use – the utilisation of the residual voids on the Nogoa River floodplain to capture a proportion of high flow flood waters and store this water for beneficial use as a potential irrigation supply.

The Department of Environment and Science (DES) also required a third option to be considered as a part of the RVP:

- Option 3: Backfill to Probable Maximum Flood (PMF) – the backfilling of the residual voids on the Nogoa River floodplain up to the elevation of the original floodplain within the lateral extent of the pre-mining PMF.

The purpose of this Social Impact Assessment (SIA) report is to present an assessment of the social impacts of these three options based on the level of design provided by Ensham. This SIA has been prepared in accordance with the key social terms of reference, as issued by the DES in July 2017 in relation to the Ensham RVP and the Coordinator-General's Social Impact Assessment Guideline, July 2013 as stipulated. The ToR for the Ensham RVP was prepared in July 2017, at which time the current SIA Guideline (March 2018) had not been released. However, the SIA has been guided by the requirements of the SIA Guideline (March 2018) in addressing the core social matters relevant to the Project.

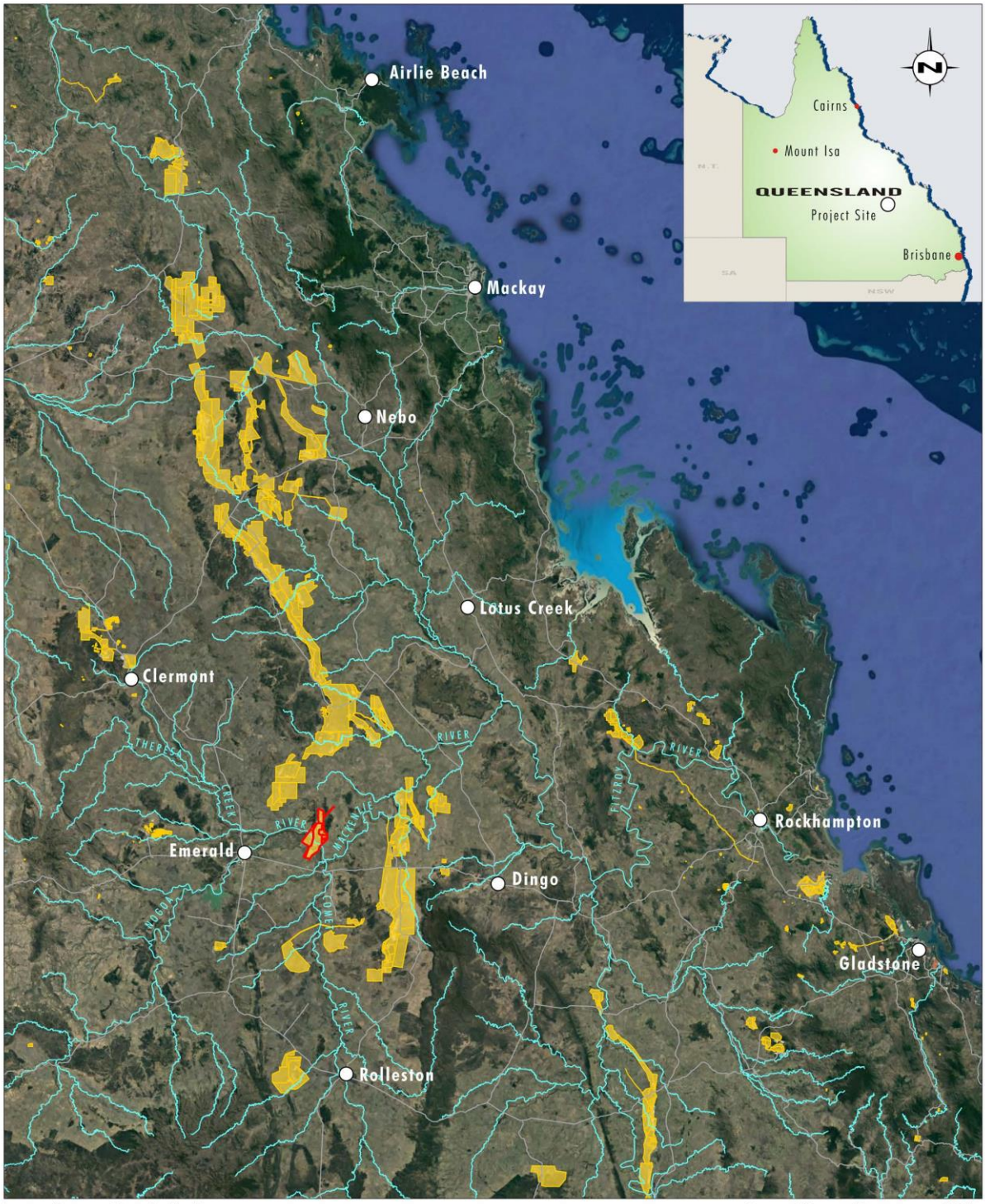


Image Source: Google Earth
Data Source: Queensland Government (2018)

0 25 50 100km
1:2 500 000

Legend

- Project Area
- Mining Tenements
- Drainage Lines
- Roads

FIGURE 1.1

Location of Ensham Mine

File Name (A4): R01/7029_116.dgn
20181019 15.20

The social impacts that were assessed for Stage 3 are presented in **Table ES1.1**, and a broad summary of the key potential impacts relevant to each Option are also provided.

Table ES1.1 Social Impacts Assessed in Stage 3

SIA Matter	Social Impacts	Key Potential Impacts
Health & Community Wellbeing	Flood related impacts	Option 1 and 2 are unlikely to have any significant impacts on livelihood or health and wellbeing in a 1:100 flood event for either upstream or downstream landholders. Option 3 is likely to impact the livelihood and mental health of downstream landholders in a 1:100 flood event due to the removal of levees that currently protect downstream properties. While there is no significant impact on upstream landholders.
Health & Community Wellbeing	Water Quality related impacts	Option 1 is unlikely to have any significant impacts on livelihood or public safety and security of upstream and downstream landholders, or residents of Comet, Emerald or Central Highlands due to water quality. Option 2 is likely to significantly impact on water security for the Central Highlands region due the ability to store water.
Health & Community Wellbeing Workforce Management	Management related impacts	All Options are unlikely to have any significant impact on the public safety and security or livelihood / way of life of the Comet, Emerald or Central Highlands community as a result of the ongoing management of the options post relinquishment.
Health & Community Wellbeing	Community related impacts	Options 1 and 3 are unlikely to have significant impacts on the livelihood or way of life of landholders and the broader community through the increase of available land. Option 2 is likely to have a significant positive impact on the economics of the Central Highlands region due to increased water availability and supplement to the Fairbairn Dam. Option 2 is also likely to have positive impacts on community resilience, way of life and culture (education and training) due to the potential for water use in agriculture, tourism and expansion of the inland port.
Health & Community Wellbeing	Landform design related impacts	Options 1 and 2 are unlikely to have any significant impact on visual amenity due to landform design - the location of the rehabilitated landform is not easily visible. Option 3 is likely to have a positive impact on visual amenity for landholders not on the flood plain due to partial backfilling.

In accordance with the Social Impact Guideline, 2018, it is recommended a social impact management plan (SIMP) be developed for the Final Preferred Option. A SIMP framework for each option has been provided in **Section 8.0** Mitigation and management.

Table ES1.2 shows the social values identified in the triple bottom line assessment and provides a reference to the supporting information within the SIA. The social values were rated using the criteria in **Table ES1.3** and in accordance with the definitions outlined in **Table ES1.4**.

Table ES1.2 Social Values for Triple Bottom Line Assessment

Primary Aspect	Secondary Aspect	Option 1 Landform Score	Reference (Section & page number)	Option 2 Beneficial Use Score	Reference (Section & page number)	Option 3 Backfill to PMF Score	Reference (Section & page number)
Social Values	Supports future recreational uses	+1	**Section 7.2.4.2** Page 92-93	+2	**Section 7.3.4.2** Page 98	0	n.a.
Aesthetic	Sympathetic with the surrounding landscape	+2	**Section 7.2.5.1** Page 93	+2	**Section 7.3.5.1** Page 99	+2	**Section 7.4.4.1** Page 103
Human Capital	Community health risk from water quality impacts	-1	**Section 7.2.1.2** Page 88-89	-1	**Section 7.3.2.2** Page 96	0	n.a.
	Risk to people's health and emotional wellbeing	-1	**Section 7.2.1.2** Page 88-89	-1	**Section 7.3.1.2** Page 94	-2	**Section 7.4.1.2** Page 99-101
Economic Capital	Risk to people's livelihoods and income	-1	**Section 7.2.1.1** Page 87 & 89	-1	**Section 7.3.1.1** Page 94-95	+1	**Section 7.4.3.1** Page 102-103
	Water security	0	n.a.	+3	**Section 7.3.2.1** Page 95-96	0	n.a.
	Supports local business vitality	0	n.a.	+3	**Section 7.3.4.1** Page 97-98	0	n.a.
Social Capital	Enhanced sense of community	+1	**Section 7.2.4.2** Page 92-93	+2	**Section 7.3.4.2** Page 97-98	0	n.a.

Primary Aspect	Secondary Aspect	Option 1 Landform	Reference (Section & page number)	Option 2 Beneficial Use	Reference (Section & page number)	Option 3 Backfill to PMF	Reference (Section & page number)
	Security from flood impacts	-1	**Section 7.2.2.2** Page 89-90	-1	**Section 7.3.2.2** Page 95-96	-2	**Section 7.4.1.3** Page 100-101
Resilience	Supports economic/industrial diversity	0	n.a.	+3	**Section 7.3.4.1** Page 97-98	0	**Section 7.4.3.1** Page 102-103
Community Acceptance	Supported by neighbouring landholders	1	**Section 7.2.4** Page 92-93	+2	**Section 6.2.1** Page 76-77	+2	**Section 6.2.1** Page 76-77
	Supported by the Central Highlands Regional Council Strategies and Plans	0	n.a.	+2	**Section 5.6.3** Page 55-56	0	n.a.
	Supported by broader local and regional community	+1	**Section 6.2.2** Page 78-79	+3	**Section 6.2.2** Page 78-79	+1	**Section 6.2.2** Page 78-79
Regulator Acceptance	Supported by the State Government (DNRME, DES, OCG) Strategy and Policy	0	n.a.	0	n.a.	0	n.a.
	Supported by the federal DotE	0	n.a.	0	n.a.	0	n.a.

Table ES1.3 Adopted Scoring Criteria for Assessment of Social Values

Scoring Criteria	Ranking
Significant negative impact for this consideration	-3
Medium negative impact for this consideration	-2
Minor negative impact for this consideration	-1
No impact/benefit for this consideration	0
Minor benefit for this consideration	+1
Medium benefit for this consideration	+2
Significant benefit for this consideration	+3

Table ES1.4 Adopted Definitions of Scoring Criteria for Assessment of Social Values

Definitions
Significant impact/benefit – results in a change which is important, notable or of consequence to the EV having regard to its intensity/frequency. For an impact the change will result in not being able to meet published standards (if there are any). For a benefit the change should meet best practice standards (if there are any published)
Medium impact/benefit – results in a change which is potentially important, notable or of consequence to the EV having regard to its intensity/frequency. For an impact, the change will result in occasions where the criterion will not meet published standards (if there are any). For a benefit the change should meet good practice standards (if there are any published)
Minor impact/benefit – results in a change which is identifiable but is not important, notable or of consequence to the EV having regard to its intensity
No impact/benefit – results in no discernible change, or is of no consequence to the EV

Note: The definition of significant impact has been based on the Federal Government's definition of significant impact contained within its "Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999"

Table of Contents

Figures

Tables

Appendices

1.0 Introduction

1.1 Background

The Ensham Mine, an open cut and underground bord and pillar coal mine, is located approximately 35 kilometres (kms) east of Emerald in Queensland and is operated by Ensham Resources Pty Ltd (Ensham), a wholly owned subsidiary of Idemitsu Australia Resources Pty Ltd (Idemitsu), on behalf of the Ensham Mine joint venture (JV) partners. The JV partners, and holders of the Environmental Authority, are Bligh Coal Limited, Idemitsu and Bowen Investment (Australia) Pty Ltd. EA EPML00732813 (the EA), dated 9 August 2018, is the relevant environmental authority under which Ensham operates the mine.

Condition G16 of the EA states that a Residual Void Project (hereafter referred to as the Ensham RVP) must be completed and submitted to the administering authority for review and comment by 31 March 2019. The minimum content of the Ensham RVP is specified within Condition G16 of the EA as including:

a) Terms of Reference;

b) Residual Void Study;

c) Progress Reports; and

d) Rehabilitation success criteria for voids.

In compliance with Condition G19 of the EA, "*the Residual Void Project must be carried out in accordance with the approved Terms of Reference*". The Terms of Reference (ToR) (Ensham Resources, 2017a) were approved by the Queensland Department of Environment and Science (DES), formerly the Department of Environment and Heritage Protection (DEHP) on 21 July 2017.

Condition G20 of the EA identifies the minimum content for the Ensham RVP as identified in Condition G16.

In accordance with the ToR, the project has been divided into five stages:

Stage 1 - Project definition and options identification

Stage 2 - Preferred Options technical studies

Stage 3 - Preferred Options detail design

Stage 4 - Most Preferred Option Identification

Stage 5 - Regulatory documentation.

Stage 1 - Project definition and options identification for the Ensham RVP has been completed. The Stage 1 Options Assessment report has been finalised and issued to the DES, the Department of Natural Resources Mines and Energy (DNRME) and the Community Reference Group (CRG). The report was independently peer reviewed and revised to address peer review comments; with the final report has been delivered to DES, DNRME and the CRG.

The Options Analysis workshop, held in Stage 1 of the Ensham RVP, identified two Preferred Options:

- Option 1: Landform Levee
- Option 2: Flood Mitigation and Beneficial Use.

DES required a third option, Backfill to Probable Maximum Flood level (Option 3), be included in the study.

All three options have been advanced through Stage 2 and into Stage 3 of the Ensham RVP, and are referred to as the 'Preferred Options'. The Preferred Options are discussed in **Section 2.0** of this report.

Stage 2 identified the Environmental Values (EVs) in the immediate and surrounding area of the Ensham Mine and determined which EVs are likely to be affected by each Preferred Option. Similar to Stage 1, the Stage 2 EV report and technical studies have been Independently Peer Reviewed and issued in final to DES, DNRME and the CRG.

Stage 3 builds on the technical studies completed in Stage 2 to develop feasibility level designs required to prevent or minimise the potential impacts to EVs for each Preferred Option.

Detailed designs for each of the Preferred Options will inform a risk assessment of each option and includes as a minimum:

- the long-term stability of the final landform;
- safety of access to the site; and
- short, medium and long-term risks associated with each Preferred Option.

The output of Stage 3, in addition to the associated technical reports, will constitute an Environmental Assessment and Social Impact Assessment reports for each Preferred Option, which identifies the design and management practices that will be implemented to minimise impacts on the identified Environmental and Social Values.

On completion, each Preferred Option report will be peer reviewed by an independent suitably qualified third party before submission to the administering authority for review and comment. The purpose of this process is to gain approval for one of the Preferred Options to then be implemented as the final landform for rehabilitation at Ensham Mine.

1.2 Scope and Structure of the SIA

The purpose of this document is to present the findings of the Social Impact Assessment (SIA) study that has been undertaken to evaluate social impacts associated with each of the three Preferred Options identified in Stage 1 of the Ensham RVP. The report identifies both negative and positive social impacts, where applicable, for each option.

The development and implementation of this SIA has been prepared in accordance with the key social terms of reference, as issued by the DES in July 2017 in relation to the Ensham RVP and the Coordinator-General's Social Impact Assessment Guideline, July 2013 as stipulated.

The social terms of reference outline that:

> *"In accordance with the Coordinator-General's Social Impact Assessment Guideline[1], (the proponent will) assess the potential adverse and beneficial social impacts on affected communities, and the proposed mitigation measures for adverse impacts. The impact assessment should at least address community and stakeholder engagement, workforce management, housing and accommodation, local business and industry content, health, and community wellbeing."*

As previously noted, the ToR encourages proponents to assess the social impacts in accordance with the SIA guideline. The ToR for the Ensham RVP was prepared in July 2017, at which time the current SIA

[1] State of Queensland, Department State Development, Infrastructure and Planning (July 2013) *Social impact assessment guideline, July 2013*

Guideline (March 2018) had not been released. However, the SIA for the Project has been guided by the requirements of the SIA Guideline (March 2018) in addressing the core social matters relevant to the Project (refer to **Section 3.2** for further detail on guideline requirements).

In addition, this report draws on best practice in social impact assessment and has been guided by the International Association for Impact Assessment (IAIA) Social Impact Assessment Guideline (IAIA April 2015) (as outlined in **Section 3.1**).

The potential negative and positive social impacts on affected communities have been assessed; impacts associated with each option predicted; mitigation measures for adverse impacts proposed and enhancement strategies also noted.

The report has been structured as outlined below.

- **Section 2.0** – provides a detailed overview of the three preferred options to be assessed.
- **Section 3.0** – outlines the policy context in which the SIA is based.
- **Section 4.0** – details the SIA methodology and engagement program that has been undertaken as part of the assessment.
- **Section 5.0** – outlines the social and economic baseline context in which the Ensham RVP is based.
- **Section 6.0** – provides an overview of key issues of relevance to key stakeholders in relation to each of the proposed options.
- **Section 7.0** – provides further assessment of these issues/impacts with technical assessment of the likelihood and consequence of impacts noted.
- **Section 8.0** – discusses the mitigation and enhancement strategies to be potentially implemented to address impacts of the options assessed; and provides recommendations on monitoring of social impacts.

It is noted that the Ensham RVP is essentially an option evaluation and selection process to determine the final landform and land uses to be implemented at the Ensham Mine in relation to mine closure.

2.0 Description of Preferred Options

This section provides a description of each of the three Preferred Options that require assessment. The duration of the RVP work for each option is outlined below:

- Option 1 Landform Levee: 2022 – 2045 (24 years)
- Option 2 Flood Mitigation and Beneficial Use: 2021 – 2038 (18 years)
- Option 3 Backfill to PMF: 2022 – 2045 (24 years).

Mining operations under the current mining lease will continue to 2022. In addition, the underground mining operation extends to 2031. Relinquishment of the land is anticipated to take place between 2045 and 2050 but will remain the property of Ensham.

As noted previously, three Preferred Options have been the focus of assessment studies, including the SIA. Further details relating to each of the options is provided in the following sub-sections.

2.1 Preferred Option 1: Landform Levee

Having conceptually evolved since Stage 1, Preferred Option 1 will develop permanent landforms along the existing levee alignment to provide flood immunity for the 0.1% (1 in 1,000) Annual Exceedance Probability (AEP) flood event having had consideration of the risk of a Probable Maximum Flood (PMF) level event (as proposed in the Stage 2 assessment). **Figure 2.1** illustrates the current placement of the landform levees.

When compared to the landform levee designed at a PMF level (as considered in Stage 2) the proposed 0.1% AEP landform along the existing levee alignment:

- Eliminates afflux impacts for upstream landholders in a greater than 0.1% AEP event
- Eliminates any potential increased impacts on downstream landholders associated with widening the river floodplain
- Eliminates the need to realign the Nogoa anabranch.

It is proposed to incorporate the existing levees into the landform design with overburden emplacement areas behind the levee being reshaped in a manner that achieves the minimum stable landform slope requirements.

Figure 2.1 Option 1 - Landform Levee

In addition to any impacts associated with the existing farm levees and mining pit levees, flood levels in the vicinity of Ensham Mine are significantly affected by the confluence of flood flows from the Comet River and Nogoa River, which occurs immediately downstream of the mine. Pits would be subject to rehabilitation in accordance with the approved Ensham Mine site Rehabilitation Management Plan (RMP) and the landform design criteria. All pits will be partially backfilled to above groundwater level.

A biodiversity corridor (treed corridor) will be developed along the western (highwall) side of the rehabilitated A and B pits to provide connectivity between Corkscrew Creek and the Nogoa River flood plain as seen in **Figure 2.1**.

2.2 Preferred Option 2: Flood Mitigation and Beneficial Use

Option 2 proposes to utilise some of the rehabilitated landforms to form water storages to capture a proportion of high flow flood water and store this water for potential beneficial use as shown in **Figure 2.2**. Flood water harvesting is able to quickly fill the post-mining voids with minimal downstream impact, achieving improved water quality to support a range of reuse options, and/or environmental, and social values.

This option is founded on the concept of capturing a small fraction of larger magnitude flood event flows in the Nogoa River, storing this water for release back to irrigation and industrial users via a series of pipes to the Weemah Channel and Yamala Inland Port. There will be no discharge to the Nogoa River by this option.

The design of rehabilitation should optimise water storage capacity. Overburden emplacement areas located adjacent to the water storage voids are to be reshaped in a manner that achieves stable landform slopes without resulting in significant void backfilling. Low wall areas are to be reshaped in-pit to achieve minimum stable slope requirements to ensure safe access and stability of exposed slope surfaces. Option 2 would utilise storage afforded by the rehabilitated landform south of the Nogoa River, and north of the river. The quantity of water likely to be required to operate the system – known as the headroom storage in the pits – is negligible when compared to overall discharges during flood events from the Nogoa River catchment into the Mackenzie River located downstream of the Ensham Mine. However, in the context of

irrigation usage, the headroom storage represents a significant volume and a potential economic asset. Delivery of this option would be staged with water storage limited to pits A and B up to 2031, at which point underground mining is completed allowing for utilisation of pits C and D. Future assessment and optimisation of Option 2 will consider the potential for interactive operation of the voids with Fairbairn Dam to improve water use efficiency across the water supply system.

Currently Fairbairn Dam's southern irrigation channel, known as the Weemah Channel, extends eastward to within approximately 10 km of Ensham Mine. Water captured from the upper Nogoa River catchment and retained in Queensland's second largest but relatively shallow Fairbairn Dam, is subject to significant evaporative losses. Furthermore, allocated water releases from the dam into the Weemah Channel (and the corresponding northern Channel, the Selma Channel) experience significant seepage and seasonal evaporative losses before reaching their intended customers, particularly where these customers are close to the end of the Weemah Channel. This option includes linking the residual voids located to the south of the Nogoa River to the existing Weemah Channel with large diameter pipes and pumps to transfer water to and from the voids.

Water captured in Fairbairn Dam could be released into the Weemah channel when hydrologic conditions are likely to result in minimal evaporative and seepage losses (i.e. at times when the catchment is receiving rainfall, the ground is saturated and evaporation is minimal). Whilst the water may not be required by customers at these times, the water could be transferred to the residual voids via the proposed Weemah channel(s) (refer red line on **Figure 2.3**) and stored in the residual voids at Ensham Mine, where lower evaporative losses are likely to be experienced than in the Fairburn Dam. In times of irrigation water demand at the lower reaches of the Weemah Channel (i.e. where the evaporative and seepage distribution losses are likely to be greatest), water would be returned to the Weemah Channel from the residual voids via the Weemah channel.

Because the Weemah Channel and proposed channel(s) lie on the southern side of the Nogoa River floodplain, it would be necessary to maintain a hydraulic connection between the reservoirs on the northern flanks of the floodplain and those on the southern flanks. It is proposed that an upgrade of the existing water distribution main, that runs parallel with the main haulage route between B Pit and C Pit, be undertaken early in the project to provide the required hydraulic connection (refer blue line on **Figure 2.3**).

Option 2 proposes that pontoon-based pumping stations would be sited in each reservoir to transfer water as required. The Weemah channel coming into the reservoir would be configured to deliver water initially to the southern reservoir. Similarly, pumping from the mine to the Weemah Channel would be done from this location.

An offtake from the pipe to Weemah channel would be used to meet water demand for the Yamala Inland Port located to the south west of Ensham Mine.

Figure 2.2 Option 2 – Flood Mitigation and Beneficial Use

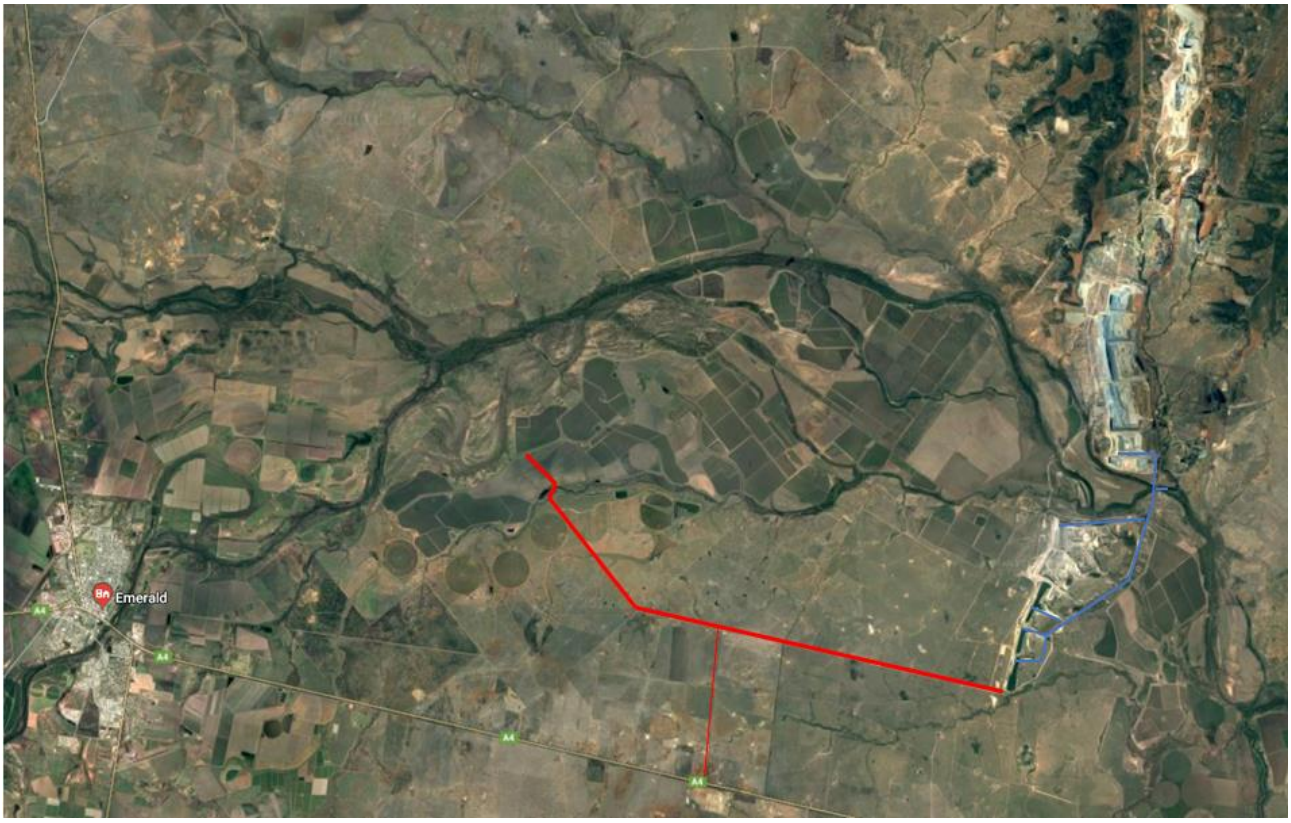


Figure 2.3 Conceptual drawing of the Weemah Channel and Yamala Inland Port pipeline connection (red) and the mine internal pump system (blue)

The intakes from the Nogoa River to the reservoirs would allow temporary storage of peak flood flows during flood events. As the river rises during a flood event, it would reach the overflow level of the inlet structures constructed in the levee (the intakes) and flow into the residual voids. The water would rise in the voids to reflect the height of the flood. As flood levels recede, water would ebb back into the river floodplain through the intakes to the base level of the intakes leaving the voids at full level. The intake level for the reservoirs has been considered as part of Stage 3.

A further key aspect of Option 2 is the depth of the reservoirs. Shallow expansive landforms experience greater evaporative water losses and hence potential salt concentration. Hence improved water quality outcomes are likely to be delivered with deeper inundated landforms.

There remain several opportunities to manage power demands of the scheme including solar-power to generate an income to cover some or all of the overall annual operating cost of this option.

Rehabilitated landforms that are not within the floodplain, for example E, F and Y pits, would be rehabilitated to achieve minimum stable slope requirements and comply with currently approved site RMP and landform design criteria. In addition, pits E, F and Y will be partially backfilled to above groundwater level.

A biodiversity corridor (trees corridor) will be developed along the western (highwall) side of the rehabilitated landform to provide connectivity between Corkscrew Creek and the Nogoa River flood plain as seen in **Figure 2.1**.

2.3 Preferred Option 3 Backfill to Probable Maximum Flood (PMF)

Preferred Option 3 comprises backfilling residual mining voids located within the pre-mining floodplain up to the elevation of the original floodplain within the lateral extent of the pre-mining PMF level. In addition, Pits E, F and Y will be partially backfilled to above groundwater level.

Conceptually, the residual voids lying within this PMF extent would be backfilled up to the approximate original (pre-mining) topography with an additional surcharging to accommodate settlement of the backfill. In practice, it may be necessary to extend the backfilling beyond the modelled extent of the PMF to ensure stability of the backfilled areas within the PMF extent and protect against slumping/ collapse into the adjacent residual voids. Excess mining spoil currently present in the floodplain, and that is not required for backfilling of residual mining voids, would be retained as seen in **Figure 2.4**.

The existing levees constructed to protect the voids from flooding would be removed, with the material re-used for backfilling voids. Material required to backfill residual voids would be drawn from the nearest cost-effective source e.g. low wall spoil. Any negative material balance will need to be met from adjacent low wall and high wall spoils.

Virgin rock typically exhibits an increase in volume when excavated - this is referred to as ‘bulking’. The degree of bulking will vary with the geo-mechanical properties and size distribution of the excavated rocks and the methods used in excavation and transport. Furthermore, it is likely to vary both along the linear extent of the open cut mine and within different parts of spoil tips created through the extraction of rock dominated by lithologies characterising the local stratigraphy. Re-excavation of spoil and re-emplacement within voids within the modelled PMF will again exhibit bulking. Whether subjected to dynamic compaction or allowed to settle with subsequent loading by overlying backfill, the spoil within the voids will inevitably exhibit uncontrolled settlement. This will lead to the development of low areas within the PMF extent which, though shallow, lie below the original level of the floodplain. These low areas will not necessarily be connected and are likely to collect surface water runoff but be subject to intense evaporation and surface accumulation of evaporative salts which would be flushed clean by fluvial flood events.

Static surcharging of the replaced spoil material may reduce the risk of long-term settlement below original floodplain. However, this will require material to be placed above the original floodplain elevation in direct contradiction of the intent of this option.

Beyond the modelled extent of the PMF, residual voids would be rehabilitated in accordance with a combination of Option 1 and option 2 landform criteria requirements.

Replaced spoil, however comprehensively compacted, is unlikely to provide durability equal to the original virgin rock and hence during times of fluvial flood, of magnitudes such that the current floodplain pinch point between B Pit and C Pit begins to develop afflux, it is likely that the Nogoa River would scour spoil within the adjacent backfilled pits. This has the potential over time to result in sink holes and ultimately a repeat of the 2008/2010 inundation events with the risk of the Nogoa River cutting a channel into one or more backfilled pits and flooding the remaining un-backfilled parts of each pit. Additionally, impacts on turbidity downstream of the backfilled areas would need to be considered.

As part of the rehabilitation process, the establishment of a biodiversity corridor (treed corridor) along the western (highwall) side of the rehabilitated landform is proposed to link Corkscrew Creek and the Nogoa River flood plain as seen in **Figure 2.4**.

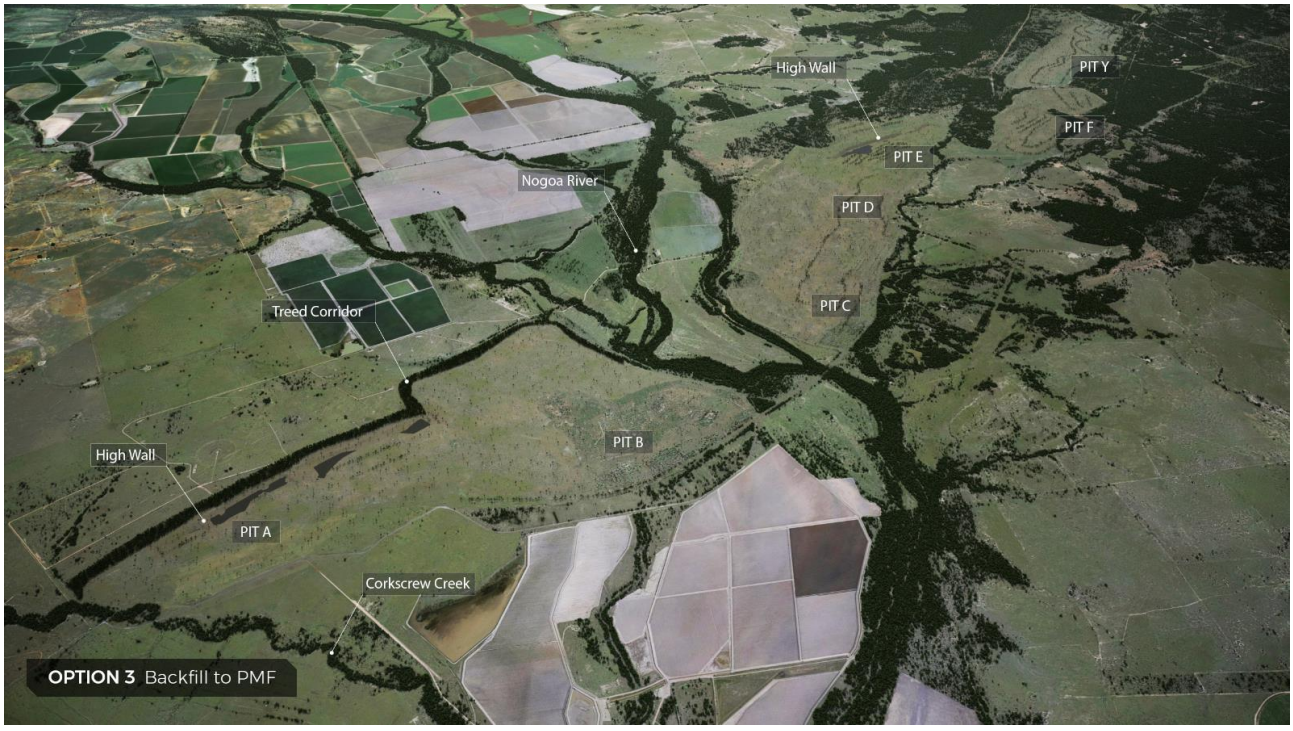


Figure 2.4 Option 3 – Backfill to PMF

2.4 Pit extents

The extents of current open-cut pits are illustrated on the plan provided in **Figure 2.5**.

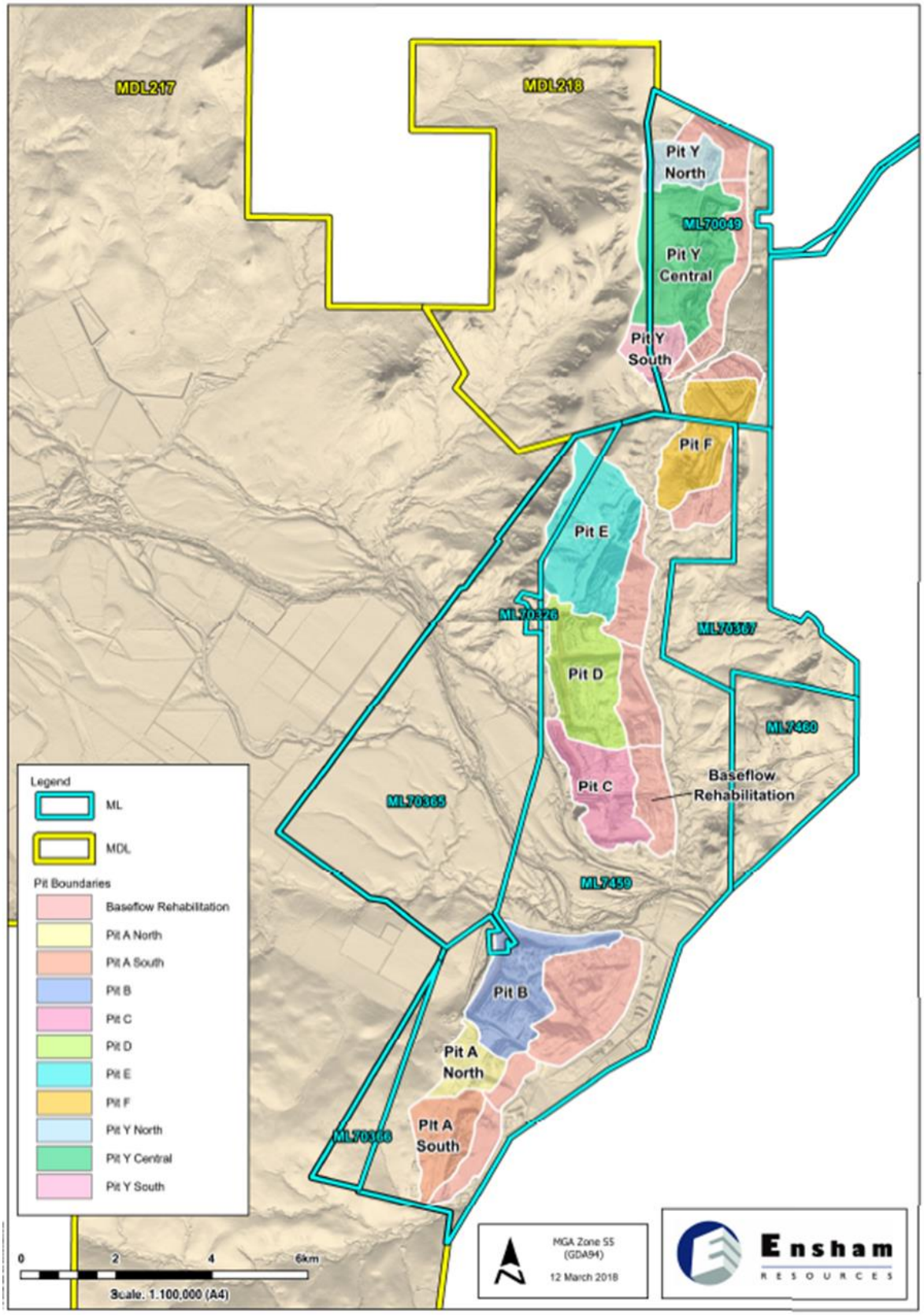


Figure 2.5 Location of open-cut pits

3.0 Policy Context

The IAIA sets the International Standards for SIA, through the development of defined social impact principles, and has informed Umwelt's SIA practice.

In line with international best practice, in 2017, the State Government passed the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act) to ensure that residents of communities located near large resource projects benefit from the construction and operation of these significant projects. While Ensham Mine is a large resource project the SIA component of the SSRC Act does not apply to operational mines.

This section provides an outline of the IAIA *Guideline for Social Impact Assessment* and the Queensland Government's SSRC Act and its statutory instrument, the *Social Impact Assessment Guideline* (March 2018), that have guided the development and implementation of the SIA for the Ensham RVP.

Other policies relevant to the project, such as those relating to rehabilitation, are also reviewed.

3.1 SSRC Act 2017

The SSRC Act provides a regulatory framework that provides for the following:

- the matters that SIA must address in relation to a project,
- adoption of a recruitment hierarchy, prioritising recruitment from local and regional communities,
- Coordinator-General conditions to manage the potential social impacts of a project, and
- enforcement provisions for conditions stated by the Coordinator-General to manage the potential social impacts of a project.

The SIA provisions of the SSRC Act work in conjunction with the Act's other provisions to achieve the objective of the SSRC Act. Other provisions include:

- prohibition of 100% fly-in, fly-out (FIFO) workforce arrangements on operational large resource projects,
- prevention of discrimination against locals in the recruitment of workers, and
- monitoring and compliance.

The SSRC Act ensures that the framework for SIA is consistently applied to large resource projects that require an EIS under the SDPWO Act or the *Environmental Protection Act 1994* (EP Act).

3.1.1 Queensland Government Social Impact Assessment Guideline, March 2018

The SIA Guideline (**Appendix 1**) is a statutory instrument for resource projects and has been developed by the Coordinator-General in accordance with section 9(4) of the SSRC Act.

For projects not subject to the EIS process under the SDPWO Act or EP Act, such as the Ensham RVP, it is a non-statutory instrument and as such is used to guide the SIA for the project. The SIA Guideline outlines the need to identify and assess potential social impacts, as well as address their management and monitoring.

The SIA Guideline identifies SIA as the process for identification, analysis, assessment, management and monitoring of social impacts of a project and stipulates that an SIA must address the following key matters:

- Community and stakeholder engagement
- Workforce management
- Housing and accommodation
- Local business and industry procurement
- Health and community wellbeing.

In addition, the SIA Guideline outlines principles to inform the development of a SIA:

- **Lifecycle-focused**: an SIA is to consider the full lifecycle of the project.
- **Reasonable**: an SIA is to be commensurate with the nature and scale of the project, the sensitivity of the social environment and the likely scope and significance of the resultant project related social impacts.
- **Participatory**: engagement for an SIA is to be inclusive, respectful, meaningful and tailored to the needs of potentially impacted individuals and groups.
- **Rigorous**: an SIA is to be based on objective, comprehensive social impact analysis, incorporating the most up to date information on the communities affected and the project.
- **Effective management**: an SIA is to include effective social management measures that enhance potential benefits and mitigate potential negative impacts.
- **Adaptive**: management measures are to be monitored, reviewed, and adjusted to ensure ongoing effectiveness (Queensland Government, 2018).

Section 4.2 further outlines how these principles and core SIA matters have been addressed in the SIA for the RVP.

3.2 International Guidelines for Social Impact Assessment

This SIA is guided by best practice as outlined in the IAIA SIA Principles (2003) and Guideline (2015). The IAIA Principles define SIA as:

> *"the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment." (IAIA, 2003)*

The IAIA guidelines adopt Vanclay's (2002) classification of social impacts, as issues affecting, directly or indirectly:

- **People's way of life:** how they live, work, play and interact with one another on a day to day basis.
- **Their culture**: shared beliefs, customs, values and language or dialect.
- **Their community**: its cohesion, stability character, services and facilities.

- **Their political system**, such as: the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose.

- **Their environment**, such as: the quality of the air and water people use, the availability and quality of the food they eat, the level of hazard or risk, dust and noise they are exposed to, the adequacy of sanitation, their physical safety, and their access to and control over resources.

- **Their health and wellbeing**: health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity.

- **Their personal and property rights**: particularly whether people are economically affected or experience personal disadvantage which may include a violation of their civil liberties.

- **Their fears and aspirations:** their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

As is the case with any type of change, some individuals or groups within the community may benefit, while others may experience negative impacts. If negative impacts are predicted, it is the role of the SIA to determine how such impacts may be addressed effectively to reduce the degree of social disruption to those affected.

If positive impacts are predicted, the aim of the SIA is to utilise these opportunities and identify how these impacts might be further enhanced.

Monitoring and evaluation is also a key component of an SIA process to monitor impacts over time and identify any unanticipated impacts that may arise as a result of the Project.

3.3 Mine Rehabilitation Reform

On 14 November 2018, the Queensland Parliament passed the *Mineral and Energy Resources (Financial Provisioning) Act 2018* (MERFP Act) which has significantly reformed mine rehabilitation in Queensland through amendments to the *Environmental Protection Act 1994* (EP Act).

Existing financial assurance requirements will be replaced with a new Financial Provisioning Scheme (the Scheme). In addition, companies will be required to develop Progressive Rehabilitation and Closure Plans (PRCPs). This rehabilitation reform has been significantly influenced by State Government policy and a number of discussion papers.

Key changes to the Act are:

- mined land must be rehabilitated progressively over the life of the mine, ideally resulting in land that is able to support a post mining use, and

- financial assurance held by the government for rehabilitation liability must correspond to the actual liability – there can be no shortfall.

3.3.1 Better Mine Rehabilitation for Queensland (The Scheme)

Under the new scheme, the EA holder(s) for a resources project may be required to provide financial assurance by way of:

- a contribution to the Financial Provisioning Fund (the Fund); or
- the giving of a surety to the scheme manager; or
- a combination of the two.

The annual contribution that an EA holder must contribute to the Fund is calculated by multiplying the estimated rehabilitation cost (ERC) for the resources project by a prescribed percentage, determined by the risk allocation made by the scheme manager who manages the scheme. The scheme manager must allocate a risk category for each environmental authority with an ERC equal to or more than $100,000 and decide whether to allocate a risk category of very low, low, moderate or high. Participation in the Financial Provisioning Fund is only for EA holders allocated a risk category of very low, low or moderate.

A surety will be required instead of (or as well as) a contribution to the scheme by the EA holder in certain circumstances, including if a high risk category has been allocated, the scheme manager decides the EA holder must give a surety (rather than pay a contribution) to preserve the financial viability of the Fund (despite being allocated a risk category of very low, low or moderate), or the ERC for an authority is less than the prescribed ERC. Like the amount contributed to the Fund, the surety is calculated by reference to the ERC for the activities permitted under the EA.

The commencement date for the Scheme is currently set as February 2019.

3.3.2 Progressive Rehabilitation and Closure Plans (PRCP's)

PRCPs will replace the previous Plan of Operations and apply for all mining leases for the life of the mine.

The PRCP will be separate to the EA and has its own processes for approval (including conditions), amendment, amalgamation/de-amalgamation and surrender.

A PRCP consists of two parts:

- the rehabilitation planning part of the PRCP; and
- a PRCP schedule (Schedule), which is the enforceable part of the PRCP that must be approved - with or without conditions - by the administering authority, being the chief executive of the DES.

The Schedule outlines the milestones and rehabilitation outcomes for both land that can be progressively rehabilitated to a stable condition for surrender and land that cannot. Land is considered in a stable condition if it is safe and structurally stable, there is no environmental harm being caused on or in the land, and the land can sustain a post-mining land use. If land cannot sustain a post-mining land use then it is classified as a non-use management area (NUMA).

The PRCP start date is scheduled for 1 November 2019.

4.0 SIA Methodology

SIA is an approach of assessing and predicting the likely consequences of a proposed action in social terms. While economic assessment emphasises the monetary effects of an action or proposal, social impact assessment is concerned with assessing benefits and costs in non-monetary terms, this involves understanding impacts from the perspectives of those involved in a personal, community, social or cultural sense. Social assessment processes work together to provide a complete picture of potential impacts and their context and meaning.

The Queensland SIA Guideline and the ToR for the Ensham RVP have been considered and requirements addressed in the development and implementation of the SIA for the Ensham RVP as well and consideration of best practice in line with the IAIA Guideline.

4.1 SIA Principles

Table 4.1 illustrates how the SIA Principles, outlined in the SIA Guideline, have been considered in the scoping of the SIA for the Ensham RVP.

Table 4.1 Adoption of SIA Principles

SIA Principles	How adopted
Lifecycle focused	The SIA has considered the potential impacts of the closure of the open cut mine, with consideration of the affected communities experiences with the mine during operation and where applicable pre-mining.
Reasonable	The SIA has taken account of the nature and scale of the project. Given the Ensham RVP is located 40kms from Emerald, the nearest town, the initial SIA engagement round extended invitations for participation to three council areas in proximity to the proposed project. The SIA has also focused on the localities of Comet and Emerald.
Participatory	The SIA has adopted a participatory approach that has included engagement with landowners and nearby neighbours, Traditional Owners, environmental groups, local government, business representatives and recreational groups. The engagement mechanisms adopted have been varied to address stakeholder needs and facilitate meaningful involvement. Such mechanisms have included: face to face interviews, workshops, telephone interviews, surveys (both personal and on-line) and the provision of project information sheets at key stages of the assessment program.
Rigorous	The SIA has been conducted using contemporary social science methods and social impact assessment and analytical techniques.
Effective management	Social impact management measures, adopted for enhancing potential benefits and mitigating negative impacts, are based on known and effective approaches. The proposed framework for the social impact management plan (SIMP) draws on known methods for managing social risks. Post approval of the Final Preferred Option, and as part of the development of the SIMP, this phase would require development of strategies that adhere to the principle of effective management.
Adaptive	The social impact management plans have been designed to ensure ongoing monitoring, review and adjustment, as required, to maximise positive and effective outcomes. This includes evaluation and review methods that allow for management plans to be adapted when/if required based on performance of the social management strategy. The proposed SIMP to be developed post approval of the Final Preferred Option, would require development of strategies that adhere to the adaptive principle.

