



**Parkway**  
CORPORATE LIMITED



# MASTER PLAN

CONCEPT

22 June 2023

ASX: PWN | [pwnps.com](http://pwnps.com)

**Bahay Ozcakmak**

Group Managing Director & CEO

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Image on presentation cover, is of brine ponds associated with Shell QGC Orana Water Treatment Plant.

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## Key Definitions

APPEA	Australian Petroleum Producers & Exploration Association
BAT	Best Available Technology
CAPEX	Capital Expenditure
CSG	Coal Seam Gas
DER	Department of Resources (Queensland Government)
DES	Department of Environment & Science (Queensland Government)
DRDMW	Department of Regional Development, Manufacturing & Water (Queensland Government)
EPCM	Engineering, Procurement, Construction & Management
FCF	Free Cashflow
FEED	Front-End Engineering Design
FID	Final Investment Decision
GAB	Great Artesian Basin
IP	Intellectual Property
LNG	Liquefied Natural Gas
OEM	Original Equipment Manufacturer
OPEX	Operating Expenditure
QBS	Queensland Brine Solutions
RO	Reverse Osmosis (water treatment plant)
RWF	Regulated Waste Facility
SEF	Salt Encapsulation Facility
WTP	Water Treatment Plant

## Key Units

\$	Australian Dollars, unless stated otherwise
MLD	Megalitres Per Day
MTPA	Million Tonnes Per Annum
TPA	Tonnes Per Annum

# 1: Introduction to QLD CSG-LNG Sector

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## Overview

- Queensland Coal Seam Gas (CSG) Industry
- Overview of Queensland CSG-LNG Projects
- CSG Water Production
- QLD CSG-LNG Industry and Parkway Timeline

## Presentation Outline

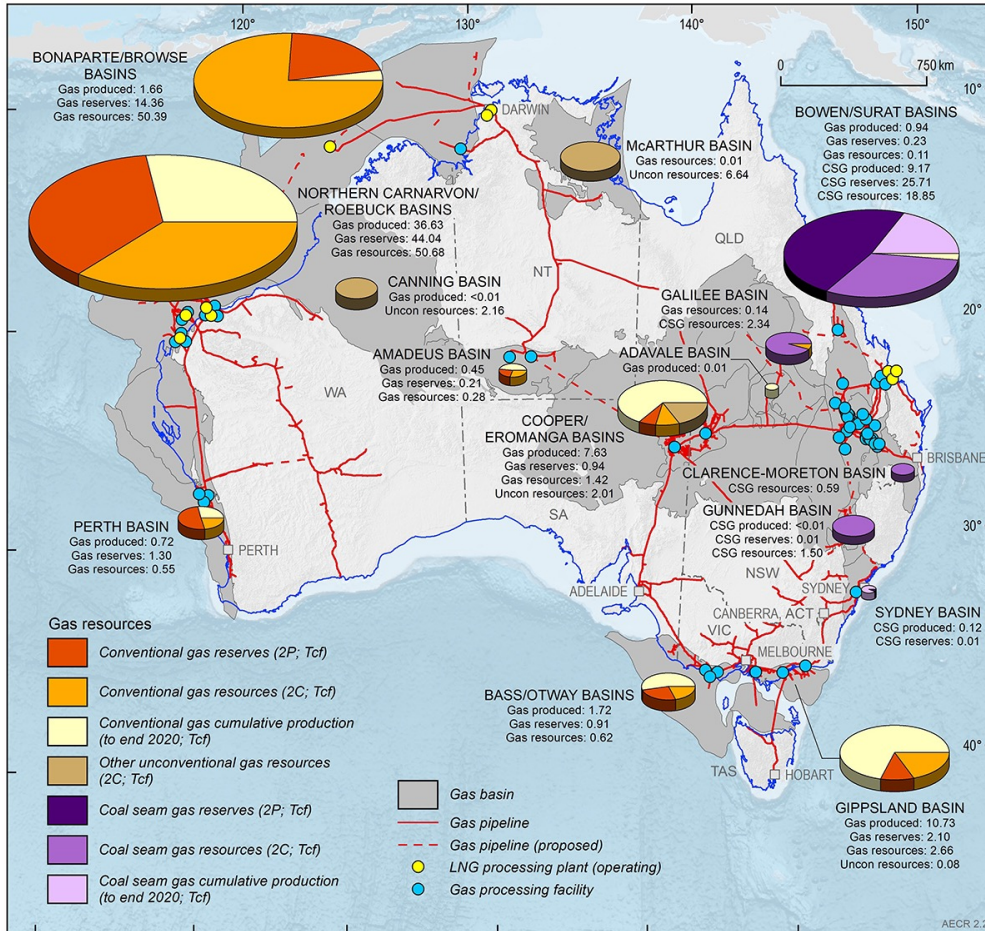
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# Queensland Coal Seam Gas (CSG) Industry



Sources: Geoscience Australia; GPInfo.  
 Pipeline routes from the GPInfo petroleum database.  
 Note: LNG = liquefied natural gas, Tcf = Trillion cubic feet.