Engagement with the community has been a key component of the SIA program at key phases of the assessment. A very participatory approach to the SIA has been undertaken, involving local landholders/residents and local and regional stakeholders in the scoping of perceived positive and negative impacts of each Preferred Option; and in the identification of strategies to address and enhance respective outcomes.

An operational situational analysis has also been undertaken to document the social and economic linkages and associations that currently exist between the Ensham Mine operation and communities in the region, to assist in defining the project's social area of influence.

Commissioning of the SIA early in the Ensham RVP, and regular meetings with the Project team throughout the assessment process, has also provided opportunities to effectively align social assessment outcomes with the broader environmental and technical studies, to inform project planning and decision making.

4.2 SIA Core Matters

Table 4.2 outlines the relevant core SIA matters, as outlined in the SIA Guideline that have been addressed in the SIA report. It should be noted that not all matters are immediately relevant to the Ensham RVP.

Table 4.2 Core SIA Matters

Key matters	Impact assessment	Report Reference
Community and stakeholder engagement	Profile of potentially impacted community How and when stakeholders consulted Principles and processes adopted Overview of consultation program and key events Stakeholder feedback and issues raised Records of engagement activities and details of negotiations or agreements with potentially impacted stakeholders	**Section 4.3** Participants/Stakeholders in the SIA **Section 4.4** SIA and Engagement Methods **Section 5.6.3** Local Community Issues, Values and Aspirations **Section 6.2** Preferred Options Analysis
Workforce management	Current and potential future workforce Training and development opportunities	**Section 5.5.2** Economic Capital Baseline Study **Section 7.0** Assessment of Social Risk
Housing and accommodation	There will be no additional workforce accommodation requirements as a result of the Ensham RVP	**Section 5.5.4.5** Housing and Accommodation **Section 7.0** Assessment of Social Risk
Local business and procurement	There are potential flow on benefits to local business through acquisition of goods and services.	**Section 1.0** Natural Capital **Section 5.6** Regional Issues, Community Values and Aspirations **Section 7.4.3.1** Economic Benefits – Locally and Regionally
Health and community wellbeing	Analysis of existing social services, facilities and infrastructure Analysis of health and wellbeing of potentially impacted communities	**Section 5.5.3** Human Capital **Section 5.5.5** Social Capital **Section 7.0** Assessment of Social Risk

4.3 Participants/Stakeholders in the SIA

SIA involves the cooperation and coordination of a number of "social partners" or "stakeholders". As Burdge (2004) outlines, stakeholders may be affected groups or individuals that:

- Live nearby the resource/project
- Have an interest in the proposed action or change
- Use or value a resource
- Are interested in its use and/or
- Are forced to relocate.

As part of the SIA for the Ensham RVP, a broad range of stakeholders were identified for involvement in the SIA, as depicted in **Figure 4.1**.

Figure 4.1 Broad Range of Stakeholders

Table 4.3 provides an overview of the number of stakeholders consulted across each stakeholder group category.

A total of 48 stakeholders participated across two rounds of SIA engagement, Round 1 in April 2018 and Round 2 in July 2018. The engagement mechanisms utilised as part of the SIA have varied and, where possible, were matched to stakeholder groups to facilitate participation in the assessment program (refer to **Section 5.4** for further detail).

Table 4.3 Project SIA Consultation Summary

Stakeholder Category	Number of Participants
Proximal Landholders	12
Water Catchment Groups	3
Tourism Groups	5
Service Providers	1
Recreational Groups	2
Political Members	1
Local Government - CHRC	3
Industry and Business	2
Indigenous Groups – Traditional Owners	10
Environment/Special Interest Groups	3
Community Groups	2
Community Reference Group (CRG)	4
Total	***48***

Source: Umwelt (2018)

Engagement with key stakeholders has occurred across two dedicated SIA engagement rounds. The first round of engagement was undertaken in the issue scoping phase of the SIA and involved two weeks of consultation in Emerald and Comet with a total of 48 participants, involving 27 face to face interviews, 3 workshops (attended by a total of 15 people) and 2 telephone interviews.

Round two of the engagement program involved one week of consultation in Emerald and Comet with 30 participants that took part in a total of 18 face to face interviews and 2 workshops attended by a total of 11 people. The lower number of participants interviewed in this round was as a result of a number of first round stakeholders declining interview, as they felt they had obtained sufficient information in relation to the Project in the earlier engagement process.

In summary, across the two engagement rounds (three weeks of consultation) in Emerald and Comet, a total of 48 individuals were engaged, through 45 face to face interviews, five workshops and two telephone interviews. Of the 48 participants only 30 took part in Round 2 of consultation.

In addition, Idemitsu, as part of their stakeholder engagement, consulted with the following in regard to the Ensham RVP:

- 4 x State Ministerial Offices
- 1 x State Minister
- 1 x Federal Minister.

In addition to those who participated, invitations were extended to representatives of Isaac Regional Council, Rockhampton Regional Council and Woorabinda Aboriginal Shire Council who declined as they felt the project did not impact them.

4.3.1 Community Reference Group

In the early phases of the Project (November 2017), a Community Reference Group (CRG) was established to work with the company and its relevant consultants in relation to the Project.

The CRG consists of 11 members, including an independent Chair, that includes representation from nearby neighbours (3), mining area landholder (1), Central Highlands Council (2), CCHRUP (1), Fitzroy Partnership for River Health (1), Sunwater (1), Cotton Growers and Irrigators Association (1) and community (1). The CRG has been established to:

- Establish good working relationships and promote information sharing between Ensham Mine, the local community and stakeholder groups on the Ensham RVP.
- Allow community members, and or their representatives, to seek information from Ensham Mine and provide feedback on the study to assist with the delivery of balanced social, environmental and economic outcomes for the community.
- Enable Ensham Mine representatives to keep the community informed about the project.
- Allow Ensham Mine to seek community views on the study and respond to matters raised by the community.
- Discuss the RV Project and raise any concerns associated with the Preferred Options and Final Option.
- Review the reports and studies undertaken for the RV Project.
- Provide comments on the reports and studies undertaken for the RV Project.
- Discuss community concerns with the RV Project, Preferred Options and Final Option.

CRG members are provided with all technical reports for review and comment and have been briefed on the SIA approach and stakeholders to be engaged as part of the SIA program. A copy of the CRG Charter is provided in **Appendix 2**.

4.3.2 Engagement with Traditional Owners

There are two Traditional Owner Groups consulted in relation to the RV Project, these include the Western Kangoulu and the Garingbal and Kara Kara people. A workshop was arranged through agreement with Elders from each Traditional Owner group resulting in a workshop being held in Rockhampton with the Garingbal and Kara Kara people and a second one workshop held in Brisbane with the Western Kangoulu people.

4.4 SIA and Engagement Methods

Table 4.4 provides a summary of the assessment and engagement mechanisms specifically utilised during each phase of the SIA program. This consultation has been further complimented by engagement undertaken by the broader project team, with State Government agencies and other key stakeholders, in the course of other operational and assessment activities.

Table 4.4 Summary of Social Assessment and Engagement Methods

Methodology/Approach	Description/Detail
SOCIAL ASSESSMENT METHODS	
Phase 1	**Program Planning**
Development of Stakeholder Engagement Strategy	Development of a tailored stakeholder engagement strategy for the Project. The strategy, developed in conjunction with Idemitsu, has utilised previous stakeholder assessment and relevant social and environmental data from the Ensham Mine operation, to inform strategy development.
Phase 2	**Community Profiling**
Community Capitals Analysis (Socio-demographic analysis)	Assessment and analysis of Australian Bureau of Statistics (ABS) Census data and other relevant social and community indicators to develop a detailed social profile of the communities of interest. Areas of existing community resilience and adaptive capacity have been identified through a community capitals analysis.
Historic and contemporary issues and opportunities	Review and analysis of historical accounts of the region and local media sources to understand historical and emerging issues and opportunities across the relevant communities.
Regional issues analysis	Personal interviews and workshops with key regional stakeholders to identify challenges and opportunities for the Central Highlands Regional Council in relation to community service provision and capacity. Isaac Regional Council, Rockhampton Regional Council and Woorabinda Aboriginal Shire Council were also invited to participate and declined as they felt the project did not impact them.
Values Mapping	Assessment of built or natural features located on or near the project site that have social value or importance to the community; and identification of community needs and aspirations
Phase 3	**Scoping of Issues and Opportunities**
Local community issues analysis	Personal interviews with key stakeholders (including near neighbours /landholders) of the Ensham Mine to identify perceived issues and opportunities relating to the Project. Ranking of perceived issues and opportunities by relative frequency.
Regional community issues analysis	Facilitation of a stand at the AgGrow event in Emerald for 3 days from 28 to 30 June 2018. Community members visiting the stall were able to review animations of each option, post rehabilitation, including water levels in a 1:100 flood event; inspect posters outlining each of the options and outcomes of the SIA engagement round 1. Community members were also provided with an opportunity to discuss the project with representatives of the Ensham Mine operation. Community members were invited to provide feedback on the project via an online survey. A total of 62 local and regional residents participated in the survey and over 300 people were issued information sheets in relation to the Project across the 3-day event.
Workforce/Employee Survey	A survey of the Ensham Mine workforce was also distributed to identify employee perspectives on the project. A total of 36 employees responded to the survey.
Phase 4	**Assessment of Impacts and Opportunities**
Social Risking	Assessment of mitigated technical social risk associated with the Project, and its various options, through review of relevant social and environmental consequence and likelihood ratings. Prediction of social impacts associated with the Project.
Phase 5	**Prediction of Impact and Strategy Development**
Social Impact Management and Residual Risk Ranking	Identification and development of appropriate strategies to address predicted impacts associated with each option. Minimisation of high and medium social risks through commitment to relevant management and enhancement strategies.

Methodology/Approach	Description/Detail
ENGAGEMENT AND COMMUNICATION METHODS	
Near neighbour meetings (N=17)	Personal meetings with near neighbours/landholders to outline Project aspects and obtain feedback on perceived issues and opportunities associated with the Project and its options.
Community group briefings and consultation (N=25)	Project briefings to local community groups in Emerald, including: • Community Reference Group • AgForce • Cotton Growers and Irrigators Association Central Highlands Development Corporation • Central Highlands Regional Resources Use Planning Cooperative (CHRRUP) • Traditional Owners (including the Western Kangoulu, Garingal and Kara Kara People) • Emergency Services • Recreational groups • Ensham Mine workforce.
Regional stakeholder consultation (N=7)	Personal meetings with key regional stakeholders drawn from across key community service sectors within the Central Highlands Regional Council area e.g. local government, and emergency services.
Government briefings and consultation (N=6)	Briefings and personal meetings with relevant government representatives (local, state and federal) to present the Project and obtain feedback on Project aspects.
Project information sheets 74 sheets distributed	Development of Project information sheets (2 in total) summarising key aspects of the Project and progress/outcomes of the environmental and social assessment programs – distributed to neighbouring community residents and relevant stakeholders. All those invited to participate in the SIA round 1 engagement, were provided with an information sheet No. 1, that described the Ensham RVP and the 3 proposed options. Prior to SIA engagement round two, a further information sheet (No.2) was circulated to all stakeholders along with an invitation to attend a round two interview.
Focus Groups (N=5)	Hosting of five small focus groups and personal meetings with Traditional Owner (TO) groups in both rounds of the SIA and with Central Highlands Regional Resources Use Planning Cooperative (CHRRUP): • Western Kangoulu: 1 focus group was held in Brisbane with 3 participants. • Garingal and Kara Kara: 2 focus groups, one in each round, were held in Rockhampton with 7 participants • CHRRUP: 2 focus groups were held in Emerald with 4 participants.
Project Summary Booklet (over 300 sheets distributed)	Summary of the key outcomes of the environmental and social studies distributed to all key stakeholders on the project database.

5.0 Social and Economic Context

The following profile draws on data from primary and secondary sources to provide an understanding of the social and economic context of the Ensham RVP.

In accordance with the SIA Guideline (March 2018), the purpose of a community profile is to, '*describe the existing social conditions and trends, within a project area, providing a benchmark against which potential social impacts can be measured*'.

Accordingly, the profile includes assessment of the following components:

- Geographic and Historical Context
- Governance
- Community Capitals
- Regional Issues
- Community Values and Aspirations.

Data used in the development of this profile, has been drawn from:

- ABS Census (2016) and Time Series Data (including Queensland Government Statisticians Office reports)
- Social Health Atlas (PHIDU, 2015-2016)
- Hospital and Health Services (HHS) data and other relevant social indicator datasets
- Local, Regional and State Government Reports
- Review of relevant local media
- Research reports and publications relevant to the locality.

Data has been collected at the State Suburb Code (SSC) level of analysis for communities relevant to the Ensham Mine operation and the Ensham RVP, namely Emerald and Comet, with CHRC and Queensland state data provided for comparative purposes. It should be noted that data for Emerald and Comet is a subset of the broader CHRC data.

5.1 Geographic and Historical Context

Ensham Resources operates the Ensham Mine which is located in the Western Bowen Basin in Queensland. The Ensham Mine is located in the Central Highlands Regional Council (CHRC) area, as delineated by the red boundary in **Figure 5.1**.

The Woorabinda Aboriginal Shire Council also sits within the physical boundary of the CHRC area and is located approximately 190 km south-east of the Ensham Mine. Project operations also border the Isaac Regional Council to the north.

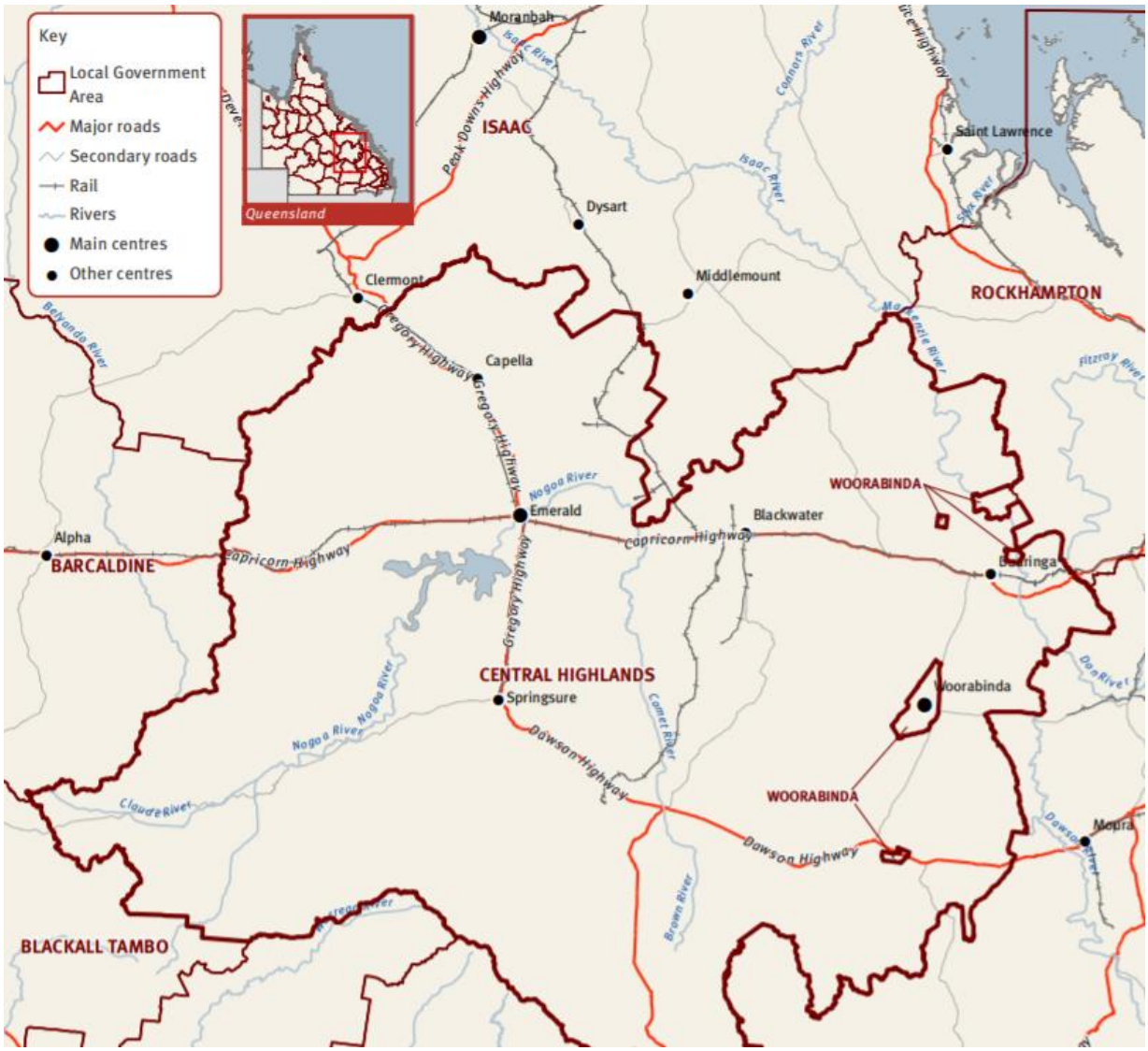


Figure 5.1 Central Highlands Regional Council (CHRC) Local Government Area
Source (DILGP, 2011)

Parts of the Ensham Mine are located on the Nogoa River flood plain, with surrounding land uses including a range of irrigated farm land and less intensive grazing lands, as well as rural land holdings.

Communities located in proximity to the Ensham Mine include Emerald, located approximately 40 km to the north-east of the operations, and Comet, approximately 27 km to the south.

5.2 Aboriginal History

There is very little information available about aboriginal groups in the Emerald region. The original inhabitants of Emerald, and the surrounding area, include the Gayiri (or Kairi) aboriginal group, who were located in the northeast region of the Nogoa River (Horton, 1994). The Garingbal people also inhabited the area on the Comet River, where they lived until European settlement in 1861.

The areas around Emerald are the traditional lands of the Western Kangoulu people, who have a registered Native Title Claim (QC2013/002) over this area, and are closely involved with development issues arising on their traditional lands (Lumburra Bimbi 2018).

To the south of Emerald, within the borders of the CHRC, sits the Woorabinda Aboriginal Shire Council. Woorabinda was established in 1926/27 by the Queensland Government on the traditional lands of the Wadja Wadja/Wadjigal Aboriginal peoples. The area was re-gazetted as an Aboriginal reserve in 1941 and was declared the Woorabinda Aboriginal Shire Council in 2005. With a population of 928, the Shire Council covers an area of 391.2 km^2 and is home to people from a number of language groups across Queensland (Woorabinda Aboriginal Shire Council 2018).

5.3 European History

The Central Highlands region was first explored by Europeans in the 1840s, with Ludwig Leichhardt exploring the region between 1843 and 1845. Leichhardt was the first to discover coal deposits in what was to become the largest coal reserve in Australia - the Bowen Basin (Centre for the Government of Queensland, 2018a; Australia Mining, 2018).

The region continued to develop into the late 1800s with the expansion of the inland railway line from Rockhampton, resulting in the establishment of a number of towns along the rail line. The Central Queensland rail line was extended west from Rockhampton to Blackwater in 1877 and then onto Emerald in 1879. The rail terminus was discontinued after one year as the rail line extended westward in 1880; however due to its position as a railway junction, Emerald became a transport hub between Clermont and Springsure, with rail branch lines opening in 1884 and 1887 respectively.

Pastoral runs were established in the late 1800s along with gemstone mining, copper and gold mining; however coal mining was not a significant activity throughout the 1800s, despite the first coal deposit being found at Blair Athol homestead in 1864 (Australia Mining 2018).

The township of Emerald was established in 1879 and named after 'Emerald Downs', the property of original European settler Peter F. MacDonald, who had first settled the area in 1861. Population growth in the district peaked as a result of rail line construction, however, post-construction saw a reduction in population numbers, and consequently development of the town was slow until the 1890s (Centre for the Government of Queensland 2018a).

Two churches, a newspaper and a horticultural society were established in the late 1800s and a cottage hospital was opened in 1907 and expanded in 1925.

The early to mid-1900s saw the establishment of a town water supply, upgrading of Council offices in Emerald, continued road works and the development of a number of public schools, although a state high school was not opened until 1969.

A (failed) farming development scheme, by the Queensland British Food Corporation, was commenced in 1940, which later led to irrigation works that assisted in developing Emerald into a successful agricultural centre.

Recreational facilities including a public pool and golf course were added in the latter half of the 1900s, along with the botanic gardens (Monument Australia, 2018; Centre for the Government of Centre for the Government of Queensland, 2018a). The region also experienced significant growth between 1950s and 1980s as beef cattle grazing was introduced to the area (Queensland Government Statistician's Office 2018b).

Work on Fairbairn Dam commenced in 1968, with the dam opening in 1972, with a storage capacity of 1,301,000 ML. The Dam blocks the waters of Lake Maraboon and is the second largest lake in Queensland. The Dam is a significant feature of the region and is the basis for the region's beef, cotton, grape, macadamia and citrus industries, as well as wheat, sorghum, melons, sunflower and pulses such as chickpea. The dam is also a recreational feature used by locals and visitors for boating and water skiing and is stocked with barramundi, perch and red claw crayfish, making it a popular fishing location.

There have been a number of floods of both the Nogoa River and Fairbairn Dam, with significant flooding experienced in 2008. Floods in 2011 also damaged infrastructure and had a significant impact on agricultural and mining production in the region (DSDIP 2013; Centre for the Government of Queensland, 2018b).

The Ensham Mine began production as an open-cut mine in 1993, before opening an underground operation in 2011 (Mining Link, 2018). Emerald experienced significant growth as a mining resident town in the 1980s and 1990s, supporting coal mines in the Bowen Basin (Centre for the Government of Queensland 2018a).

Today, Emerald's economy is supported by strong mining and agriculture sectors and has a developing tourism market. The town has developed into a major regional business and regional government centre and provides diverse education and health services, sporting and entertainment facilities (Central Highlands Regional Council 2018d).

5.4 Governance

5.4.1 Federal

At a federal level, the Ensham Mine is located within the federal electoral divisions of Capricornia and Flynn, which are currently represented (in the House of Representatives) by National Party senators Michelle Landry MP and Ken O'Dowd post-nominal MP.

5.4.2 State

The Queensland Parliament consists of a Lower House, the Legislative Assembly, and comprises 993 members. Unlike other state parliaments, the Queensland Parliament does not have an Upper House. The Central Highlands falls in the state electoral district of Gregory and is currently represented by Lachlan Millar of the Liberal-National Party (LNP).

The recognition, protection and conservation of cultural heritage sites and protected areas fall under the *Aboriginal Cultural Heritage Act 2003* administered by the Queensland Department of Aboriginal and Torres Strait Islander Partnerships.

The Queensland Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) is responsible for administering the *Planning Act 2016*; with the Queensland Office of the Coordinator General responsible for administering the *State Development and Public Works Organisation Act 1971* and the *Strong and Sustainable Resource Communities Act 2017;* and its statutory instrument the *SIA Guideline, March 2018.*

The Queensland DES is responsible for administering the EP Act and its subordinate legislation and policies:

- Environmental Protection Regulation 2008
- Environmental Protection (Air) Policy 2008
- Environmental Protection (Noise) Policy 2008
- Environmental Protection (Water) Policy 2008.

5.4.3 Local

The Ensham Mine falls within the CHRC. Council elections took place in 2016 with nine councillors appointed for a 4 year term, including the Mayor Cr Kerry Hayes, elected members are listed in **Table 5.1**.

The Council is governed by the *Local Government Act 2009*, with councillors publicly representing the community.

Table 5.1 CHRC Councillors in 2018

Role	Councillors	
Mayor	Cr Kerry Hayes	
Deputy Mayor	Cr Gail Godwin-Smith	
Councillors	Cr Gail Nixon	Cr Christine Rolfe
	Cr Gai Sypher	Cr Paul Bell AM
	Cr Charlie Brimblecombe	Cr Megan Daniels
	Cr Alan McIndoe	

Source: Central Highlands Regional Council (2018c)

The CHRC produces a number of development plans and strategies. The *Corporate Plan 2017 - 2022* was released in 2017 and sets the region's strategic framework for the next 5 years.

The *Central Highlands 2022 Community Plan* was released in 2017, following community consultation, to address future social and economic challenges to the region. The plan prioritises 5 main themes across the 13 CHRC communities which include: community, infrastructure, economy, environment and governance.

The *Central Highlands Regional Council Operational Plan 2017 - 2018* supports the strategic direction set out in the corporate plan, and maps the council's performance over 2017 - 2018.

Inter-council governance is facilitated by the Fitzroy Basin Association (FBA), which focuses on agriculture and environmental issues, and the Central Queensland Regional Organisation of Councils (CQROC) which comprises the Shire Councils of Banana, Central Highlands, Gladstone, Livingstone, Rockhampton and Woorabinda. Council initiatives to foster economic development include funding the Central Highlands Development Corporation (CHDC), the Economic Development Incentive Framework, and industry engagement. Facilitation of industry bodies in the region includes the CQROC and the FBA.

The CHDC reports to the CHRC and undertakes the majority of whole-of-region governance and economic development in the region (KPMG, 2017). The CHDC released The *Central Highlands Economic Master Plan* (CHEMP) and associated Action Plan in 2017. These documents outline future strategic directions for the CHRC, detailing economic opportunities and actions to be implementation by 2047. The CHEMP specifically identified optimising water trade, security and capacity as key infrastructure requirements to support economic outcomes in 2017-22 (KPMG, 2017).

Table 5.2 Regional Planning Context

Plan/Strategy	Purpose/Desired Outcomes	Responsibility	Timeframe
CHRC Central Highlands Visions for our Community: Our Region 2022, published 2017	• Improve community services and facilities • Build and maintain infrastructure relating to development • Promote liveability • Attract medical and aged care services • Diversify the economy • Plan and develop transport systems and housing to meet future needs	CHRC and CHDC.	2017 - 2022
Central Highlands Economic Master Plan (CHEMP) to 2047, published 2017	• Emerald as a Regional Hub • Diversified, mature economy • Exporting internationally • Skilled and adaptable local workforce	CHRC and CHDC.	2017 - 2047

Plan/Strategy	Purpose/Desired Outcomes	Responsibility	Timeframe
	• Digital connectivity • Protect/promote natural assets • Governance which promotes business/investment		
The CHEMP outlines a number of key investment areas:	• Multi-purpose centre • CQ Inland Port • Meat processing plant and intensive beef industry precinct • Business incubation and innovation hub • Grain and pulse processing facilities • Emerald Medical Village Stage 2 • Emerald Saleyard Complex • Aged Care Facilities	CHRC and CHDC.	2017 - 2047
Queensland Department of State Development, Infrastructure and Planning (DSDIP) Economic and Infrastructure Framework published 2013	• Intended to highlight the economic potential of the CHRC • Mining, energy and minerals processing • Mining supply chain • Agriculture/food processing • Construction • Tourism • Education/training	Regional public and private stakeholders including CHRC.	

Source: DSDIP (2013); CHRC (2017a); KPMG (2017)

The Central Highlands forms part of the catchment of the Fitzroy River, a key resource for the region. The health of the river system is of primary importance in a region with a strong agricultural economic base.

The Fitzroy Partnership for River Health (FPRH) is a collective of resources, industry, government, agriculture and community interests that monitor the health of the Fitzroy Catchment, the 2nd largest catchment in Australia behind the Murray- Darling Catchment.

Other community groups active in the area include Capricornia Catchments Inc., the Central Highlands Regional Resource Use and Planning Cooperative and the Dawson Catchment Coordinating Association (KPMG 2017; CHDC, 2018).

5.5 Community Capitals Assessment

In the development of the profile for the project, aspects of the sustainable livelihoods approach (DfID, 1999) have been utilised to provide a comprehensive understanding of the relevant communities proximal to Ensham Mine.[2.]

The Department for International Development (DFID) approach draws on broad categories of community capitals as a fundamental basis to identifying and further enhancing community capacity and resilience. According to DFID[3], a livelihood includes the capabilities, assets (including both material and social resources) and activities required for people to meet their basic needs and support their well-being. A livelihood is considered sustainable "*…when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base*".

[2] Coakes, S., Sadler, A., 2011. Utilising a sustainable livelihoods approach to inform social impact assessment practice, in: New Directions in Social Impact Assessment. Edward Elgar Publishing, Cheltenham, pp. 3–20.

[3] Department for International Development, 1999. Sustainable Livelihoods Guidance Sheets.

The approach involves profiling relevant communities according to five 'community capitals' or 'capital assets – economic, physical, social, human and natural capital; and has involved the selection and collation of indicators for each capital.

For example, **human capital** refers to the health and welfare of human beings, their knowledge and skills, as well as their overall capacities to contribute to ongoing community sustainability. A community that is heavily dependent on a particular industry, but which exhibits low levels of human capital, is likely to face greater challenges in embracing socio-economic change as a result of disruption.

Social capital relates to how individuals, groups, organisations and institutions within a community interact and cooperate; and can be broadly defined as a multifaceted concept that can broadly be defined as the dynamics and strength of relationships and/or interactions within a given community; this includes the degree of social cohesion and interconnectedness between community members.

Economic capital is defined as the extent of financial or economic resources within a town or community, including access to credit. For instance, a town lacking in economic capital, but predominantly reliant on a specific industry sector such as mining, is likely to be more vulnerable to change and consequently more likely to experience greater difficulties in adapting to change given this dependence, particularly once an industry declines or as a result of industry closure.

Physical capital is broadly defined as a town or community's built infrastructure and services, including hospitals, schools as well as social service provision e.g. health care, aged care, child care. For example, a highly remote community that lacks access to basic facilities and social services may lack the capacity to enhance its local human skills base and is likely to be more disadvantaged in capitalising on opportunities for further industry development and economic capital growth.

Lastly, **Natural capital** is defined as the stock of natural resources e.g. minerals, oil and gas, agricultural lands, oceans, forests etc. that provide natural beauty, generate sustainable economic and commercial activities and which provide ecosystem services.

Elements of each capital area are further outlined in **Figure 5.2**.

Figure 5.2 Capital Framework

Source: Adapted from Coakes and Sandler 2011

For the purpose of this study a qualitative assessment of community resilience or adaptive capacity has been utilised based on review and analysis of relevant indicators and other secondary data sources.

Table 5.3 summarises the key strengths and vulnerabilities of the identified communities of interest – Emerald and Comet - by capital area. Further discussion of each of the core capitals is provided in the proceeding sub-sections.

Table 5.3 Key community strengths and vulnerabilities – Emerald and Comet

Emerald and Comet		
Capital Area	**Strengths**	**Vulnerabilities**
Natural	• Fairbairn Dam and the river system support a large and lucrative agricultural industry, some heavily reliant on irrigation, as well as providing recreation for local and regional residents. • Coal resources in the Shire account for a significant proportion of employment across the Shire and contribute to the purchase of goods and services. • A mature agricultural sector supports the region's second largest industry. • A growing tourism industry is based on the proximity of natural landscape features and services built around assets such as Fairbairn Dam, the Gemfields and Carnarvon Gorge.	• Dependence on coal resources. • Water security, with CHRC water demand projected to exceed water allocation in in approximately 10 years.

Emerald and Comet		
Capital Area	**Strengths**	**Vulnerabilities**
Economic	• Higher median incomes, than the state average. • High levels of workforce participation (67.6%) and low unemployment (5.5%) at regional level. • Diversity in the economy with mining (24.3%) and agriculture, forestry and fishing (12.8%) accounting for 37.1% of the region's industry. • Strong labour force participation and high levels of employment in both mining and agriculture in Emerald and Comet, contributing to a diverse employment landscape. • High rates of employment of local and regional residents by the Ensham Mine stabilises the community and strengthens the local economy. • Less rental stress and a lower proportion of low income households than Queensland, and a lower proportion of young people on unemployment benefits.	• Dominance of mining employment leading to dependence on mining.
Human	• A relatively young population (median age of 31 years old in 2016). • A higher proportion of working aged adults (20 - 64 years) in the region than Queensland. • A high proportion of the population with Certificate level qualifications in technical and trade positions, machinery operators and driver positions, with these occupational groups being higher in Emerald. • Fewer population groups likely to be considered 'at-risk' compared to Queensland proportion. • Low rates of disadvantage, particularly in Emerald.	• Population growth slow. • Falling levels of building approvals. • Tertiary education largely limited to Cert III reducing resilience to economic change. • High proportion of CHRC adult population engaging in health risk behaviours e.g. smoking, obesity and risky drinking, compared to Queensland.
Physical	• Infrastructure in the Emerald region is reasonably diverse, including tertiary education facilities and a high number of aged care places compared with the state average. • There are a broad range of health services provided in Emerald. • The population is serviced by a diverse range of community services, with the exception of a number of specialist services which only attend Emerald on a visiting basis. • Building approvals have experienced a sharp dip over the period between 2012 – 2016 with a marked drop in both number of approvals and the value of those approvals. • Tourism accommodation remains steady with no change between 2012 - 2016. • Low numbers of residents with language barriers. • High rates of volunteering across the CHRC. • Good transport links for freight and air travel. • Good recreational, social and cultural facilities.	• Some limitations on health services requiring travel to larger regional centres and Brisbane. • Limited public transport leading to high reliance on travel to work by car. • Limited long-distance passenger transport. • Rates for home ownership fall below Queensland averages for outright ownership, and above Queensland averages for rentals. • Housing availability has been identified by the CHRC as a barrier to attracting skilled workers. • Mortgages are higher than state average. • Higher than state average number of dwellings rented and lower than average proportion of homes owned outright.

Emerald and Comet		
Capital Area	**Strengths**	**Vulnerabilities**
Social	• Mobility in Comet has been lower than state averages in the period between 2011 - 2016. • Volunteer rates for Emerald and the CHRC are higher than for Queensland, potentially indicating a higher degree of community participation and trust, and stronger social networks. • Overall crime rate is lower than for Queensland.	• Higher than average degree of mobility in Emerald than for Queensland. • Increasing crime rates across the Emerald police division for offences against property, drug offences and breach against violence protection order.

5.5.1 Natural Capital

Natural capital contributes to community strength and sustainability and includes an assessment of natural assets and resources such as water, soil and air quality, biodiversity and the presence of natural resources such as timber, minerals and gas. Natural capital can also include assets which contribute to recreational values, tourism or other social and cultural values, such as waterways or lakes.

The CHRC area benefits from a sub-tropical climate and high quality soils, which enable broad acre farming of pulses and cereals in both spring and summer. According to the CHDC the annual value of broad acre cropping is estimated at around $103 million. The area also produces citrus, cotton and table grapes and beef.

The Queensland government recently identified one third of the region as Strategic Cropping Land (SCL) and Priority Agricultural Areas (PAA). Emerging crops in the region include melons, macadamia, figs, lychees, peanuts and potatoes. The agricultural sector has delivered a cumulative growth rate of 12% in the average value produced per hectare, doubling the national average of 6% (CHDC 2018).

The region is serviced by a number of water sources: the Nogoa, Comet, Mackenzie and Dawson Rivers, and the significant, Fairbairn Dam, located near Emerald. The dam is the second largest water storage facility in Queensland with a capacity of 1,301,000 ML and provides water supply to irrigators via the Nogoa Mackenzie Water Supply Scheme (the Scheme), established in 1968 to manage the region's water resources. Water entitlements are issued by the scheme and are an important commodity which can be leased, bought and sold (CHDC 2018). Through consultation, members of the community expressed the significance of the Fairbairn Dam to the region and the community's reliance on the Dam for both economic and recreational pursuits. Emerald and its surrounds has a fairly resilient water source; however forecasting conducted by Queensland's Department of Energy and Water Supply (2017) shows that water demand in Emerald is likely to reach or exceed the CHRC current water allocations in approximately 10 years.

The CHRC benefits from the Bowen Basin's natural coal reserves which contribute to higher than state average employment across the region. The Queensland Resources Council (2017) reported that 2016/17 saw minerals and energy contribute 9,858 jobs (25.8% of the industry total) to the Fitzroy region, which incorporates the areas of Central Highlands, Rockhampton, Gladstone and Banana. The average salary was $120,123 and the total estimate for goods and services purchased from local businesses, community contributions and local government payments as totalled around $1.8 billion for the same period.

The CHRC also has a number of landscape features and National Parks such as Carnarvon Gorge and Minerva Hills National park to the south of Emerald. Tourism is a burgeoning industry in the CHRC, and Emerald has experienced growth in its tourism market as a jump-off point to surrounding National parks and the southern Sapphire Gemfields. The man-made Fairbairn Dam provides for a range of recreational

pursuits such as fishing, boating and water skiing to locals and visitors (Central Queensland Regional Organisation of Councils 2018).

Emerald and the Central Highlands region have diversity within its natural capital, which has and is expected to continue to provide the community with sustainable industries and recreational areas to support its economic and social aspirations.

5.5.2 Economic Capital

An assessment of economic capital involves consideration of a number of indicators, including industry and employment, workforce participation and unemployment, income levels and cost of living pressures, such as weekly rent or mortgage repayments.

5.5.2.1 Industries of Employment

Significant industries of employment across the CHRC include mining (24.3%), agriculture, forestry and fishing (12.8%), and retail trade (8.1%), with employment by industry data provided in **Table 5.4** and highlighted in yellow.

Table 5.4 Industry of Employment - Comet, Emerald, CHRC* and Queensland State

Industry of Employment	Comet (SSC)	Emerald (SSC)	CHRC	QLD
Agriculture, forestry and fishing	45.9%	5.0%	12.8%	2.8%
Mining	19.1%	19.0%	24.3%	2.3%
Retail trade	1.2%	11.2%	8.1%	9.9%
Accommodation and food services	1.2%	6.3%	6.3%	7.3%
Public administration and safety	1.2%	5.4%	4.1%	6.6%
Education and training	5.1%	9.0%	7.9%	9.0%
Health care and social assistance	1.6%	6.7%	5.2%	13.0%
Arts and recreation services	0.0%	0.4%	0.5%	1.6%
Other services	3.9%	5.5%	4.2%	3.9%

Source: ABS (2016b, 2016d, 2016e, 2016f) NOTE: * CHRC is equivalent to ABS LGAs and will be referred hereafter as CHRC.

In Emerald the major employment industries include mining (19%), retail (11.2%), education and training (9.0%), and health care and social assistance (6.7%). Comet also has a high reliance on mining (19%) but a greater reliance on agriculture, forestry and fishing (46%).

Importantly, the strong presence of two industry sectors in the region supports the anecdotal evidence obtained during consultation, where the community repeatedly expressed the significance of the agriculture and mining industries to their locality. This diversity was seen to have assisted during the global financial crisis and subsequent downturn in the mining sector.

5.5.2.2 Occupations

The key occupations (**Figure 5.3**) in Comet are managers (28.8%), machinery operators and drivers (20.2%), and labourers (13.2%). In Emerald, the most common occupations include technicians and trades (18.6%), machinery operators and drivers (15.5%), and clerical and administrative (12.6%). Apart from clerical and administrative occupations, all occupational types are higher than for Queensland as a whole, and are consistent with the high prevalence of agriculture and mining in the region.

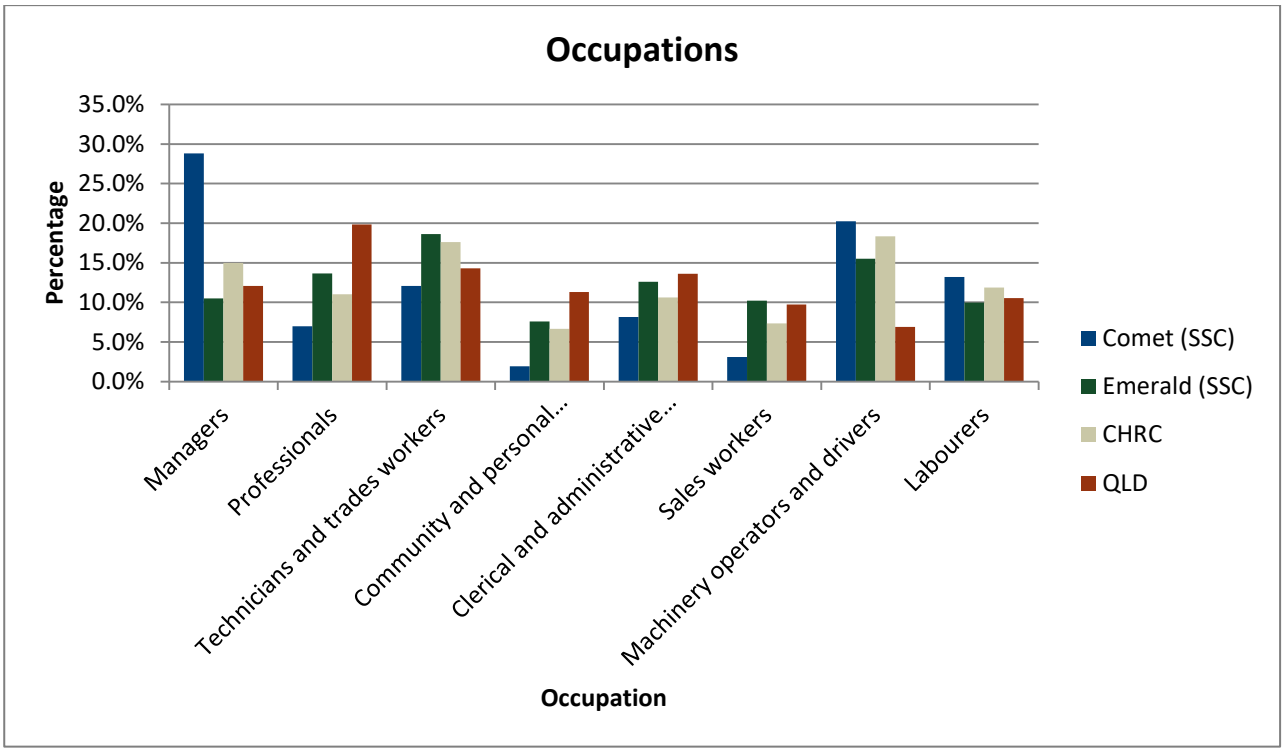


Figure 5.3 Occupation types in Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f)

5.5.2.3 Labour Force Participation

ABS data indicates that labour force participation (**Figure 5.4**) across the CHRC (67.6%) is higher than the state average of 61%; with Comet (68.7%) and Emerald (70.6%) both exceeding the CHRC labour participation rates.

Unemployment across the CHRC (5.5%) is also lower than the Queensland average (7.6%), with lower rates of unemployment also evident across both Comet (1.9%) and Emerald (5.5%) (ABS 2016).

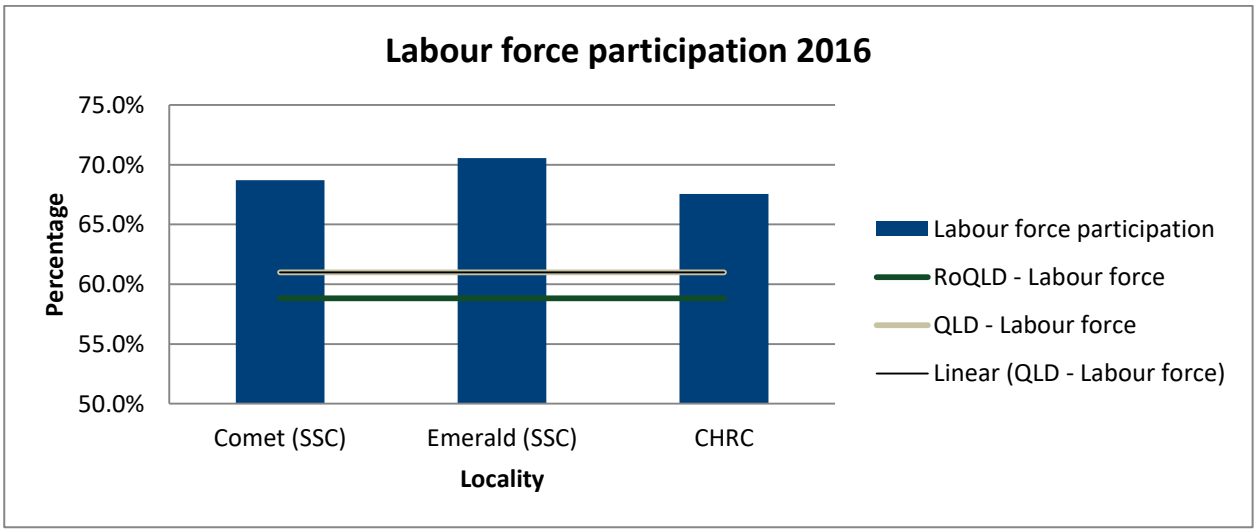


Figure 5.4 2016 Labour Force Participation in Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f, 2016g)

*RoQ: Rest of Queensland refers to Queensland excluding Greater Brisbane area

5.5.2.4 Median Household income

Economic health indicators from the ABS Census data (2016e) for the CHRC indicate median weekly household income of $1,823 and a median weekly personal income of $843; with a slight reduction in incomes experienced across the region from 2011 ($1,998) to 2016. Despite this reduction, median household incomes for Comet ($1,937) and Emerald ($1,893) remain higher than the Queensland average of $1,402 (ABS, 2016).

Aboriginal and/or Torres Strait Islander people in Emerald have a median weekly household income of $1,465, slightly higher than the state average of $1,402.

5.5.2.5 Median Household expenditure on mortgage and rentals

Expenditure on mortgage and rentals are also indicators of economic health. ABS data from the 2016 Census shows that median monthly mortgage repayments of $2,000 and a median weekly rent of $112 were evident for the CHRC in 2011. By 2016 median monthly mortgage payments had reduced by $158 to $1,842 per month. However, mortgage payments in the CHRC ($1,842) remain above the Queensland average of $1,733.

Both Emerald and Comet are above state averages in relation to household expenditure. Emerald has a median monthly mortgage repayment of $2,000 and a median weekly rent of $230; while Comet has a median monthly mortgage repayment of $2,124, with no rental expenditure.

The median weekly rent for Aboriginal and/or Torres Strait Islander people was $240, with the median monthly mortgage repayment being $1,882 (ABS (2016e).

5.5.2.6 Ensham Mine Workforce Profile

According to Ensham Mine (May, 2018), a total of 315 full time employees work at the Ensham Mine with 56 working in the open-cut operation, 189 in the underground operations and 65 working across both operations. Ensham Mine has no part-time or casual employees.

Workforce demographics, as supplied by Ensham Mine (2018), indicate a high proportion of male workers (307), with 8 females. The mine does not currently have records of any Aboriginal and/or Torres Strait Islander staff or workers with a disability.

As outlined in **Table 5.5** the workforce for the mine have been predominantly drawn from Queensland; with only a small number of workers from NSW, Victoria and South Australia.

Table 5.5 State of residence of workers

State	No. of Workers	% of workforce
New South Wales	13	4.1
Victoria	1	0.3
South Australia	1	0.3
Queensland	300	95.2
TOTAL	**315**	**100%**

Source: Ensham Resources

A more detailed assessment of worker residential locations indicates that Emerald and Comet are the residential localities for approximately 107 workers (34.0% of the workforce at the operations).

The drive-in, drive-out (DIDO) workforce accounts for the largest proportion of workers (140 or 44.4%), while fly-in, fly-out (FIFO) workers comprise the smallest proportion of the workforce at 68 or 21.6%.

Table 5.6 Employee classification and roster type

Classification	5/2	7/7	Farmer	Grand Total
DIDO	-	140	-	140
EMERALD	30	75	2	107
FIFO	-	68	-	68
Grand Total	**30**	**283**	**2**	**315**

Source: Ensham Resources

Note: Workers are rostered on for 5 days with 2 days off, or 7 days with 7 days off.

5.5.3 Human Capital

Human capital is assessed by considering indicators such as population size, age distribution, education and skills, general population health and the prevalence of at-risk groups within the community.

5.5.3.1 Population and Age Characteristics

As at 30 June 2017, the CHRC had an estimated population of 28,684. Aboriginal and/or Torres Strait Islander people represented 4.3% of the region's population, 0.3% higher than Queensland (ABS, 2016).

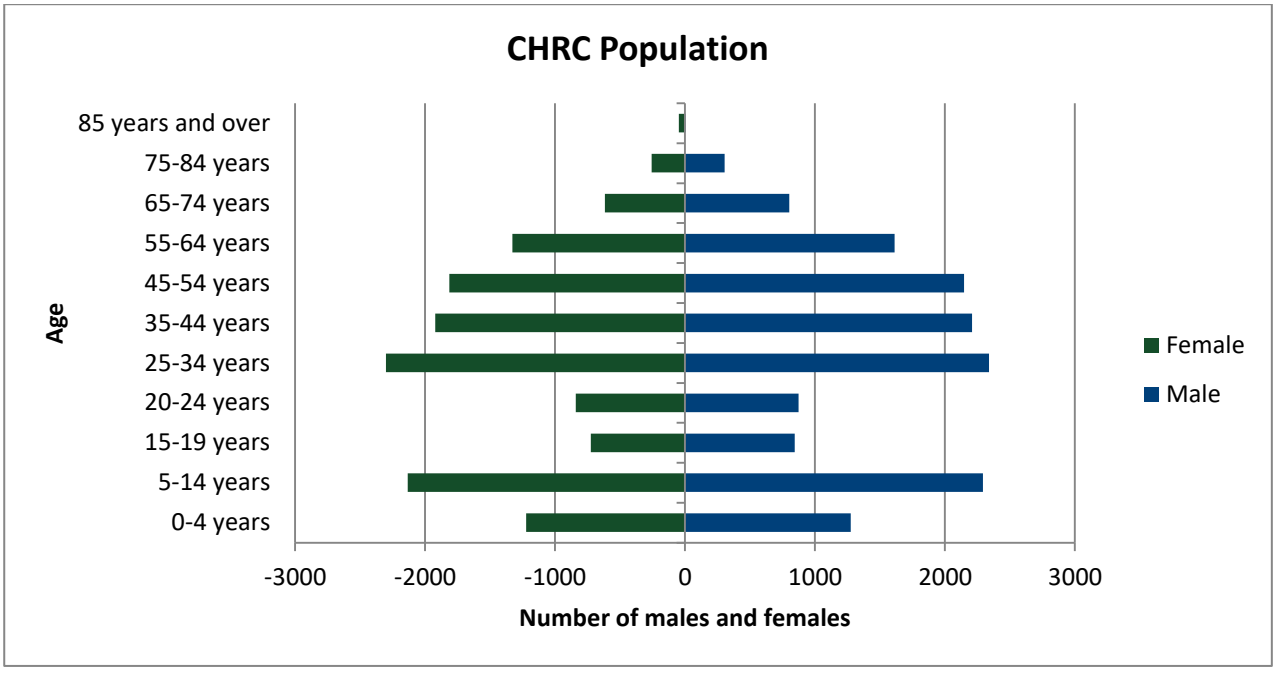


Figure 5.5 Number of males and females by age group in the CHRC

Source: ABS (2016e)

The CHRC has a relatively young median age of 33 years (ABS, 2016) compared with Queensland's median age of 37 years. The region has experienced a slight reduction in the number of people in the 0 – 19 year cohort (**Figure 5.5**) and a slight rise in numbers in the 55 - 85 year cohort between 2012 and 2015 (Queensland Government Statistician's Office 2016).

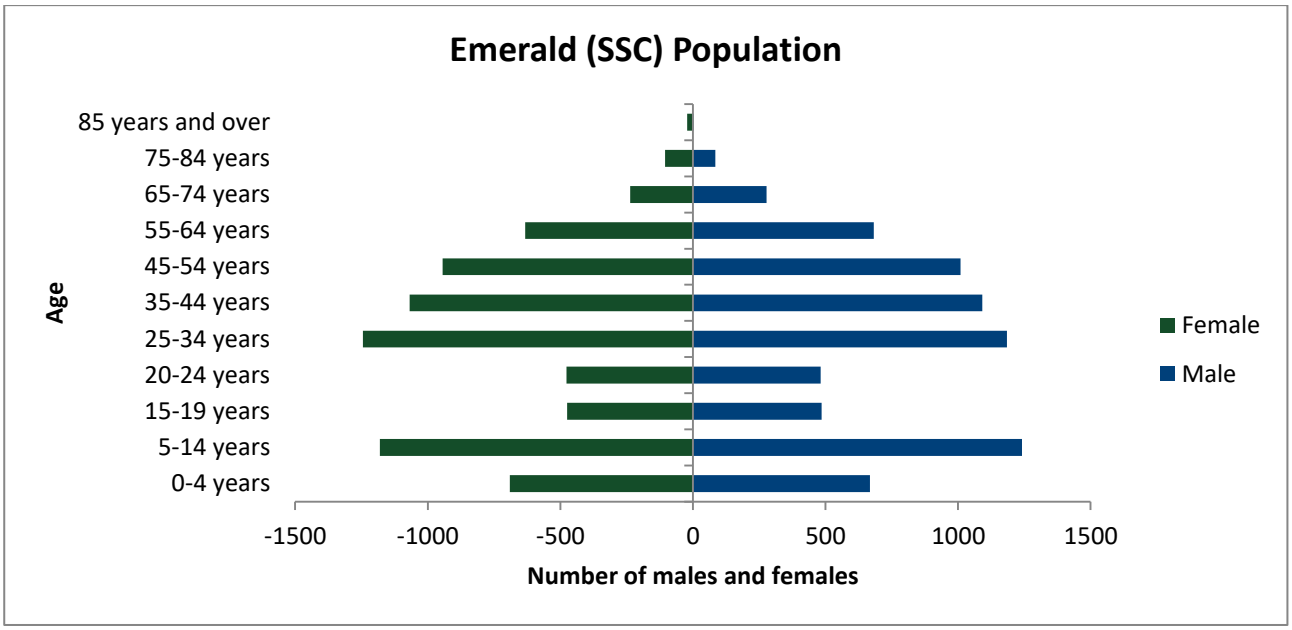


Figure 5.6 Number of males and females by age group in Emerald

Source: ABS (2016b)

At a local community level, in 2016, Emerald had a population of 14,356, with an even distribution of females (49.4%) and males (50.6%), and a median age of 31 years (**Figure 5.6)**. Of the total population, 3.5% of the population identify as Aboriginal and/or Torres Strait Islander people.

Comet is a smaller township with a population of 498 residents in 2016, with females comprising 39.6% and males 60.4% of the population. The median age of the locality is 35 years. Aboriginal and/or Torres Strait Islander people comprise 3.4% of Comet's population.

5.5.3.2 Population Change and Projection

Table 5.7 illustrates a slight increase in population across all age ranges from 2012 - 2015 in the Central Highlands, with the exception of the 0 - 14 years age group, where there is a very slight decrease. Overall the population has remained reasonably stable.

Table 5.7 Population change between 2012 and 2015 for the CHRC

Age Range	2012	2013	2014	2015	Trend
0 - 14	7,639	7,693	7,715	7,582	↓
15 - 64	21,923	22,487	22,727	22,651	↑
65 - 84	1,792	1,900	1,961	2,026	↑
85 +	153	167	181	196	↑
Total Persons	31,507	32,247	32,584	32,455	↑
% Working Age Population (15 - 64)	69.6	69.7	69.7	69.8	↑
Median Age - Usual Residents, Persons (years)	31.4	31.6	31.9	32.3	↑

Source: ABS (2016a)

Figure 5.7 illustrates projected population change in the CHRC and Emerald from 2011 to 2036.

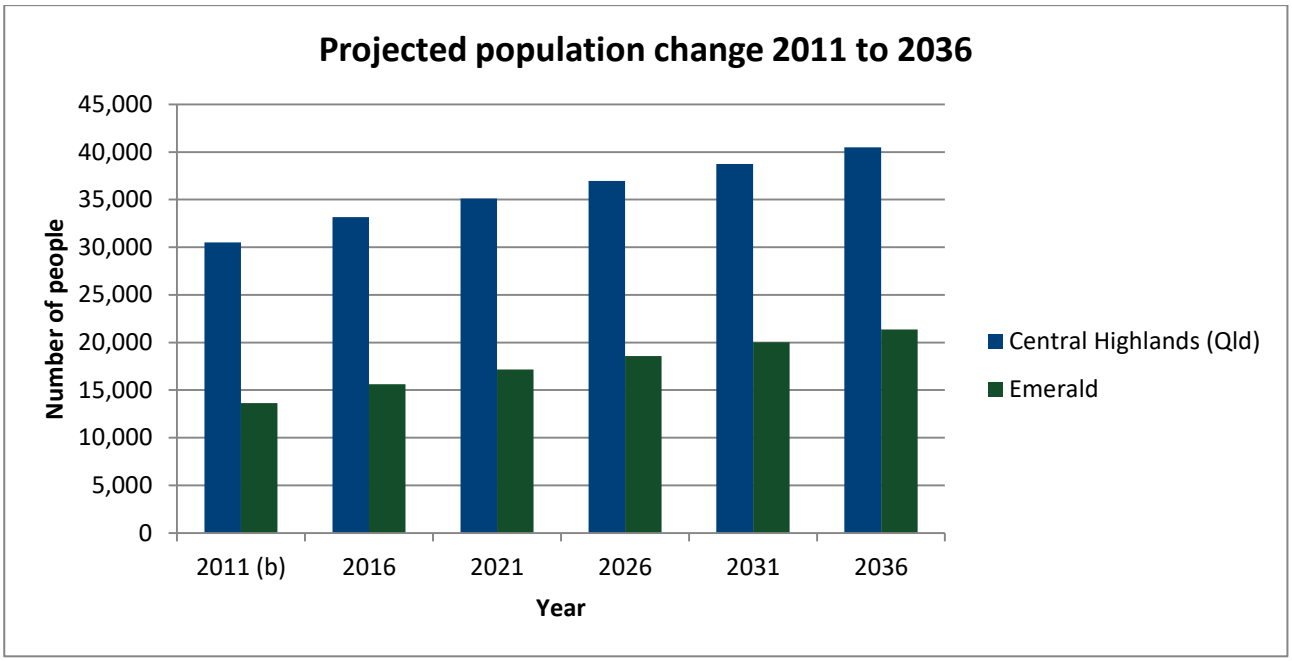


Figure 5.7 Population change (projected from 2011 to 2036) for Emerald and the CHRC

Source: Queensland Government Statistician's Office (2011)

As **Figure 5.7** suggests, both the CHRC and Emerald are projected to experience steady population growth to 2036, with Emerald and the CHRC projected to reach a population of 21,361 and 40,510 respectively.

The median age across the region is expected to increase to 34.8 years by 2036 (Queensland Government Statistician's Office 2018b); and while some fluctuations in population have occurred in the last 6 years, the CHRC and Emerald populations remain relatively stable and are projected to grow over the next 2 decades.

5.5.3.3 Working Age Population

According to the ABS census data, Emerald (62.0%), Comet (65.0%) and the CHRC (63.0%) have a higher proportion of working aged adults (people aged between 20 - 64 years) compared to Queensland (59.0%), with the median age expected to rise over coming years. However, projections put the median age lower in 2036 than the current Queensland median age, indicating the CHRC will retain and likely increase its working age population by 2036 (**Figure 5.8**).

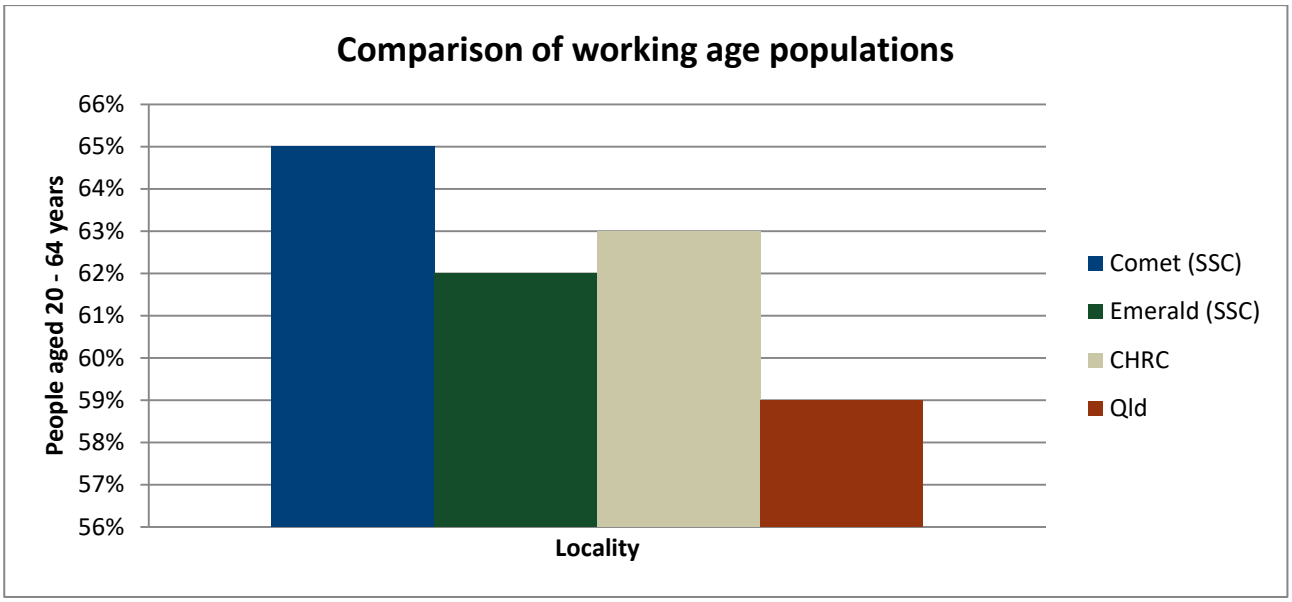


Figure 5.8 Proportion of people aged between 20 to 64 years of age in Comet SSC, Emerald SSC, the CHRC and Queensland in 2016

Source: ABS 2016

5.5.3.4 Educational Attainment and Skills

Levels of education in the community can be a key determinant of overall health and wellbeing as well as social cohesion. A well-educated population across all levels of an economy and society are indicators of a more sustainable and resilient community. In a 2007 OECD report*, Understanding the Social Outcomes of Learning*, it was outlined that key outcomes for individuals and society as a result of increased years of education can include:

- Enhancement of health and wellbeing (individual, community and intergenerational)
- Improved knowledge and experience that facilitates civic and social engagement
- Cultivation of values, attitudes, beliefs and motivations which encourage civic and social engagement
- Improved employment and higher income opportunities.

Educational attainment across Emerald is comparable to Queensland for completion of Years 10 - 12, and is higher than Queensland (15.2%) for Certificate level three (20.1%). However, as illustrated in **Figure 5.9**, attainment of advanced diploma and diploma level is lower in Emerald (6.4%) than Queensland (8.7%). The gap increases with attainment of bachelor degrees and above (Emerald 12.6% and Queensland 18.3%).

A greater proportion of qualifications at certificate level three are consistent with higher proportions of technicians and tradespersons and machinery operators and lower proportions of professionals and managers. Comet is an exception with 28.8% of managers almost twice that of the state average (12.1%). The disparity of educational attainment may indicate a reduced resilience to economic change as a result of a more limited diversity of skills (ABS 2016b, 2016f).

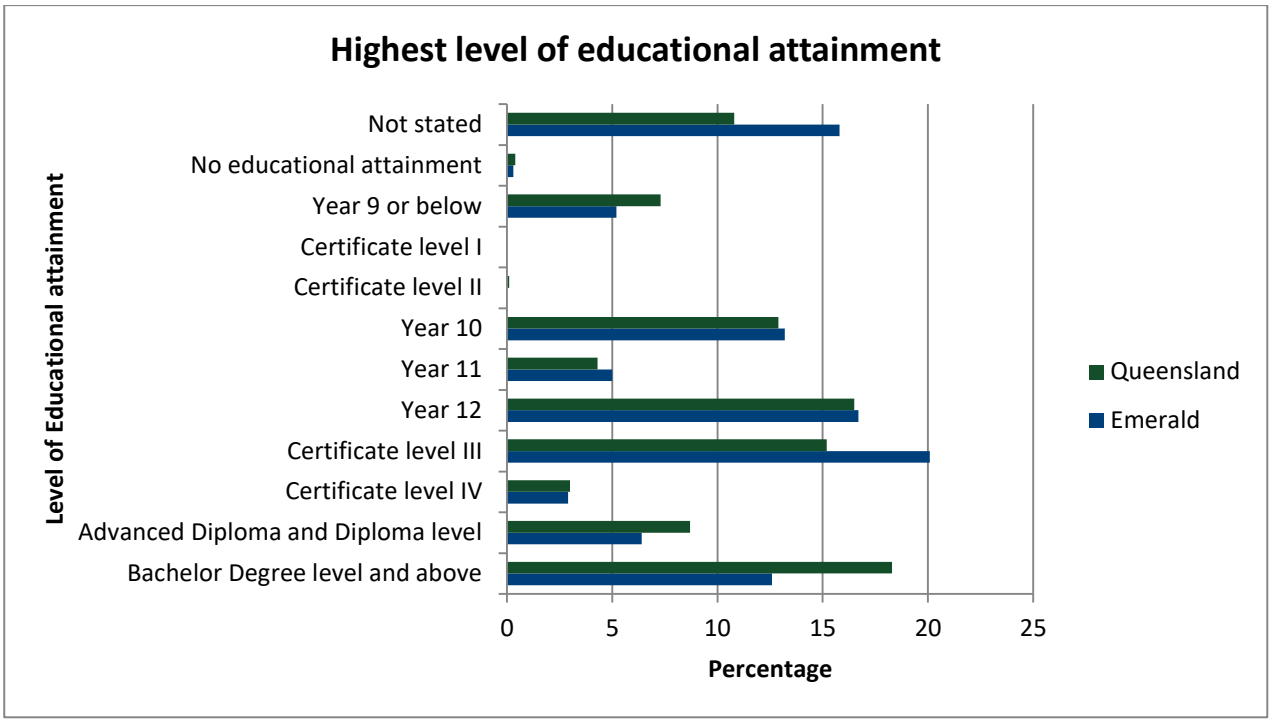


Figure 5.9 Level of educational attainment - Emerald and Queensland

Source: ABS 2016

5.5.3.5 Health Status

The health and wellbeing of community members is assessed using indicators such as incidence of premature death, incidence of risk factors, status of childhood health, rates of chronic illness, levels of self-assessed and general health, as well as the extent and quality of aged care and medical services present in the locality.

Central Queensland Hospital and Health Service (CQHHS) demonstrated a hospitalisation rate of 23% higher than the state in 2013-14 (Queensland Health, 2016). Of the 90,126 hospitalisations in the CHRC in 2013-2014, only 9% were deemed potentially preventable hospitalisations (PPH). Half of all PPH were due to complications with diabetes, dental conditions and urinary tract infections. Of the 1,215 deaths in the CHRC in the same year (7% higher than Queensland), 42% were considered premature. In addition, CQHHS was one of the nine Hospital and Health Services to have no difference in the Indigenous Queenslander death rate (Queensland Health, 2016).

Table 5.8 shows that in 2015/16 the CQHHS experienced a significantly higher incidence of all risk factors for adults in comparison to Queensland.

Table 5.8 Risk Factors for Adults in Central Queensland HHS, 2015-2016

Risk Factor	% & Number at risk	Comparison to Queensland
Daily smokers in 2015/16	17%, 27,979	38.0% higher relative to QLD
Obese 2015-2016	29%, 48,052	20.0% higher relative to QLD
Risky drinkers 2015/16	25% or 42,027	15.0% higher relative to QLD

Source: Queensland Health, *2016 Chief Health Officer report 'Central Queensland HHS: Population health status profile* (2016) https://www.health.qld.gov.au/__data/assets/pdf_file/0036/536895/hhs-profiles-central.pdf

According to PHIDU, the proportion of the CHRC population providing unpaid childcare (32.7%) is higher than the state average (28.1%), the population in the region experiences considerably less rental stress, is

home to a lower proportion of low-income households (25.3%), compared to Queensland (41.0%); and has a lower proportion of young people on unemployment benefits (PHIDU 2018).

Table 5.9 Health indicators for the Central Highlands Regional Council

Impact	CHRC	QLD
Early childhood development: AEDC, Developmentally vulnerable on one or more domains	24.1%	26.1%
Learning or Earning at ages 15 - 24 years	76.3%	81.8%
Single parent families with children aged less than 15 years	14.7%	23.1%
Total unpaid child care (People aged 15 years and over providing child care)	32.7%	28.1%
Households in dwellings receiving rent assistance from the Australian Government	10.9%	22.2%
Rental Stress - Rented private dwellings that are low income households (bottom 40% of income distribution)	9.4%	28%
Low income Households (bottom 40% of income distribution)	25.3%	41%
Housing suitability - dwellings with households requiring extra bedrooms	2.2%	2.9%
People receiving an unemployment benefit (16 – 24 years old)	4.1%	6.2%
Age Pensioners (proportion of pension recipients receiving the aged pension)	54.1%	69.8%
Low income, welfare-dependent families (with children)	7.6%	11%
Internet not accessed from private dwelling	14.6%	13.6%

Source: PHIDU (2018)*

Note: *Greater Capital City Statistical Area and Rest of State/Territory and Australia are based on the Australian Bureau of Statistics Australian Statistical Geographical Standard.

In summary, the health status of the CHRC population is reasonable, although there are some serious health risk factors present among the adult population and children of single parent families.

5.5.3.6 At Risk and Vulnerable Groups

An over representation of at-risk groups can indicate a community which may require differing levels of community assistance. According to the Australian Institute of Health and Welfare (AIHW), people living in rural or remote locations experience poorer health and welfare in general than people in metropolitan locations. In rural regions, this disadvantage may be compounded by an individual's inclusion in one or more 'at-risk' groups. At risk groups have a greater risk of experiencing disadvantage than the general population. Such disadvantage can include economic, social and health risks that may accumulate over a person's life.

The Socio-Economic Indexes for Areas (SEIFA) focuses on low-income earners, those with relatively low education attainment, high unemployment and dwellings without motor vehicles. In reviewing **Table 5.10**, Emerald demonstrates low levels of disadvantage with only 24.8% falling in the most disadvantaged quintile (4.9% Quintile 1 and 19.9% Quintile 2) and 48.3% in the least disadvantaged quintile (31.4% quintile 4 and 16.9% quintile 5). This is well below the index score for both CHRC (33.3% most disadvantaged) and Queensland (40% most disadvantaged). CHRC also demonstrates a lower level of disadvantage when compared to Queensland as a whole.

Table 5.10 Socio Economic Index for Disadvantage: Emerald and CHRC, 2016

Location	Socio economic index of disadvantage				
	Most disadvantaged				Least disadvantaged
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Emerald	4.9	19.9	26.9	31.4	16.9
CHRC	14.0	19.3	24.2	26.0	16.5
Queensland	20.0	20.0	20.0	20.0	20.0

Queensland Government Statistician's Office (2011)

At risk groups may also be those in the population that are providing unpaid child care, who have limited educational attainment, are aged 65 years and over, are indigenous, are profoundly or severely disabled, and/or unpaid carers of people with a disability. The CHRC area as a whole, however, exhibits comparatively lower numbers of potential at-risk groups.

Table 5.11 Proportion of at-risk groups in Emerald, Comet, CHRC and Queensland

Risk	Emerald	Comet	CHRC	Queensland
Highest Educational attainment: Year 9 or below	5.2%	7.2%	7.0%	7.3%
Aboriginal and/or Torres Strait Islander people	3.5%	3.4%	4.3%	7.3%
Population aged 65+	5.3%	9.0%	7.5%	15.2%
Unpaid assistance to people with a disability	7.2%	-	8.7%	10.7%
Profoundly or severely disabled people (all ages, incl. long term care)	2.5%	-	2.7%	5.4%

Source: ABS (2016b, 2016d, 2016e, 2016f) PHIDU (2018)

Finally, data from PHIDU (2018) indicates that in 2014, the estimated number of people aged 18 years and over, who experienced frequent level of difficulty getting to necessary places with transport (including housebound people), was 4.3% of the CHRC population and 3.2% for Emerald, compared to 3.8% for Queensland state.

While the population in the CHRC may experience a greater rate of difficulty in accessing necessary places with transport, due to its remote nature; the proportion of people who reported having difficulty in accessing healthcare in 2014 due to the cost of service (2.0%), was on par with Queensland (2.7%). However, a greater proportion of Emerald's population (3.2%) experiences difficulty accessing health care. This is likely to be due to limited health services locally, particularly specialist services, which require travel to other larger regional centres and/or Brisbane, thus increasing the cost of accessing services.

Therefore, the CHRC has a high level of human capital and lower levels of disadvantage, when compared to Queensland, with some distinct vulnerable at risk factors such as smoking, obesity and drinking among the adult population and children of single parents.

5.5.4 Physical Capital

Physical capital includes built infrastructure and services to the community. This includes amenities, services, and utilities along with housing and accommodation. The availability and type of physical capital are key indicators of social health and wellbeing, and indicate a community's capacity for economic growth and innovation. A lack of physical capital such as health care and recreation facilities can negatively impact on the health and wellbeing of a community. The type, quality and degree of access to physical capital by the community are an important consideration when assessing a community's physical capital assets.

5.5.4.1 Public Amenities and Utilities

Table 5.12 summarises the public amenities and utilities available in the CHRC area. Public amenities and utilities are located throughout the region but are concentrated in Emerald. Notable issues include inconsistent quality of telecommunications in remote locations of the region and a lack of passenger services, consistent with a rural locality.

Table 5.12 Public amenities and utilities in the CHRC and Emerald region

Amenity / Utility	Description
Water	Fairbairn Dam supplies potable water via the Selma Weir to Emerald and irrigation water to surrounding communities through the Nogoa Mackenzie Water Supply Scheme. Emerald currently operates under water restriction level '0' which limits water consumption.
Wastewater	A number of properties in the CHRC are not connected to the reticulated sewerage system and are serviced by on-site sewerage facilities.
Waste Management	The CHRC offers waste collection throughout the Central Highlands region including Emerald. The Emerald Waste Transfer Station and Emerald Landfill (Lochlees) are open to the public for a fee for domestic and building waste disposal.
Electricity	Ergon Energy is the government-owned energy supplier responsible for transmission and distribution infrastructure, including solar systems.
Gas	There is no municipal gas supplied to the Emerald township.
Telecommunications	Infrastructure throughout the CHRC is operated by Telstra, while Queensland Rail provides the corridor for fibre which connects small communities in the CHRC rail corridor, including Emerald. Service providers include Telstra, Optus and TPG. Coverage in some areas outside Emerald is variable.
Transport	Emerald sits at the junction of the Capricorn and Gregory Highways and acts as a transport hub for the CHRC region. Emerald is serviced by regular flights into Emerald Airport via Qantas and Virgin Airlines, daily buses linking Emerald with Mackay (Mackay Transit Coaches), Emerald, Longreach and Rockhampton (Greyhound) and local taxi and limousine services. Queensland Rail 'Spirit of the Outback' service between Brisbane and Longreach stops at Emerald two days per week.

Source: CHRC (2018d), Queensland Rail Pty Ltd, MacKay Transit Coaches Pty Ltd, SunWater Pty Ltd.

Given Emerald's status as a transport hub for the mining and agriculture industries, transport infrastructure in Emerald for freight is well serviced. The Central West Rail System hauls coal, grain, livestock and containerised freight. Road freight services connect with the rail, and service Emerald and the surrounding region. Passenger services are somewhat limited, with three carriers providing approximately 50 flights in and out of Emerald Airport each week, along with a limited number of long distance passenger trains and bus services.

Figure 5.10 indicates that travel to work is primarily achieved by car (66%) for Emerald residents, a slightly higher rate than Queensland (64%), reflective of the vast distances people are likely to travel.

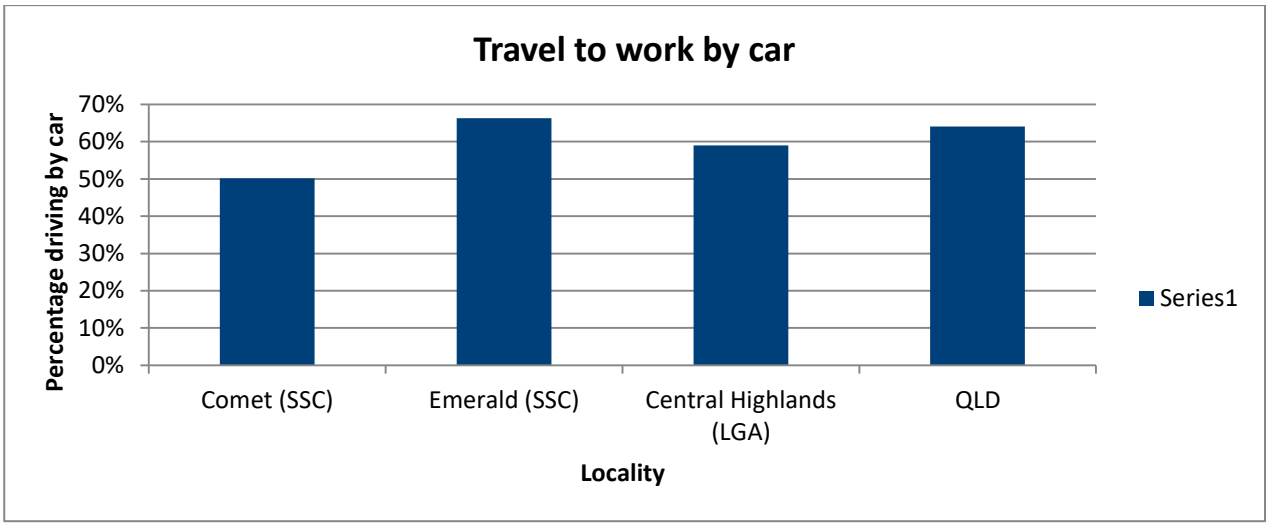


Figure 5.10 Percentage of employees travelling to work by car - Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f)

5.5.4.2 Built Infrastructure

Table 5.13 outlines the physical infrastructure present within the CHRC and Emerald. As the table indicates, built infrastructure in Emerald is reasonably comprehensive, offering a range of sporting and recreation facilities and open space. Attractions within Emerald itself include the 42 hectare (ha) Botanic Gardens and the National Trust listed Railway Station, which was restored in 1986.

Anecdotal evidence from community members also suggests Emerald offers a satisfactory range of services.

Table 5.13 Built infrastructure in the CHRC and Emerald

Infrastructure	Description
Hospital	Emerald is serviced by a 36 bed hospital with 24 hour accident/emergency care, surgical, maternity, paediatric and palliative care services
Culture/Arts	Pioneer Museum, Dance Centre and Emerald Art Gallery
Library	Emerald Library is serviced by the Central Highlands Regional Council Library Service
Schools	Emerald is serviced by: • Three State schools, Emerald (Grades 7-12), Denison and Emerald North (both grade prep-6) • Three non-state schools, Emerald Christian college (Grade prep-12), Marist College (Grades 7-12), St Patricks school (grade prep-6). • TAFE campus, offering a distance education program (prep – grade 12), a number of special education programs (prep to grade 12) and an alternative learning centre • Central Queensland University campus is also situated in Emerald
Recreation/ Community facilities	• Emerald Showgrounds • Emerald Botanic Gardens • Emerald Aquatic Centre • Tennis and squash court • Sporting fields catering for sports such as cricket, netball, hockey, football, soccer, gyms, golf course and motor sports (carting and motorbikes)
Open Spaces	Four public parks including Morton Park Lake Maraboon (Fairbairn Dam) includes BBQ and picnic facilities

Source: CHRC Council (2018), My Community Directory (2018).

5.5.4.3 Community Services

Table 5.14 shows the range of community services available to residents across the CHRC area and those services specifically accessible to populations in Emerald and Comet.

Table 5.14 Community services in the CHRC

Community Service	Description
Safety/emergency	Emerald Police, Queensland Fire and Rescue, Queensland Ambulance Service, Emerald Neighbourhood centre emergency relief.
Childcare	Emerald is serviced by seven child care centres and one before and after school hours centre, and two playgroups including a free playgroup for 0 – 5 year olds.
Aged care	Emerald has one aged care facility, the Avalon Aged Care Accommodation Services, which is a 58 bed facility that provides respite and full time high and low level care. The service also offers meals-on-wheels; home respite, transport, day respite, personal care and home help programs.
Education	Educational services in Emerald service children between grades prep to 12, with post-school vocational education catered for at the local TAFE campus. The Central Queensland University in Emerald offers a range of (primarily) online courses from short courses through to higher research degrees.
Indigenous/ multicultural	The CH multicultural festival is held annually at the Emerald Showgrounds. However, there is limited recognition of Aboriginal cultural contribution to the area. Support services include the Central Queensland Indigenous development service and Aboriginal Legal Aid, and health services offered to the Aboriginal community through the Central Highlands community and Primary Health Service in Emerald.
Youth	The Emerald Police-Citizens Youth Club (PCYC) offers a broad range of youth activities and programs and outside-school care, Anglicare operate a Youth service in Emerald, and the Emerald Youth Justice Centre supervises young people aged 17 years and under who are under court orders. The CHRC runs a number of movie, skate park and holiday activities. Youth Accommodation services offered in Emerald are run by the Salvation Army for youth aged 16 – 20 years old, and young men aged 18 – 25 years old.

Source: CHRC (2018), My Community (2018), Central Queensland University (2018)

As the table indicates, Emerald boasts a reasonably high level of community services; however childcare has been identified at a regional level as a limiting factor for those not currently participating in the workforce. Education for prep to Year 12 is catered for by a number of on-campus and distance education services.

Table 5.15 indicates that CHRC has a low rate of aged care places (45.9/1,000), when compared to Queensland; however Emerald has a significantly higher rate (133/1,000). This is reflective of Emerald as a service centre for the region, and while it may appear that Emerald is relatively well serviced, such services are provided to a much broader region that has significant under supply.

Table 5.15 Number of Aged-care places in 2016

	Emerald	CHRC	QLD
No. aged care places per 1000 people 70 years plus	133/1,000	45.9/1,000	79/1,000

Source: PHIDU (2018)*

** Note: Greater Capital City Statistical Area and Rest of State/Territory and Australia are based on the Australian Bureau of Statistics Australian Statistical Geographical Standard.*

5.5.4.4 Health Services

The availability of health services is a key indicator of community health and wellbeing. According to the AIHW, rural and remote communities experience a greater degree of difficulty accessing health and welfare services than populations in metropolitan areas. The level of health services available in rural regions negatively impacts on life expectancy and general health outcomes (AIHW, 2018).

Emerald is currently serviced by one hospital, 18 GPs, 5 dental clinics and a number of allied health services such as physiotherapists, speech therapists, social workers and occupational therapists, psychologists and podiatrists.

Emerald Hospital services include day surgery, minor surgery and general surgery, along with an outpatient department which treats non-urgent conditions. Services available at the hospital include: general medicine, acute medical services, gastroenterology, rehabilitation, specialist clinics, pacemaker checking, pathology, paediatric, palliative care, chemotherapy, anaesthetics, radiography and maternity/nursery and extended midwife, antenatal/midwifery group practice, oral health services and dental clinic, pharmacy service and fracture/orthopaedic outpatient clinic. Visiting services include general surgeons, obstetricians, ear, nose and throat specialists, adult, child and youth psychiatrist, ophthalmologists, cardiologists, diabetic clinic and paediatrician services (My Hospitals, 2018).

The Emerald Community and Allied Health Services provide a disability program, child and family health services and mental health services and programs along with breast care and prostate cancer care nurses. The Rural and Other Drugs Services offers assessment and counselling, withdrawal support, relapse prevention and a range of other services which are run through the Emerald Community Health Service (My Hospitals 2018). Community Mental Health Services operate from Emerald Hospital and offer free mental health services; while programs including drug and alcohol services operate out of Rockhampton (Queensland Health 2018).

Main referring hospitals from Emerald include Rockhampton Hospital, located 275 km from Emerald, and The Royal Brisbane and Women's Hospital in Brisbane, which is 900 km from Emerald (My Hospitals, 2018). Residents requiring physical or mental health care, that cannot be delivered locally, must travel to a larger population centre that delivers the required health care. The cost of such travel is both in time and expense, including time away from care obligations of family members and work, as well as the expense of getting to the major hospital and the cost of accommodation. Illnesses which require extensive time away and/or multiple visits can become a financial burden.

The Queensland government runs a number of services and programs to assist residents of rural and remote locations to access health care, including the Medical Specialist Outreach Assistance Program (MSOAP) which includes the Indigenous Chronic Disease Program and the Maternity Services program, while Telehealth video conferencing allows residents to speak to health professionals. The Patient Travel Subsidy Scheme (PTSS) can be accessed by eligible patients to reduce the cost of accessing health care that may not be available locally. The Rural Health Services directory also connects residents with services (Queensland Government 2018).

While Emerald and the surrounding region have a broad range of health services, like many regional towns these are limited. For vulnerable groups and those with more serious or chronic conditions, the burden of travelling to specialist health care and/or addressing specific health service requirements, has a negative impact on their health and finances.

5.5.4.5 Housing and Accommodation

Housing and accommodation are a vital component of physical capital, indicating capacity to accommodate current and future population. As shown in **Figure 5.11,** dwellings owned with a mortgage were the primary form of home ownership in both Emerald (37.6%) and Comet (31.6%) in 2016; with both localities

demonstrating similar or higher rates of home ownership with a mortgage than the CHRC (28.8%). Emerald's rate was higher than Queensland as a whole (33.7%) while Comet's was slightly lower.

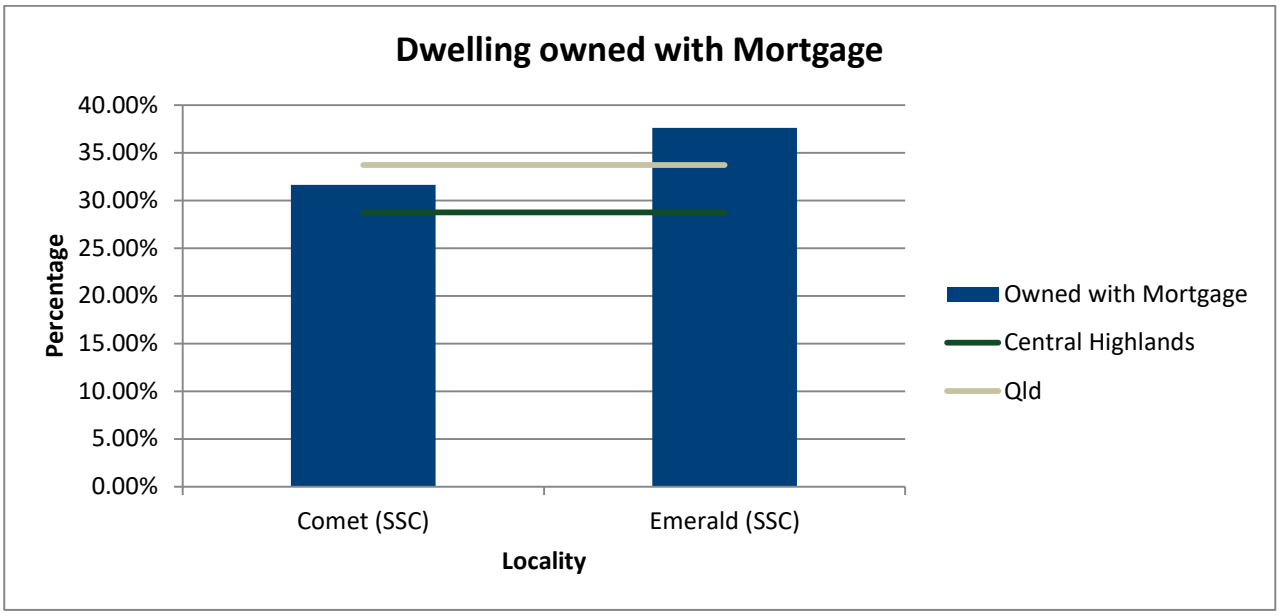


Figure 5.11 Percentage of dwellings owned with a mortgage - Comet, Emerald, CHRC and Queensland
Source: ABS (2016b, 2016d, 2016e, 2016f)

The number of dwellings owned outright in Emerald (14.6%) is significantly less than both the Queensland average (28.4%) and the level of ownership in the CHRC (20.0%). Home ownership in Comet (22.2%) is also lower than Queensland, but slightly higher than that for CHRC (**Figure 5.12**).

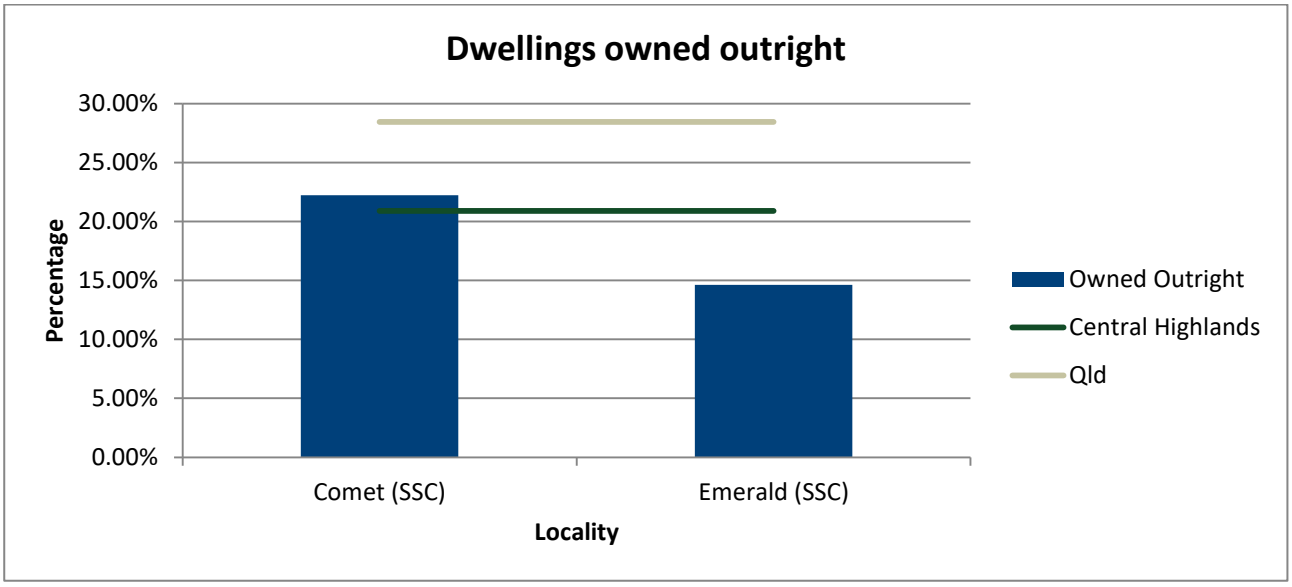


Figure 5.12 Percentage of dwellings owned - Comet, Emerald, CHRC and Queensland
Source: ABS (2016b, 2016d, 2016e, 2016f)

Rented dwellings in Comet (36.7%) and Emerald (44.6%) represent the most common type of tenure, with both slightly higher than Queensland (34.2%). Totals for both Emerald and Comet are higher than the CHRC (48.8%). However, the total number of dwellings owned either outright or with mortgage are Emerald

(52.2%) and Comet (53.8%) indicating that home ownership remains the preferred option for tenure (**Figure 5.13**).

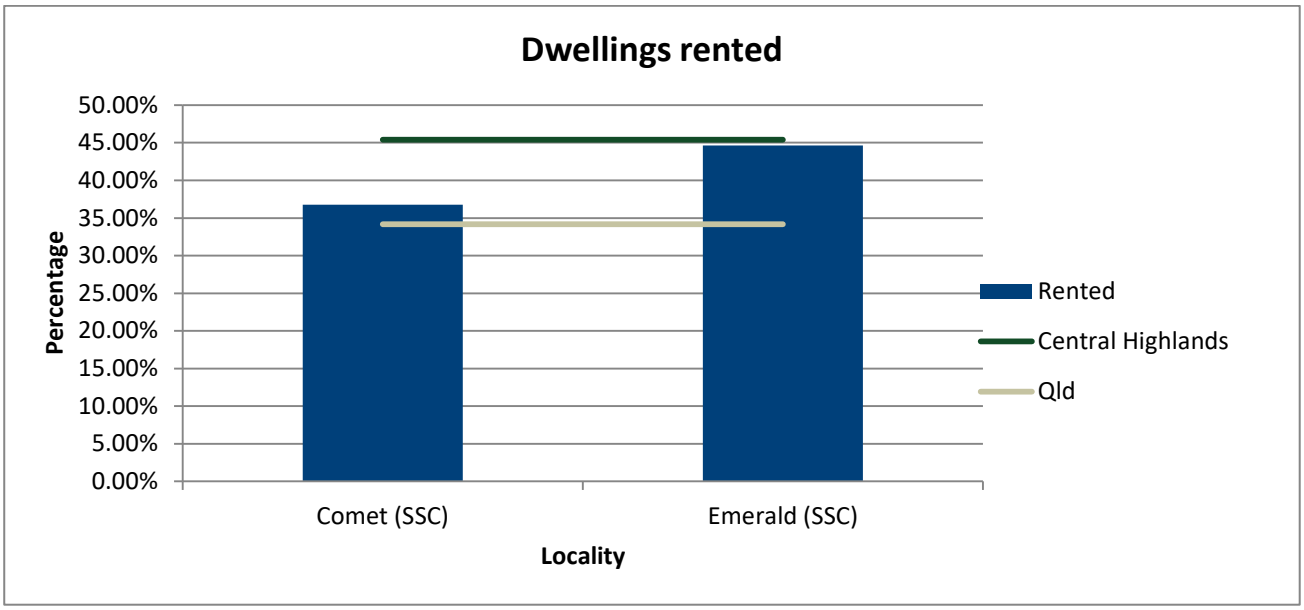


Figure 5.13 Percentage of dwellings rented in Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f)

While not directly comparable, ABS (2016a) data indicates that median sale prices for houses in Emerald for averaged $449,000 in June 2013, and dropped to $392,000 by the same time in 2014. Prices in **Table 5.16** as at May 2018 reflect a continuing drop in values in the real estate market.

Table 5.16 Emerald Property Prices as at 9 May 2018

Dwelling Type	Purchase $	Rental $
House (Average)	$240,000	$300
2 bedroom	n/a	$180
3 bedroom	$165,500	$250
4 bedroom	$285,000	$330
Unit (Average)	$146,000	$220
1 bedroom	n/a	$210
2 bedroom	n/a	$200
3 bedroom	$162,500	$250

Source: realestate.com.au (2018)

Table 5.17 illustrates that building approvals and building values experienced a surge in 2013; however the number of approvals and the value of those approvals have decreased markedly between 2012 and 2016. For example, the total value of buildings approved in 2012 fell $84 million dollars by 2016, while the total number of private sector houses approved for construction fell from 186 in 2013 to just six in 2016.

Table 5.17 Emerald Building approvals between 2012 and 2016

Building Approvals	2012	2013	2014	2015	2016
Private sector houses (no.)	133	186	106	26	6
Private sector dwellings excluding houses (no.)	120	150	34	2	-
Total private sector dwelling units (no.)	253	336	140	28	6
Total dwelling units (no.)	253	336	140	28	6
Value of private sector houses ($m)	40	55	33	9	2
Value of private sector dwellings excluding houses ($m)	20	31	6	-	-
Value of residential building ($m)	60	88	40	10	2
Value of non-residential building ($m)	26	40	16	12	1
Value of total building ($m)	87	128	56	22	3
Total value of private sector dwelling units ($m)	60	86	39	9	2

Source: ABS (2016a)

The number of accommodation establishments for tourists (12 establishments) has remained stable between 2012 and 2016, with a slight rise to 13 establishments between 2013 and 2015 (ABS 2016).

5.5.5 Social Capital

Social capital is assessed using indicators such as population mobility, the proportion of residents born outside Australia, and those with English-language proficiency barriers, as well as rates of volunteering and participation in the population. Higher levels of social capital can equate to a higher degree of social cohesion and community resilience.

5.5.5.1 Mobility

Mobility rates, shown in **Figure 5.14**, may indicate population stability and the degree of social cohesion in a community.

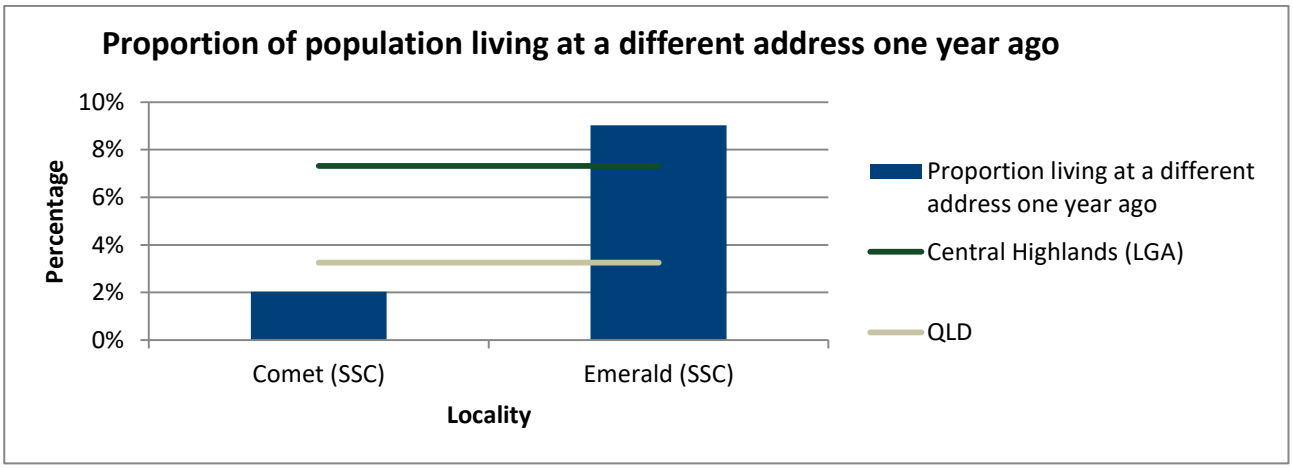


Figure 5.14 Proportion of population living at a different address one year ago - Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f)

Figure 5.14 above illustrates a higher than average degree of mobility for Emerald over the 12 months preceding the 2016 Census, with a greater number of people moving into Emerald than Comet, the CHRC and Queensland.

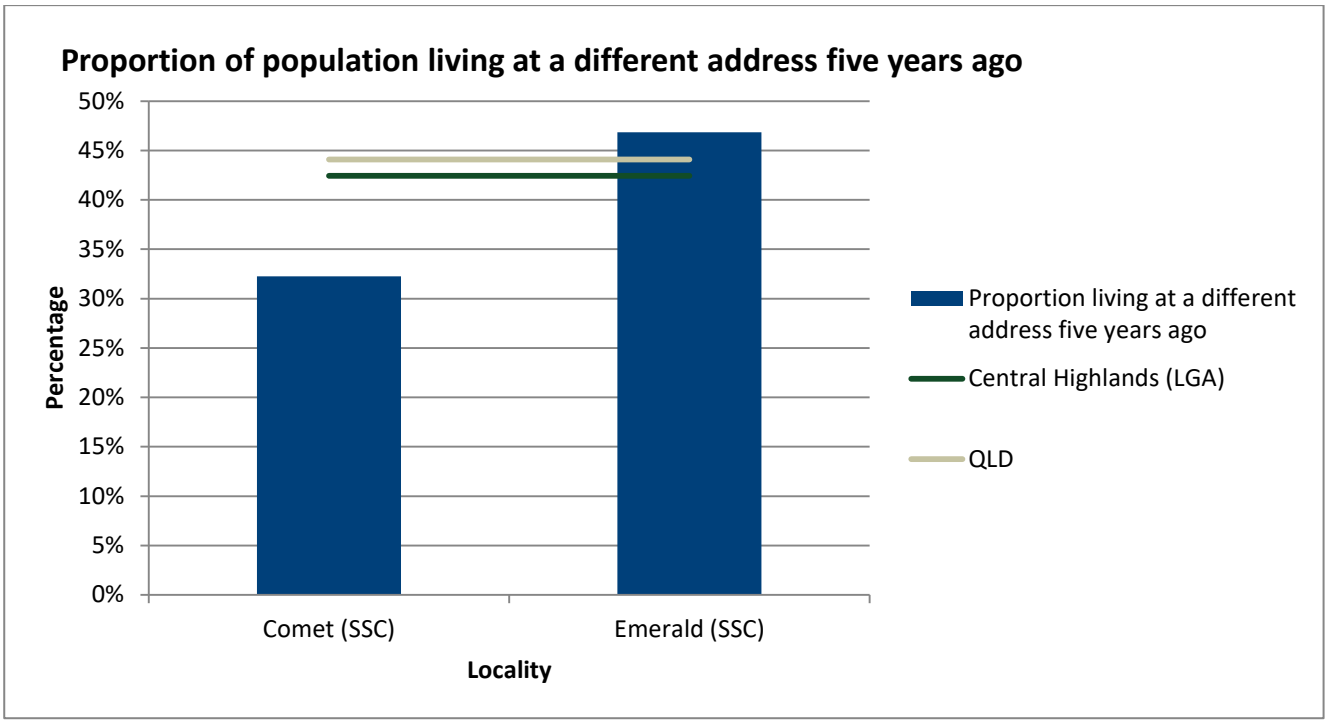


Figure 5.15 Proportion of population living at a different address five years ago (2011) in Comet, Emerald, CHRC and Queensland

Source: ABS (2016b, 2016d, 2016e, 2016f)

Figure 5.14 and **Figure 5.15** above indicate that the population of Emerald experienced greater rates of mobility at both, 1 year (9.0%) and 5 years (47.0%) than the CHRC (3.0% and 42.0% respectively) and Queensland (7.0% and 44.0% respectively), prior to 2016. This rate of mobility may reflect changes in the population resulting from the decline of the mining industry in the Bowen Basin during 2013/14.

However, Comet was below both regional (7.0%) and state (3.0%) averages at both the 1 year (2.0%) and 5 year (32.0%) periods. As illustrated in **Figures 5.14** and **5.15**, Comet experiences a greater degree of home ownership than Emerald, and this may be linked to lower levels of mobility in the locality.

5.5.5.2 Social Cohesion and Wellbeing

According to Markus (2017), social cohesion is a complex concept which can be defined as "a sense of belonging, attachment to the group, willingness to participate and to share outcomes" (Markus, 2017).

Social cohesion may be assessed by measuring factors including cultural diversity and language proficiency. Low levels of spoken English in an Australian community may represent a barrier to social cohesion as it affects the degree to which community members interact or integrate as part of the community. Competition for resources such as employment and housing may also lessen social cohesion.

Table 5.18 Country of Birth for Central Highlands, Emerald and Queensland

Region	% Australian born	% born overseas in English speaking countries	% born in non-English speaking countries
Central Highlands – Region	79.0	5.3	2.7
Emerald	73.7	7.3	6.0
Queensland	71.1	10.5	11.1

Source: PHIDU (2018)

A high percentage of residents across the CHRC (79.0%) were born in Australia according to 2016 data gathered by PHIDU (2018). Emerald (73.7%) and the CHRC both have higher numbers of Australian-born residents than Queensland (71.4%). PHIDU (2018) reported that the residents born in non-English speaking countries for Emerald (6.0%) and the Central Highlands (2.7%) were well below Queensland averages (11.1%).

A higher proportion of residents were born in English-speaking countries, however for the CHRC (5.3%) and Emerald (7.3%), the proportion of residents born in English-speaking countries still remained below the Queensland average (10.5%). English is the dominant language spoken across the CHRC, with a very low percentage of people with poor or no English language proficiency in the CHRC (0.1%) and Emerald (0.4%) compared to Queensland (refer to **Figure 5.16**). Generally, this lack of cultural diversity is characteristic of many rural/regional towns.

Many rural areas are also known for their social support networks and sense of cohesion in their community. Those interviewed consistently referred to their community as having great social networks and being a 'well knit' cohesive community with few reports of conflict.

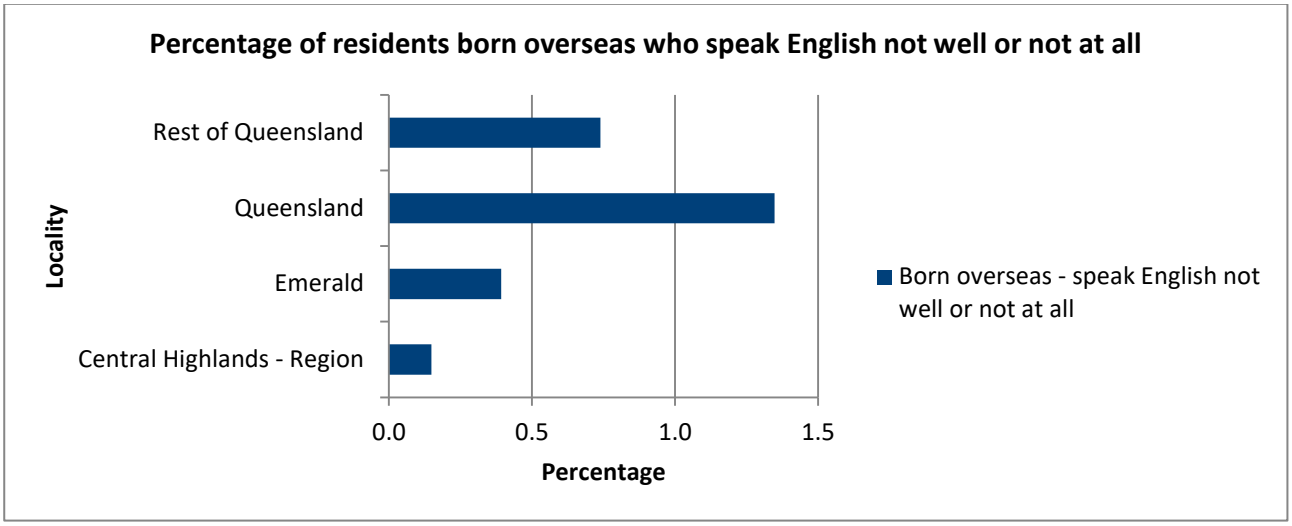


Figure 5.16 Percentage of residents born overseas with poor or no English language proficiency for Emerald, Central Highlands, *rest of Queensland and Queensland

Source: PHIDU (2018)

*Rest of Queensland refers to Queensland excluding Greater Brisbane area

5.5.5.3 Crime

Crime rates can also be an indicator of the degree of social capital. Stronger relationships in a community may serve to reduce crime levels (ABS 2004).

Data generated by the Queensland Police Service (QPS) for the Emerald division affords an analysis of whether crime rates are greater ↑ or less than ↓ those experienced in Queensland within our communities of interest (**Table 5.19**).

Table 5.19 Crime rates for QPS Emerald Division 2013 to 2017

Offence	2012	2013	2014	2015	2016	2017	↑↓
Assault	68.3	66.6	68.3	80.2	72.7	63.0	↓
Sexual Offences	12.0	9.9	17.8	17.8	12.9	11.0	↓
Robbery	1.0	2.0	2.0	2.0	0.0	1.0	↓
Other Offences Against the Person	5.0	9.9	5.9	9.9	4.0	7.0	↓
Offences Against the Person	87.3	89.5	94.0	109.9	89.6	82.1	↓
Unlawful Entry	100.4	97.5	41.6	68.3	55.7	86.1	↓
Other Theft (excl. Unlawful Entry)	256.0	213.8	176.2	195.1	262.8	231.2	↓
Offences Against Property	571.3	494.3	399.0	449.7	536.6	581.4	↑
Drug Offences	145.6	165.1	263.3	370.5	316.6	895.6	↑
Breach Domestic Violence Protection Order	36.1	46.7	53.5	72.3	84.6	98.1	↑
Traffic and Related Offences	215.9	233.7	249.5	255.6	196.1	175.1	↓

Source: Queensland Police 2018a, 2018b)

*Note: * Rates are calculated per 100,000 people. ** ↓ = Lower than Qld. ↑ = higher than Qld*

A review of crime rates in the Emerald Division illustrate an increase in other offences against the person, offences against property, drug offences, and breaching domestic violence protection orders over the period from 2012 - 2017. During the same time period there was a decrease in offences against the person, unlawful entry, other theft (excluding unlawful entry) and traffic and related offences. Of particular note is the significant increase in drug offences from 316.6 in 2016 to 895.6 in 2017, especially when compared to 2012 (145.5). The other significant increase relates to the breach of domestic violence protection orders with 36.2 being reported in 2012 and 98.1 in 2017. However, with the exception of these offences, the rate of crime in Emerald is lower than for Queensland.

5.5.5.4 Volunteering in the Community

Volunteer rates are an important indicator of social capital. Volunteer rates may indicate the degree of community cohesiveness, trust in others and the degree to which community members are willing to contribute to the community or to participate in community life.

Voluntary work for an organisation or group by people 15 years or older in 2016 was higher in both Emerald (24.0%) and the CHRC (25.1%) than for Queensland as a whole (18.8%), according to data gathered by PHIDU (2018). Emerald and the CHRC exhibit stronger levels of participation and trust, indicative of good social networks and social capital.

Consultation with key stakeholders indicated a high rate of voluntary participation in a range of organisations such as Rural Fire Service, sporting groups, event organisation etc. In addition, those interviewed acknowledged the contribution made by mining through volunteering and social investment initiatives.

5.6 Regional Issues, Community Values and Aspirations

Regional issues, community values and aspirations are drawn from a range of sources at a local community, local government and regional level. Sources that informed the development of this section include:

- Central Highlands Regional Council strategic plan
- Central Highlands Economic Master Plan
- Central Highlands Visions for Our Community
- Local, regional, state and national media outlets
- Outcomes of the community Capitals Analysis (refer to **Section 5.5**).

5.6.1 Regional Issues and Opportunities

Issues identified in **Table 5.20** are also evident in the strengths and vulnerabilities highlighted in the Capitals Summary **Table 5.3**. **Table 5.20** summarises the key themes identified in Central Highlands planning documents across the following topics: land use, resource development and the natural environment; economic development and employment; housing and accommodation; services and infrastructure; and health.

Some of the key challenges for the Central Highlands region include:

- Balancing competing land use requirements between agricultural and resource uses
- Protecting state significant soils and therefore regional agricultural interests
- Protecting and promoting the natural assets of the region
- Maintaining a strong resource sector, providing regional income and also local employment of expenditure
- Increasing educational opportunities across the region, and greater uptake
- Need for greater housing choice across a range of income groups and family types
- Addressing higher proportions of at-risk behaviours across the region.

Table 5.20 Summary of key challenges for the Central Highlands Region

Theme	CHRC Central Highlands Visions for our Community: Our Region 2022, published 2017	Queensland Department of State Development, Infrastructure and Planning (DSDIP) Economic and Infrastructure Framework published 2013	Central Highlands Economic Master Plan (CHEMP) to 2047, published 2017
Land use, resource development and natural environment		Balance land use between resource extraction, tourism and agriculture.	Balance conflicting land use to protect strategic agricultural soils, key natural assets and resource extraction.

Theme	CHRC Central Highlands Visions for our Community: Our Region 2022, published 2017	Queensland Department of State Development, Infrastructure and Planning (DSDIP) Economic and Infrastructure Framework published 2013	Central Highlands Economic Master Plan (CHEMP) to 2047, published 2017
Economic Development and Employment	Promotion of the region as a tourism centre. Diversifying the region's income to include tourism and sustain existing industries to account for the effects of economic cycles.	Stronger focus on construction and tourism and education industries to enhance employment opportunities. Continuing the focus on resource extraction as a large regional employer. Establishing greater employment opportunities by increasing agricultural and minerals processing.	Provide the means for local businesses to export their product internationally as well as nationally. Focus on diversification of the economy into other areas, while sustaining resource and agricultural industries. Training requirements to provide a skilled local workforce. Maintaining and building strong governance to support growth.
Housing and Settlement	Increase the liveability of the region as a whole. Plan for future housing developments to meet a range of needs and budgets. Impacts of growth disparity across the region.		
Services and Infrastructure	Address transport issues across the region for passenger and goods.		Promotion of Emerald as a regional hub. Digital connectivity across the region.
Health	Address requirements for a greater level of medical and aged care services.		

5.6.2 CHRC Issues and Opportunities

There are a number of future challenges facing the CHRC that relate to the effects of the global economy, the environment, limited growth, infrastructure, affordability, rapid growth, and an aging population. The liveability of the regional area is a key to the success of CHRC plans to secure both growth and economic prosperity, improve public services, increase private investment into the area, and retain people who would otherwise move out of the region, for example, young school leavers. As such the CHRC strategic focus for the Shire is split into four pillars: export drivers, population services, workforce and governance.

A number of infrastructure priorities are identified in the CHEMP which seek to maintain and build on the economic benefits of existing industry in the region, these include the development of:

- Multi-purpose centre
- Central Queensland Inland Port
- Meat processing plant and intensive beef industry precinct

- Business incubation and innovation hub
- Grain and pulse processing facilities
- Emerald Medical Village Stage 2
- Emerald Saleyard Complex
- Aged Care Facilities
- Project Regeneration ($18.5m investment in Yamala).

The projects listed above are aimed at addressing issues of economic development and employment and provision of public health services, as outlined in **Table 5.20,** and address the CHRC's aspiration to continue to develop the liveability of the Central Highlands region.

Table 5.21 below aligns issues identified in the Capitals analysis with outcomes and strategies identified in the CHEMP:

Table 5.21 Mapping of Capitals to the Central Highlands Economic Master Plan

Issues	Capitals Analysis Outcomes	Central Highlands Economic Master Plan (CHEMP) to 2047
Natural	Potential land use conflict	Sustainability of the region assured through integrated, well-planned development. Employ efficient development planning practices. Implement initiatives for flood mitigation and community resilience. Collaborate with stakeholders to manage the environment. Ensure effective regulatory role through education and enforcement.
Economic	Dominance of mining employment Higher than average mortgage amounts	Support the Central Highlands Development Corporation to facilitate networks and partnerships between local business, industry groups and government. Promote the Central Highlands as a region for tourism and development opportunities. Focus on diversification of the economy into other areas, while sustaining resource and agricultural industries. Advocate and support the development of the Central Highlands as a regional hub. Training requirements to provide a skilled local workforce. Maintaining and building strong governance to support growth.
Human	Slow population growth High proportion of population engaged in health-risk behaviour Limitations to community health services	Develop a regional youth action plan and a strategy for advocacy. Adopt a liveability strategy.

Issues	Capitals Analysis Outcomes	Central Highlands Economic Master Plan (CHEMP) to 2047
Physical	Limited passenger transport Higher proportion of rental accommodation and lower proportions of fully owned homes	Develop efficiencies in water and wastewater operations. Develop a roads and transport strategy to ensure the efficient and effective use of resources. Develop a strategy for our land and property assets. Deliver waste, recycling and re-use strategies across the region. Implement energy efficient practices for assets and facilities. Implement an effective open space and recreational plan.
Social	Higher degree of mobility	Support the delivery of significant regional events. Support cultural events highlighting cultural diversity. Develop a heritage management plan and a reconciliation action plan. Develop action plans for all community reference groups.

5.6.3 Local Community Issues, Values and Aspirations

Key issues identified through consultation with community members in Comet and Emerald, during the two rounds of community engagement for the Ensham RVP, and through review of the *Central Highlands Economic Master Plan* and *Central Highlands Visions for our Community: Our Region 2022* report include:

- **Skill shortages** - identified as resulting from competitive employment opportunities in the resources sector, which lead to high demand in other sectors including agriculture and tourism (DSDIP 2017).

- **Housing affordability** - a lack of affordable housing, impacts on the attractiveness of the region to non-resource sector workers. As liveability decreases, so too does the region's capacity to attract skilled workers. The DSDMIP has identified initiatives which will support community and social infrastructure and develop the liveability of the region.

- **Water** - securing the reliability of water supplies has also been a key issue as identified by the DSDMIP. In the Central Highlands this centres on adequacy of water storage infrastructure and aggregation and distribution pipelines (DSDIP). Flood mitigation and contamination of waters in a flood were also key issues raised. The Fitzroy Partnership for River Health (FPRH) monitors the health of the Fitzroy River, of which the Central Highlands forms part. The Fitzroy River is a key resource for the region. Tributaries of the Fitzroy include the Nogoa River, which originates to the west of Emerald, and the Mackenzie, both of which combine and feed into the Fitzroy. The health of the river system is of primary importance in a region with a high agricultural economic basis. The FPRH is a collective of resources, industry, government, agriculture and community interests which monitors the health of the Fitzroy River.

  The FPRH have released three report cards on the health of the aquatic ecosystem of the Fitzroy River, commencing in 28 May 2013, 21 August 2017, 12 December 2017 and 26 June 2015, with future report cards scheduled for release every 9 months. The FPRH aims to fill knowledge gaps with needed research, provide information to engage with community and inform land and water management practices and investment as well as the improvement of plans such as the Central Queensland Sustainability Strategy (CQSS).

- **Infrastructure and Service Provision** - limitations to infrastructure in the region, which were identified in the capitals analysis and through community consultation, included limited medical services and transport infrastructure, which was seen to impact the overall liveability of the community. The DSDMIP has also identified that investment in telecommunications infrastructure is required to bolster innovation and productivity throughout the region and to ensure consistent quality of access.

As stated in the *Central Highlands Visions for our Community: Our Region 2022,* the CHRC prides itself on its strong community spirit, its heritage and culture and its safe and relaxed rural lifestyle. The report also cites family values, a diverse and prosperous community, the importance of sports, recreational, cultural and community events, quality community facilities and natural landscape features and resources as key regional values of the area.

The values mapping assessment undertaken as part of the first round of engagement with key stakeholders found that stakeholders valued the area's 'strong sense of community' as a drawcard, believing that the region provided 'great opportunities for the future' and a 'rich natural environment' and 'rural lifestyle'. These values are consistent with those documented in the CHRC vision report, with community members expressing their enjoyment of the family-oriented nature of Emerald and Comet, the diverse community facilities and the cohesiveness of the community generally.

Figure 5.17 illustrates the community assets that stakeholders identified, when asked what they value most about their community, 16 of the 44 individuals consulted, noted sense of community as the locality's biggest asset.

Other community assets that were also valued highly included the connectedness of the community, the quality of life and opportunities offered within the region, the diversity of the economy and community resources such as local facilities and services. Other assets such as the resilience of the community, its stability and affluence were also noted, as were water and geographic location.

Figure 5.17 Community Assets Word Cloud

Source: Umwelt, 2018

*Note: Multiple responses allowed, data based on consultation with 44 individuals

Key priorities for the local community are outlined in the CHEMP and focus on aspirations for strong, vibrant communities; building and maintaining quality infrastructure; supporting the local economy; protecting the community and the environment, and organisational leadership and governance.

Priorities at both local council and community levels also included a greater level of awareness and participation in cultural heritage, history and cultural diversity. These priorities align with outcomes of the consultation, where stakeholders noted the importance of water in the area as the 'life-blood of Emerald' and 'good quality country' underpinning the region's diverse economy and social fabric.

Aspirations for Comet and Emerald as outlined in the *Central Highlands Visions for our Community: Our Region 2022* report are summarised in **Table 5.22** below.

Table 5.22 Community Aspirations for Comet and Emerald

Comet	Emerald
• Increase access to community services and improve community facilities • Maintain and build infrastructure to encourage development • Promote the community to attract population growth • Continue developing the ability to engage and influence the future of the community.	• Attract and improve community services such as medical and aged care to meet growth demands • Further diversify our economy, building on strengths, including tourism development and investment attraction • Plan, develop and expand facilities and infrastructure to meet current and future growth, especially transport systems and housing • Continue to engage and plan for the community's future.

5.6.4 Profile Summary

Data was collected from a range of primary and secondary sources in developing the profile to provide a comprehensive baseline understanding of the Emerald and Comet communities and the Central Highlands region more broadly. The issues and opportunities for the CHRC span all the community capitals assessed: natural, economic, human, physical and social.

Key issues and opportunities arising from the profile analysis for the CHRC are summarised below in **Figure 5.18** by capital area and relate to: supporting the capacity for greater economic diversity across the region, to withstand economic fluctuations and facilitate population growth; attracting a broader range of services and business sectors to the region; and ensuring well-built and well-maintained infrastructure.

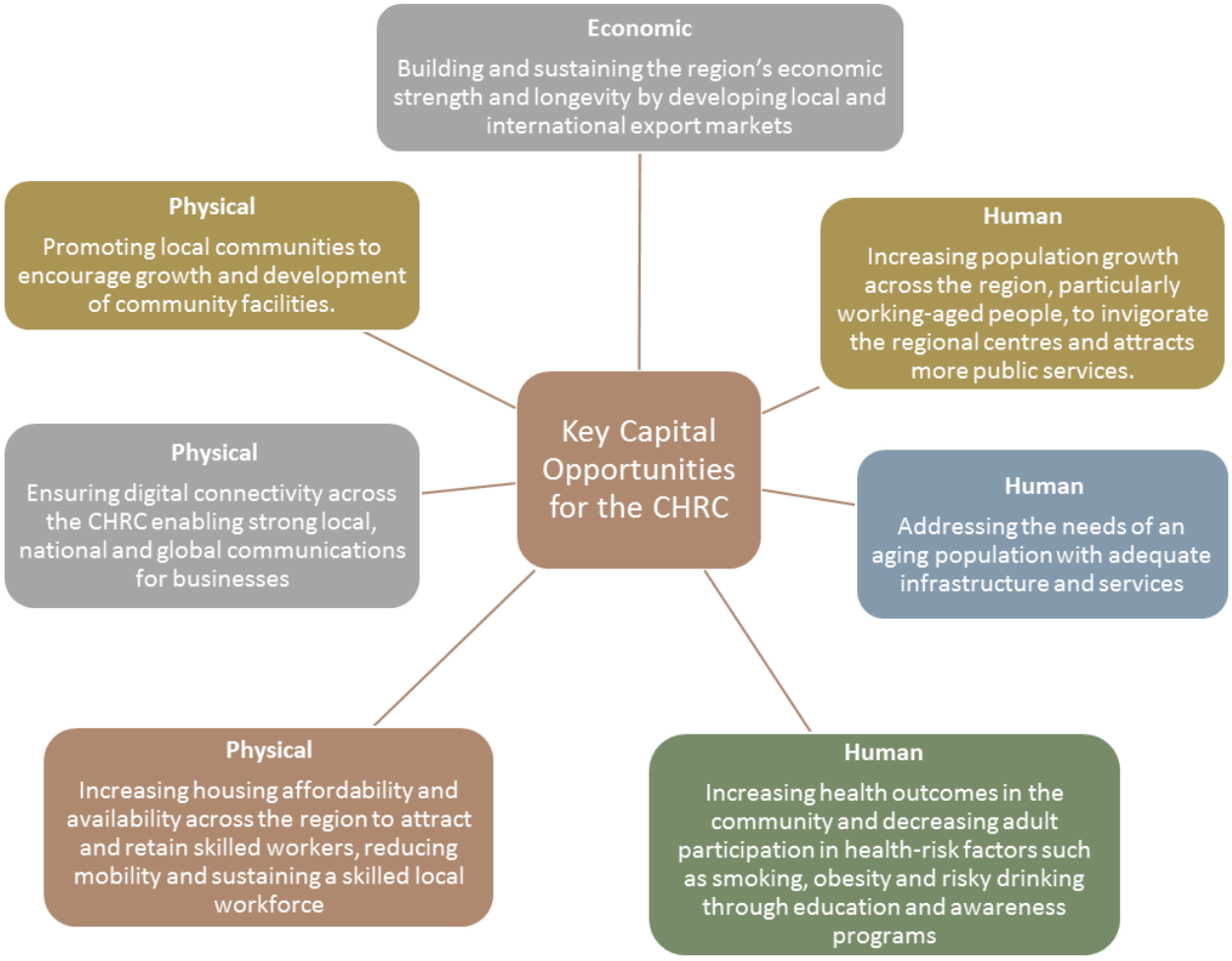


Figure 5.18 Key Capital Opportunities for the CHRC

6.0 Perceived Impacts by Option

During April and May, 2018 the first round of engagement was undertaken for the Ensham RVP to inform the scoping phase of the SIA. As part of the engagement process, key stakeholders, as defined in **Section 4.3** were presented with information on three proposed options relating to the rehabilitation of the residual voids.

Participants were asked to provide their views and opinions on the potential positive and negative impacts of each of the three proposed options and to indicate their option preferences. This round of engagement was followed with a second round in June/July 2018, where further detail was provided on each of the project options.

This section provides an analysis of the issues identified across both rounds of consultation undertaken with key stakeholders. Data obtained from the interview process has been collated and coded and descriptive statistics utilised to identify frequency of stakeholder issues by option. Qualitative data has also been used to complement the frequency analysis and to provide further detail on the perceptions arising from the engagement process. Stakeholder comments regarding the options, across the two rounds of engagement, are also noted as relevant.

6.1 Preferred Option Themes

In discussing the three preferred options, a total of 503 issues were identified by stakeholders during the engagement process. In coding and analysing the issues, five predominant themes emerged from the engagement data, these included:

- Flood
- Water quality
- Options management
- Opportunity/beneficial use
- Landform design.

These themes are further described in **Table 6.1** below.

Table 6.1 Description of Key Option Themes

Theme	Description
Flood	Stakeholders expressed concern about the interaction between each preferred option and flood water in the event of a large flood. More specifically, concerns were raised as to how alterations to the existing levees would affect flood flow and impact on areas that have previously undergone rehabilitation. Opportunities to mitigate flood impacts were also discussed.
Water Quality	Stakeholders identified a range of concerns, specific to each option, which related to the quality of the water in the voids and the interaction of this water with broader river/creek systems and the surrounding environment.
Option Management	Management of the options was a concern raised by a range of stakeholders. Questions were raised about the short and long term strategies to be put in place to ensure sustainability and viability of each of the proposed options.

Theme	Description
Opportunity	Stakeholders identified a range of opportunities – commercial, recreational, educational and cultural – presented by each option but particularly Preferred Option 2 – Beneficial Use.
Landform Design	Stakeholders addressed issues and benefits relating to the final landform design – in relation to accessibility and interaction with the surrounding environment.

As highlighted in **Figure 6.1,** the opportunity presented by the respective options was the key theme raised by stakeholders (153 issues), followed by issues relating to Flood (149), Option management (96), Water quality (65) and Landform design (40). Both positive and negative impacts were identified within each theme, across the three Preferred Options, and are further described in the sections below.

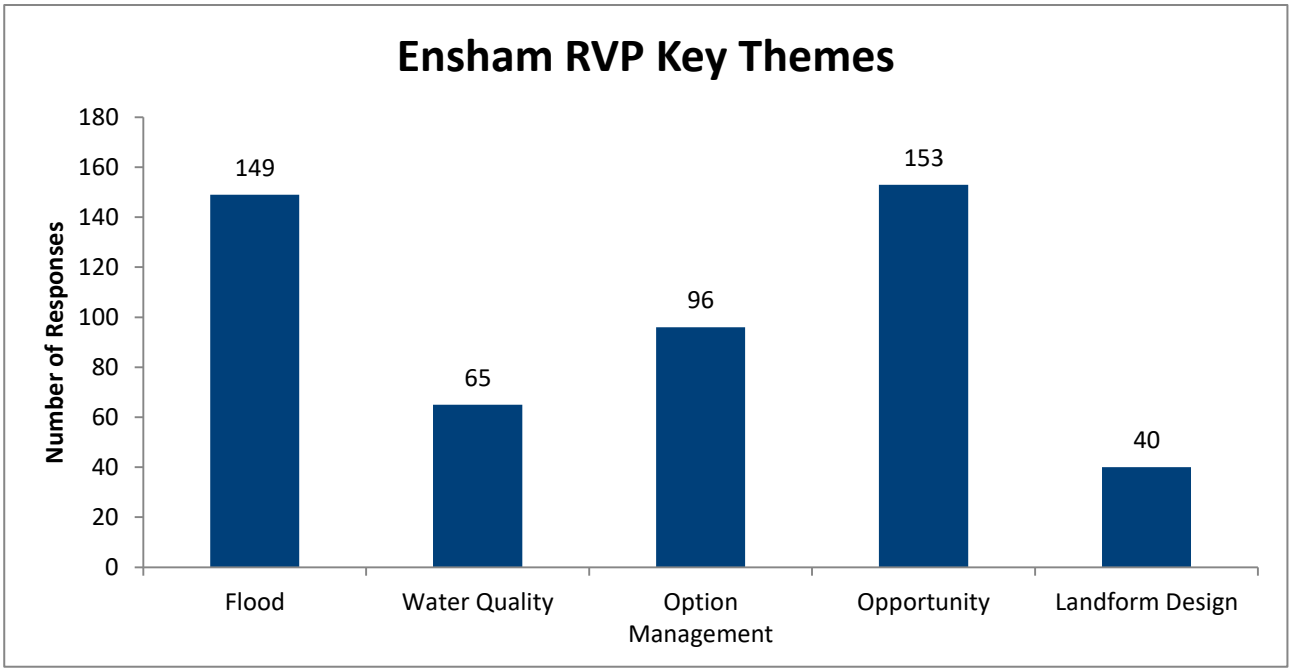


Figure 6.1 Ensham RVP - Key Themes

Note: Responses were collected from 48 stakeholders. Multiple Responses were allowed.

Figure 6.2 provides an overall summary of the themes identified by option.

In relation to Preferred Option 1 – Landform –impacts relating to flooding generated the largest frequency, followed by opportunity, landform design and water quality. Option management was of less concern in relation to this option.

In contrast, Preferred Option 2 - Beneficial Use - evoked a higher response frequency overall, predominantly around opportunity, option management and water quality. Flood and landform design issues were also raised, but to a much lesser extent.

Impacts identified in Preferred Option 3 - Backfill to PMF - centred on flood, opportunities and option management. Minimal impacts were raised concerning landform design and water quality for this option.

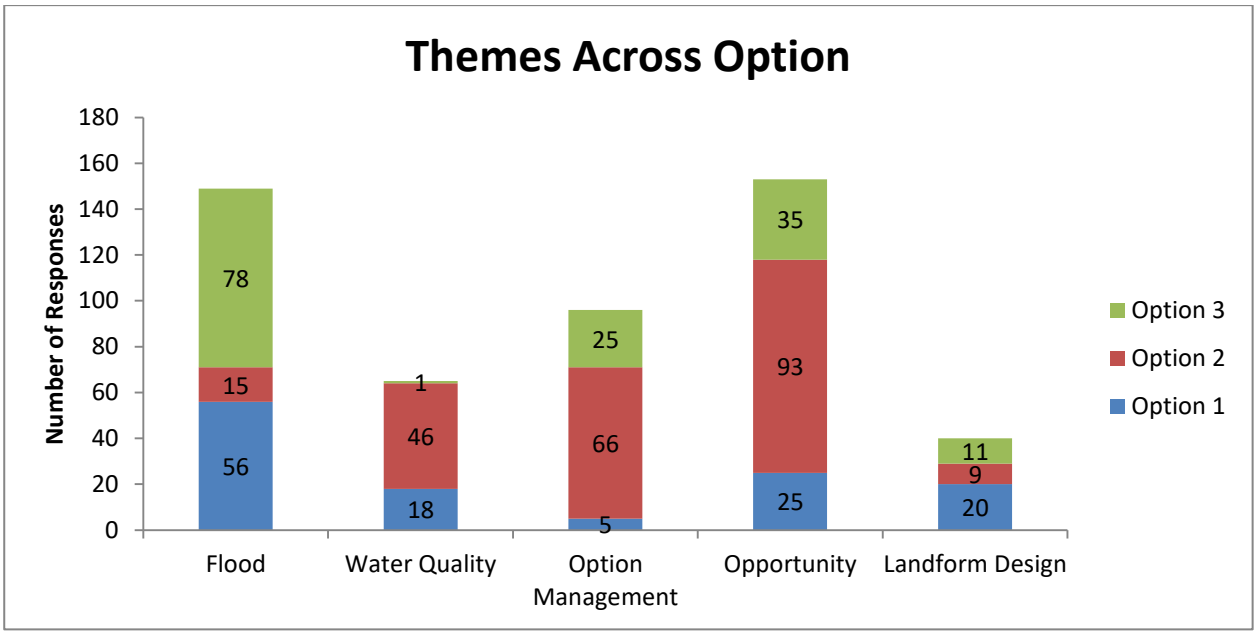


Figure 6.2 Summary of Themes by Option

6.1.1 Preferred Option 1 – Landform

In relation to Preferred Option 1 - Landform - 124 impacts were raised by 48 stakeholders across both round 1 and 2 of engagement, as summarised in **Table 6.2**.

Table 6.2 Option 1 Landform - Round 1 & 2 Response Details

Option 1 – Landform	Number of Surveys Completed	Number of responses	Number of Responders	Number of Impacts Raised (multiple responses allowed)
Round 1	34	30	44	83
Round 2	23	22	30	41
Total	**57**	**52**	***48**	**124**

Source: Umwelt, 2018

*Note: A total of 48 stakeholders participated across both rounds of engagement – of which 44 participated in round 1 and 30 in round 2.

Figure 6.3 shows the distribution of positive and negative impacts raised by stakeholders for Preferred Option 1 (23 positive compared to 60 negative) by key theme during Round 1 consultation. In this round of engagement, the majority of the perceived impacts identified related to levees, backfilling of the voids and their impact on flood mitigation. Water quality, limited potential for community use and movement of the anabranch were also noted.

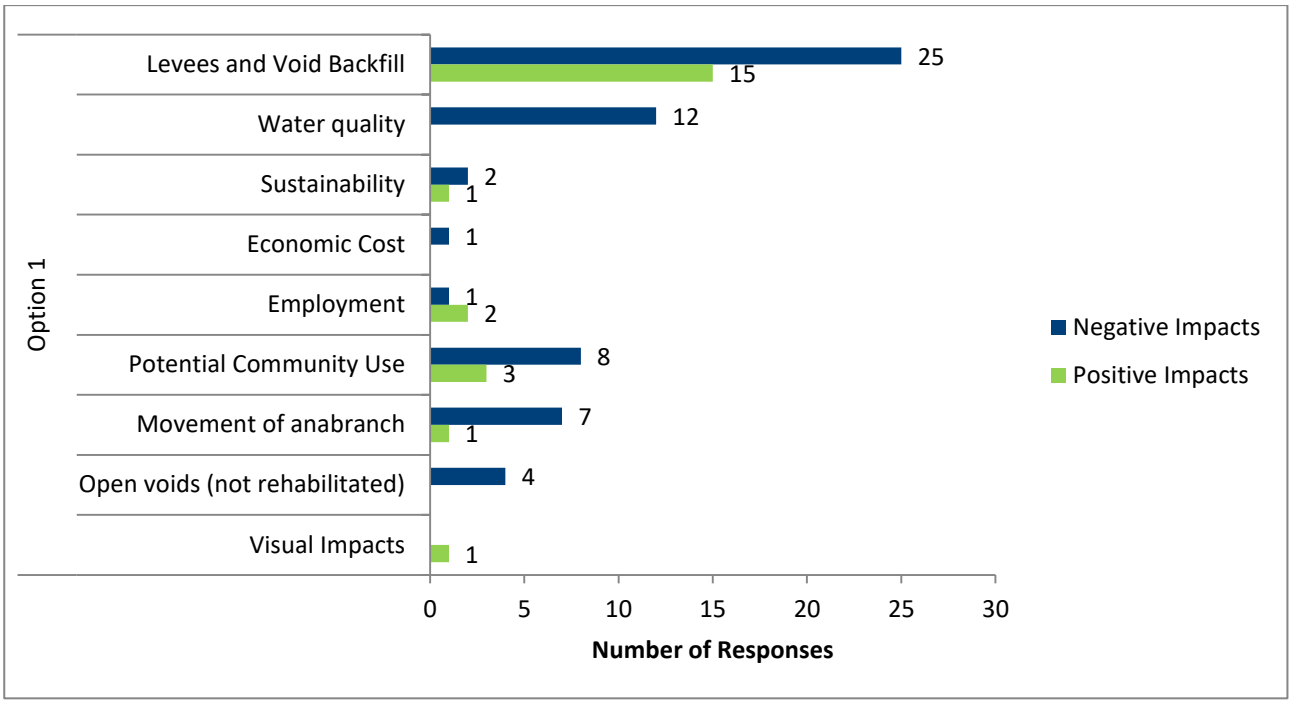


Figure 6.3 Option 1 Landform - Round 1 Perceived Positive and Negative Impacts

Post Round 1 consultation and following feedback from the community and preliminary technical studies, there were significant changes made to the design of Preferred Option 1. These changes included retaining the anabranch, raising the pit floors to at or above groundwater level and inclusion of a biodiversity corridor (treed corridor) along the void high walls. Data collected across the two rounds of engagement have been displayed separately, with **Figure 6.4** providing an overview of the issues identified in Round 2 post the option refinements.

As **Figure 6.4** illustrates, Round 2 of the engagement program resulted in very few additional impacts being identified for this Preferred Option. A total of 21 positive impacts were identified compared to 20 negative impacts.

The most prominent negative impact identified (post the option refinements) still related to the presence of the levees that narrow the floodplain and the implications of these levee structures for both upstream and downstream landholders.

Positive impacts noted related largely to the refinements made to Preferred Option 1 since the first round of consultation, namely the raising of the floor of the voids and retaining the anabranch in place. Each of the issues identified is further described below.

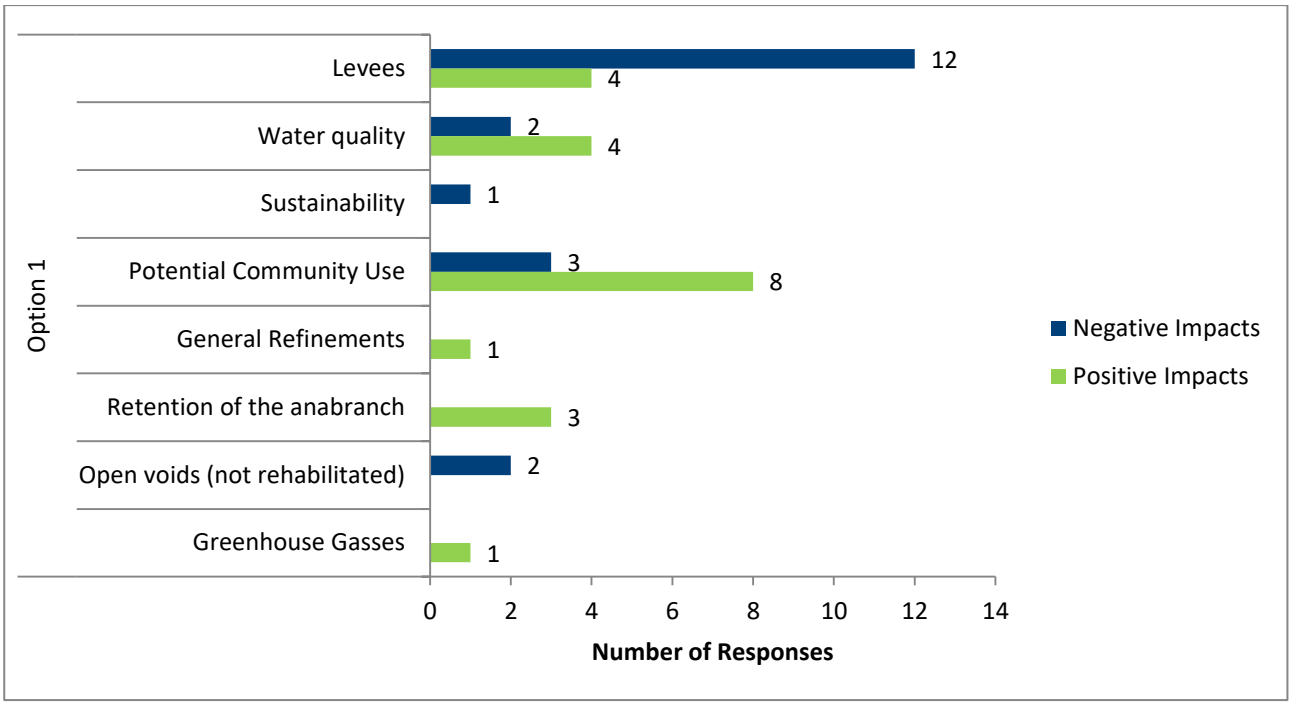


Figure 6.4 Preferred Option 1 Landform - Round 2 Perceived Positive and Negative Impacts

6.1.1.1 Levees

Stakeholders most commonly identified the potential impact of the levees on flood flow and the effects of this flow on both upstream and downstream landholders. These concerns were largely driven by stakeholder experiences in the 2008 and 2010 floods respectively, as noted in the stakeholder quotes below:

"Opening up the bottle neck [which will] slow the flood water"

"Water release better through the bottleneck"

As the quotes indicate, stakeholder perspectives regarding the effectiveness of the levee structures differed significantly, with upstream landholders describing how the levees were seen to "narrow the floodplain" causing a backup of water for those upstream; and downstream landholders outlining how the levee structure resulting in a "funnel" of water expelled downstream.

"Negatively effects flow of flood, previous levee appeared to funnel flood water"

"Socially not suitable - directing water at the property [downstream]"

"Still has a bottleneck - width of floodplain, doesn't alleviate upstream impacts"

One of the refinements of Preferred Option 1 was to maintain the portion of the levee originally proposed to be removed. This refinement affected how stakeholders evaluated the potential effect of the levees on downstream landowners. **Table 6.3** illustrates the distribution of opinions around upstream and downstream effects of the levees on nearby landowners.

As the table indicates, retaining the existing levee was seen to result in significantly less impacts identified for downstream landholders; whereas issues for upstream landholders remained largely the same across both rounds of engagement.

Table 6.3 Preferred Option 1 Landform - Upstream and Downstream Effects

Preferred Option 1 - Landform	Round 1		Round 2	
	Potential Negative Impacts	Potential Positive Impacts	Potential Negative Impacts	Potential Positive Impacts
Upstream flood effects	4	0	5	0
Downstream flood effects	10	1	0	0
Both up and downstream flood effects	5	6	6	0

Potential negative impacts noted in Round 2 across both upstream and downstream landowners are summarised in the quotes below:

> *"Levees still jamming up floodplain [they] should be removed"*

> *"Choking the river and floods up and down stream"*

> *"Levees create more inundation upstream"*

Stakeholders also saw potential benefit in the reinforcement of the levees and further protection against flood waters entering the voids and becoming hyper saline.

> "Water collecting in voids [and becoming hyper saline is a concern]"

Fewer stakeholders expressed that the removal of the anabranch, as originally proposed in Preferred Option 1, may actually be beneficial in enabling flood waters to flow more effectively and alleviate some of the issues outlined above.

6.1.1.2 Potential Community Use

During Round 1 of engagement, nine of the stakeholders consulted considered that Preferred Option 1 provided little benefit to the community, the economy or recreational opportunities in the area. Three stakeholders believed there was potential for the rehabilitated land to be used for commercial use, such as cattle or other agricultural pursuits. This belief was shared with stakeholders who participated in Round 2.

> *"the rehabbed area could be used for grazing"*

Of the 23 stakeholders consulted as part of Round 2, there were four stakeholders who believed there were ecological benefits of the proposed biodiversity corridor.

> *"[the bio-corridor is a] great concept"*

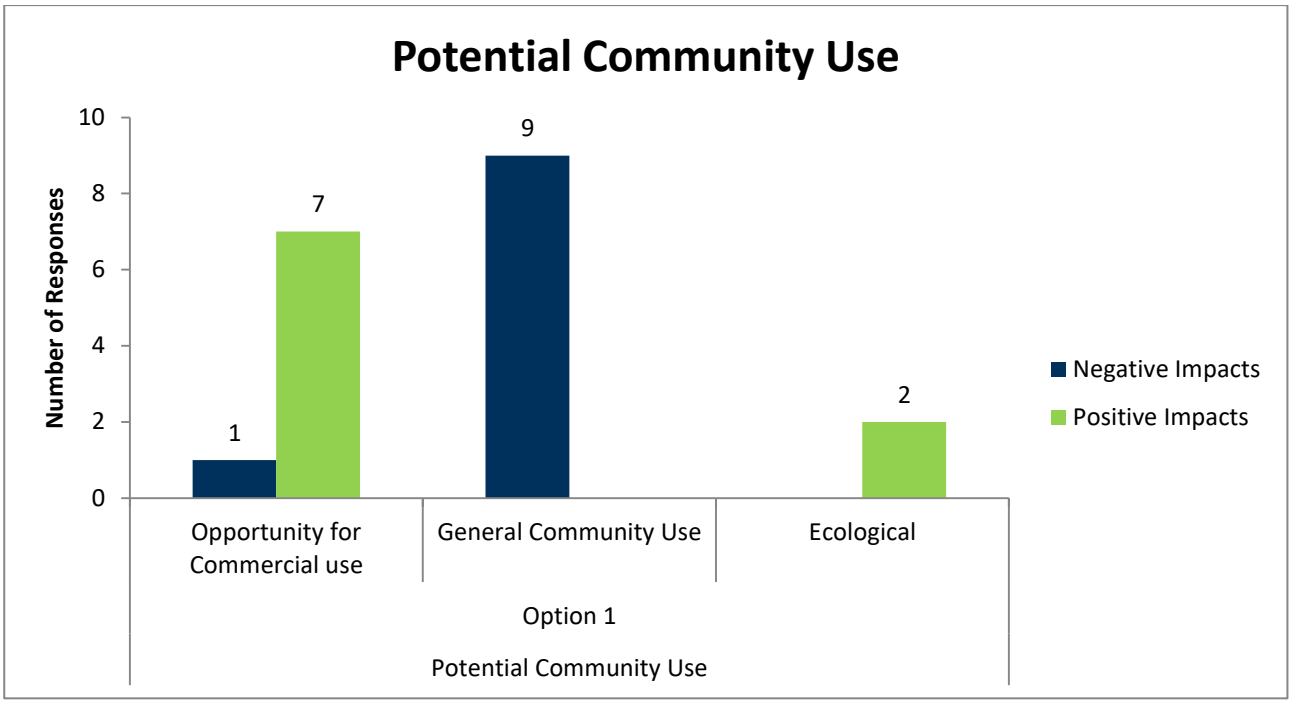


Figure 6.5 Preferred Option 1 Landform – Potential Community Use

6.1.1.3 Water Quality

The potential for groundwater to seep into the voids, for the water in the voids to become hyper saline and the potential for contamination of the river system were potential negative impacts raised during the first round of consultation (refer to **Figure 6.6**).

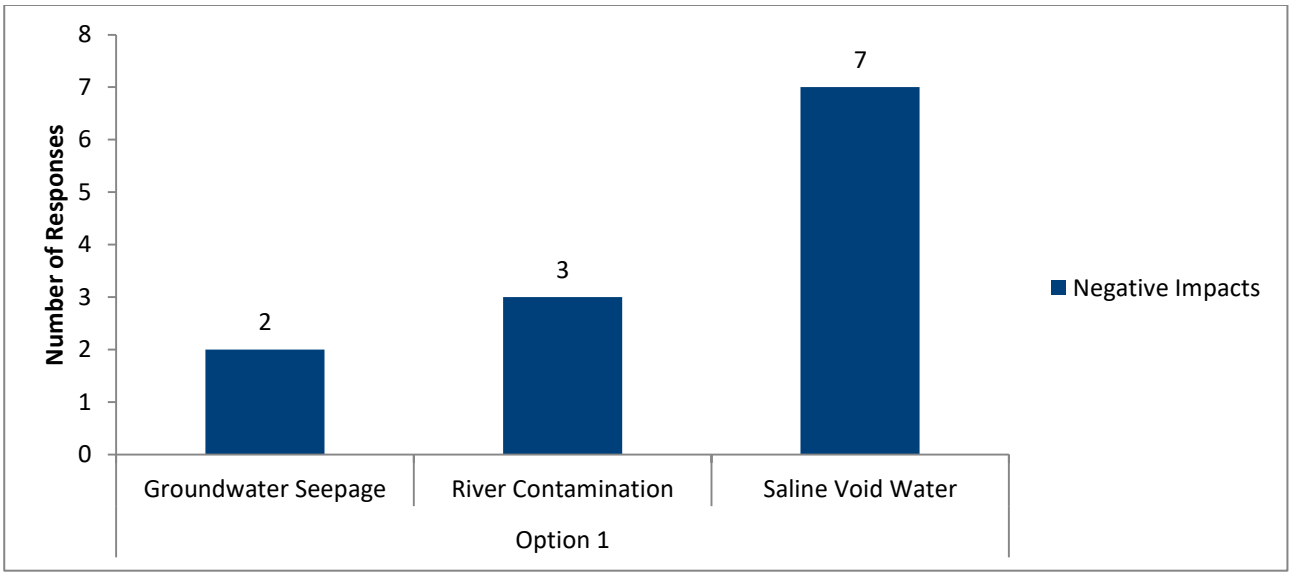


Figure 6.6 Preferred Option 1 Landform - Water Quality

Having obtained this community feedback, proposed refinements were made to raise the floor of the voids to prevent groundwater seepage and potential hyper salinity. While two stakeholders who participated in Round 2 still had reservations about the water becoming hyper saline, four stakeholders felt that the refinements were useful in addressing their original issues, as described below.

> *"Pits don't interact with ground water or the river"*

> *"[lifting void floors] improves issue of saline water"*

6.1.1.4 Summary – Preferred Option 1 Landform

In summary, the most salient positive impact associated with Preferred Option 1, as perceived by key stakeholders consulted, was the protection the levees provide for downstream landholders and the improved water quality achieved by lifting the pit floors above groundwater level.

In contrast, the key negative impacts noted related to the potential for the levees to narrow the floodplain, causing issues both upstream and downstream; the movement of the anabranch and continued concerns regarding water quality issues. Preferred Option 1 was also considered to have limited potential for community use.

For those stakeholders that participated in Round 2 of engagement, many of the issues raised in Round 1 appeared to be addressed in the refinements made to the Preferred Option, as noted below:

> *"[The] revised Option 1 is better than [the] original"*

> *"Appears to have addressed prior issues"*

> *"[I'm] happy that the anabranch isn't moving"*

Table 6.4 provides a summary of the issues raised for Preferred Option 1.

Table 6.4 Preferred Option 1 Landform - Positive and Negative Impacts

Theme	Negative Impacts	Positive Impacts
Flood	• Impact of the levees on flood flow and effects on upstream and downstream neighbours • Flood impacts on rehabilitated area	• Flood mitigation - changing the levee and restoring a section of the floodplain • Protection of the voids from flood water entering by the presence of the levees
Water Quality	• Impact of saline pit water and groundwater seepage on the river system	
Option Management	• Logistics around maintenance of the land and levees • High economic cost of creating / maintaining the levees • Reduction in employment	• Low economic cost – cheapest option • Employment potential
Opportunity	• Limited beneficial use, e.g. economically or recreationally	• Opportunity for commercial use
Landform Design	• Realignment of the anabranch • The voids not being backfilled	• Reduced interaction with the river system • Visually more appealing • Refinement: Anabranch no longer being realigned

Umwelt, 2018

6.1.2 Preferred Option 2 – Beneficial Use

Across both rounds of consultation, 48 stakeholders raised a total of 229 impacts relating to Option 2 - Beneficial Use.

Table 6.5 Option 2 Beneficial Use – Round 1 & 2 Response Details

Option 2 - Beneficial Use	Number of Surveys Completed	Number of responses	Number of Responders	Number of Impacts Raised (multiple responses allowed)
Round 1	34	31	44	152
Round 2	23	22	30	77
Total	**57**	**53**	***48**	**229**

Umwelt, 2018

*Note: A total of 48 stakeholders participated across both rounds of engagement – of which 44 participated in round 1 and 30 in round 2.

Figure 6.5 illustrates the range of positive and negative impacts raised by stakeholders in relation to Preferred Option 2 – 117 positive compared with 112 negative. The potential for a range of alternate community uses as a result of this Preferred Option was the key positive impact identified. Negative impacts related to water quality in the voids and ongoing sustainability and viability issues. Issues relating to levees, water source and supply and economic costs associated with Preferred Option 2 were also identified. Each of these perceived impacts is further described below.

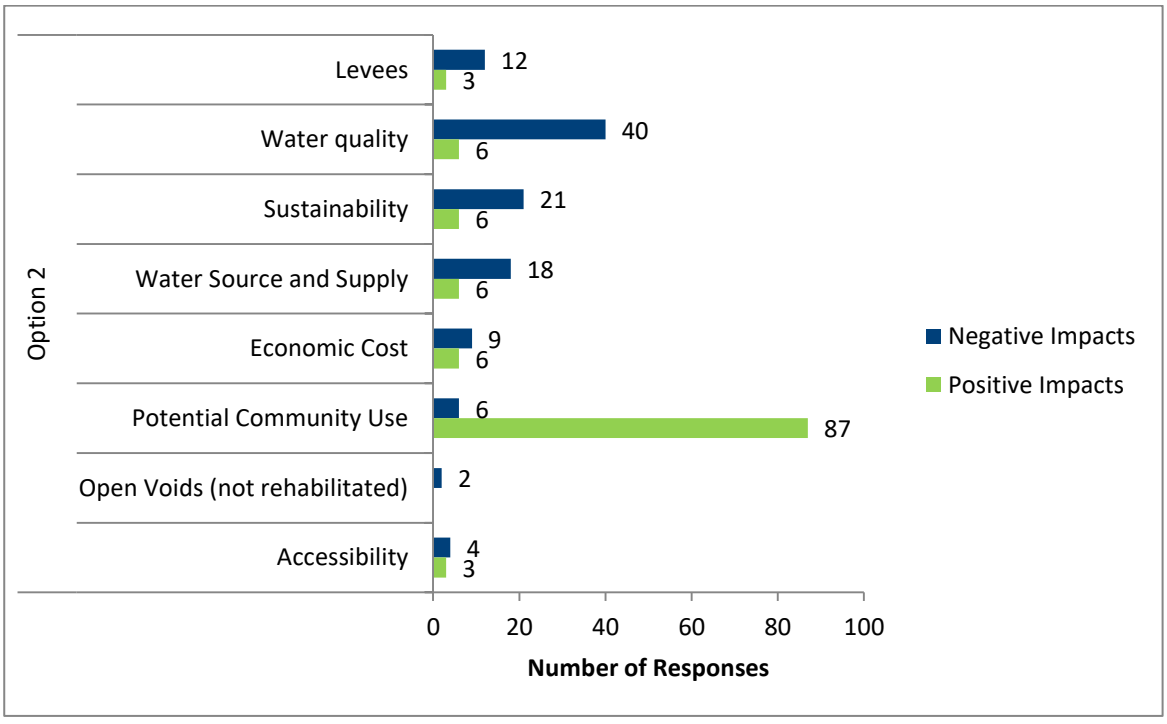


Figure 6.5 Preferred Option 2 Beneficial Use – Perceived Positive and Negative Impacts

6.1.2.1 Potential Community Uses

As highlighted in **Figure 6.6,** stakeholders consulted identified a range of potential uses for the rehabilitated landform, in consideration of Preferred Option 2 – 87 positive compared with 6 negative. Such uses included use for: commercial purposes, water storage, recreation or tourism opportunities and/or research and education.

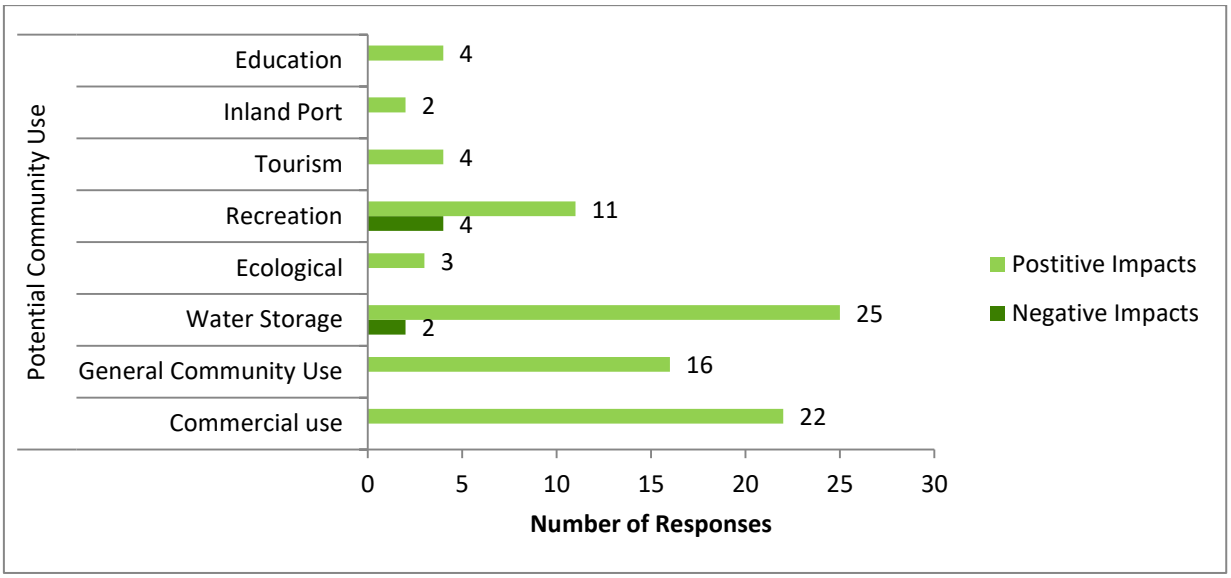


Figure 6.6 Preferred Option 2 Beneficial Use – Potential Community Use

6.1.2.2 Water Quality

As Preferred Option 2 Beneficial Use centres on off-stream storage, the quality of the water and the impacts on existing water systems was a potential negative impact identified by the majority of stakeholders consulted (refer to **Figure 6.7**). Issues of water quality; the potential for groundwater seepage from the storage; potential drainage and contamination of the river system; and questions relating to the ability of water to sustain different uses, such as agriculture, were frequently identified.

"Where water contacts [with] coal you will get leeching – the water will go bad"

"Water quality is everything"

"Groundwater seepage puts pressure on the River"

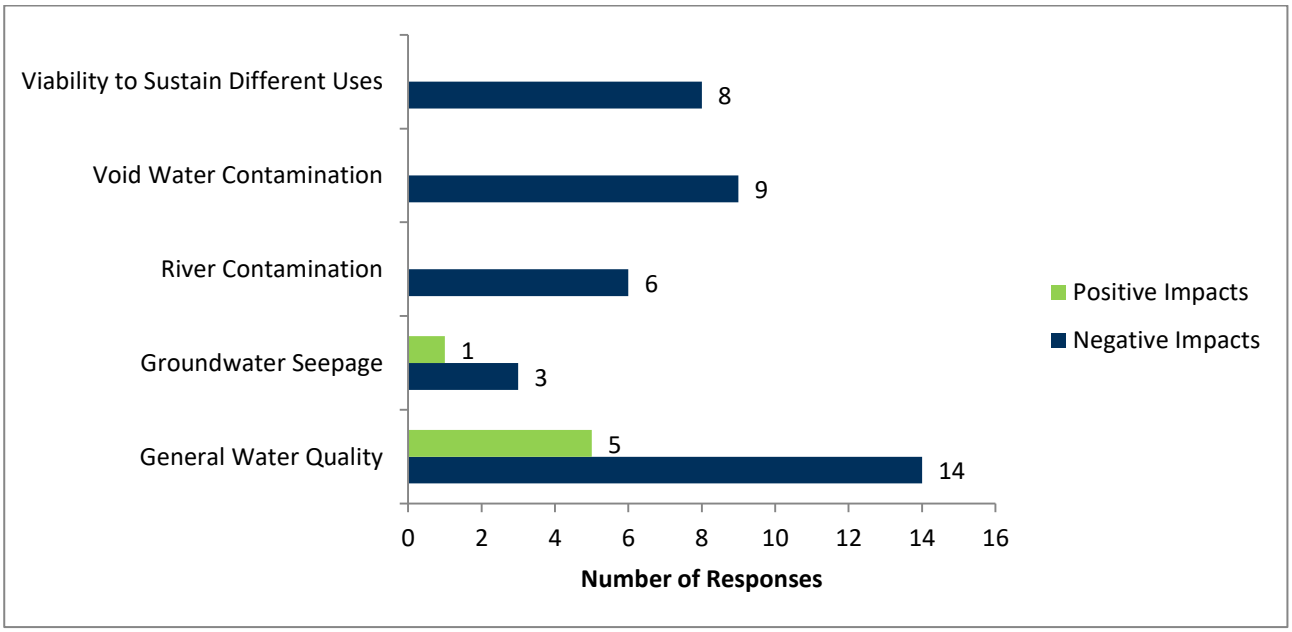


Figure 6.7 Preferred Option 2 Beneficial Use - Potential Water Quality Impacts

Providing that water quality could be maintained, as documented in the scientific water studies relating to Preferred Option 2, further discussion centred around how the water would be used, allocated and maintained over time. This is reflected in the following stakeholder quotes:

> *"We need to be careful with water – there's a value in creating more water"*

> *"The water from Theresa Creek etc, is 'held' for environmental flow purposes, but option 2 proposes to redirect that water. Someone will have to change the environmental flow regulations to allow Option 2 to happen."*

> *"Supplement water allocation for irrigators which means they can still get crops"*

Despite the outputs of the scientific water studies, some stakeholders remained sceptical that water quality could be maintained to a safe standard.

6.1.2.3 Sustainability

Issues relating to sustainability were also noted in discussions relating to Preferred Option 2 (refer to **Figure 6.8**), with stakeholders identifying the need to ensure appropriate management of the voids and levees to ensure option sustainability in the long term. More specifically, there were concerns that once established the area could be incorrectly managed which could adversely affect water quality and future land uses.

> *"Long term effects are unknown"*

> *"Management of water instead of letting it sit"*

> *"5yrs later what happens if the soil is salty?"*

Conversely, stakeholders recognised that ongoing management of the area, as part of this option, would ensure that the voids and levees would not fall into disrepair thus limiting other risks.

> *"Maintenance of levees [has to be undertaken]"*

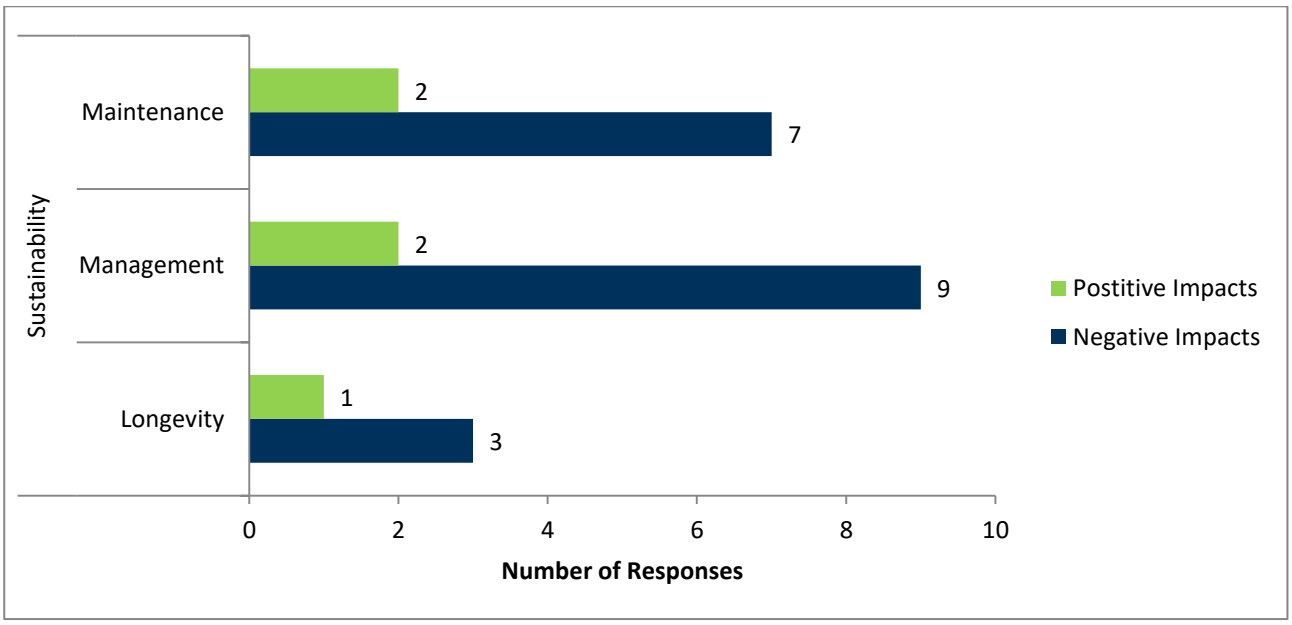


Figure 6.8 Preferred Option 2 Beneficial Use – Sustainability

6.1.2.4 Water source and supply

A further impact identified related to where the water would be sourced with a couple of stakeholders suggesting that potentially Ensham Mine could utilise their current water allocations to fill the voids. Further issues related to how the additional water could potentially be utilised by others to facilitate a range of uses and also how this additional water source might negatively impact on the value of water for those selling water allocations (refer to **Figure 6.9**).

"Water harvesting: as long as it is viable and can be managed by an asset-manager"

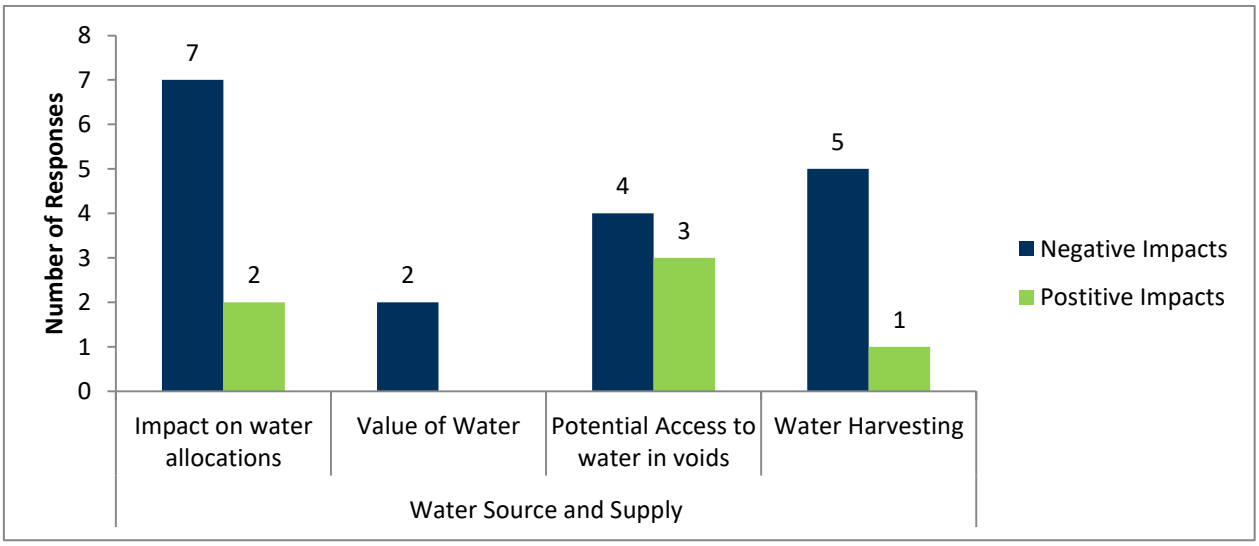


Figure 6.9 Preferred Option 2 – Water Source and Supply

6.1.2.5 Levees

Concerns relating to levees in Preferred Option 2 were similar to those identified in Preferred Option 1 (refer to **Figure 6.10**). Once again key concerns centred on the levees creating a 'bottleneck' that would narrow the flood plain, resulting in impacts on landholders living both up and downstream.

From an upstream perspective, the levee is believed to slow the flood water down, causing it to back up and impact upstream landholders.

"Levee potentially causes flood backup"

"Existing levees funnel flood water and this backs the water up"

Conversely, the flood water exiting on the other side of the levee is seen to be forced out at speed, with the faster flowing water causing damages to downstream landholders.

Over the course of consultation rounds 1 and 2, the potential negative impact on both upstream and downstream landholders was considered to have the greatest impact. As one upstream landowner noted:

"[the levees] still has impact on floodplain".

However, the potential positive impact of the Preferred Option to act as a water catchment, in the event of a flood event, was also raised by a couple of stakeholders.

"[the voids will help with] taking water in during a flood"

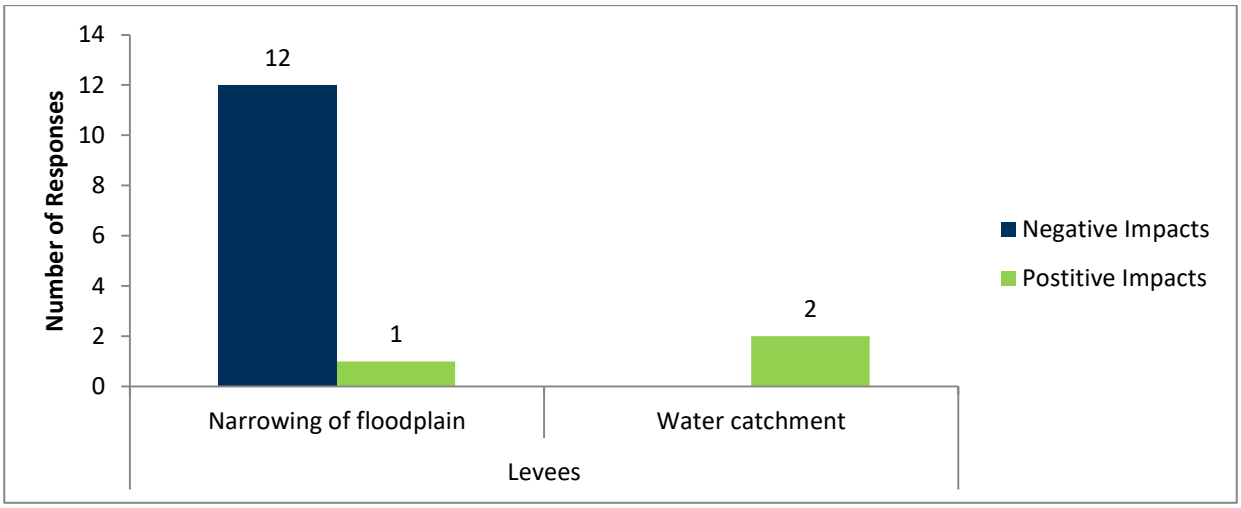


Figure 6.10 Preferred Option 2 – Levees

6.1.2.6 Economic costs

The economic impacts associated with Preferred Option 2 (**Figure 6.11**) were raised by stakeholders as both a potential positive and negative impact. Given the elements of this option, there was some concern that Preferred Option 2 would be too costly and therefore not be viable in the long term.

In contrast, other stakeholders suggested that Preferred Option 2 was an opportunity to enhance economic benefits in the locality and the broader region, with a range of potential community uses identified (refer to **Section 6.1.2.1** above).

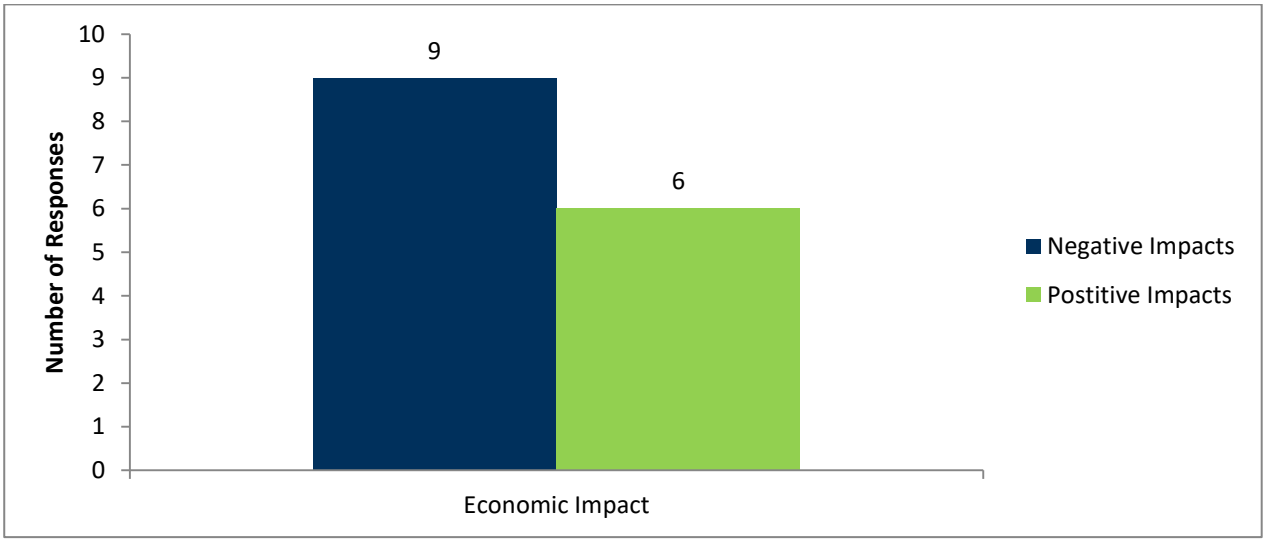


Figure 6.11 Option 2 - Economic Cost

6.1.2.7 Summary – Option 2

In summary, Preferred Option 2 - Beneficial Use resulted in the identification of a wide range of potential opportunities by stakeholders, with the proviso that the appropriate water quality in the voids could be maintained. Some of the potential community uses identified included commercial uses, such as agriculture and/or tourism, water storage, research and education and recreational activities.

Potential negative impacts associated with this option related to groundwater seepage into the voids, and potential contamination of pit water and the broader river system.

Of note, stakeholders outlined that if water quality could be maintained to a safe standard, then the majority of the potential negative impacts (discussed above) would be addressed.

Table 6.6 Preferred Option 2 Beneficial Use - Positive and Negative Impacts

Theme	Negative Impacts	Positive Impacts
Flood	• Levees narrow the floodplain	• Levees mitigate flood flow, making it more predictable • Flood mitigation from the voids act as a water catchment
Water Quality	• General quality of the water in the voids and interaction with the river system • Groundwater seepage, prior to voids being filled • Viability to sustain different uses • Contamination of the water in the voids	• Alleviates pressure on groundwater systems
Option Management	• Sustainability of the option in relation to management in the short and long-term • Allocation of available water	• Commitment to ongoing management • Potential access to water for different uses
Opportunity	• Limited beneficial use as water storage, compared to Fairbairn Dam	• Opportunity for commercial use and/or tourism • Potential community use for recreational activities • Educational and ecological research benefits: training, tours
Landform Design	• Accessibility - infrastructure needs to be established and tailored to afford use	• Use of existing infrastructure

6.1.3 Preferred Option 3 – Backfill to PMF

As outlined in **Table 6.7**, a total of 48 respondents commented on Preferred Option 3 across the two rounds of engagement, of which 3 were consulted only during Round 2. These stakeholders identified a total of 150 issues in relation to Preferred Option 3 – Backfill to PMF.

Table 6.7 Preferred Option 3 Backfill to PMF – Round 1 & 2 Response Details

Preferred Option 3 - Backfill to PMF	Number of Surveys Completed	Number of responses	Number of Responders	Number of Impacts Raised (multiple responses allowed)
Round 1	34	30	44	92
Round 2	23	22	30	58
Total	**57**	**52**	***48**	**150**

Umwelt, 2018

*Note: A total of 48 stakeholders participated across both rounds of engagement – of which 44 participated in round 1 and 30 in round 2.

Figure 6.12 illustrates the positive and negative impacts identified in relation to Option 3 – 57 positive compared with 93 negative. As shown in the figure, both positive and negative impacts were raised in relation to the removal of the levees and the potential community uses arising from the option. Negative impacts noted related largely to the process of backfilling the voids, the economic cost of the option and the options ongoing sustainability/viability. Each of these issues is further described in the sections below.

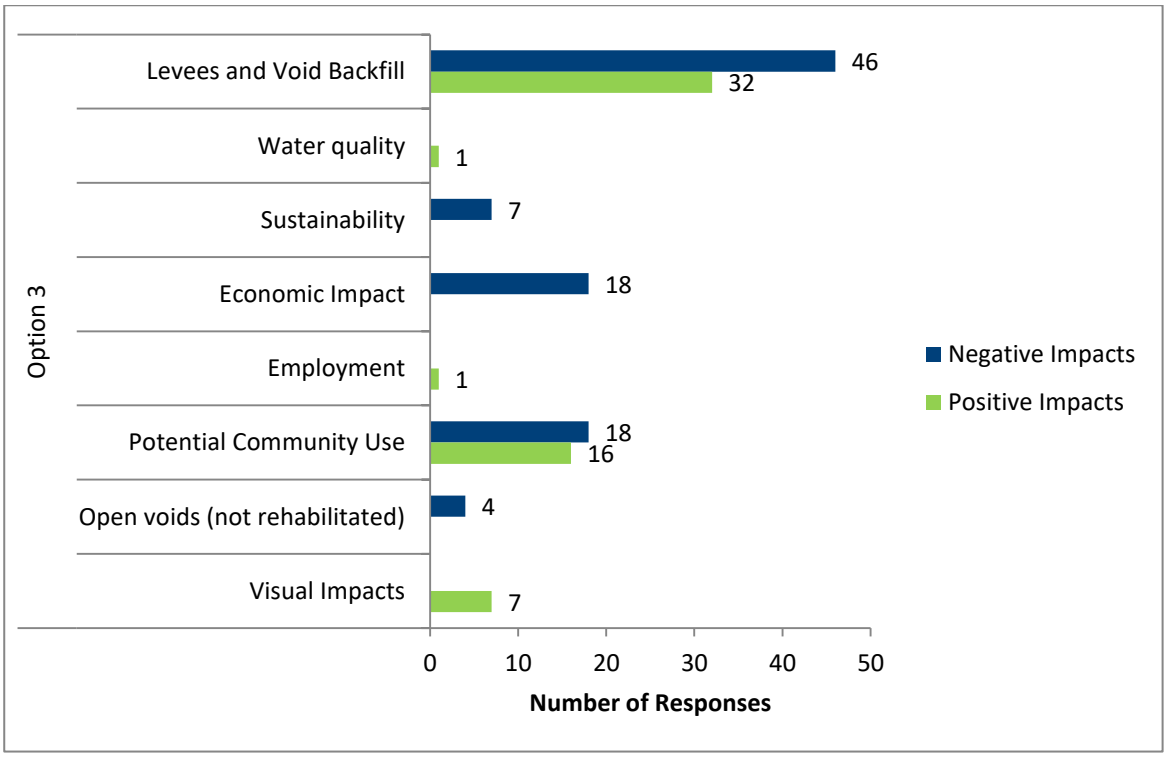


Figure 6.12 Preferred Option 3 Backfill to PMF – Perceived Positive and Negative Impacts

6.1.3.1 Levees and Void Backfill

In relation to Preferred Option 3, a total of 78 responses were obtained from stakeholders that related to the impact of the removal of the existing levee structures and subsequent effects on flood flow and the underground mine operation, should a 1:100 flood event occur.

Historically, there have been two recent major flood events that have occurred while the mine's levees have been present, and which have revealed the flow/movement of flood water during these events. The majority of stakeholders consulted outlined that the complete removal of the levees would dramatically change the course of flood waters and impact on both upstream and downstream landholders.

> *"Probably have the right solutions in place now with the current levees"*

> *"I am concerned about the effect of levee removal on flood flow"*

Despite the overall level of concern regarding levee removal, some stakeholders believed that removal of the levees may in fact alleviate the backing up of flood waters in a 1:100 event, thus reducing major flood impacts for upstream users.

> *"Upstream benefits because water has somewhere to go"*

> *"Opens up the choke point [which] is more beneficial upstream in a flood"*

Other stakeholders, however, felt that the removal of the levees would disadvantage downstream users as the lack of diversion, currently provided by the existing levees, could potentially result in greater stress on levees constructed by landholders downstream.

"Loss of protection [for downstream landowners]"

In contrast, it was also raised that the removal of the levees could potentially slow the water, alleviating the pressure on the levees of downstream landowners.

"Beneficial to all downstream"

"Un-chokes the river [so the] flood [water] will flow slower"

A further potential impact identified by stakeholders related to whether the removal of the levees may impact on the existing underground mine operations, in a flood event. It was perceived that the underground mine operations are considered to be protected by the current levee.

"The Underground mine is protected by levee above Pit C"

6.1.3.2 Void Backfill

The rehabilitation and restoration of the floodplain was seen as a potential positive impact of Preferred Option 3. Stakeholders stated that restoring the floodplain would potentially assist in alleviating negative impacts caused by mine levees, and afford greater flow of floodwater and therefore reduced erosion. The following quotes capture the potential impacts noted:

"[restoring the floodplain will be] beneficial to all downstream landholders"

"Alleviate issues around flood plain impact"

"No backup or funnel, and therefore less erosion"

"Reinstates floodplain to its natural process"

The potential for subsidence and erosion of rehabilitated land was reiterated as a negative impact. Of particular concern was whether the land would have sufficient time to settle before a further flood event.

"It (the land) will wash away in event of a flood"

"There's potentially a Subsidence issue - it may turn into a waterhole"

"Wash out of rehab before it takes hold"

"Unconsolidated fill in a flood washing downstream"

"If a large flood occurs then the water will tear through the rehab"

6.1.3.3 Economic Costs

The economic costs associated with Preferred Option 3 were frequently raised by stakeholders given that backfilling of the voids would require a vast amount of topsoil. As stakeholders stated:

"If you are going to spend all that money on it, why not do something with it that benefits the community in some way".

"That could not possibly be an option? It would cost far too much"

6.1.3.4 Potential Community Use

In relation to the potential community uses associated with Preferred Option 3, stakeholders were divided as to whether the Preferred Option resulted in potential positive or negative impacts (refer to **Figure 6.13**). Some stakeholders believed that the Preferred Option provided little opportunity and benefit to the community broadly; others felt that there could be general potential for the land to be used, with some stakeholders highlighting particular uses such as commercial use for farming, aboriginal cultural benefits, ecological purposes or education.

"No visible economic benefit - who will buy it with voids."

"Could potentially be used as farm land to produce something"

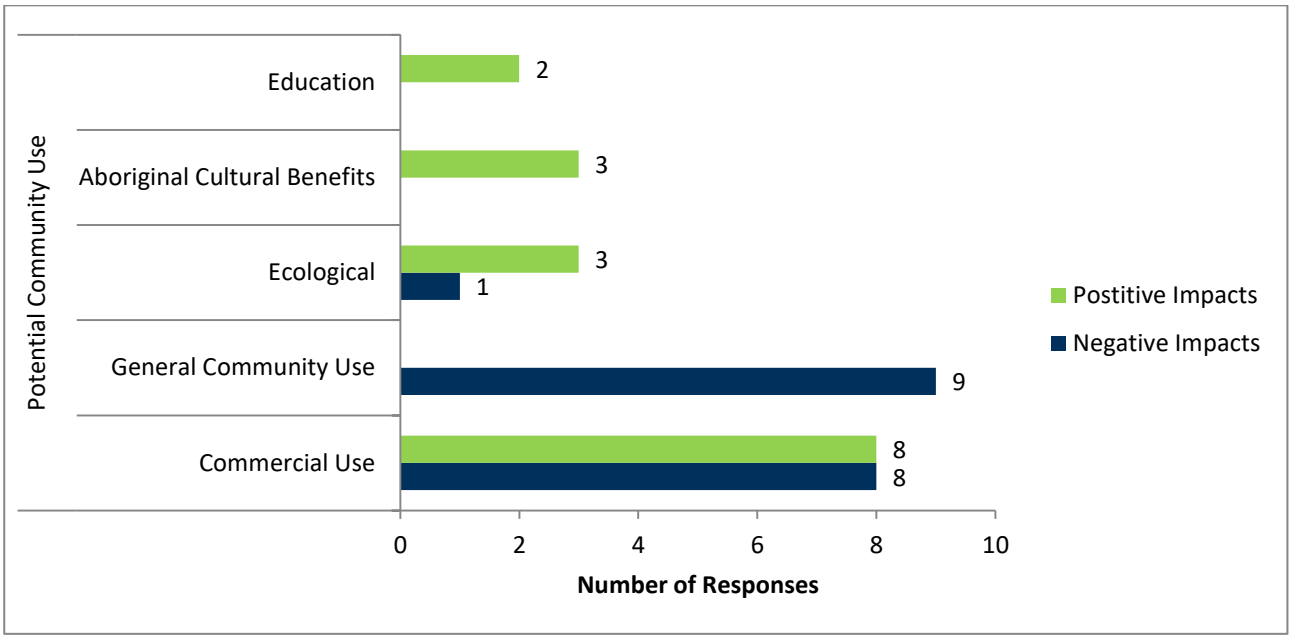


Figure 6.13 Preferred Option 3 Backfill to PMF – Potential Community Use

6.1.3.5 Summary – Preferred Option 3 Backfill to PMF

In summary, the key positive impact raised by stakeholders in relation to Preferred Option 3 related to the restoration of the floodplain to pre-mining levels and the removal of existing levees resulting in positive and negative impacts for upstream and downstream landholders respectively in a 1:100 flood event.

The majority of the participants identified negative impacts which related largely to the process of backfilling the voids, the economic cost of the option and the options' ongoing sustainability/viability. The potential benefits of this option identified by stakeholders included opportunities for the rehabilitated mine site to be used for commercial, ecological, aboriginal cultural and educational purposes. However, other stakeholders felt that such opportunities were limited.

Table 6.8 Preferred Option 3 Backfill to PMF Positive and Negative Impacts

Theme	Negative Impacts	Positive Impacts
Flood	• Levee: effect of removal on flood water flow and existing underground operations • Settling of rehabilitated land in the event of a flood • Subsidence impacts in the event of a flood	• Flood mitigation: restoration of the floodplain
Water Quality		• Water quality: filling of the voids mitigates potential issues associated with water quality
Option Management	• Sustainability: management of the land in the long term • Supply and maintenance: maintenance of the site and water in the voids	
Opportunity	• Economic cost of backfilling the voids • Reduced opportunity for potential beneficial use	• Potential for employment • Opportunity for commercial use on rehabilitated land • Other identified uses including ecological, cultural, and educational benefits
Landform Design	• Open voids not rehabilitated	• More visually appealing

6.2 Preferred Options Analysis

Preferred Option preferences were collected across a range of stakeholder groups, including Ensham employees, key local and regional community stakeholders, and local and regional community residents that attended the AgGrow Annual field event in Emerald from the 28 to 30 June 2018. Preferences of each individual group are summarised below.

6.2.1 Key Stakeholders

As **Figure 6.14** illustrates, across the key stakeholders consulted, Option 2 – Beneficial Use was preferred by the participants in Round 1, followed by Option 3 – Backfill to PMF. Two preferences were allocated to Option 1 – Landform Levee.

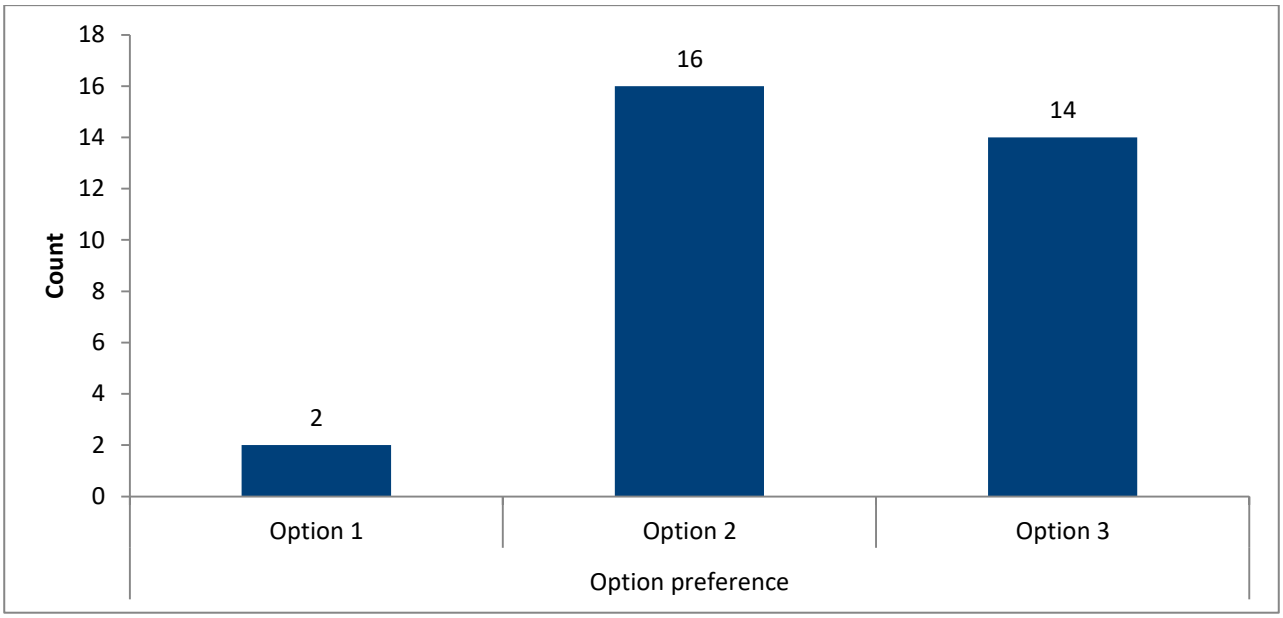


Figure 6.14 Round 1 Preferred Option Preferences - Key stakeholders

While preferences for Preferred Option 1 and Preferred Option 2 were evident in Round 1, a number of stakeholders changed their preferences to Preferred Option 3 in Round 2, when provided with further detail regarding each of the options. The reasons provided for changing option preferences are summarised in **Table 6.9** below.

Table 6.9 Change in Preferred Option Preference across SIA rounds of engagement

Round 1 Preference	Round 2 Preference	Reason for change
Preferred Option 1	Preferred Option 3	The levees will cause water to back up and worsen the effects of a flood for those landholders upstream. *"The Levees in Option 1 are still [narrowing the floodplain]."* "Option 3 has upstream benefits because the water has somewhere to go." "I have no concern with consolidation of soil because the water will slow down."
Preferred Option 1	Preferred Option 2	"If modelling for water quality for Preferred Option 2 is correct, it's a good option".
Preferred Option 2	Preferred Option 3	"Still the best option for skiing but [it] would need a more sustained water level. [Option 2] would need to be a zero cost exercise for [the] government to approve it." "Option 3 has upstream benefits."
Preferred Option 2	Preferred Option 3	"[I have] greater alignment with Option 3."

Consequently, at the conclusion of Round 2 of engagement with key stakeholders, Preferred Option 3 emerged as the most preferred Option, closely followed by Option 2 (refer to **Figure 6.15**).

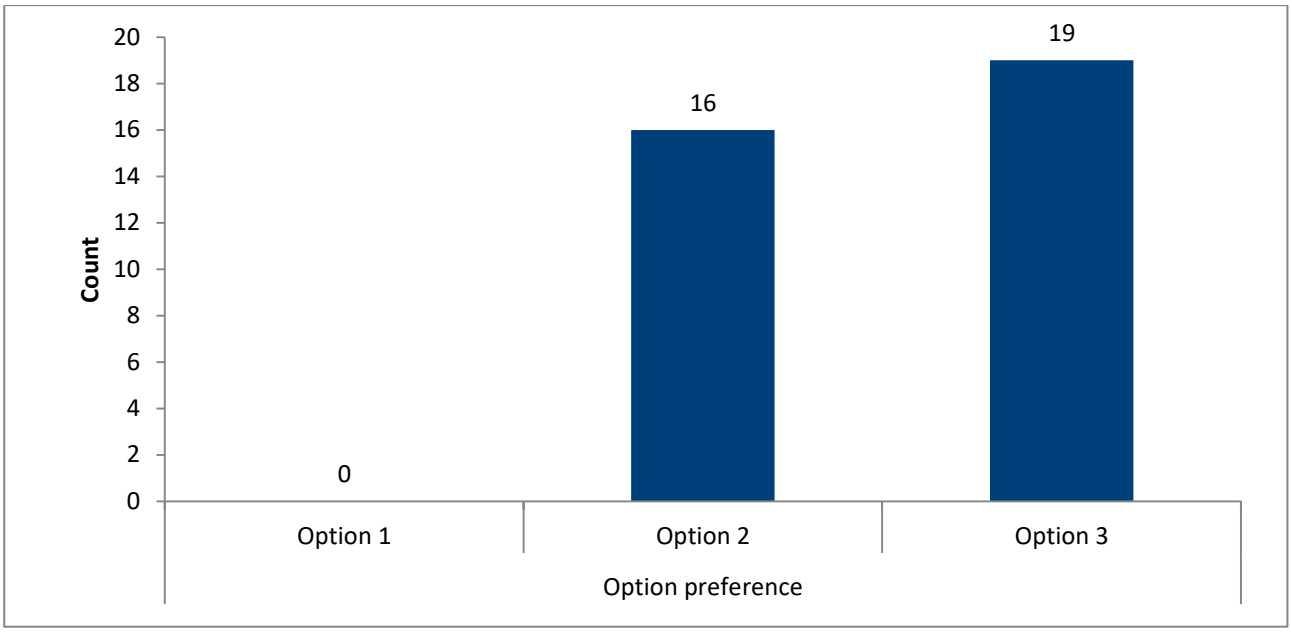


Figure 6.15 Round 2 Preferred Option Preferences - Key stakeholders

6.2.2 Local and Regional Community Residents

A total of 62 local and regional community residents completed the survey at the AgGrow event held in Emerald from 28 to 30 June, 2018. Of the 62 people responding to the survey, 12 people stated a preference for Preferred Option 1 – Landform Levee, 42 people Preferred Option 2 – Beneficial Use, and 8 people Preferred Option 3 – Backfill to PMF (refer to **Figure 6.16**).

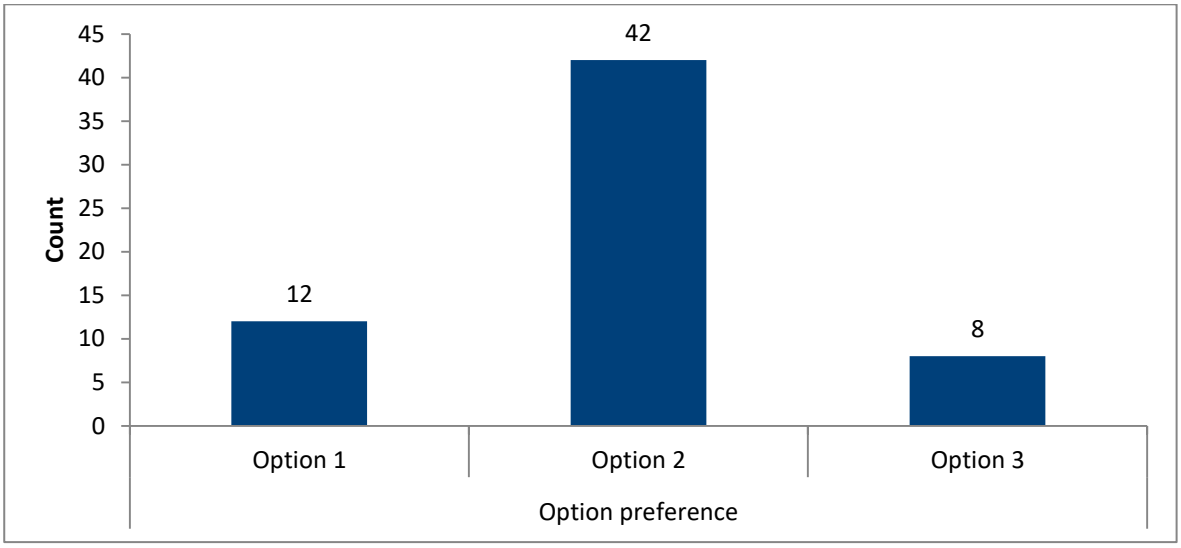


Figure 6.16 Preferred Option Preference - Local and Regional Community Residents

Reasons for option selections are summarised in **Table 6.10** below.

Table 6.10 Reasons provided for Preferred Option Selection – Local and Regional Community Residents

Option	Reasons for option preference	Stakeholder quotes
Preferred Option 1 – Landform Levee	• Protection for downstream landholders • Consider rehabilitation a good aspect	*"Protects downstream properties in a flood event"*
Preferred Option 2 – Beneficial Use	• Potential for community uses of the water for water storage, recreation, educational benefits and commercial use.	*"We need the water and it will help the farmers"* *"Remains an asset to community"* *"Create an environment for people to enjoy"*
Preferred Option 3 – Backfill to PMF	• Positive effects of the removal of the levee on flood flow and restoring the floodplain.	*"Reinstate the flood plain back to pre-mine period"*

6.2.3 Ensham Employees

A total of 36 Ensham employees completed an option preference survey. Of the 36 employees that responded, no employees selected Preferred Option 1 -Landform as their preference, 34 showed a preference for Preferred Option 2 - Beneficial Use, and 2 employees Preferred Option 3 - Backfill to PMF (refer to **Figure 6.17**.)

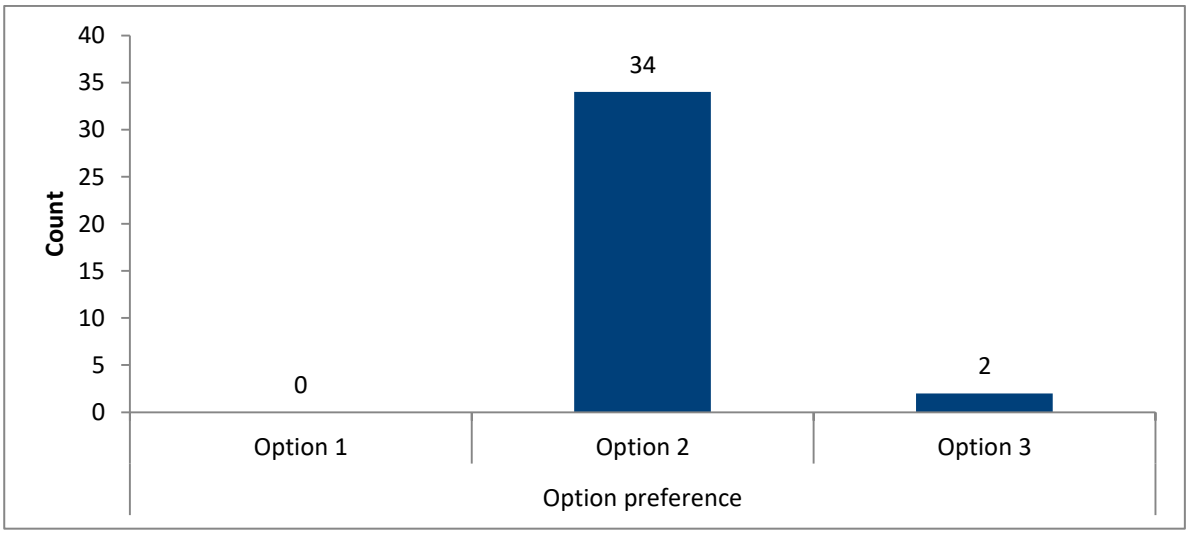


Figure 6.17 Preferred Option Preference - Ensham Employees

Employees were also asked to provide reasons for the selection of their Preferred Option, as outlined in **Table 6.11** below.

Table 6.11 Reasons provided for Preferred Option Selection – Ensham Employees

Option	Reasons for option preference	Stakeholder quotes
Preferred Option 2 – Beneficial Use	• Potential community uses for water storage, recreation and tourism, education and commercial use.	"The area can actually be utilised long beyond mining to enhance the agricultural viability in the area " "Water availability is key to a thriving inland community " "Usable storage for agriculture "
Option 3 – Backfill to PMF	• Return of the floodplain to pre-mining levels	*"Returning land back as close to its original state as possible"*

6.3 Overall Option Preference

In conclusion, as indicated in **Figure 6.18**, across all stakeholder groups consulted (key stakeholders, local and regional community residents and Ensham employees), Preferred Option 2 emerged as the key option preference (92), followed by Preferred Option 3 (29) and Preferred Option 1 (12).

As has been highlighted in the sections above, key stakeholders consulted were more divided in their option preferences between Preferred Option 2 – Beneficial Use (16) and Preferred Option 3 – Backfill to PMF (19); whereas, both local and regional community residents (42) and Ensham employees (34) were more likely to demonstrate a clear preference for Preferred Option 2.

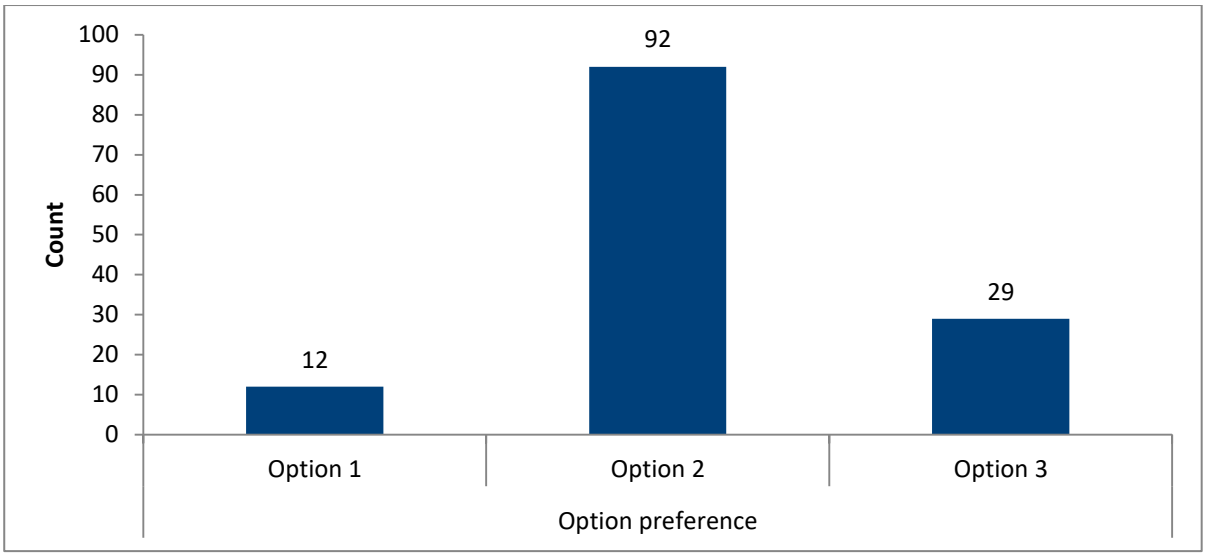


Figure 6.18 Overall Preferred Option

7.0 Assessment of Social Risk

This section provides a ranking of the social impacts identified during the scoping phase of the SIA (Section 6.0). The aim of the SIA is to assess the proposed change to the current baseline social environment (of which Ensham's Mine operations are a part) and has utilised data from a number of sources to develop a layered picture of the potential social impacts arising from each of the Project's proposed options.

In order to prioritise the identified social impacts, a risk-based framework has been adopted in the assessment of social impacts. Traditionally, the technical risk assessment process has not been greatly amenable to the inclusion of social impacts, in particular consideration of both positive and negative social impacts and opportunities. Sandman's risk equation (Risk = Hazard + Outrage) (Sandman, 1997) acknowledges the low correlation between a risk's technical 'hazard' (how much harm it's likely to do) and its 'outrage' (how upset it's likely to make people). Outrage and stakeholder perception is therefore considered an independent and no less valid component, of risk. The integration of the outcomes of the technical ranking with stakeholder perceived ranking of impacts thus affords a true integration of expert and local knowledge in impact assessment, and enables both types of risk to be addressed in the development of impact mitigation, amelioration and enhancement strategies.

The more technical assessment of risk is usually undertaken using a more traditional consequence and likelihood framework i.e. assessing the consequence of a given impact factor (e.g. catastrophic, major, negligible) against the likelihood that it will occur (e.g. almost certain, likely, possible), to determine an overall risk assessment of the impact as 'low', 'medium' or 'high'.

However, a review of the UN Human Rights assessment approach (Esteves, Factor, Vanclay and Gotzmann (2016) ranks the consideration of the significance of social impacts - both positive and negative – in determining impact consequences, noting that likelihood is not a deciding factor in determining significance. Depending upon the type of impact being assessed (positive or negative), significance factors such as Gravity or Magnitude, Extent, Vulnerability, Remediability and/or Ease of Implementation are considered in determining consequence ratings of insignificant, minor, moderate, major and intense/severe (refer to Table 7.1 below). These consequence category outcomes are similar to the more traditional risk assessment process consequence categories. As noted, the UN approach also includes consideration of the implementation and remediability of controls and mitigation measures.

For the purpose of the current Ensham RVP SIA, the human rights-sensitive categories have been utilised to assess both perceived stakeholder significance and mitigated stakeholder significance. Stakeholder perceived significance ratings have been determined through data obtained in the consultation process and the perceived significance of potential social impacts to the stakeholders consulted. The mitigated stakeholder significance ranking has been informed by the outcomes of the relevant environmental and economic technical studies as appropriate and consideration of the proposed controls and mitigation measures to be implemented.

Table 7.1 Social Risk Ranking Matrix

Assessment of positive impact significance		
Level of significance criterion		**Level**
Magnitude	Major benefit to community wellbeing, with target exceeded for the relevant social baseline indicator within 5 years	M1
	Moderate benefit to community wellbeing, with target met for the relevant social baseline indicator within 5 years	M2
	Minor benefit, to community wellbeing, with uncertain effect on the relevant social baseline indicator	M3
Extent (numbers of people to be adapted to context)	>1000 people or >50% of stakeholder group	E1
	100 - 1000 people or 11 – 50% of stakeholder group	E2
	<100 people or <10% of stakeholder group	E3
Vulnerability	Will benefit vulnerable groups	V1
	Will benefit other stakeholder groups	V2
Ease of implementation	Difficult – complex technical requirements, little stakeholder acceptance, no alignment with government development plans, low capacity of implementing organisations, potential for corruption difficult to control	I1
	Moderate - simpler technical requirements, stakeholder acceptance, alignment with government development plans, implementing organisation can deliver with some capacity development, potential for corruption can be controlled	I2
	Easy - simple technical requirements, stakeholder acceptance, alignment with government development plans, implementation partner has capacity to deliver, no potential for corruption	I3
Consequence category:		
Intense	M1 and I2/I3 (regardless of extent or vulnerability)	
Major	M1 and I2/I3 (regardless of extent or vulnerability)	
Moderate	M2 and E2/E3/V2 and I2/I3	
Minor	M3 and V1 and I2/I3	
Insignificant	M3 and V2 and I2/I3, or I1 (regardless of magnitude, extent, vulnerability)	

Assessment of negative impact significance		
Level of significance criterion		**Level**
Gravity	Will cause death or adverse health effects that could lead significant reduction in quality of life and/or longevity Continued exposure is generally likely to lead to adverse health effects	G1
	Impact to a tangible human right infringement of access to basic life necessities (including education, livelihood, etc.) Impact to cultural, economic, natural and social infrastructure/assets that been identified as highly valued by identified groups or subject matter experts in the scoping and assessment steps of the impact assessment Impact to ecosystem services identified as priority to livelihoods, health, safety or culture in scoping and assessment steps of the impact assessment process	G2
	All other impacts	G3
Extent (numbers of people to be adapted to context)	>1000 people or >50% of stakeholder group	E1
	100 - 1000 people or 11 – 50% of stakeholder group	E2
	<100 people or <10% of stakeholder group	E3
Vulnerability	Will impact vulnerable groups, or, entire community is vulnerable to this impact due to recent trends and events (e.g. conflict, natural disasters, cumulative impacts)	V1
	Will impact groups not found vulnerable in the given context	V2
Remediability	Difficult – complex technical requirements, little acceptance of remediation by the identified group, low capacity of implementation partner, no viable replacement for loss of ecosystems services	R1
	Moderate – simpler technical requirements, acceptance by the identified group, implementation partner can deliver with some capacity development	R2
	Easy – simple technical requirements, acceptance by the identified group, implementation partner has capacity to deliver	R3
Consequence category:		
Severe	G1 E1 (and V1) R1 (and V1) G2 and V1 and R1/R2 E1 and R1/R2	
Major	G2 and V1 and R3, or G2 and V2 and E1/E2 and R1/R2	
Moderate	G2 and V2 and E3 G3 and V1, or G3 and E1/E2 and R1/R2	
Minor	G3 and E1/E2 and V2 and R3	
Insignificant	G3 and E3 and V2 and R3	

Source: Esteve, A.M., Factor, G., Vanclay, F. and Gotzmann, N. (2016); Community Insights Group, IPIECA (2018).

7.1 Social Impact Themes

During the SIA engagement process there were five key themes that were identified by stakeholders across the three options presented. These included: Flood, Water Quality, Option Management, Community Use and Landform Design. This section provides further detail on the social impact themes identified drawing, where relevant, on engagement and social baseline data collected in the profiling and scoping phases of the SIA.

7.1.1 Flood

Flood was repeatedly identified by stakeholders as an impact across the options being assessed, and is directly related to the Ensham Mine site being located on a flood plain of the Nogoa River.

In 2008 and 2010 major flood events occurred in the region. The 2008 flood event saw the Ensham Mine inundated with water as a result of a levee failure and flood water flowing into the operational pits. The failure of the levee, and the perceived ramifications for nearby neighbours and community, required the resulted in reengineering and construction of levees to protect it from a flood, with an average recurrence interval of 1000 years in the Nogoa River (Queensland Floods Commission of Inquiry, 2012); subsequently approved by the Coordinator-General in 2009.

These relatively recent flood events have raised serious concerns in the community regarding the management of existing voids, given imminent closure, and subsequent impacts on upstream and downstream landholders.

The Ensham Mine is surrounded by cotton farmers both upstream and downstream of the site and more broadly the Central Highlands region is heavily populated by farmers reliant on the availability of quality water to support their crops. As such, flood events have an intrinsic effect on the livelihoods of farmers; with some farmers reliant on smaller more regular flood events to maintain water security in the region. Conversely, large flood events pose the risk of negatively impacting farmers by damaging property, destroying crops and reducing yield.

For example in 2010-11, floods destroyed cotton crops in central Queensland with water logging reducing yield by approximately 10-15 per cent, resulting in significant financial implications for cotton growers (Australian Government, 2011). In 2013 Agforce estimated that about 30% of the Emerald cotton crop was inundated with a loss of 62,000 bales and a value in the order of $31m (Regional Australia Institute, 2013). These effects were reflected by landholders and other key stakeholders in the comments and concerns that arose during the engagement phases of the SIA. The ability to mitigate against major flood events has the potential to protect the economic and infrastructure strengths that exist in the CHRC area.

Major flood events have the added risk of affecting the health and wellbeing of residents, particularly psychosocial impacts such as stress. Adults of working age and residents of regional and remote areas in Queensland were more likely to report emotional impacts caused by the 2010 floods such as distress, feeling terrified, helplessness or hopelessness, and stresses associated with having reduced incomes. Mental health issues were the largest impact of the floods in 2010 with an estimated lifetime cost of approximately $5.9 billion (Australian Business Roundtable (ABR), 2016). Mental health-related behaviours such as substance use (alcohol and smoking) have been documented following natural disasters (ABR 2016), in Emerald there was anecdotal evidence of a significant increase in alcohol related problems and domestic violence post the 2010 flood event (QCOSS, 2011). It is reasonable to expect that the mental health of residents in Emerald and its surrounding regions was affected having experienced major flood events in both 2008 and 2010.

With Ensham Mine being located on a flood plain in proximity to the Nogoa River, Comet River and Winton Creek, there is a perception in the community that there is a high risk of contamination should seepage occur, with effects likely to be felt broadly across the Central Highlands region. Scientific studies show that seepage will not be an issue to either the river or groundwater. The angst among stakeholders regarding the potential for seepage to the river system was evident during the SIA engagement process. In 2013 farmers told the ABC that the Dee River was an unnatural shade of blue-green and that birds and fish were dying with contamination anecdotally reported to be occurring 55kms downstream from the Mount Morgan Mine. The high profile nature of the problems at Mount Morgan, in relation to groundwater seepage and contamination of the waterways, contributes to the level of concern in the Emerald and Comet communities given their heavy reliance on water for a range of purposes. The sentiment was further exacerbated by the breeching of the levees that occurred in the 2008 flood event.

7.1.2 Water Quality

Water security is critical to support industry and liveability of communities in the Fitzroy Basin. As with many parts of Australia, in the Fitzroy Basin there are multiple users of water, the coal industry and the agricultural industry are the two largest industries, raising concerns for: security of water supply; flood and drought impacts; the management of surface and underground water; and environmental flow and water quality (KPMG, 2018).

The Central Highlands region has extensive water infrastructure, serviced by the Fairbairn Dam, a number of smaller weirs and a comprehensive irrigation network. Generally, water security is considered relatively strong; however, minimising water loss, unlocking future capacity and optimising water use and flexibility are ongoing challenges for the Central Highlands (KPMG, 2017).

Agriculture is the major industry across the Central Highlands region accounting for approximately 12 per cent of all employment in the region. Surrounding the Ensham Mine are primarily cropping farms (mostly cotton) and some cattle grazing, including Nogoa Pastoral that runs cattle within the boundaries of the land owned by the Ensham Joint Venture. Nogoa Pastoral Company covers the majority of the land on which ML 7459 (6,154 ha) and ML 70365 (2,763 ha) is situated. Approximately half of the land is utilised for mining operations and the other half pastoral activities. As at 31 July 2018 there were 1,971 head of cattle comprising 787 steers, 1,127 females and 37 bulls.

In addition, the Nogoa River runs between Pit B and Pit C, connecting to the Fairbairn Dam and an intricate water system that provides water to farmers and to the townships of Comet and Emerald and the region more broadly.

As previously noted, water quality in the Central Highlands region is paramount to ensure it is usable for cropping and to support the current agricultural industry, as well as regional economic growth aspirations. Mining activities taking place on and around a flood plain, with the perception that there is potential for seepage to the river system, creates what is perceived to be a high risk scenario for the Central Highlands Region. With Mount Morgan, also situated in the Fitzroy catchment, the fear of contamination from groundwater seepage is evident amongst stakeholders concerned for their livelihoods and the safety of their community.

The largest social risk identified by participants related to water quality, as a result of the Ensham Mine, relates to salinity, or salt content and the effects that this would have on landholders and the agricultural industry. The stronger the conductivity levels of water, the higher the salt content. **Table 7.2** shows the conductivity of water levels mapped to the salinity class for irrigation water.

Table 7.2 Salinity classes for irrigation water

Conductivity	Salinity class
< 650	**1** – Low salinity water, suitable for use on all crops except tobacco, with all methods of water application, with little probability of a salinity problem developing.
650 – 1300	**2** - Medium salinity, suitable for use on all but very low salt tolerance crops. Water can be used if a moderate amount of leaching occurs. Plants with medium salt tolerance can be grown, usually without special practices for salinity control. Sprinkler irrigation with the more saline waters in this group may cause leaf burn on salt-sensitive crops, especially at higher temperatures in the daytime when evaporation may be high.
1300 – 3000	**3** - High salinity - suitable for use on medium and high salt tolerant crops only. Water should not be used on soils with restricted drainage. Even with adequate drainage, special management for salinity control may be required.
3000 – 5000	**4** - Very high salinity - suitable for use only on high salt tolerant crops. For use soils must be permeable, free draining, and water must be applied in excess to provide considerable leaching.
- 8000	**5** - Extremely high salinity generally unsuitable for irrigation unless soils are permeable, well drained and crops are of very high salt tolerance.
> 8000	**6** - Too saline for irrigation.

Source: Queensland Government, Department of Agriculture and Fisheries. (2018) Interpreting water analysis for crop and pasture. Available on line: https://www.daf.qld.gov.au/business-priorities/plants/field-crops-and-pastures/broadacre-field-crops/managing-water-resources/interpreting-water-analysis

Option 2 Beneficial Use involves rapid filling of the rehabilitated landforms that adjoin the floodplain using cast in situ culverts design to enable flows > 17,000ML/ day in the Nogoa River. The modelling conducted by Hydro Engineering & Consulting in 2018 (Rev 1) indicates that "*with management of inflow and outflow, salt concentrations in the void should be able to be maintained at levels consistent with water quality guidelines for irrigation*".

There are vulnerabilities identified in the CHRC area that would be addressed by the availability of water for irrigation and other beneficial uses. Water security in the Central Highlands is of particular concern as is the dependence on mining. As the Central Highlands has an established agricultural industry, access to a secure water supply provides the opportunity to further diversify the economy and support the economic growth plans of the *Central Highlands Economic Master Plan (CHEMP) to 2047*. Securing a quality water source has the added benefit of potentially strengthening the well-established agricultural sector.

7.1.3 Option Management

Management refers to the ongoing maintenance and management of land, levees and/or any infrastructure post relinquishment and the aspects of ongoing management and maintenance may vary for each Option.

The Queensland Government's Financial Assurance Framework, combined with the proposed new Better Mine Rehabilitation for Queensland policy mechanisms, as detailed in **Section 3.0**, provide a framework and standard for the ongoing maintenance of rehabilitated land under the residual risk payment post relinquishment.

The largest management related perceived social risks for this project include the impacts on landholders and the local residents in the event of future levee failures (particularly if levees are not properly maintained); employment opportunities for the broader community associated with rehabilitation; and the associated cost to Ensham, and the company's ability to continue investing in mining in the region. The ability to support ongoing mining, through the provision of additional employment opportunities associated with rehabilitation, will further strengthen the economic outcomes for the Central Highlands region.

7.1.4 Community Use

Increasing the availability of land for future grazing and or cropping would be deemed as high value in a region such as the Central Highlands. Comet, where the Ensham Mine site is located near, has agriculture as the largest employer making the potential for use of the land a valuable asset.

The use of any rehabilitated land would not be able to occur until the rehabilitated areas are deemed safe, stable and non-polluting and able to sustain appropriate land use after rehabilitation (Queensland Government, 2014), a process which may take an extended period of time.

Consultation with the community and key stakeholders, as well as a review of relevant literature, has identified a range of potential uses for the stored water post mining for consideration by the operator of the reservoir. These include:

- Water storage for irrigation – allowing for water to be pumped to farms for crops, pastures, and urban landscapes (parks, school yards, residential lots and golf courses)
- Recreation and tourism – for swimming, skiing, boating, recreational fishing or diving
- Industrial uses – cooling, boiler feed, wash down, dust suppression, and firefighting
- Ecological values – permanent wetlands habitats
- Education – rehabilitation of mine sites and Aboriginal and/or Torres Strait Islander cultural practice (Doupé & Lymbery, 2005).

The broad range of potential community uses provides the opportunity to leverage their strengths in the growing tourism industry and further supplement reasonably diverse infrastructure.

The largest perceived social risks relating to community use for this project relate to water quality and the potential impacts on landholders in the event they cannot farm the land, as well as the broader communities' ability to access and use the land suitably.

Each of the options provides the opportunity to improve employment locally and contribute to the local economy. Given the CHRC is vulnerable to an over reliance on mining for employment, the more jobs created in other industries by delivery of an option, the greater the benefit to the community. The more industries that are able to benefit from the land available post mining the greater the opportunity to strengthen the economy and create sustainable employment.

7.1.5 Landform Design

Design refers to the impacts that directly relate to the landform design features of each of the options. A number of design changes have been made between round one and two SIA engagement phases.

The most significant changes were made to Preferred Option 1 – Landform Levee, as a result of community feedback and preliminary findings from scientific studies. This resulted in a decision being made to: maintain landform to a 1:1000 level, negating the need to realign the anabranch; raise the floor of the pits to minimise groundwater interactions; and introduce a biodiversity corridor (treed corridor) along the high walls of all pits.

Preferred Option 2 Flood Mitigation and Beneficial Use and Preferred Option 3 Backfill to PMF also saw changes to design with landform redesign to minimise geomorphological risks and the inclusion of the biodiversity corridor (treed corridor) along the western aspect of the rehabilitated landform between Corkscrew Creek and the Nogoa River. This would add to existing values in the natural landscape of the CHRC area that already contribute to a range of features and services that attract tourists to the region.

The largest design related social risks for this project relate to the potential visual impacts of the voids for those living in the vicinity of the mine site.

7.2 Preferred Option 1 - Landform Levee

This section explores the social risks and potential impacts that may be associated with Preferred Option 1 - Landform Levee on the communities of Emerald and Comet.

7.2.1 Flood related impacts

Preferred Option 1 proposes to maintain construct landforms along the alignment of the existing levees to accommodate a 1:1000 flood event, which allows for the status quo to continue post mining. Given that this option proposes maintaining the status quo, with respects to flood hydrology, it allows for a more reliable assessment of impacts. In considering potential impacts it is important to understand that stakeholders, particularly neighbouring landholders, have made business decisions over the past 30 years based on the existence of the Ensham Mine and the current levee structures. These decisions have included farmers constructing expensive levee structures themselves that both protect their properties in flood events but may also allow for the funnelling of water for the purposes of water harvesting. It is entirely possible that the existing levees perform an important function for upstream water users who rely on flood recharge for off stream storage.

7.2.1.1 Livelihood

The way in which Preferred Option 1 impacts will be experienced during a flood event vary depending on whether properties are located upstream or downstream of the Ensham Mine Pits (Pits A, B, C and D). The differing potential impacts relate to the changing water levels in a major flood event as a result of the levees. However, as noted maintaining the flood hydrology under Preferred Option 1, maintains the existing status quo for all landholders. There will be no change to flood dynamics currently experienced.

Upstream landholders

Due to the narrowing of the waterway caused by the levee structures surrounding Pit B and Pit C, the water in a 1:100 flood event was perceived by stakeholders to back up, raising the extent and depth of the water on upstream properties. Therefore, based on previous flood experience, the effects of a 1:100 flood event was perceived by some stakeholders to exacerbate the flood for those living upstream of the operation and may result in damage to property, potentially a longer time period for recovery from a flood event, a reduction in yields and subsequent livelihood impacts. As one stakeholder noted:

> *"There is still a bottleneck - width of floodplain, doesn't alleviate upstream impacts"*

Experiences in 2008 and 2010 demonstrate that the mine levees is only one contributing factor in this regard and is limited to immediate properties on the flood plain. This is supported by current flood modelling (HEC, 2018c RevM).

Downstream landholders

It was expressed by some participants that due to the narrowing of the waterway, as a result of the levee structures surrounding Pit B and Pit C in 2008, a funnel of water was created and expelled downstream causing erosion in at least one property. However, this was outweighed by the protection that the levees provided for other downstream landholders. As was stated by participant, in 2008 the neighbouring downstream property to the Ensham Mine was inundated with water due to a failure of the levee. This provides evidence of the negative impact, and consequence, of levee removal for downstream landholders. Post the 2008 flood, the levees were reengineered and given approval by the State Government to reduce future risk of levee failure in serious flood events.

As part of the SIA engagement process, stakeholders identified the need to maintain the current levees to protect downstream landholders. The protection of the levees allows for reduced impacts, hastens recovery efforts, and decreases the risk that crop yields will be negatively impacted.

Therefore, given that under Preferred Option 1 there is no change to the existing hydraulic performance in flood events, the potential for livelihood impacts on upstream and downstream landholders are considered to be MINOR negative.

7.2.1.2 Health and Wellbeing (Stress)

Based on previous research on the impacts of floods on communities, following the 2008 and 2010 Queensland flood experiences (as outlined in **Section 7.1.1**), it is reasonable to expect that residents of Emerald, and its surrounding region, may experience health and wellbeing issues (stress) as a result of future flood events. Consideration needs to be given to how the proposed Preferred Option 1 will impact the health and wellbeing of neighbouring landholders and the community should a major flood event occur.

Upstream and Downstream Landholders

Maintaining the current hydraulic performance by landform design appears to minimise the mental health impacts experienced by upstream and downstream landholders in a major flood event. Floods in the region are a major concern for all stakeholders. The status quo of retaining the existing hydraulic performance allows both upstream and downstream landholders to plan for future flood events with a degree of confidence in what may happen should a flood event occur, based on previous knowledge and experience. This was evident through engagement with agricultural landholders who outlined the strategies they have in place, as businesses, to respond to major flood events.

Therefore, the certainty provided by maintaining the current levee structures will minimise the impacts on the wellbeing of upstream and downstream landholders but will not completely alleviate the effects of flood as a result of the levees being in place. This impact has therefore been categorised as a MINOR negative impact under this option.

7.2.1.3 Summary

In summary, it has been determined that from a social impact perspective, as shown in **Table 7.3,** Preferred Option 1 has the potential to impact on both livelihood and health and wellbeing (stress) in a 1:100 flood event for both upstream and downstream landholders, however these impacts are considered to be MINOR.

Table 7.3 Summary of social impacts - Preferred Option 1 - Flood

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	**Flood: Maintain existing levee**	Livelihood	Upstream and downstream Landholders	LT	Emerald Comet	**MAJOR**	**MINOR**
		Health and Wellbeing (Stress)	Upstream and downstream Landholders	ST	Emerald Comet	**MAJOR**	**MINOR**

7.2.2 Water Quality related impacts

Preferred Option 1 Landform Levee proposes to partially backfill the voids to reduce the interaction with groundwater. It is perceived by stakeholders that the consequences associated with partial backfilling will impact landholders both upstream and downstream, residents of Comet, Emerald and the broader Central Highlands region.

7.2.2.1 Livelihood

Participants perceived that the consequences associated with partial backfilling of all Pits will prevent groundwater seepage to the river system and maintain water quality. The availability of quality water is paramount for farmers to ensure viability of their crops. Ensham Mine is surrounded by agricultural landholders and some participants expressed that any seepage to ground water would have detrimental effects on farmer's crop yields and could, in a worst case scenario, render their land unusable for cropping.

Scientific studies indicate the partial backfilling of the pits to above groundwater level should ensure fresh water seeps to groundwater (HydroSimulations, 2018).

Therefore, providing that seepage can be controlled and water quality not affected, the impacts on the livelihood of upstream and downstream landholders and other landholders in the broader region are MINOR negative. Despite this technical ranking, this issue still has consequences and remains of high concern to key stakeholders.

7.2.2.2 Public safety and security

Parts of Ensham Mine are located adjacent to a flood plain and as a result the Nogoa River, Comet River and Winton Creek are all perceived to be at a high risk of contamination should seepage occur - the effects of which would be felt broadly across the Central Highlands region. The high profile nature of the problems at Mount Morgan, with groundwater seepage and contamination of the waterways, contributes to the level of concern in the community, which was further exacerbated by the breeching of the levees that occurred in the 2008 flood event.

In response to community concerns raised in the first round of consultation, Preferred Option 1 - Landform was adapted to partially backfill the pits to minimise interaction with groundwater and address the concerns raised by participants regarding hyper salinity in the pits. The landforms effectively exclude the rehabilitated landform from being connected to the flood plain. This protection reduces the risk of contamination occurring.

Ongoing monitoring and sampling of the catchment, which occurs as part of the Fitzroy Partnership for River Health, near the Ensham Mine, provides greater certainty and confidence and affords early detection and intervention of any potential contamination. Consequently, the impact to public safety and security, under Option 1, has been ranked as a MINOR negative impact.

7.2.2.3 Summary

In relation to water quality issues, relating to Preferred Option 1, it has been determined that the potential social impacts on livelihood and public safety and security are both MINOR negative impacts, as indicated in **Table 7.4**.

Table 7.4 Summary of social impacts - Option 1 - Water Quality

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Signficance
Health & Community Wellbeing	**Partial backfill - raising floor of landform to reduce interaction with groundwater** **Water quality - potential seepage affecting river system**	Livelihood	Upstream and downstream landholders	LT	Upstream and downstream landholders	**MAJOR**	**MINOR**
		Public safety and security	Upstream and downstream landholders Broader community	LT	Comet Emerald CHR	**MAJOR**	**MINOR**

7.2.3 Management related impacts

Potential impacts in relation to option management, identified by key stakeholders, included a focus on the ongoing maintenance of the land and levees, economic impacts such as the potential for employment in the management phase and/or provision of alternative uses for rehabilitated land. The costs to Ensham associated with implementing the option were also identified.

In relation to option maintenance, concerns were raised within the community around who would be responsible for the ongoing maintenance of the land and levees to ensure that the landforms perform in the way intended. Participants articulated that failure of the levees has occurred in the past, leading to negative impacts for neighbouring landholders particularly those downstream of the Ensham Mine operation.

From an economic perspective, employment was also discussed, with stakeholders expressing mixed views as to the degree of employment that may be generated in management and maintenance of this option.

Preferred Option 1 was considered by stakeholders as having the lowest economic cost to Ensham, when compared to the other options. However, this was not supported by the Economic Impact Assessment which put the total cost of rehabilitation, in present value terms, at $194.26 million for Option 1, $135.90 million for Option 2, and $333.06 million for Option 3 (Deloitte Access Economics, 2018). While not the lowest cost it remains significantly lower in cost than Preferred Option 3.

Stakeholders consulted reflected the importance of the Ensham Mine to the region, and were cognisant of the fact that the mine had experienced economic impacts to their business in the past as a result of flood events and downturn in the mining sector. Clear sentiments were expressed that the presence of Ensham Mine was very important for the local communities of Emerald and Comet and the broader Central Highlands Region. Rural and remote communities in Queensland are often reliant on mining for creation of employment and Emerald, Comet and the broader Central Highlands Region are no exception, as shown in **Table 7.5**; where the mining industry provides significantly high levels of regional and local employment when compared to Queensland as a whole.

Table 7.5 Industry of employment statistics - Comet, Emerald, CHRC and QLD

Industry of Employment	Comet (SSC)	Emerald (SSC)	CHRC (Central Highlands LGA)	QLD
Agriculture, forestry and fishing	45.9%	5.0%	12.8%	2.8%
Mining	19.1%	19.0%	24.3%	2.3%

7.2.3.1 Public safety and security

The community considered the maintenance of the land and levees post relinquishment as a potentially high risk if appropriate maintenance was not in place. Given previous flood experience in 2008 and 2010, a number of initiatives have been implemented to reduce impacts on public safety and security. These include: reengineering of the levees in 2009 and improved policy development reflected in the Queensland Government's Financial Assurance Framework and Better Mine Rehabilitation for Queensland Policy.

As the consequences of any failures, due to inadequate maintenance, have the potential to impact landholders and potentially affect the river system, regular monitoring and maintenance will be paramount to ensure that the levee structures continue to protect landholders against flood in the longer term. With appropriate mitigation in place, the impact on public safety and security has been assessed as a MINOR negative impact.

7.2.3.2 Livelihood/ Way of Life

The potential for further employment opportunities was seen as a benefit of Preferred Option 1. The ongoing availability of employment opportunities in mining is linked strongly to people's livelihoods and their way of life. Stakeholders were acutely aware that the diversity in their local economy is important and that includes continued opportunities for local residents in the mining sector.

The economic impact assessment (Deloitte Access Economics, 2018) indicates that 40 – 74 new FTE jobs annually are expected to be directly employed to undertake rehabilitation related works for the Ensham Mine. Preferred Option 1 delivers 46 FTE's post rehabilitation. In addition, a further 24 indirect jobs can be generated by Preferred Option 1. The monetised benefit of Preferred Option 1, expressed in $M at Net Present Value (7%) is a $8.21M post mining benefit (Deloitte, 2018).

Therefore, the positive impact of potential employment, under this option, has been ranked as MINOR, given that only a small degree of employment is anticipated in the management phase.

7.2.3.3 Summary

In summary, and as shown in **Table 7.6**, it is determined that Preferred Option 1 has the potential to have a MINOR negative impact on public safety and security and a MINOR positive impact in relation to employment should the option be implemented. However, issues relating to appropriate management and maintenance of option aspects are considered a significant issue for community stakeholders.

Table 7.6 Summary of social impacts - Option 1 - Management

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Maintenance of land and levees (post relinquishment)	Public safety and security	Upstream and downstream landholders	LT	Comet Emerald CHR	**MAJOR**	**MINOR**
Workforce Management	Employment - post mining	Livelihood/ Way of Life	Broader community	LT	CHR	**MODERATE (Positive)**	**MINOR (Positive)**

7.2.4 Community Use related impacts

Increasing the availability of land for future grazing and or cropping would be deemed as high value in a region such as the Central Highlands. The Comet locality, where the Ensham Mine is located new, has rich agricultural land with agriculture being the largest employer within the area.

7.2.4.1 Livelihood

In consultation, key stakeholders outlined that opportunities to utilise rehabilitated land, as part of Preferred Option 1, for commercial use had the potential to improve livelihoods of individual landholders. However, given that the voids are only partially being backfilled, there is a perception that some of the land would be too steep to enable cattle grazing, resulting in only limited livelihood opportunities for neighbouring farmers. The economic value of the land is approximately $2.8 million and will reduce flooding risk by $7 million (Deloitte, 2018).

7.2.4.2 Way of Life – Recreation

Stakeholders also expressed the view that Preferred Option 1 provided limited other potential beneficial uses when compared to other options, given useability. Therefore the option was considered to result in a very minor community benefit overall.

7.2.4.3 Culture – Education and Training

A further use of the resource, identified by key stakeholders, included opportunities to provide further education and training in regard to rehabilitation of the area. Indigenous stakeholders consulted, in particular, identified value in being involved in the rehabilitation process and in longer term education and training initiatives that allow the incorporation and continuation of their traditional knowledge.

7.2.4.4 Summary

In summary, Preferred Option 1 has the potential to have a MINOR positive impact on both the livelihoods of proximal landholders and recreational opportunities for the broader community; however these benefits may be limited by land useability and takes considerable time to be realised, given the period required for rehabilitated land to be considered safe, stable and non-polluting.

Table 7.7 Summary of project impacts Preferred Option 1 Community Use – increase in available land

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significnace	Mitigated Stakeholder Significance
Health & Community Wellbeing	Increase in available land	Livelihood	Landholders	LT	Comet	MINOR (Positive)	MINOR (Positive)
		Way of Life – recreation	Broader community	LT	CHR	MINOR (Positive)	MINOR (Positive)
		Culture – education and training	CHR residents Indigenous groups	LT	CHR	MODERATE (Positive)	MINOR (Positive)

7.2.5 Landform Design related impacts

The landform design for Preferred Option 1 – Landform Levee, was altered after the first round of SIA engagement as a result of community feedback and findings from scientific studies. In relation to landform design, the decision was made to construct the landform to a 1:1000 level, negating the need to realign the anabranch; raise the floor to limit interaction with groundwater; and introduce a biodiversity corridor (treed corridor) along the western side of the rehabilitated landform between Corkscrew Creek and the Nogoa River.

As a result, the findings from the second round of SIA engagement were significantly different from those received in the first round, with many of the issues that had been noted becoming redundant, having been addressed by changes to the preferred option design. Stakeholders, for the most part, viewed the design changes positively, outlining that the preferred option had been improved. Stakeholders were also provided with animated fly over representations of the rehabilitated Ensham Mine site in Round 2, enabling them to visualise how the landscape was likely to change for this preferred option.

Some stakeholders however were disappointed that only partial backfilling would occur for voids not located on the floodplain under this option. However, lifting of the pits floors and proposals for additional visual impact was appreciated.

7.2.5.1 Visual Impact

Visual impact was the key social impact identified in relation to landform design. Preferred Option design changes such as maintaining the anabranch and partial backfilling, were seen to improve visual impact of the rehabilitated landform, resulting in a ranking of MODERATE positive visual impact.

Table 7.8 Summary of social impacts - Option 1 – Landform Levee

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	**Landform Design**	Visual Amenity	Upstream and downstream landholders	LT	Comet	**MODERATE**	**MODERATE (Positive)**
Health & Community Wellbeing	**Partial backfilling of voids not on the flood plain**	Visual	Landholders and CHR residents	LT	CHR	**MAJOR**	**MODERATE (Positive)**

7.3 Preferred Option 2 - Flood Mitigation And Beneficial Use

Preferred Option 2 - Flood Mitigation and Beneficial Use, proposes to keep the existing levee structures, with the addition of inlet and outlet structures to enable water to be harvested in flood events greater than 17,000ML/ day flows. The ability to maintain the existing levees will allow for a degree of reliability; however, the addition of inlet and outlet structures will require a reliance on modelling to inform how the water will behave, in terms of water flows, extent, depth and velocity. The greater the reliability, the more able landowners are to make informed decisions.

7.3.1 Flood related impacts

Landowners have invested in constructing expensive levee structures in the floodplain upstream and downstream of Ensham Mine based on the current floodplain characteristics (the status quo) and knowledge and experience gained through the 2008 and 2010 flood events. Consequently proposed changes, as a result of Preferred Option 2, may affect the effectiveness of those investments and protection in future major flood events, both upstream and downstream.

7.3.1.1 Livelihood

As was previously discussed in relation to Preferred Option 1, the maintenance of existing levees as an aspect of Preferred Option 2 provides protection from the levees, reducing impacts for both upstream and downstream landholders in major flood events. Consequently both upstream and downstream landholders will experience no significant change under this option.

7.3.1.2 Health and Wellbeing (Stress)

Based on the research on the impacts of floods on communities it is reasonable to expect that residents of Emerald and the surrounding region may experience health and wellbeing issues as a result of major flood events, and consideration needs to be given to how the proposed Preferred Option 2 Flood Mitigation and Beneficial Use will impact the health and wellbeing of neighbouring landholders and the community in a major flood event.

Maintaining the current levees will minimise the negative health and wellbeing impacts experienced by both upstream and downstream landholders in a major flood event. However, floods in the region are a major concern for all stakeholders and have serious consequences.

As previously noted, landholders are likely to have good structures and strategies in place for managing flood events, some of which have been improved based on previous experiences with major floods, and will assist in mitigating impacts.

Maintenance of the levees, with the inclusion of inlet and outlet structures, would relieve some of the negative impacts associated with the flood events but would not alleviate the problem fully and is therefore assessed as having a MINOR negative impact on landholders' in relation to this factor.

7.3.1.3 Summary

In summary, it has been determined that Preferred Option 2 has the potential to MINOR negative impact on livelihood and health and wellbeing (stress) of landholders in a 1:100 flood event, as shown in **Table 7.9**, with the social impacts assessed under this Option considered MINOR.

Table 7.9 Summary of project impacts Preferred Option 2 - Flood

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health and Community Wellbeing	Maintenance of current levees	Livelihood	Upstream and Downstream Landholders	LT	Emerald Comet	MAJOR	MINOR
		Mental Health (Stress)	Upstream and downstream Landholders	ST	Emerald Comet	MAJOR	MINOR

7.3.2 Water Quality related impacts

Preferred Option 2 proposes to use the rehabilitated landforms located on the flood plain for water storage. Use for water storage will impact landholders both upstream and downstream, residents of Comet and Emerald and the Central Highlands region more broadly, depending upon selected uses.

7.3.2.1 Water Security

Current projections indicate that Emerald's demand for water is due to exceed the volume of water that council has nominally allocated for the town, by about 2024 (State of Queensland, 2017). The fiscal cost of building a dam or water storage facility would require significant investment from the Queensland Government. Without the future use of this asset, it is unlikely that the Central Highlands would be able to deliver on their aspirations outlined in their strategic plans, including the provision of water security required by 2024.

It is anticipated that the water storage will have a maximum water holding capacity of 120,000ML making available 8,000ML of high priority water by 2024-25. An additional 12,000ML of high priority water would become available from the water storage on the northern side of the river post mine closure (HEC, 2018b Rev 1). This additional 20,000ML would supplement the Fairbairn Dam, increasing water supply to the Central Highlands region. The use of Ensham Mine for water storage raises the issue of the quality of water, which according to relevant scientific studies, has been assessed as being 500 to 600 TDS (total dissolved solids) or 750 to 900 EC (electrical conductivity), and is considered suitable for irrigation and other industrial uses (HEC, 2018b Rev 1).

It is assessed that the use of the rehabilitated landform for water storage will have a significant positive impact on the community, with increased benefits for the region, by providing access to a secure water source that can support local agriculture and facilitate other uses e.g. the opportunity to pump water to the Weemah Channel and to the Central Queensland Inland Port project, which commenced construction in August 2018. The economic impact assessment supports that Preferred Option 2 will deliver 271 FTE additional jobs, and $128.27M present value benefit to the Central Highlands region through the provision of additional irrigation water to Emerald, a currently water constrained community, (Deloitte Access Economics, 2018).

Improving water security will provide potential economic growth for the Central Highlands and for the Nogoa – McKenzie river systems, and consequently has been rated as a MAJOR positive social impact.

7.3.2.2 Public Safety and security

Utilising the rehabilitated landform to store water raises serious concerns in the community in regard to water quality. Under this Preferred Option, water in the rehabilitated landforms seeps to groundwater, not the reverse – thus reducing potential risks of groundwater contaminating the water. In addition, the rehabilitated landform is below the height of the floodplain, protected by the engineered levees, providing further protection in reducing interaction between the rehabilitated landform and the flood plain.

Ongoing monitoring of water quality in the river catchment areas near the Ensham Mine would need to be undertaken to enable early detection and intervention. However, given appropriate controls and monitoring are in place, it is predicted that the impacts to Public Safety and Security would be minimised, resulting in only a MINOR negative impact ranking for this social impact factor.

7.3.2.3 Summary

In summary, it has been determined that Preferred Option 2 has the potential to impact on public safety and security in a 1:100 flood event in relation to water quality, and has been ranked as a MODERATE impact on local landholders and the broader community. However under this option significant positive impacts may ensue in the form of greater water security for key stakeholders in the region.

Table 7.10 Summary of project impacts Preferred Option 2 Water Quality – water storage and quality

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Use of voids for water storage	Water security	CHR residents	LT	CHR	MAJOR	MAJOR (Positive)
		Public safety and security	Upstream and downstream landholders Broader community	LT	Comet Emerald CHR	MAJOR	MINOR

7.3.3 Management related impacts

The Post Mining Land Use for Preferred Option 2 landforms adjacent to the flood plain, includes potentially linking the rehabilitated landforms located to the south of the Nogoa River to the existing Weemah Channel with large diameter pipes and pumps to transfer water to and from Ensham Mine for use in irrigation and other industrial uses. In addition, inclusion of a solar farm could reduce the operational costs associated with this option post relinquishment. The ability to store water and governance of the asset will consequently impact the Queensland Government, Sunwater and other key stakeholders within the Central Highlands region.

7.3.3.1 Fears and Aspirations/Political – decision-making

The storage of water and governance of the asset, proposed under Preferred Option 2, Flood Mitigation and Beneficial Use raised concerns among stakeholders as to the sustainability or viability of this option in the long term. Barriers to successful implementation such as political decision making processes were noted; however, potential benefits were also envisaged should a managing body, such as Sunwater, be appointed to manage the asset.

Regardless of these fears, there were clear aspirations among key stakeholders and community to improve access to water, not only for agriculture and other industrial uses, but also for a range of recreational, tourism, educational and ecological purposes. The fiscal cost of building a dam or water storage facility would require significant investment from the Queensland Government, and without the availability of this asset it was considered that the Central Highlands would not receive funding for such a facility.

The potential opportunities offered under Preferred Option 2, with appropriate management and governance structures in place, resulted in a MAJOR positive impact for this factor.

Table 7.11 Summary of social impacts - Option 2 Management

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Availability and governance of the asset	Fears and aspirations Decision making and Governance	QLD Government Sunwater	LT	CHR	**MODERATE**	**MAJOR** (Positive)

7.3.4 Community Use related impacts

This section addresses the potential social impacts arising from alternate community uses for water in the voids. Greater availability of, and access to, water to supplement the Fairbairn Dam, was considered very positively by key stakeholders consulted, with a range of potential uses for the water identified.

7.3.4.1 Regional Economic Growth/Community Resilience

Improved access to, and availability of, water in the region is likely to result in growth across a number of potential commercial sectors, including agriculture and potentially tourism. Such growth may translate to an increase in employment across these sectors contributing to improved community resilience across economic and human capital areas within the region.

In this regard, the economic assessment outlines that:

> *"… activities such as boating, water skiing, wakeboarding and fishing attract visitors to the existing Fairbairn Dam. It is expected that, under Option 2, the rehabilitated open cut areas may provide the option for similar aquaculture and recreational purposes. This may have a material impact on tourism within the locality, predominantly for accommodation, hospitality and other tourism service providers. The rehabilitation is not expected to have any material effects on business travel under any of the options. Over97all, it is expected that the rehabilitation of the open cut mine areas will lead to an increase in demand for tourism services in the locality …" (Deloitte Access Economics, 2018).*

Further benefits include the residual value of land estimated to be around $2million for Option 2 and $11 million of economic value created in the reduction of the flood afflux (Deloitte Access Economics, 2018). These will add to the flow on benefits to the region which supports community resilience.

7.3.4.2 Way of Life – Recreation

Use of the water was also considered by key stakeholders for other purposes such as recreation. Potential recreational activities noted by stakeholders included water skiing, fishing, camping and other water sports. The opportunity to develop additional recreational areas, such as camp sites and recreational infrastructure, such as picnic facilities, was also mentioned.

The development of rehabilitated mines for recreational purposes has been successful in other countries around the world (Doupé and Lymbery, 2005); and the Emerald and Comet communities are supportive of the recreational possibilities that could arise from Preferred Option 2. Such a use would provide additional recreational activities and opportunities, but could also provide an additional place where the community could meet and connect. Consequently, the use of the water resource for recreational purposes has positive impacts for residents of the Central Highlands region.

7.3.4.3 Culture – Education and Training

A further use of the resource, identified by key stakeholders, included opportunities to provide further education and training in regard to rehabilitation of the area. Indigenous stakeholders consulted, in particular, identified value in being involved in the rehabilitation process and in longer term education and training initiatives that allow the incorporation and continuation of their traditional knowledge.

7.3.4.4 Summary

It has been determined that Preferred Option 2 has the potential to impact on regional economic growth, recreational and cultural – education and training opportunities. Overall, Preferred Option 2 was considered to provide a number of significant positive impacts (ranked as MAJOR and MODERATE) to the community and the region more broadly, that had the potential to facilitate greater community connectedness, cohesion and resilience.

Table 7.12 Summary of project impacts – Preferred Option 2 Community Use – Water availability

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Water availability and supplement to the Fairbairn Dam for potential use in agriculture, tourism and expansion of inland port	Economic Impacts	CHR residents QLD State Landholders	LT	CHR QLD	**MAJOR (Positive)**	**MAJOR (Positive)**
		Community Resilience	CHR Residents	LT	CHR	**MODERATE (Positive)**	**MODERATE (Positive)**
		Way of life – recreation	CHR residents	LT	CHR	**MODERATE (Positive)**	**MODERATE (Positive)**
		Culture – education and training	CHR residents Indigenous groups	LT	CHR	**MODERATE (Positive)**	**MINOR (Positive)**

7.3.5 Landform Design related impacts

Preferred Option 2 proposes to rehabilitate the land surrounding the rehabilitated landforms and include a biodiversity corridor (treed corridor) along the high walls. The key issue raised by stakeholders in this theme related to visual impact of the rehabilitated landforms.

7.3.5.1 Visual Impact

In relation to visual impacts, some stakeholders outlined that despite the proposed strategies to improve visual amenity, such as the biodiversity corridor, there was a view that other voids would still remain e.g. Pits E, F and Y and that this would be a negative impact. Given the rehabilitation aspects proposed, the visual impact ranking for Preferred Option 2 is considered a MODERATE positive impact.

Table 7.13 Summary of social impacts – Preferred Option 2 – Landform Design

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Rehabilitation of land	Visual Amenity	Upstream and downstream landholders CHR Residents	LT	CHR	**MINOR (Positive)**	**MODERATE (Positive)**
Health & Community Wellbeing	Partial backfilling of voids not on the flood plain	Visual	Landholders and CHR residents	LT	CHR	**MAJOR**	**MODERATE (Positive)**

7.4 Preferred Option 3 - Backfill to PMF

Preferred Option 3 Backfill to PMF proposes to remove all current levees and backfill all the voids located within the floodplain, up to the height and width of the original flood plain within the lateral extent of the pre-mining PMF level. The removal of the current levees and backfilling of the voids is considered to impact a number of stakeholders including local landholders, the Ensham workforce and residents of Comet and Emerald. Pits not on the floodplain will be partially backfilled to minimise interaction with groundwater.

7.4.1 Flood and water quality related impacts

7.4.1.1 Livelihood

Removal of the current levees is anticipated to have an adverse effect on both upstream and downstream landholders, to differing degrees, depending upon the changing water levels in a flood event. As has been previously highlighted, many stakeholders perceived the levees to be critical in maintaining flood waters to an appropriate level despite having experienced flood impacts across previous significant flood events.

Downstream landholders

As has been noted in the discussion of flood related impacts in Option 1, the potential removal of levees was repeatedly identified by downstream landholders, the consequences of which will have a significant impact on properties downstream resulting in potential livelihood impacts.

In 2008 the neighbouring downstream property to the Ensham Mine was inundated with water due to failure of the levee, resulting in property damage, lost crops and loss of income. From a stakeholder perspective, this provides evidence of the consequence of removal of the levee, for downstream landholders. As has been evidenced in previous flood events, the greater the damage to a farm caused by flood, the longer the recovery, and the higher the impact on personal livelihoods.

The concerns noted by stakeholders in relation to the removal of the levees appear supported by flood modelling (HEC, 2018a Rev1), which suggests that in a 1:100 flood event, a greater volume of water may be experienced by downstream landholders.

Therefore, it is predicted that the consequences of levee removal on the livelihoods of downstream landholders will have a MAJOR negative impact.

Upstream landholders

In the 2008 and 2010 upstream properties were impacted by higher levels of water, due to the backing up of water caused by current levee structures (afflux effects). Consequently, a number of stakeholders expressed the view that the removal of the levees may actually benefit upstream landholders. Stakeholders outlined that restoration of the floodplain, in its more natural form, provides flood water somewhere to go, thus relieving some of the impacts experienced upstream.

However, the flood modelling (HEC, 2018a Rev1) indicates that the levee structures are only one factor that influences water flows and therefore impacts on upstream landholders, with the study suggesting that the removal of the levees may be unlikely to benefit upstream landholders to a great extent, with the positive impacts of levee removal somewhat overstated.

Therefore, it is predicted that the impact of levee removal on the livelihoods of upstream landholders is likely to have MODERATE positive impacts.

7.4.1.2 Health and Wellbeing (Stress)

Based on the research on the impacts of floods on communities, it is reasonable to expect that residents of Emerald and the surrounding region may experience health and wellbeing issues as a result of a flood event, based on previous experience through the 2008 and 2010 flood events. Serious consideration needs to be given to how the removal of levees under Option 3 Backfill to PMF, is likely to impact the mental health of neighbouring landholders in a major flood event.

Downstream landholders

Given the level of concern in relation to the removal of the current levees, it is likely that additional stress may be experienced by downstream landholders should a further major flood event occur. As has been previously noted, in response to previous flood events, landholders have invested in expensive structures and strategies. If the current levees are removed, under Option 3, such structures and strategies would increase levels of uncertainty regarding flood water movements.

Therefore, the potential for health and wellbeing issues/stress to be experienced by downstream users as a result of the removal of current levees in Option 3 is likely to be MAJOR negative impact.

Upstream landholders

While upstream landholders outlined through consultation that levee removal may actually result in less flood impacts to their properties; this view conflicts with the formal modelling of flood waters in a 1:100 flood event. Consequently, the social impact of levee removal on upstream landholders has been ranked as a MODERATE positive impact.

7.4.1.3 Livelihood

Backfilling of voids raises concerns about the settlement of rehabilitated land causing silt and contamination of land in flood event, or subsidence. Stakeholders expressed that this would have a MAJOR negative impact on downstream landholders as if silt and contamination washed away in a flood event it would potentially end up on downstream properties with major negative consequences to livelihood. Downstream properties are used for farming and as such the value of their businesses in dependent upon the ability for their land to produce crops, any contamination of the land at worse could render the land unusable, at best it would cause loss of yield for a period of time. The technical studies show that there is a low risk that the rehabilitated land could wash away and silt and contamination of land downstream, although if it did there would be consequences to landholder's livelihoods. As such the assessment is that there is a MINOR negative impact on livelihood for downstream landholders, in particular those neighbouring the Ensham Mine.

7.4.1.4 Summary

It has been determined that Option 3 has the potential to impact on livelihood, mental health (stress) and workforce safety as shown in **Table 7.14**.

Table 7.14 Summary of project impacts - Option 3 - Flood

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Removal of current levees	Livelihood	Downstream landholders	LT	Comet	MAJOR	MAJOR
		Livelihood	Upstream landholders	LT	Emerald	MAJOR	MODERATE Positive
		Health and Wellbeing (Stress)	Downstream landholders	ST	Comet	MAJOR	MAJOR
		Health and Wellbeing (Stress)	Upstream landholders	ST	Emerald	MINOR Positive	MODERATE Positive
	Settlement of rehabilitated land and potential subsidence	Livelihood	Downstream landholders	LT	Downstream landholders	MINOR	MINOR

7.4.2 Management related impacts

Management issues identified in relation to Option 3 were similar to those raised for all the other options. There was a strong view across key stakeholders that appropriate management measures should be in place to ensure that rehabilitation of land, post backfilling of the voids, was appropriately undertaken to ensure that soils and land were safe, stabilised and non-polluting. Relevant government policy and frameworks should provide some certainty to stakeholders that land will be left in an appropriate state post relinquishment; however, this still remained a concern for particular stakeholders, with a request that detailed management plans be developed to guide management and maintenance activities post Option implementation.

As has been previously noted, while perceived as a MODERATE risk by stakeholders consulted, the consequences on the livelihoods of landholders and the broader community is assessed to have a MINOR negative impact.

Table 7.15 Summary of social impacts - Option 3 - Management

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Ongoing maintenance and management of land	Livelihood	Landholders, CHR community	LT	Comet Emerald	MODERATE	MINOR

7.4.3 Community related impacts

In general, Option 3, while the second most Preferred Option across all the stakeholder groups consulted, was not seen to contribute significantly to the community broadly.

7.4.3.1 Economic Benefits – Locally and Regionally

It was considered by stakeholders, that the backfilling of the voids, under this option, could result in an economic benefit to the communities of Emerald and Comet, and the broader CHR, in the form of short term employment opportunities relating to rehabilitation works.

Recent downturns in mining, across Queensland's rural and remote communities, particularly in communities such as Emerald that are relatively dependent on mining for ongoing employment in the region, have had an impact. As has been noted in the profile section of the report (**Section 5.5.2.1**), the mining sector is a key contributor to the economy of the CHR and consequently communities experience strongly any downturn in the sector.

The economic impact assessment indicates that employment opportunities, under this Option, will be minimal as they will be taken up by the existing Ensham Mine Workforce, transitioning out of current operational roles, in the short term (approximately 5 years) rather than creating new employment opportunities for local and regional residents. However, rehabilitation under Preferred Option 3 is estimated to see 47 FTE jobs annually between 2022 and 2045, while operation of the mine is expected to average 175 FTE direct jobs annually from the local area (Deloitte Access Economics, 2018).

There was also a view that rehabilitation of land may result in greater opportunities for local landholders to utilise this land for commercial farming purposes According to Deloitte Access Economics (2018) the residual land value for Preferred Option 3 is estimated at $25 million in present value terms. It is important to note that the current landowners of the northern Pits (F and Y) purchased the property post commencement of the mining operation and as such any additional rehabilitated land that may be made available has the potential to benefit current and future neighbouring landholders. In addition, there is potential for local and regional businesses to benefit through Ensham's RVP procurement processes, this may occur through the purchase of goods and services as inputs (Deloitte, 2018).

A further key concern identified by stakeholders in relation to this option related to the cost to Ensham of Option 3 implementation. It was suggested that backfilling of the voids, while returning the land to a pre-mining land use, was a very costly exercise and could have negative flow on effects to the Ensham business, in both the short and long term, and provide a barrier to their future investment in the locality. A number of stakeholders also felt that the investment in this option could be more constructively used to benefit the broader community:

> *"That could not possibly be an option?"*
>
> *"If you are going to spend all that money on it, why not do something with it that benefits the community in some way"*

The consequences related to the local and regional economy and the cost to Ensham is deemed as a MINOR positive impact.

7.4.3.2 Culture – Education and Training

A further use of the resource, identified by key stakeholders, included opportunities to provide further education and training in regard to rehabilitation of the area. Indigenous stakeholders consulted, in particular, identified value in being involved in the rehabilitation process and in longer term education and training initiatives that allow the incorporation and continuation of their traditional knowledge.

7.4.3.3 Summary

Therefore, in summary, Option 3 will result in only small/MINOR economic benefit to the community as there are a small number of local employment opportunities and an increase in useable land for landholders.

Table 7.16 Summary of social impacts - Option 3 – Local and Regional Economic Benefits

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Workforce Management	Cost of the Option	Local and Regional Economic Benefits	CHR Community	ST	CHR	**MODERATE (Positive)**	**MINOR (Positive)**
	Rehabilitation related employment opportunities						
Health & Community Wellbeing	Availability of additional land		Landholder	LT	Comet	**MODERATE (Positive)**	**MINOR (Positive)**

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Availability of additional land	Culture – education and training	CHR residents Indigenous groups	LT	CHR	**MODERATE (Positive)**	**MINOR (Positive)**

7.4.4 Landform Design related impacts

7.4.4.1 Visual Impact

Rehabilitation of land proposed under Option 3 was considered favourably by stakeholders. Some stakeholders however were disappointed that only partial backfilling would occur for voids not located on the floodplain under this option. However, lifting of the pits floors and proposals for additional visual impact was appreciated.

The Landform Design study (Ensham Resources Pty Ltd, September 2018) indicates that rehabilitation of the land will significantly improve visual amenity under this option, providing a landscape that is sympathetic to the surroundings and will facilitate local habitat. This was considered by stakeholder to be a vast improvement to the baseline state, where the current voids are an unsightly scar on the landscape.

7.4.4.2 Summary

In summary, Option 3 is likely to result in a MODERATE positive impact to visual amenity should the option proceed and provide some opportunity for local landholders neighbouring the Ensham Mine site to utilise rehabilitated lands for further commercial purposes. This provides a MINOR positive impact to the livelihood of neighbouring landholders.

Table 7.17 Summary of project impacts Option 3 Design – rehabilitation of land and partial backfilling of voids not on the floodplain

SIA Matter	Project Aspect	Potential Impact	Stakeholder	Duration	Extent	Perceived Stakeholder Significance	Mitigated Stakeholder Significance
Health & Community Wellbeing	Land Rehabilitation	Livelihood	Neighbouring Landholders	LT	Comet	**MODERATE (Positive)**	**MINOR (Positive)**
	Partial backfilling of voids not on the flood plain	Visual	Landholders and CHR residents	LT	CHR	**MAJOR**	**MODERATE (Positive)**

8.0 Mitigation and management

This section provides a summary of the identified social impacts for each of the three preferred RVP options, along with the corresponding perceived stakeholder risk rankings and mitigated technical risk rankings. In addition, key potential stakeholder partners have been identified to participate in the monitoring and management of impacts, along with a range of proposed social impact mitigation and management strategies.

This section also provides a framework for the development of a Social Impact Management Plan (SIMP). Whilst the SIA Guideline requires the development of a SIMP as a component of the SIA process, it is recognised that the Ensham RVP consists of three preferred final landform and land use options that each have different social impact outcomes. Therefore, it is proposed that a framework of mitigation measures and monitoring processes is adequate at this stage, until a RVP Project option is selected for approval or further refinement. It is proposed that at the point of approval, a SIMP would be required to be developed for the approved RVP option, in accordance with an appropriate condition of final approval.

8.1 Ensham Resources Current Social Investment

Between January 2017 and March 2018 Ensham invested $57,662.89 in their community. Investments contributed to events, sporting clubs, infrastructure upgrades and an environmental education camp. There is an opportunity for Ensham to maximise their investment program as part of the ERVP and leverage relationships developed as part of their stakeholder engagement activities.

Of particular note is the opportunity to partner with Traditional Owner Groups to incorporate tradition cultural knowledge to inform rehabilitation and provide education and training. There may also be opportunity to support enterprise and entrepreneurship development initiatives to enable economic diversification in target sectors that would benefit from increased land availability. An existing example in the Bowen Basin is the BHP Local Buy Program.

8.2 Option 1 Landform Levee

Project Aspect	Potential Impact	Perceived Stakeholder Significance	Mitigated Stakeholder Significance	Potential Partners	Proposed Mitigation and Management
Partial backfilling of voids not on the flood plain	Visual Amenity	**MAJOR**	**MODERATE (Positive)**	• Landholders • CHR residents	• Develop a communications strategy as part of the mine closure plan that informs the community of the progress of rehabilitation and informs them of the final landform design.
Landform Design	Visual Amenity	**MODERATE**	**MODERATE (Positive)**	• Upstream and downstream landholders	• Develop a communications strategy as part of the mine closure plan that informs the community of the progress of rehabilitation and informs them of the final landform design.
Maintaining existing levee	Livelihood	**MAJOR**	**MINOR**	• Qld Government • Landholders • CHRC	• Participate in CHRC emergency management networks • Involve landholders in ongoing monitoring of groundwater and river systems • Establish network to assist with ongoing monitoring • Regular communication of results to the community resulting from monitoring and testing of groundwater and river systems
	Health and Wellbeing (Stress)	**MAJOR**	**MINOR**	• Central Queensland HHS • CHRC • Emergency Services	• Support mental health programs across the Central Highland Regional Council area e.g. ESP Programs can deliver effective counselling should a flood event occur ○ Support emergency planning activities across the region
Partial backfill – raising floor of pits to above groundwater	Livelihood	**MAJOR**	**MINOR**	• Qld Government • Landholders • CHRC • Fitzroy Partnership for River Health	• Develop a water management strategy that: ○ Involves landholders in ongoing monitoring of groundwater and river systems ○ Establish network to assist with ongoing monitoring ○ Regular communication of results from monitoring and testing of groundwater and river systems to community
Water quality – potential seepage affecting river system	Public safety and security	**MAJOR**	**MINOR**		

Project Aspect	Potential Impact	Perceived Stakeholder Significance	Mitigated Stakeholder Significance	Potential Partners	Proposed Mitigation and Management
Maintenance of land and levees (post relinquishment)	Public safety and security	**MAJOR**	**MINOR**	• Qld Government • Landholders • CHRC	• Develop a mine closure plan that outlines the ongoing monitoring and management activities and roles and responsibilities for the ongoing maintenance of the land and levees from operation through to post relinquishment. • Develop and implement a community and stakeholder engagement strategy that informs the community and key stakeholders of the ongoing management and maintenance of the Option Implementation.
Employment - post mining	Livelihood/ Way of Life	**MODERATE**	**MINOR (Positive)**	• Workforce	• Develop a workforce plan as part of the mine closure plan that outlines the workforce requirements from operation, rehabilitation and post relinquishment • Offer employee assistance programs
Increase in available land	Livelihood	**MINOR (Positive)**	**MINOR (Positive)**	• Landholders	• Develop a communications strategy as part of the mine closure plan that: ○ Liaises with stakeholders to communicate suitable land uses ○ Engages with community around any potential uses of land
	Way of Life – recreation	**MINOR (Positive)**	**MINOR (Positive)**	• Broader Community • CHRC	
	Culture – education and training	**MODERATE (Positive)**	**MINOR (Positive)**	• Indigenous groups • CHRC residents	• Partner with Traditional Owner Groups to incorporate tradition cultural knowledge to inform rehabilitation and provide education and training

8.3 Option 2 Flood Mitigation and Beneficial Use

Project Aspect	Potential Impact	Perceived stakeholder risk	Mitigated technical risk	Potential Partners	Proposed Mitigation and management
Water availability and supplement to the Fairbairn Dam for potential use in agriculture, tourism and expansion of inland port	Economic Impacts	**MAJOR (Positive)**	**MAJOR (Positive)**	• Sunwater / Water Board • CHRC • CHR residents • QLD State • Landholders	• Incorporate the Option 2 Flood Mitigation and Beneficial Use into the CHRC Economic Strategies and Plans to maximise benefits of increase water availability across the region • Develop Implementation Working Group to maximise benefits association with Option 2 Flood Mitigation and Beneficial Use • Develop and implement a community and stakeholder engagement strategy • Develop and implement a marketing strategy that highlights the benefits associated with additional water availability and associated opportunities • Support enterprise and entrepreneurship development initiatives to enable economic diversification in target sectors that would benefit from increased land availability
Availability and governance of the asset	Fears and aspirations Decision making and Governance	**MODERATE**	**MAJOR (Positive)**	• Qld Government • Sunwater/Water Board • CHR residents	• Sunwater/Water Board to operate the asset according to their operational standards • Queensland Government to approve asset as water storage facility • Develop and implement a communication strategy that clearly outlines the decision making process and governance arrangements

Use of voids for water storage	Water security	**MAJOR**	**MAJOR (Positive)**	• Qld Government
				• Landholders
				• CHRC
				• Fitzroy Partnership for River Health
					• Develop a water management strategy that:
					  ○ Involves landholders in ongoing monitoring of groundwater and river systems
					  ○ Establish network to assist with ongoing monitoring
					• Regular communication of results from monitoring and testing of groundwater and river systems to community

Project Aspect	Potential Impact	Perceived stakeholder risk	Mitigated technical risk	Potential Partners	Proposed Mitigation and management
Water availability and supplement to the Fairbairn Dam for potential use in agriculture, tourism and expansion of inland port	Community Resilience	**MODERATE (Positive)**	**MODERATE (Positive)**	• CHR residents • CHR residents	• Incorporate the Option 2 Flood Mitigation and Beneficial Use into the CHRC Economic Strategies and Plans to maximise benefits of increase water availability across the region • Develop Implementation Working Group to maximise benefits association with Option 2 Flood Mitigation and Beneficial Use • Develop and implement a community and stakeholder engagement strategy • Develop and implement a marketing strategy that highlights the benefits associated with additional water availability and associated opportunities • Support enterprise and entrepreneurship development initiatives to enable economic diversification in target sectors that would benefit from increased land availability
	Way of life – recreation	**MODERATE (Positive)**	**MODERATE (Positive)**		
Rehabilitation of land	Visual Amenity	**MINOR (Positive)**	**MODERATE (Positive)**	• Landholders • CHR residents	• Include landholders and CHR residents in rehabilitation where appropriate • Conduct site visits for landholders and CHR residents to view rehabilitated areas
Partial backfilling of voids not on the flood plain	Visual Amenity	**MAJOR**	**MODERATE (Positive)**	• Landholders • CHR residents	• Include landholders and CHR residents in rehabilitation where appropriate • Conduct site visits for landholders and CHR residents to view rehabilitated areas
Maintenance of current levees	Livelihood	**MAJOR**	**MINOR**	• Qld Government • Landholders • CHRC	• Involve landholders in ongoing monitoring of groundwater and river systems • Establish network to assist with ongoing monitoring • Regular communication of results from monitoring and testing of groundwater and river systems to community

Project Aspect	Potential Impact	Perceived stakeholder risk	Mitigated technical risk	Potential Partners	Proposed Mitigation and management
	Mental Health (Stress)	**MAJOR**	**MINOR**	• Central Queensland HHS • CHRC • Emergency Services	• Support health and wellbeing programs across the Central Highland Regional Council area e.g. ESP Programs can deliver effective counselling should a flood event occur • Support emergency planning activities across the region
Use of voids for water storage	Public safety and security	**MAJOR**	**MINOR**	• Qld Government • Landholders • CHRC • Fitzroy Partnership for River Health	• Develop a water management strategy that: ○ Involves landholders in ongoing monitoring of groundwater and river systems ○ Establish network to assist with ongoing monitoring • Regular communication of results from monitoring and testing of groundwater and river systems to community.
Water availability and supplement to the Fairbairn Dam for potential use in agriculture, tourism and expansion of inland port	Culture – education and training	**MODERATE (Positive)**	**MINOR (Positive)**	• CHR residents • Indigenous groups	• Develop and implement an education and training program in partnership with traditional owners.

8.4 Option 3 Backfill to PMF

Project Aspect	Potential Impact	Perceived Stakeholder Risk	Mitigated Technical Risk	Stakeholder	Proposed Mitigation and management
Removal of current levees	Livelihood	**MAJOR**	**MAJOR**	• Landholders	• Develop and implement a stakeholder engagement strategy that ensure landholders are informed of the changes to the landscape and associated risks • Contribute to regional disaster and flood risk management across the CHR • Provide access to mental health services (potentially via existing EAP arrangements) to landholders affected by flood, particularly those downstream where the impacts are greatest
	Health and Wellbeing (Stress)	**MAJOR**	**MAJOR**		
	Livelihood	**MAJOR**	**MODERATE Positive**		
	Health and Wellbeing (Stress)	**MINOR Positive**	**MODERATE Positive**		
Partial backfilling of voids not on the flood plain	Visual	**MAJOR**	**MODERATE (Positive)**	• CHR residents	• Develop an Implementation Working Group to ensure that the management/stewardship of rehabilitated land post relinquishment • Develop and implement a community and stakeholder engagement strategy that informs the community and key stakeholders of the ongoing management and maintenance of the Option Implementation
Backfilling of voids	Workforce and Public Safety	**MODERATE**	**MINOR**	• Ensham workforce	• Provide all Ensham staff with adequate training in disaster management and flood mitigation • Contribute to CHRC disaster management and flood mitigation planning
Settlement of rehabilitated land and potential subsidence	Livelihood	**MINOR**	**MINOR**	• Landholders	• Monitor settlement of rehabilitated land to identify early indications that there may be subsidence issues • Liaise with landholders and share outcomes of any monitoring activity • Where appropriate include landholders in rehabilitation of land

Project Aspect	Potential Impact	Perceived Stakeholder Risk	Mitigated Technical Risk	Stakeholder	Proposed Mitigation and management
Ongoing maintenance and management of land	Livelihood	**MODERATE**	**MINOR**	• Landholders • CHR residents	• Develop an Implementation Working Group to ensure that the management/stewardship of rehabilitated land post relinquishment • Develop and implement a community and stakeholder engagement strategy that informs the community and key stakeholders of the ongoing management and maintenance of the Option Implementation
Cost of the Option Rehabilitation related employment opportunities	Local and Regional Economic Benefits	**MODERATE (Positive)**	**MINOR (Positive)**	• CHR Residents	• Recruit local workforce for rehabilitation of land
Availability of additional land	Local and Regional Economic Benefits	**MODERATE (Positive)**	**MINOR (Positive)**	• Landholders	• Maximise the availability of land for post mining use • Liaise with landholders about the availability of land and potential future use
	Culture – education and training	**MODERATE (Positive)**	**MINOR (Positive)**	• Indigenous groups • CHR residents	• Develop and implement an education and training program in partnership with traditional owners
Land Rehabilitation	Livelihood	**MODERATE (Positive)**	**MINOR (Positive)**		• Develop an Implementation Advisory Group to ensure the management/stewardship of rehabilitated land post relinquishment • Involve community, in particular Traditional Owners, in rehabilitation of land where appropriate

8.5 Monitoring and measurement

The potential social impacts identified in this SIA, for each Ensham RVP options, are outlined in **Sections 8.1**, **8.2** and **8.3** above. It is proposed that a SIMP be developed to include a monitoring and measurement program to ensure that the identified impacts remain relevant to the changing conditions and trends in the Central Highlands region over time, and to measure the effectiveness or otherwise of the proposed management measures.

It is proposed that as part of the conditions of approval of the Final Preferred Option, a Social Impact Management Plan be developed that identifies the following key aspects:

- Track progress of mitigation and management strategies
- Assess actual project impacts against predicted impacts
- Identify how information will be captured for reporting to impacted stakeholders including landholders, communities and government on progress and achievements
- Key performance indicators, targets and outcomes
- Responsible parties
- Mechanisms for ongoing adaption of management measures when and if required.

To ensure the ongoing relevance and currency of the impacts and management measures, it is recommended that a continuous improvement approach be adopted allowing for the review and adaption of impacts, management measure and outcomes.

In addition, it is proposed that the results of the monitoring program, and analysis of the results against targets and KPIs, be reported annually to the CRG, the CHRC and the DES for 2 years post relinquishment and/or as articulated in the Ensham Closure Plan.

9.0 References

Ahern A. (2014, 25 July) *Yamala farmers left dry and blame mine*, CQ News. Available online: https://www.cqnews.com.au/news/farmers-left-dry-and-blame-mine/2328496/

Australian Bureau of Statistics (2000) *Population Mobility Queensland,* Information Paper. cat. No. 3237.3. ABS: Canberra, ACT.

Australian Bureau of Statistics (2004) Measuring Social Capital an Australian Framework and Indicators, Information Paper. cat. No.1378.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016b) *2016 Census of Population and Housing General Community Profile*, Emerald, Qld (SSC30982) cat. No. 2001.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016d) *2016 Census of Population and Housing General Community Profile*, Comet, Qld (SSC30661) cat. No. 2001.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016e) *2016 Census of Population and Housing General Community Profile*, Central Highlands (R) (Qld) (LGA32270), cat. No. 2001.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016f) *2016 Census of Population and Housing General Community Profile*, Queensland (3) cat. No. 2001.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016g) *2016 Census of Population and Housing General Community Profile*, Rest of Qld (3RQLD) cat. No. 2001.0. ABS: Canberra, ACT.

Australian Bureau of Statistics (2016a) *Census Time Series Regional Statistics, ASGS 2011, 2011-2016, Annual (2010-11 to 2015-16) Emerald 308011192.* ABS: Canberra, ACT.

Australian Bureau of Statistics, (2016c) *Quick Stats,* (State Suburbs) ABS: Canberra, ACT. Available online at http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats

Australian Bureau of Statistics, (2016i) *Quick Stats,* Comet Qld SSC30661 (SSC) ABS: Canberra, ACT. Available online at: http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC30661

Australian Bureau of Statistics, (2016j) *Quick Stats,* Emerald Qld SSC30982 (SSC) ABS: Canberra, ACT. Available online at: http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC30982?opendocument

Australian Bureau of Statistics, (2016k) *Quick Stats,* Central Highlands (R) Qld LGA32270 (SSC) ABS: Canberra, ACT. Available online at: http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA32270?opendocument

Australian Bureau of Statistics (2016h) *Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA)*, Australia, 2016 (cat. no. 2033.0.55.001.)

Australian Institute of Health and Welfare (2018) Website: *Rural and Remote Health. Available online at https://www.aihw.gov.au/reports/rural-health/rural-remote-health/contents/rural-health*

Australian Business Roundtable. 2016. *The economic cost of the social impact of natural disasters.* On line http://australianbusinessroundtable.com.au/assets/documents/Report%20-

%20Social%20costs/7.%20The%20cost%20of%20natural%20disasters%20-%20Australian%20experiences.pdf

Australian Government, Australian Bureau of Agricultural and Resource Economics and Sciences. 2011. *The impact of recent flood events on communities*. On line http://resources.news.com.au/files/2011/01/21/1225992/459658-flood-report.pdf

Australian Mining (2018) Website: *Back in Black in the Bowen.* Available online at: https://www.australianmining.com.au/news/back-in-black-in-the-bowen/

Butterworth K. (2014, 22 August) *Meaty plan in the works for Emerald*, The Morning Bulletin. Available online at: https://www.themorningbulletin.com.au/news/meaty-plan-in-the-works-is-a-meatworks-an-option-i/2359631/

Burdge, J Rabel J. *A Community Guide to Social Impact Assessment.* Third Ed. Middleton, Wisconsin: Social Ecology Press

Butterworth K. (2014, 19 September) *Central Highlands farmers have the need for speed*, The Morning Bulletin. Available online at: https://www.themorningbulletin.com.au/news/weve-got-the-need-for-speed-quality-connection-is-/2391645/

Centre for the Government of Queensland (2018a) Website: *Queensland Places Emerald*. Available online at http://www.queenslandplaces.com.au/emerald.

Centre for the Government of Queensland (2018b) Website: *Queensland Places Emerald Shire* Available online at http://www.queenslandplaces.com.au/emerald-shire

Central Highlands Regional Council (2018c) Website: *Councillor Contacts.* Available online at http://www.centralhighlands.qld.gov.au/about-council/mayor-councillors/councillor-contacts-2/

Central Highlands Regional Council (2018d) Website: *Central Highlands Regional Council*. Available online at http://www.centralhighlands.qld.gov.au/

Central Highlands Regional Council (2017a) *Central Highlands Visions for our Community: Our Region 2022.*

Central Highlands Regional Council (2017b) *Central Highlands Regional Council Operational Plan 2017-2018.*

Central Highlands Development Corporation (2018) *Agribusiness Capability Statement,* CDHC: Queensland.

Central Queensland Regional Organisation of Councils (2018) Website: *Our Regions*. Available online at http://cqroc.org.au/our-regions/central-highlands/

Central Queensland University (2018) Website: *CQ University Australia*. Available online at https://www.cqu.edu.au/

Coakes, S., Sadler, A., 2011. *Utilising a sustainable livelihoods approach to inform social impact assessment practice, in: New Directions in Social Impact Assessment.* Edward Elgar Publishing, Cheltenham.

Deloitte Access Economics (2018) *Economic assessment of the Ensham Residual Void Project: Idemitsu Australia Resources Pty Ltd*

Distance Calculator (2018) Website: *Australia Distance Calculator*. Available online at https://distancecalculator.globefeed.com/Australia_Distance_Calculator.asp, Accessed: 30 June 2018.

Dorey J. (2017, 12 April) Emotions run high as Emerald votes 'no' for flood levee, The Morning Bulletin. Available online at: https://www.themorningbulletin.com.au/news/emotions-run-high-as-emerald-votes-no-for-flood-le/3165797/

Doupé RG and Lymbery AJ (2005) *Environmental Risks Associated with Beneficial End Uses of Mine Lakes in Southwestern Australia,* In 'Mine Water and the Environment v24 i3 134-138. Available online https://link.springer.com/article/10.1007%2Fs10230-005-0084-0

Ensham Resources Pty Ltd (September 2018) *Stage 3 Technical Report: Landform Design*

Foster S. (2017, 11 December) Dust settles on boom time prices in town that housed mining surge, The Courier Mail. Available online at: https://www.couriermail.com.au/?s=Dust+settles+on+boom+time+prices+in+town+that+housed+mining+surge

Fox S. (2017, 16 June) Former central Queensland gold mining town of Mount Morgan set to shine again, ABC News. Available online at: http://www.abc.net.au/news/2017-06-16/former-gold-mining-town-mt-morgan-to-shine-again/8624908

Gordon J. and Preiss B (2016, 18 December) Lake plan for Hazelwood coal mine could leave taxpayers high and dry, The Age. Available online at: https://www.theage.com.au/national/victoria/lake-plan-for-hazelwood-coal-mine-could-leave-taxpayers-high-and-dry-20161218-gtdfll.html

Hydro Engineering & Consulting Pty Ltd (2018a) *Ensham Coal Mine Residual Void Project: Stage 2 Catchment Hydrology and Flood Study (Revision 1)*

Hydro Engineering & Consulting Pty Ltd (2018b) *Ensham Coal Mine Residual Void Project: Stage 2 Void Water and Salt Balance Modelling*

Hydro Engineering & Consulting Pty Ltd (2018c REVM) *Ensham Coal Mine Residual Void Project: Stage 2 Catchment Hydrology and Flood Study (Revision 1)*

HydroSimulations (2018) *Ensham Resources: Residual Void Project – Groundwater Assessment Stage 3*

Horton, D. (1994). Gayiri. Encyclopaedia Of Aboriginal Australia, v1 n406.

Horton, D. (1994). Garingbal. Encyclopaedia Of Aboriginal Australia, v1 n404

International Association for Impact Assessment (2003) *'SIA Principles' Impact Assessment and Project Appraisal*, volume 21, number 1, March 2003, pages 5–11, Beech Tree Publishing, 10 Watford Close, Guildford, Surrey GU1 2EP, UK

Jacques, O. (2013, 13 February) *78 environmental breaches from CQ coal sites since 2010* The Morning Bulletin Available online at: https://www.themorningbulletin.com.au/news/farmers-mine-water-78-environmental-breaches-2010/1753587/

King A. (2013, 20 May) Tests reveal "shocking" level of heavy metals in Dee River, the Morning Bulletin. Available online: https://www.themorningbulletin.com.au/news/out-of-his-own-pocket-mount-morgans-tom-foster-pai/1873276/

KPMG (2018) *BHP Water Report 2018.* Available online at: https://www.bhp.com/-/media/documents/investors/annual-reports/2018/180828_bhpwaterreport2018.pdf

KPMG (2017) *The Central Highlands Economic Master Plan (CHEMP) and associated 2017 – 2022 Action plan*.

Kraak H. (2017, 26 October) Rehabilitation a hot topic at forum, Latrobe Valley Express. Available online at: http://www.latrobevalleyexpress.com.au/story/5013096/rehabilitation-a-hot-topic-at-forum/

Lumburra Bimib (2018) Website: Western Kangoulu. Available online at: http://lumburrabimbi.com.au/western-kangoulu/

Markus A. (2017) *Mapping Social Cohesion, The Scanlon Foundation surveys 2017*, Monash University, Victoria, Australia.

Mining Link (2018) Website: Ensham. Available online at: http://mininglink.com.au/site/ensham

Monument Australia (2018) Website: Emerald Railway Memorial. Available online at: http://monumentaustralia.org.au/themes/technology/industry/display/91355-emerald-railway-memorial

My Community Directory (2018) Website: *Emerald 4720*. Available online at https://www.mycommunitydirectory.com.au/Queensland/Central_Highlands?id=4450&location=Emerald%204720

My Hospitals (2018) Website: *Emerald Hospital*. Available online at https://www.myhospitals.gov.au/hospital/310000135/emerald-hospital, accessed 18.5.18

National Flood Risk Advisory Group (2008) *Flood risk management in Australia.* In 'The Australian Journal of Emergency Management', v23 n4. Available online https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwjZqNWl4-vcAhXCx7wKHZ6GCL4QFjACegQICBAC&url=https%3A%2F%2Fajem.infoservices.com.au%2Fdownloads%2FAJEM-23-04-06&usg=AOvVaw3ALlC6uyXbFRIhQ7lCs5DZ

Organisation for Economic Cooperation and Development (2007) *Understanding the Social Outcomes of Learning,* OECD: Paris, France. DOI :http://dx.doi.org/10.1787/9789264034181-en

Plane M. (2017, 11 December) Revealed: Why 2018 will be the year for mining, Daily Mercury. Available online at: https://www.dailymercury.com.au/news/revealed-why-2018-will-be-the-year-for-mining/3287203/

Public Health Information Development Unit (PHIDU) 2018 *Social Atlas of Australia, Data by Local Government Area, Central Highlands LGA, Queensland.*

Queensland Council of Social Services (2011) *The Queensland floods and the community sector: contribution, challenges and lessons for the future.* Available online https://www.qcoss.org.au/sites/default/files/Final_Consultation_summary.pdf

Queensland Floods Commissions of Inquiry (2012) *Queensland Floods Commission of Inquiry: Final Report 'Chapter 13: Mining'*. Available online at: http://www.floodcommission.qld.gov.au/__data/assets/pdf_file/0017/11717/QFCI-Final-Report-Chapter-13-Mining.pdf

Queensland Government, Department of Energy and Water Supply (2017) *Emerald regional water supply security assessment.* Available online https://www.dews.qld.gov.au/__data/assets/pdf_file/0005/1262777/emerald-rwssa.pdf

Queensland Government, Department of Environment and Science (2014) *Guideline: Rehabilitation requirements for mining resource activities*. Available online at https://environment.des.qld.gov.au/assets/documents/regulation/rs-gl-rehabilitation-requirements-mining.pdf

Queensland Government, Department of Local Government and Planning (2018) Website: *Department of Local Government, Racing and Multicultural affairs*. Available online at http://www.dilgp.qld.gov.au/resources/map/reform/central-highlands-map.pdf

Queensland Government, Department of State Development, Infrastructure and Planning (2013) *Economic and Infrastructure Framework.*

Queensland Government, Department of State Development, Manufacturing, Infrastructure and Planning (2018) *Strong and Sustainable Resource Communities Act 2017*. DSDMIP, Queensland Government: Qld.

Queensland Government (2018) Website: *Rural and Remote support.* Available online at https://www.qld.gov.au/health/services/specialists/rural-remote

Queensland Government Statistician's Office 2018a, Queensland Treasury, *Queensland Regional Profiles: Indigenous Profile for Central Highlands (R) Local Government Area*.

Queensland Government Statistician's Office 2018b, Queensland Treasury, *Queensland Regional Profiles: Resident Profile for Central Highlands (R) Local Government Area*.

Queensland Government Statistician's Office (2011) Website: Projected population (medium series), by statistical area level 2 (SA2), SA3 and SA4, Queensland, 2011 to 2036. Available online at http://www.qgso.qld.gov.au/subjects/demography/population-projections/tables/proj-pop-medium-series-sa2-sa3-sa4-qld/index.php

Queensland Health Hospital and Health Services (2017) *Destination 2030: Delivering Great Care for Central Queenslanders*, Central Queensland Hospital and Health Service.

Queensland Health Hospital and Health Services (2018) *The health of Queenslanders, Population Health Status Profile.*

Queensland Health (2016) Chief Health Officer report 'Central Queensland HHS: Population health status profile (2016). Available online at https://www.health.qld.gov.au/__data/assets/pdf_file/0036/536895/hhs-profiles-central.pdf

Queensland Police (2018a) Website: *Reported Crime Trend Data - Division Reported Offences.* Available online at https://www.police.qld.gov.au/online/data/default.htm

Queensland Police (2018b) Website: *Reported Crime Trend Data - District Reported Offences.* Available online at https://www.police.qld.gov.au/online/data/default.htm

Queensland Resources Council, (2017) *Economic contribution of the minerals and energy sector to the Queensland economy 2016/17*.

Realestate.com.au (2018) Website: *Median Property Prices – Emerald Queensland 4720*. Available online at https://www.realestate.com.au/neighbourhoods/emerald-4720-qld

Regional Australia Institute. 2013. *From Recovery to Renewal*. On line http://www.regionalaustralia.org.au/home/wp-content/uploads/2013/06/RAI-Natural-Disasters-Report-Case-Studies.pdf

Remplan 2017 http://www.economyprofile.com.au/centralhighlands/trends/gross-regional-product

State of Queensland, Department of Energy and Water Supply (2017) *Emerald: regional water supply security assessment.* Available online at https://www.dews.qld.gov.au/__data/assets/pdf_file/0005/1262777/emerald-rwssa.pdf

State of Queensland, Department of State Development, Manufacturing, Infrastructure and Planning 2018, Social Impact Assessment Guideline 2018.

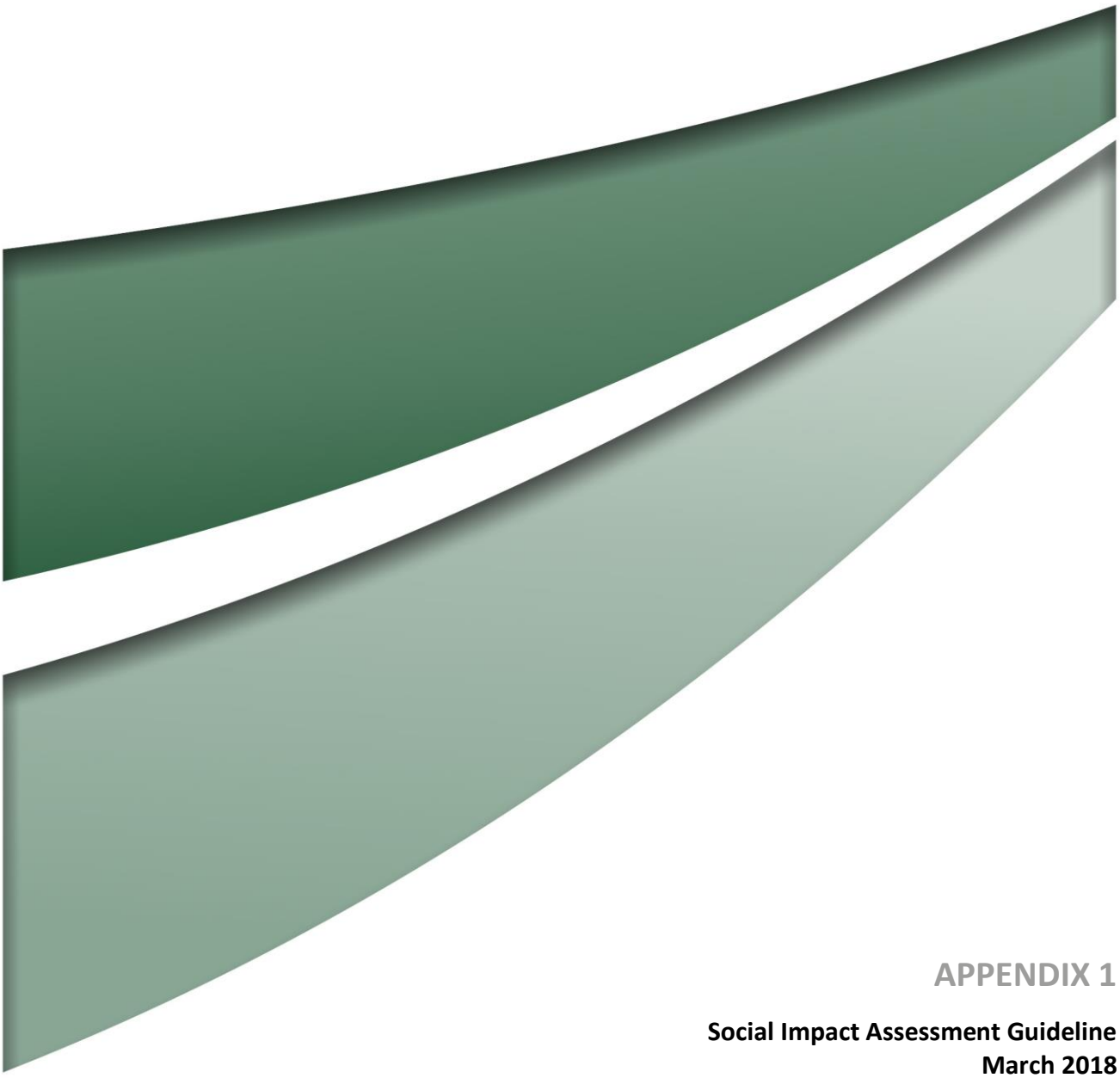
The Morning Bulletin (2016, 1 November) Tonnes of weight lifted off CQ roads with freight hub go-ahead, The Morning Bulletin. Available online at: https://www.themorningbulletin.com.au/news/tonne-of-weight-lifted-off-cq-roads-with-freight-h/3107103/

Townsend I. (2013, 13 February) *Mining's Dirty Secret*, ABC Radio National Available online: http://www.abc.net.au/radionational/programs/backgroundbriefing/toxic-mine-water/4518922

Vanclay, F. 2002 '*Conceptualising social impacts'. Environmental Impact Assessment Review* 22(3), 183-211

Vanclay, F. (2015) *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*, International Association for Impact Assessment.

Woorabinda Aboriginal Shire Council (2018) Website: *About Woorabinda*. Available online at http://www.woorabinda.qld.gov.au/page.php?id=8 Accessed on: 11 May 2018.



APPENDIX 1

Social Impact Assessment Guideline
March 2018

The Coordinator-General

Social Impact Assessment Guideline

March 2018

Queensland Government

The Department of State Development, Manufacturing, Infrastructure and Planning

The Queensland Government is committed to providing accessible services to Queenslanders of all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on telephone 131 450 and ask them to contact the Queensland Department of State Development, Manufacturing, Infrastructure and Planning on (07) 3452 7100.

Copies of this publication are available on our website at www.dsdmip.qld.gov.au and further copies are available upon request to:

Department of State Development, Manufacturing, Infrastructure and Planning
PO Box 15009, City East, Queensland 4002
1 William Street, Brisbane Qld 4000 (Australia)

Phone: 13QGOV (137468)
Fax: 07 3220 6465
Email: info@dsdmip.qld.gov.au
Web: www.statedevelopment.qld.gov.au

Contents

1 Introduction

This Social Impact Assessment (SIA) Guideline (the Guideline) applies to all projects subject to an Environmental Impact Statement (EIS) process under the *State Development and Public Works Organisation Act 1971* (SDPWO Act) or the *Environmental Protection Act 1994* (EP Act).

The purpose of an EIS is to assess and report on a project's social, economic and environmental impacts and the measures proposed to mitigate the potential impacts of the project. This includes the Coordinator-General's evaluation of the social impacts of a project and the decision whether or not to allow the project to proceed.

The definition of environment in the SDPWO Act and the EP Act includes social matters that affect people and communities. The consideration of social impacts through an SIA is therefore required for EISs under both Acts. An SIA is released for public comment as an integral component of an EIS.

1.1 Application of this Guideline

The Guideline states the details that must be included in an SIA. The Guideline covers the identification and assessment of potential social impacts, as well as their management and monitoring.

The Guideline is a statutory instrument for resource projects and has been made by the Coordinator-General in accordance with section 9(4) of the *Strong and Sustainable Resource Communities Act 2017* (SSRC Act). It is a non-statutory instrument for non-resource projects subject to an EIS process under the SDPWO Act or EP Act.

1.2 The SSRC Act 2017

The object of the SSRC Act is to ensure that residents of communities near large resource projects benefit from the construction and operation of the projects.

Sections 9, 10 and 11 of the SSRC Act provide the regulatory framework for the SIA of large resource projects. This framework includes provisions for the following:

- the matters SIA must provide for in relation to a project
- adoption of a recruitment hierarchy, prioritising recruitment from local and regional communities first, then recruitment of workers to the regional community
- Coordinator-General conditions to manage the potential social impacts of a project
- enforcement provisions for conditions stated by the Coordinator-General to manage the potential social impacts of a project.

The SIA provisions of the SSRC Act work in conjunction with the Act's other provisions to achieve the object of the SSRC Act. The other provisions include:

- prohibition of 100 per cent fly-in, fly-out (FIFO) workforce arrangements on operational large resource projects
- prevention of discrimination against locals in the recruitment of workers
- monitoring and compliance.

The SSRC Act ensures that the framework for SIA is consistently applied to large resource projects that require an EIS under the SDPWO Act or the EP Act.

2 SIA process

SIA is a process for the identification, analysis, assessment, management and monitoring of the social impacts of a project, both positive and negative. The social impacts of a project are the direct and indirect impacts that affect people and their communities at all stages of the project lifecycle.

The SIA must address the following key matters:

- community and stakeholder engagement
- workforce management
- housing and accommodation
- local business and industry procurement
- health and community well-being.

Addressing the key matters above in an SIA is a statutory requirement for large resource projects under Section 9 of the SSRC Act. The details that must be included in an SIA for each of the key matters are provided in Section 3.

2.1 Integration with the EIS process

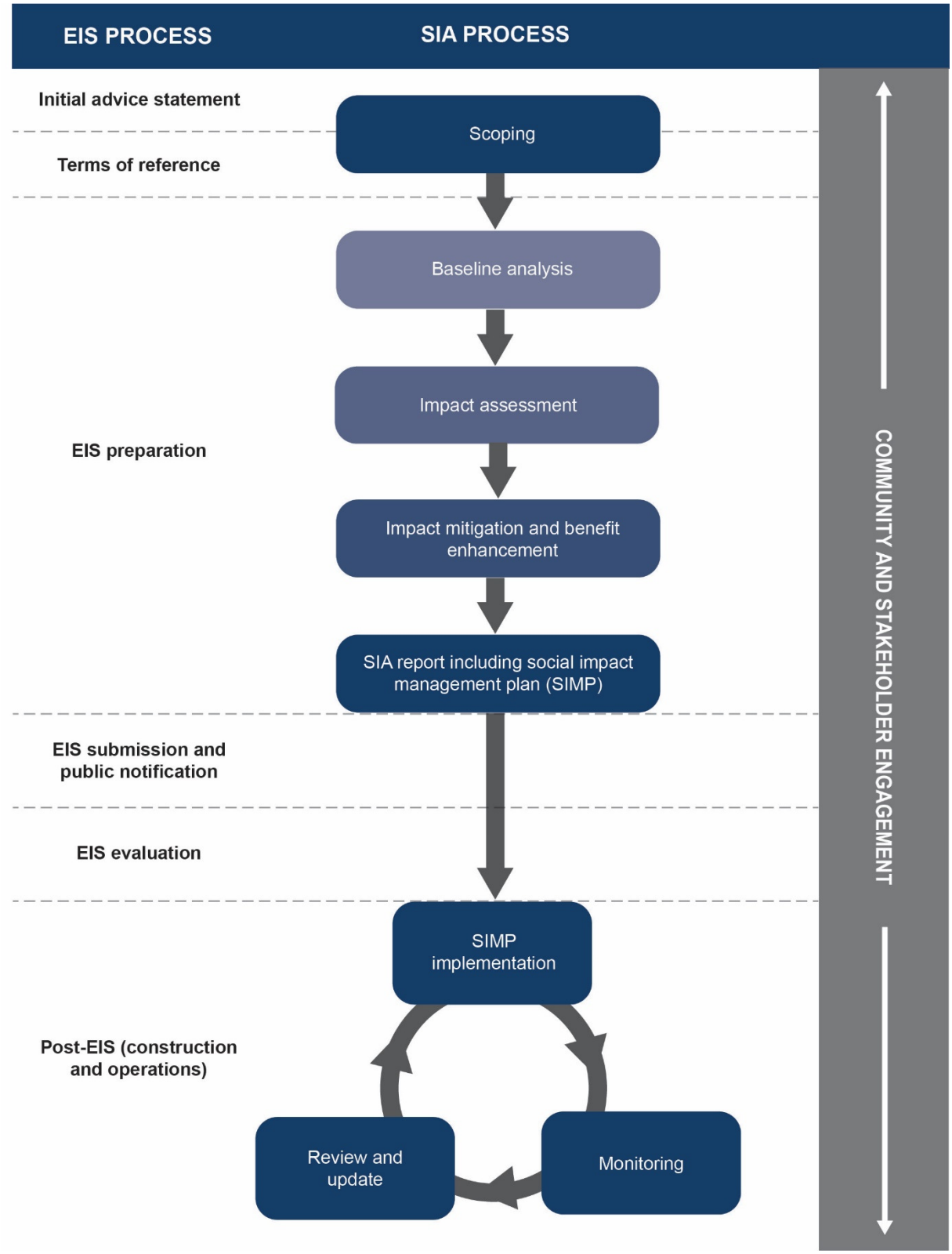
The SIA report is part of the EIS for each project. Figure 1 explains how the SIA process aligns and integrates with the EIS process. The SIA report is released for public comment with the project's EIS. Based on the feedback received, the Coordinator-General may request amendments to the SIA. The Coordinator-General may, as part of evaluating a project's EIS, condition the project to require the management of social impacts.

2.2 SIA principles

The following principles are to inform the development of an SIA:

- **Lifecycle-focused:** an SIA is to consider the full lifecycle of the project.
- **Reasonable:** an SIA is to be commensurate with the nature and scale of the project, the sensitivity of the social environment, and the likely scope and significance of the resultant project related social impacts.
- **Participatory:** engagement for an SIA is to be inclusive, respectful, meaningful and tailored to the needs of potentially impacted individuals and groups.
- **Rigorous:** an SIA is to be based on objective, comprehensive social impact analysis, incorporating the most up to date information on the communities affected and the project.
- **Effective management:** an SIA is to include effective social management measures that enhance potential benefits and mitigate potential negative impacts.
- **Adaptive:** management measures are to be monitored, reviewed, and adjusted to ensure ongoing effectiveness.

Figure 1: Integration of the SIA process with the regulatory EIS process



2.3 SIA phases

The phases of the SIA process are shown in Figure 1 and explained below. The outcomes of the SIA process are to be documented in an SIA report, along with an explanation of the approach and methods used for each phase of the SIA.

2.3.1 Scoping

The scoping phase allows for the early identification of the likely SIA issues and ensures that the SIA is appropriately scaled and consistent with regulatory requirements.

Scoping phase activities include describing the project, determining the regulatory context, identifying and profiling affected communities, identifying stakeholders, identifying relevant social indicators, conducting a preliminary review of potential social impacts and benefits and considering potential project design alternatives. These matters are typically addressed in a project's initial advice statement (refer to Figure 1) and will assist in identifying any project specific SIA requirements for the EIS terms of reference.

The SIA study area is to be determined during this phase. The SIA study area identifies the social and geographical boundaries for the SIA, and takes into account the following:

- the nature and scale of the proposed project, including associated infrastructure
- the scope of the potential social impacts throughout the project lifecycle
- the location and characteristics of potentially affected communities (including nearby regional communities)
- infrastructure, urban / rural centres, and land use patterns
- native title rights and other interests held by Aboriginal and Torres Strait Islander peoples
- location of other projects in the region which may contribute to cumulative social impacts over time.

Potentially affected communities are those local and/or regional communities that may be affected by a proposed project, whether negatively or positively. A more detailed understanding of the characteristics of potentially affected communities, and the potential social impacts of the project, is obtained as the SIA process progresses, which will allow for the identification of potentially impacted communities (refer to Section 2.3.5).

Multiple study areas may be required in order to assess potential project impacts at differing geographic scales or locations (for example, a local and regional study area).

2.3.2 Baseline analysis

A social baseline describes the existing social conditions and trends within the SIA study area and provides a benchmark against which potential social impacts can be assessed.

The social baseline should include:

- a demographic profile of potentially affected communities
- an analysis of community characteristics such as community culture and values, community history, community well-being, land/property ownership and utilisation of natural resources
- details of the capacity of those potentially affected to participate in the community and stakeholder engagement
- an overview of land use and key industries in the region, as well as relevant local and state government plans
- the capacity and accessibility of infrastructure, facilities and services, including education, health and emergency services
- an analysis of the existing housing and accommodation market, including availability, capacity and affordability
- a profile of the local and regional labour market, including an assessment of the likely availability of personnel with skills relevant to the project
- details of other resource and infrastructure projects in the area, both planned and currently operating, based on publicly accessible information.

The scope, context, scale and level of detail in the social baseline is to reflect the nature of the project and the scope of the potential social impacts. Social baseline data must be as reliable as reasonably possible and include both desktop and field studies. Desktop data must be up to date and obtained from reputable sources (for example, census data, local government planning reports, and peer-reviewed research publications).

Prior to undertaking any field studies, the proponent will evaluate the quality and completeness of the data obtained through desktop research and identify any gaps to determine the requirements for additional data collection. Any required field data collection and analysis must be based on statistically sound methodologies.

Where relevant, data for Aboriginal and Torres Strait Islander peoples must be incorporated into the social baseline.

2.3.3 Community and stakeholder engagement

Community and stakeholder engagement for a project includes the following elements:

- **Project:** the proponent's project level stakeholder engagement including overall project communications, negotiations, public relations and complaints management.
- **EIS:** the statutory stakeholder notification and consultation required for the EIS process.
- **SIA:** community and stakeholder engagement for the purposes of informing the development of the SIA report.

- **Post-EIS:** community and stakeholder engagement to inform the ongoing monitoring, review and update of management measures.

The proponent should integrate the above elements of the engagement program to reduce the risk of engagement fatigue for potentially affected communities.

In the context of the SIA, community and stakeholder engagement is undertaken to:

- understand who is likely to be impacted and how
- understand the values and characteristics of potentially affected communities
- identify and assess potential social impacts
- develop management measures to mitigate adverse impacts and enhance benefits
- support monitoring and reporting (including outcomes and performance indicators).

A consultative and inclusive engagement program is to commence at an early stage in the SIA process, and is to consider the nature of the project and the needs of the different stakeholder groups. Stakeholders should include local residents and landholders, state agencies and local government, non-governmental organisations, Traditional Owners, unions, industry groups and businesses, community groups, and traditionally underrepresented stakeholders such as Aboriginal and Torres Strait Islander peoples, women, youth, and vulnerable groups. Further detail on the role of various stakeholders in the SIA process is provided in Appendix 1.

Stakeholders are to be provided with timely and relevant information about the project which presents an accurate indication of potential impacts and benefits. Stakeholder input is to inform the development of the SIA, including the baseline analysis, impact assessment, and development of management measures.

2.3.4 Impact assessment

The purpose of the impact assessment is to identify and assess the potential social impacts associated with a project. This includes the associated infrastructure for the project such as roads, pipelines and worker accommodation villages. At this stage of the SIA process the assessment will identify potentially affected communities that are likely to be impacted (referred to as “potentially impacted communities”).

Social impacts are the issues that affect people and the potentially impacted communities in which they live as a result of a project. Types of social impacts include:

- changes to community values and/or the way the community functions
- impacts on how people live, work, play and interact with one another on a day-to-day basis
- impacts on culture, history, and ability to access cultural resources

- impacts on communities' physical safety, exposure to hazards or risks, and access to and control over resources
- impacts on communities' quality of life including liveability and aesthetics, as well as the condition of their environment (for example, air quality, noise levels, and access to water)
- impacts on communities' access to, and quality of, infrastructure, services and facilities
- impacts on communities' physical and mental health and well-being, as well as their social, cultural and economic well-being
- changes to livelihoods, for example, whether peoples' jobs, properties or businesses are affected, or whether they experience advantage/disadvantage.

The impact assessment in the SIA report is to include sufficient detail and analysis to provide a clear understanding of the potential impacts of the project. The assessment must consider the level of impact at differing geographic scales within the SIA study area, and be informed by consultation with stakeholders. The impact assessment must also consider the social consequences of technical matters assessed in other parts of the EIS (for example, traffic management, economics, and noise). Potential impacts which have been identified through the SIA process, and which do not fall within the scope of the key matters in Section 3, must be addressed in the SIA.

The impact assessment must also consider impact significance. An impact significance assessment is an analysis of the extent to which potentially impacted communities and stakeholders, may be affected, whether positively or negatively. Factors such as the probability, scale, duration and intensity of the impact, as well as the characteristics of the community or stakeholders which may be affected, should be considered. Where a potential impact is found to be significant, a residual significance assessment (extent of impact after management measures have been applied) is also required.

Consideration must also be given to potential cumulative impacts that could result from the combined effect of similar actions by multiple projects. In many instances, mitigation of these cumulative impacts may not be within the proponent's direct control, but an assessment nonetheless provides important context regarding the likely consequences that would be experienced by potentially impacted communities.

The Coordinator-General may also establish SIA cross-agency reference groups (CARGs) on a needs basis for relevant regions when required to provide a collaborative approach to SIA and the assessment of cumulative impacts. Membership of the CARGs will include relevant state government agencies and local governments. A project proponent may be invited to a CARG meeting to discuss project details and proposed impact mitigation and benefit enhancement measures. Other stakeholders may also be invited to attend a CARG meeting as required.

2.3.5 Impact mitigation and benefit enhancement

Once potentially significant social impacts have been identified, the proponent, in consultation with potentially impacted communities and other stakeholders, must develop and document social impact mitigation and benefit enhancement measures (collectively referred to as “management measures”) within the SIA report.

The SIA must provide management measures for all potentially significant negative impacts, and must demonstrate that the hierarchy of avoid and mitigate has been followed. Options to mitigate social impacts must only be proposed where all reasonable measures relating to project design, location, consultation and implementation have been explored to avoid negative social impacts.

The SIA must include the following for each proposed management measure:

- the potential impact
- a description of the management measure, and an assessment of its adequacy
- defined outcomes and performance indicators
- residual impacts and how these will be addressed
- monitoring and reporting framework.

Management measures should be outcomes focused, reasonable, relevant, transparent and monitorable. The management measures that are developed through the SIA process are to be embedded within the proponent’s internal social management systems and will inform the development of the social impact management plan (SIMP).

2.3.6 Social impact management plan

The management measures identified through the SIA process must be documented in an SIMP, which will provide a practical basis for their implementation.

The SIMP is to include detail on the proposed management measures, timeframes for implementation, roles and responsibilities, stakeholders, and potential partnerships. The SIMP must also incorporate processes to ensure that throughout the project lifecycle:

- the effectiveness of management measures is monitored
- ineffective management measures are amended.

A SIMP is to be provided in the SIA report, and submitted as part of the EIS.

2.3.7 Monitoring, review and update

The potential social impacts identified in the project’s SIA report reflect the existing social conditions and trends within the SIA study area at the time of the assessment. Changes to social conditions and trends can occur over time. The proponent may be required to update

the SIA report, which would inform an updated SIMP, if more than two years have elapsed between the Coordinator-General's evaluation of the SIA report and the commencement of construction or if the social conditions within the SIA study area change significantly from those evaluated in the SIA report.

To ensure that the project's social management measures remain current and effective, the proponent is required to monitor the implementation of their SIMP throughout the project lifecycle. Stakeholder feedback and field data collection will play a role in this process.

The purpose of monitoring is to:

- track the progress and assess the appropriateness and effectiveness of the management measures
- assess the actual project impacts against the potential impacts and social indicators identified in the SIA
- capture information with which to advise potentially impacted communities and government on progress and achievements
- facilitate engagement, consultation and collaboration with stakeholders.

The key components of a monitoring program are:

- a list of identified impacts, issues and benefits
- targets and outcomes sought
- description of how management measures will be monitored and reported
- the party responsible for monitoring
- timing and frequency of monitoring
- key performance indicators
- mechanisms to update management measures, if required.

The Coordinator-General may condition a project to specify how often the project's SIA report and SIMP should be updated. There should be a continuous improvement approach throughout the project lifecycle involving the review and adaption, where required, of potential impacts, management measures, and outcomes.

2.4 Compliance and reporting

The Coordinator-General will set conditions to manage social impacts. The Coordinator-General may also require the proponent to report on matters such as:

- compliance with the Coordinator-General's conditions for the project
- implementation of the SIMP and proponent commitments
- community and stakeholder engagement, including complaints management
- monitoring outcomes.

The frequency of reporting to the Coordinator-General will depend on the individual circumstances of each project, and will be specified in the Coordinator-General's conditions for the project.

Section 11 of the SSRC Act and Part 7A of the SDPWO Act authorises the Coordinator-General to enforce compliance with project conditions. Compliance actions may include:

- a review by the Coordinator-General of SIAs and management plans
- direction to the proponent on corrective actions that may be required
- an audit by the Coordinator-General to verify compliance
- a third-party audit.

3 Key matters for SIA

This section details the requirements for each of the key matters the SIA for a project must provide for:

- community and stakeholder engagement
- workforce management
- housing and accommodation
- local business and industry procurement
- health and community well-being.

The scope, objectives and detail to be provided in the SIA for each key matter is explained below.

3.1 Community and stakeholder engagement

3.1.1 Scope

This matter applies to the SIA requirements for engagement with potentially impacted communities and stakeholders. The SIA report must include an explanation of the community and stakeholder engagement undertaken during the SIA process, as well as proposed measures for ongoing engagement during construction and operation.

3.1.2 Objective

To ensure transparent and inclusive community and stakeholder engagement informs the SIA process, and the ongoing management and monitoring of potential social impacts during the construction and operational phases of the project.

3.1.3 Detail required in the SIA

The SIA report must include the following details for community and stakeholder engagement:

- a profile of potentially impacted communities, and analysis of key stakeholders
- a description of engagement undertaken in support of the SIA, including details such as:
    - stakeholders consulted, and how and when they were consulted
    - principles and processes adopted
    - an overview of the consultation program and key events
    - stakeholder feedback and issues raised (including the means by which these have been or will be addressed)
    - records of engagement activities and details of any negotiations or agreements with potentially impacted stakeholders
- a description of how stakeholder input has informed the baseline analysis, social impact assessment, and the development of management measures
- a community and stakeholder engagement plan for the construction and operational phases of the project, which includes:
    - objectives and key performance indicators
    - measures for ongoing engagement including action plans, and proposed communication tools and activities
    - processes for incorporating stakeholder feedback into the further development of project-specific management measures
    - details of any stakeholder agreements to be negotiated, including agreements with state and local government agencies
    - roles and responsibilities for engagement
    - a complaints management process
    - monitoring and reporting requirements.

3.2 Workforce management

3.2.1 Scope

This matter applies to the SIA requirements for the assessment and management of potential social impacts associated with the project workforce during the construction and operational phases. The project workforce includes employees of the project, as well as personnel engaged by principal contractors and subcontractors.

3.2.2 Objective

To ensure project workforce management practices:

- prioritise recruitment of workers from local and regional communities and workers who will live in regional communities
- reduce the proportion of workers engaged in FIFO arrangements, where operationally feasible
- support the health and well-being of the project workforce.

3.2.3 Detail required in the SIA

The SIA report must include the following details regarding workforce management:

- a summary workforce profile for the construction and operational phases of the project, including the estimated proportion of FIFO workers
- an analysis of the local and regional labour market, and an assessment of potential social impacts, including:
    - employment opportunities
    - training and development opportunities
    - possible labour shortages within local communities due to project demand
- an assessment of opportunities for local workers to commute to and from work where safe and practical
- a workforce management plan for the construction and operational phases of the project which includes:
    - objectives and key performance indicators
    - roster arrangements for local, regional and FIFO workers
    - measures to enhance potential employment opportunities for local and regional communities, and to mitigate potential negative social impacts
    - provisions to achieve a recruitment hierarchy that prioritises recruitment of workers from the local and regional communities, then recruitment of workers who will live in regional communities
    - proposed training and development initiatives to improve local and regional skills and capacity including, where relevant, initiatives for traditionally underrepresented groups
    - programs to support the physical and mental health and well-being of workers.

3.3 Housing and accommodation

3.3.1 Scope

This matter applies to the SIA requirements for the assessment and management of potential social impacts from project housing and accommodation arrangements for the project workforce during the construction and operational phases.

3.3.2 Objective

To ensure project housing and accommodation arrangements:

- do not contribute to significant affordability and availability impacts on housing and accommodation in local and regional communities
- are well planned, enhance worker well-being, and do not place an excessive burden on existing infrastructure, facilities and services used by local and regional communities.

3.3.3 Detail required in the SIA

The SIA report must include the following details regarding housing and accommodation:

- proposed workforce accommodation arrangements during the construction and operational phases of the project
- details of any proposed project workforce accommodation facilities or purpose built housing developments, including:
  - statement of need
  - planned size, capacity, layout, location and service life
  - strategies for the provision of adequate infrastructure, utilities, recreational facilities, health and social services for workers
  - status of any relevant approvals and agreements with local and state government agencies regarding provision of infrastructure, utilities and services
- projected population changes attributable to the project, including an estimate of workers and their households who may live in, or move to, local or regional communities
- an analysis of the local and regional housing and accommodation market, and an assessment of potential social impacts, including:
  - potential impacts to the availability and affordability of housing (both open market and rental) and other forms of accommodation
  - consequences of project induced housing market changes for local residents
  - potential opportunities for local accommodation providers
- a workforce housing and accommodation plan for the construction and operational phases of the project which includes:

- objectives and key performance indicators
- measures to enhance potential benefits for project workers and the community, and to mitigate potential negative social impacts
- policies regarding housing and accommodation support to be provided to project workers and their families who wish to live locally.

3.4 Local business and industry procurement

3.4.1 Scope

This matter applies to the SIA requirements for the assessment and management of potential social impacts associated with the procurement of goods and services for the project during the construction and operational phases.

3.4.2 Objective

To ensure project procurement practices:

- maximise opportunities for competitive and capable local businesses to provide goods and services to the project
- reduce barriers to entry for local businesses where feasible.

3.4.3 Detail required in the SIA

The SIA report must include the following details regarding local business and industry procurement:

- a profile of the skills, services and materials required by the project
- an analysis of local and regional supplier capability and capacity relevant to the project, and an assessment of potential social impacts, including:
  - opportunities to enhance the capacity of local businesses and supply chains
  - risks associated with monopolisation of goods and services by the project
- a local business and industry procurement plan for the construction and operational phases of the project which includes:
  - objectives and key performance indicators
  - procurement strategies and initiatives for local and nearby regional suppliers, including Aboriginal and Torres Strait Islander owned businesses, and actions to facilitate participation
  - proposed policies and programs to build local and regional capacity and capability, and reduce barriers to entry
  - processes that embed the local business and industry procurement strategies into the contracting model for the project
  - measures to mitigate any potential negative social impacts on local industries

- details of any established industry guidelines or codes of practice which the proponent has committed to complying with.

3.5 Health and community well-being

3.5.1 Scope

This matter applies to the SIA requirements for the assessment and management of potential social impacts from the project to the health and well-being of potentially impacted communities during the construction and operational phases. This matter includes physical and mental health, as well as social, cultural and economic well-being.

3.5.2 Objective

To ensure the project:

- avoids or mitigates negative social impacts and capitalises on opportunities to improve the health and well-being of local and regional communities
- does not adversely impact on the level of service to local and regional communities from existing social services, facilities and infrastructure.

3.5.3 Detail required in the SIA

The SIA report must include the following details regarding health and community well-being:

- an analysis of the availability, accessibility and capacity of, and an assessment of potential project impacts on, existing social services, facilities and infrastructure such as:
  - healthcare and emergency response
  - transport and utilities
  - education and childcare
  - community support services
- an analysis of the health and well-being of potentially impacted communities, and an assessment of potential social impacts, including:
  - community health, safety and security (including exposure to hazards and risks)
  - environmental factors such as air quality, noise and water
  - livelihoods, economic well-being and access to resources
  - community lifestyles and cultural practices, amenity value, social character, and community cohesion
- a health and community well-being plan for the construction and operational phases of the project which includes:
  - objectives and key performance indicators

- measures to ensure that the level of service provided to the local community by existing social services, facilities and infrastructure is not reduced
- measures to mitigate potential health and well-being impacts on local communities, and enhance potential benefits
- the level of on-site health services to be provided for workers
- details of any workforce code of conduct to govern worker interactions with local communities
- emergency response arrangements and management measures agreed with emergency service providers, for incidents both on and off the project site
- details of any community development programs to be implemented, and the outcomes to be achieved.

Appendix 1: Roles of key stakeholders

Coordinator-General

The Coordinator-General is responsible for:

- convening cross-agency reference groups (CARGs), where necessary
- considering stakeholder submissions, including those of local governments, on the terms of reference and the SIA report
- evaluating and deciding the adequacy of the SIA report
- conditioning to manage a social impact, if necessary
- monitoring and enforcing ongoing compliance.

Project proponents

Project proponents are required to follow the SIA process, prepare an SIA report, and prepare and implement an SIMP for their project in accordance with this Guideline. Project proponents are also required to engage with potentially impacted communities and stakeholders in a transparent and inclusive manner throughout the project lifecycle.

State agencies

State agencies are required to provide information and data for the social baseline, review an SIA report, participate in the CARG process and assess potential project impacts on state government services.

Local governments

In preparing the SIA, project proponents must consult with the local government(s) for the area in which the project is located. Engagement with local government(s) should commence early in the SIA process. The relevant local government(s) will play an important role in reviewing project proposals and providing information for the social baseline. Relevant local government(s) may also:

- participate in the CARG process
- engage, collaborate and negotiate with proponents on the management of project impacts on local government services
- review and provide feedback on the SIA report and assess potential project impacts on local government services
- represent or coordinate local community groups, as appropriate.

Non-government organisations

Non-government organisations may be requested to provide information for the social baseline. These organisations may also:

- review an SIA report and assess potential impacts on non-government services
- engage with proponents on the management of potential impacts to non-government services.

Unions

Relevant unions will be requested to provide information to support the social baseline. They may also be requested to:

- review an SIA report and assess potential social impacts
- engage with proponents on the management of potential social impacts
- represent employee groups.

Industry groups and businesses

Industry groups and businesses may be consulted regarding the provision of information to support the social baseline. They may also:

- review an SIA report and assess potential social impacts
- engage with proponents on the management of potential social impacts.

Aboriginal and Torres Strait Islander peoples

Aboriginal and Torres Strait Islander peoples have the opportunity to make submissions on a project's terms of reference and review an SIA report during the EIS public consultation period. Aboriginal and Torres Strait Islander peoples may also be engaged with by the proponent through stakeholder engagement processes and provide information for the social baseline and comment on social impact management strategies regarding potential cultural, social and economic impacts.

The community

All members of potentially impacted communities and stakeholders have the opportunity to make submissions on a project's terms of reference and review an SIA report during the EIS public consultation period. These groups may also be engaged by the proponent through the stakeholder engagement processes outlined in this Guideline.

Appendix 2: References

Anti-Discrimination Commission Queensland, *Applications for Tribunal exemptions*, 2018
http://www.adcq.qld.gov.au/resources/legal-information/exemptions

Department of State Development (DSD), *Economic Impact Assessment Guideline*, DSD, 2017
https://www.statedevelopment.qld.gov.au/resources/guideline/cg/economic-impact-assessment-guideline.pdf

International Association for Impact Assessment (IAIA), *Social impact assessment: Guidance for assessing and managing the social impacts of projects*, IAIA, 2015
www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf

International Association for Public Participation (IAP2), *Quality assurance standard for community and stakeholder engagement*, IAP2, 2015
https://www.iap2.org.au/Tenant/C0000004/00000001/files/IAP2_Quality_Assurance_Standard_2015.pdf

International Council on Mining & Metals (ICMM), *Stakeholder research toolkit*, ICMM, 2015
https://www.icmm.com/website/publications/pdfs/stakeholder-survey/8516.pdf

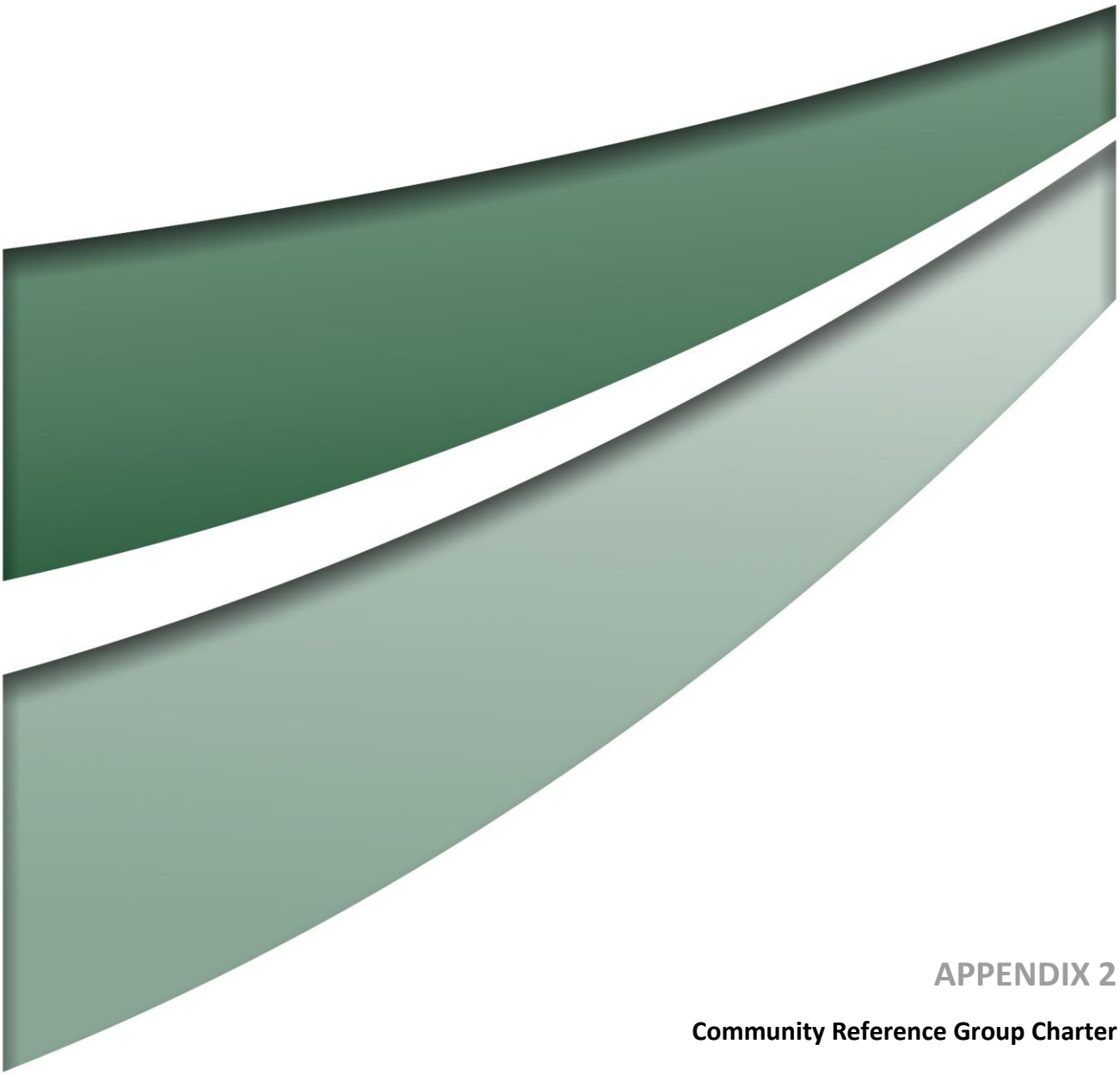
International Finance Corporation (IFC), *Stakeholder engagement: A good practice handbook for companies doing business in emerging markets*, IFC, 2007
https://www.ifc.org/wps/wcm/connect/938f1a0048855805beacfe6a6515bb18/IFC_StakeholderEngagement.pdf?MOD=AJPERES

Minerals Council of Australia (MCA), *Cumulative environmental impact assessment: Industry guide*, MCA, 2015
http://www.minerals.org.au/file_upload/files/reports/Cumulative_Environmental_Impact_Assessment_Industry_Guide_FINAL.pdf

Queensland Health (QH), *Health considerations – Environmental impact statement: Guidelines for proponents*, QH, 2016
https://www.health.qld.gov.au/__data/assets/pdf_file/0034/444949/environ-impact-state-guidelines.pdf

Queensland Resources Council (QRC), *Code of practice for local content*, QRC, Brisbane, 2013
https://www.qrc.org.au/wp-content/uploads/2016/07/Local-Content-Code-of-Practice.pdf

Vanclay, F, 'International principles for social impact assessment', *Impact Assessment and Project Appraisal* , 2003
http://www.iaia.org/uploads/pdf/IAIA-SIA-International-Principles.pdf



APPENDIX 2

Community Reference Group Charter

Ensham Residual Void Study
Community Reference Group
Charter

Table of Contents

1 BACKGROUND

In March 2017, the Ensham Mine environmental authority (EA) EPML00732813 was amended to include conditions requiring a scientific and environmental assessment of the options to rehabilitate residual voids in the flood plain of the Nogoa River and other at Ensham Mine.

The study commenced in May 2017 and consider a range of options for rehabilitation of residual voids within the flood plain of the Nogoa River and other voids with final documentation to be submitted to the Department of Environment and Heritage Protection (EHP) in March 2019. It will provide draft regulatory documents for EHP's consideration and approval including proposed updates to the current Rehabilitation Management and Residual Void Management plans.

Engagement with local community stakeholders is an important part of the study. This will be undertaken primarily through a Community Reference Group (CRG) CRG providing input to the study's consideration of rehabilitation options.

The purpose of this document is to outline the role of the CRGCRG in the Residual Void Project (RV Project).

2 PURPOSE

The purpose of the RV Project - CRG Community Reference Group (CRG)is to;

Create an open forum for discussion on issues directly relating to the Residual Void Project with key stakeholders.

3 OBJECTIVES

The objectives of the Community Reference Group (CRG)CRG are to:

- Establish good working relationships and promote information sharing between Ensham Mine, the local community and stakeholder groups on the Residual Void (RV) Study; and
- Allow community members and or their representatives seek information from Ensham Mine and give feedback on the study to assist with the delivery of balanced social, environmental and economic outcomes for the community; and
- Allow Ensham Mine to keep the community informed about the project; and
- Allow Ensham Mine to seek community views on the study and respond to matters raised by the community, and
- Discuss the RV Project and raise any concerns with the Preferred Options and the Final Option; and
- Review the reports and studies undertaken for the RV Project; and
- Provide comments on the reports and studies undertaken for the RV Project; and
- Discuss community concerns with the RV Project, Preferred Options and Final Option.

4 RESPONSIBILITIES

4.1 COMMUNITY REFERENCE GROUP CRG FORUM

- Act in an advisory capacity to the Ensham Mine RV Project by providing insight and advice into community perspectives on the Study
- Aspire to represent the views of the broader community in relation to the project
- Allow and respect the ideas and beliefs of all members and contribute to an atmosphere in which all members feel comfortable to openly participate in discussions
- Contribute in a constructive way to finding solutions to issues or concerns
- Notify the Chair of any potential conflict of interest that may arise in relation to the project during participation in the CRG
- Not disseminate confidential information that is discussed at the CRG
- Not make any media comment on behalf of the CRG in relation to the project and/or the CRG.

4.2 ENSHAM RESPONSIBILITIES TO THE CRG

Ensham Mine engagement and communication approach can be summarised as follows:

- Engage proactively and regularly with local stakeholders
- Conduct genuine and open dialogue between Ensham Mine and all other parties
- Respect all parties at all times
- Develop local community understanding of opportunities and benefits arising from mining operations
- Provide timely and accurate information
- Record all significant contact with local stakeholders
- Inform local stakeholders on how their input has informed decisions.

In relation to the Residual Void Study CRG, Ensham Mine commits to:

- Provide the group with timely, accurate and comprehensive reporting of the study. This does not include matters that are financially or commercially sensitive
- Provide the group with relevant documents and reports as they become available
- Provide support for the effective operation of the group
- Respond within an agreed timeframe to any questions or advice given by the group about the study
- Provide site access for the group (as required).

5 ROLES

5.1 INDEPENDENT CHAIRPERSON

This role is fulfilled by Emma McCullagh.

- Non-voting position.
- Meeting management.
- Dispute resolution.

5.2 CRG MEMBERS

The current membership of the CRG is outlined in Appendix 1

- Attend CRG meetings and provide apologies in advance where attendance is not possible
- Represent the views of the stakeholders they represent
- Actively participate in achieving the groups purpose and objectives.
- Communicate information to stakeholders and the broader community.

5.3 OBSERVERS/VISITORS

A process for the inviting of visitors and observers is provided 5.3.1.

- Attend meetings on invitation from the CRG.
- Do not have voting rights.
- Provide advice and expertise to the meeting as required.

5.3.1 Inviting Observers /Visitors

A request to invite a visitor/observer can be submitted to the independent chairperson. This request will be considered by the CRG members and final approval will be in consultation with Ensham. Visitors should not attend a CRG meeting without approval. It is the responsibility of the independent chairperson to ensure that the observer/visitor understands the forum and their obligations under the charter.

6 MEETINGS

6.1 MEETINGS

It is anticipated that meetings will be held to align with major project milestones with potential for additional meetings. The frequency of meetings may vary over time as the study progresses. The group should determine the frequency of meetings after considering the complexity of the study and the level of public interest.

i. The timing of meetings will align with availability of the participants. This may change from time to time.
ii. There will be a minimum of four meetings per year
iii. Meetings are to be held in the Emerald area, in a location that is convenient for CRG members.
iv. Any member may request the Chairperson convene an extraordinary meeting of the CRG to discuss any issues warranting urgent consideration. The Chairperson shall determine whether an extraordinary meeting is warranted In consultation with Ensham Mine.
v. All meetings will have a start and finish time.
vi. Agenda will be circulated to members five (5) days before the scheduled meeting.
vii. All agenda items need to be to the chair seven (7) days before the scheduled meeting.

6.2 RECORDS OF MEETINGS

i. A record of each CRG meeting will be documented and distributed to all group members (by the CRG Chairperson) within one week of the CRG meeting.

ii. Minutes must be maintained for all CRG meetings. The minutes must record all discussions, issues raised, actions to be taken, when the actions are to be completed and by whom.
iii. Ensham Mine must ensure that a copy of each meetings minutes will be provided to the administering authority within 20 business days of each meeting.
iv. Any changes/additions to the record of meeting will be amended and endorsed at the following stakeholder engagement group meeting.

6.3 REPORTS AND DOCUMENTS

Reports and documents developed throughout all stages of the RV Project must be provided to the CRG for review and comment. Evidence must be provided to the administering authority as to how the comments from the CRG have been considered in the RV Project.

6.4 PROXIES

i. Members may nominate a proxy to attend a meeting if they are unable to attend and have notified the independent chair. It is the responsibility of the member to brief their proxy prior to the meeting including minutes of the previous meeting and the meeting agenda. The proxy has the voting rights of the member that they are representing.

6.5 ATTENDANCE

ii. Attendance is an expectation of all members. Failure to attend on three consecutive occasions, without leave of absence may result in the member being asked to step down from the CRG. For representative members (including Ensham) the issue of attendance will be raised with their organisation.

7 LENGTH OF MEMBERSHIP

The CRG will operate for the period of the Residual Void study, concluding by date of submission to EHP, which is currently set for March 2019.

8 RESPONSE TIME FOR FEEDBACK

- An action plan shall be prepared at each meeting with response times for all actions identified at a meeting.
- The action plan will include timeframes for responses and allocated ownership of action items

9 CODE OF CONDUCT

All members, including the chairperson and any alternative representatives, must sign a code of conduct, Appendix 2 before they join the CRG and comply with the code while they are members of the group.

The code of conduct will cover the interactions between group members and the sharing of study information. The chairperson must bring any breach of the code to the attention of the persons concerned and if appropriate, the CRG.

- Members of the CRG will respect the confidentiality of information shared at meetings. These items will be identified as being confidential when they are discussed.
- Not disseminate confidential information that is discussed at the CRG
- Not make any media comment on behalf of the CRG in relation to the project and/or the CRG.
- Personal interests will be required to be tabled at each meeting in regards to any issue listed on the agenda.
- Members will declare their interests (Appendix C) and standing register of interests – (Appendix D) will be created.
- Members have a responsibility to best represent the interests of their stakeholders.
- Members should follow standard "good practice" for community meetings.
- You must conduct yourself with openness, honesty, fairness, integrity and in the best interests of the group

In addition, each CRG member joins the group with the understanding that where a member disregards the Code of Conduct, they may be asked to step down from the CRG.

10 CRG CHARTER REVIEW

CRG Charter will be reviewed and agreed upon at the first meeting of the CRG. The CRG Charter to be reviewed half yearly meeting (or the closest meeting to this date).

11 COMMUNICATION STRATEGIES

- Agendas, minutes of the meetings and reports tabled can be distributed through stakeholder groups, unless deemed confidential by the CRG or Ensham
- Ensham Website – relevant information
- Agenda item for key communication points

APPENDIX A- STAKEHOLDER REPRESENTATION

BACKGROUND

The CRG members were selected from local community and community stakeholder groups and nominated by the independent Chairperson and the Central Highlands Regional Council and represent a range of community members.

The Central Highlands Regional Council nominated two CRG members, who are two local government Councillors. A range of local landholders and members of local community organisations with interests in agriculture, environment and water resources are also represented.

The CRG currently contains representatives from the following:

- ✓ 2 local Councillors;
- ✓ a regional industry association for the agricultural industry,
- ✓ a primary utility provider, in this case SunWater, a government owned corporation;
- ✓ 2 representatives of local community organisations with interests in environmental protection and sustainability;
- ✓ 4 landowners within the community including nearby neighbours of the Ensham Coal Mine.

Position	**Person**
Independent Chairperson	Emma McCullagh
Neighbour Representative	Carl Morowitz
Neighbour Representative	Justin Fontana
Neighbour Representative	Hamish Millar
Central Highlands Regional Resources Use Planning Cooperative Limited (CHRRUP)	Claire Rodgers
Central Highland Regional Council (CHRC)	Councillor Megan Daniels
Central Highlands Regional Council (CHRC)	Councillor Alan McIndoe
Central Highlands Cotton Growers and Irrigators Assn. (CHCG&IA)	Nigel Burnett
Fitzroy Partnership for River Health	Nathan Johnson
SunWater	Peter McTaggert
Community Representative	Geoff Kavanagh
Visitors Observers	As required

APPENDIX B – CODE OF CONDUCT

Residual Void - Stakeholder Engagement Group

1. Members of the CRG will respect the confidentiality of information shared at meetings. These items will be identified as being confidential when they are discussed.
2. Members will not disseminate confidential information that is discussed at the CRG
3. Members will not make any media comment on behalf of the CRG in relation to the project and/or the CRG.
4. Personal interests will be required to be tabled at each meeting in regards to any issue listed on the agenda.
5. Members will declare their interests and a standing register of interests will be kept.
6. Members have a responsibility to best represent the interests of their stakeholders.
7. Members should follow standard “good practice” for community meetings, as outlined below.
8. You must conduct yourself with openness, honesty, fairness, integrity and in the best interests of the group.

Good Practice for Community Meetings

1. Strive to attend all meetings, sending apologies to the chair for necessary absences.
2. Prepare for the meeting by reading the agenda, papers and any emails before the meeting.
3. Talk to the chair before the meeting if you need to clarify anything.
4. Arrive on time. Stay to the end.
5. Participate fully in the meeting;
    a. Listen to what others have to say and keep an open mind.
    b. Contribute positively to the discussions.
    c. Try to be concise and avoid unnecessary discussion.
6. Help others concentrate on the meeting. Discourage side conversations.
7. Draw attention to any potential conflicts of interest that may arise in the meeting.
8. Fulfil any responsibilities assigned to you at the meeting and be prepared to report back on your progress at the next meeting.

Signature …….

Name ……

Date ……

APPENDIX C - DECLARATION OF INTERESTS

Personal Details	**Please provide details of any boards, committees, organisations and groups on which you serve or with which you are affiliated that have or a likely to have an interest in the business of this group.**
Full Name	
Address	
Contact Phone Number	
Occupation	
Directorships of Boards/Committee/s:	
Memberships of other committees, working groups	
Other Affiliations (industry)	

I hereby certify that the information set forth above is true and complete to the best of my knowledge. It is the responsibility of the member to amend their declaration if circumstances change.

Signed _____ **Date_____**

APPENDIX D - REGISTER OF INTERESTS

Register of Interests – August 2017				
Name	**Position on CRG**	**Person and/or Organisation with Interest**	**Nature of Conflict or Interest**	**Date of Declaration**

umwelt
Environmental & Social Consultants

Newcastle

75 York Street
Teralba NSW 2284

Perth

Level 1
12 Prowse Street
West Perth WA 6005
PO Box 783
West Perth WA 6872

Canberra

2/99 Northbourne Avenue
Turner ACT 2612
PO Box 6135
O'Connor ACT 2602

Sydney

50 York Street
Sydney NSW 2000

Brisbane

Level 13
500 Queen Street
Brisbane QLD 4000

Orange

Office 1
3 Hampden Avenue
Orange NSW 2800

T| 1300 793 267 E| info@umwelt.com.au www.umwelt.com.au