Geoscience Australia, Gas: Australia's Remaining Gas Reserves, period ending June 2021.

## Gas Resources

- The majority of coal seam gas (CSG) resources and reserves in Queensland, are hosted within the:
  - Bowen Basin, and
  - Surat Basin.

## Investment Profile

- During the early 2010's, >\$80 billion invested in building 25 Mtpa in liquefied natural gas (LNG) export capacity:
  - APLNG, 9 Mtpa (Origin led)
  - GLNG, 7.8 Mtpa (Santos led)
  - QCLNG, 8.5 Mtpa (Shell led)

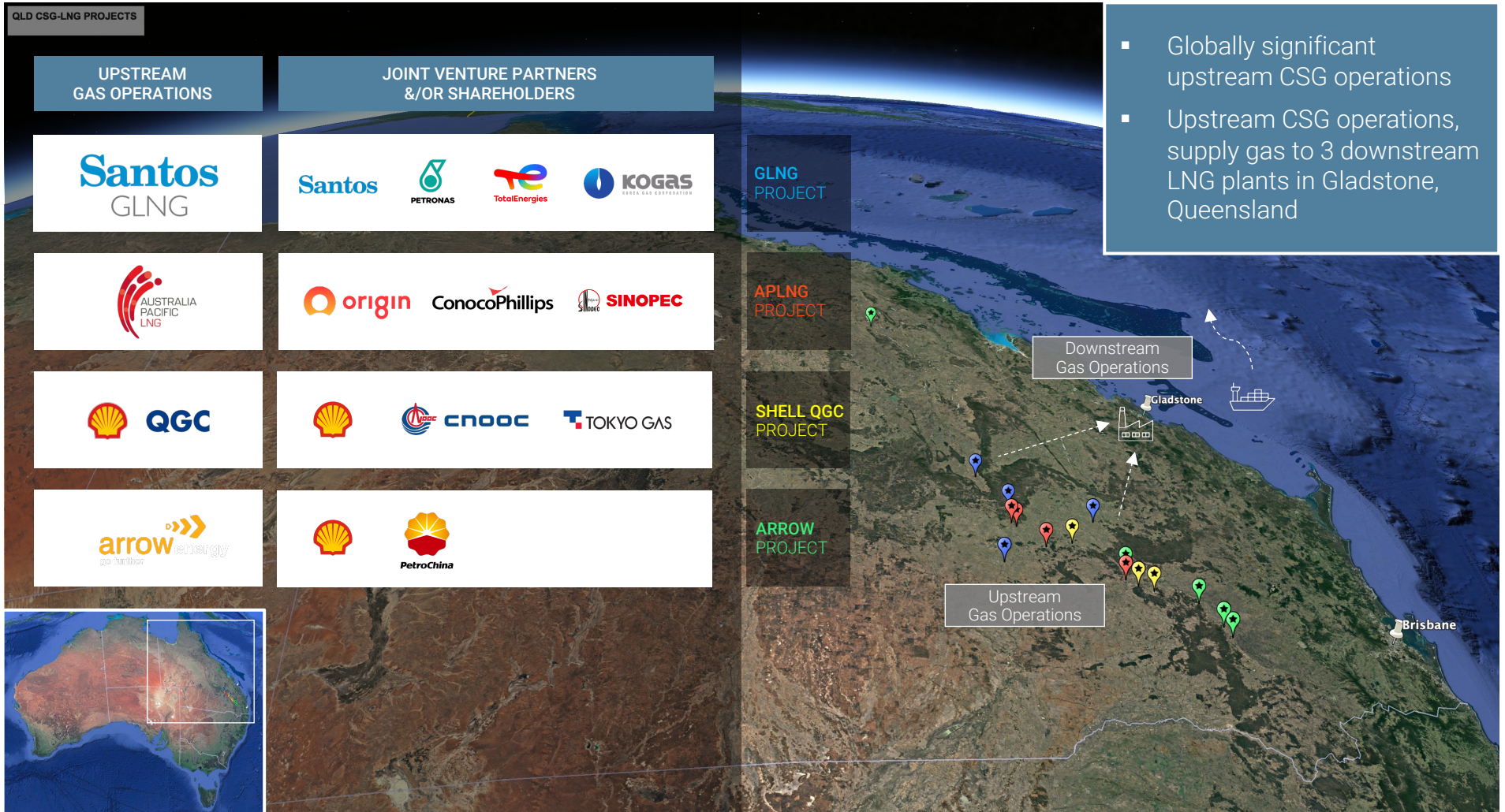
## Production Profile

- In 2022, the three LNG projects in Gladstone exported 24.3 Mt of LNG, ~6% of global LNG production:
  - Majority of gas exported to Asia, generating estimated >\$25 billion in export revenue in 2022.

## Regulatory Profile

- Projects are governed by a robust regulatory framework.

# Overview of Queensland CSG-LNG Projects





# CSG Water Production

## Where does the gas and water come from?

- CSG is an unconventional gas resource found in coal deposits.
- The production of gas requires the dewatering (removal of groundwater from) the coal seams, to allow the gas to flow to surface.

## Complex CSG water requires treatment

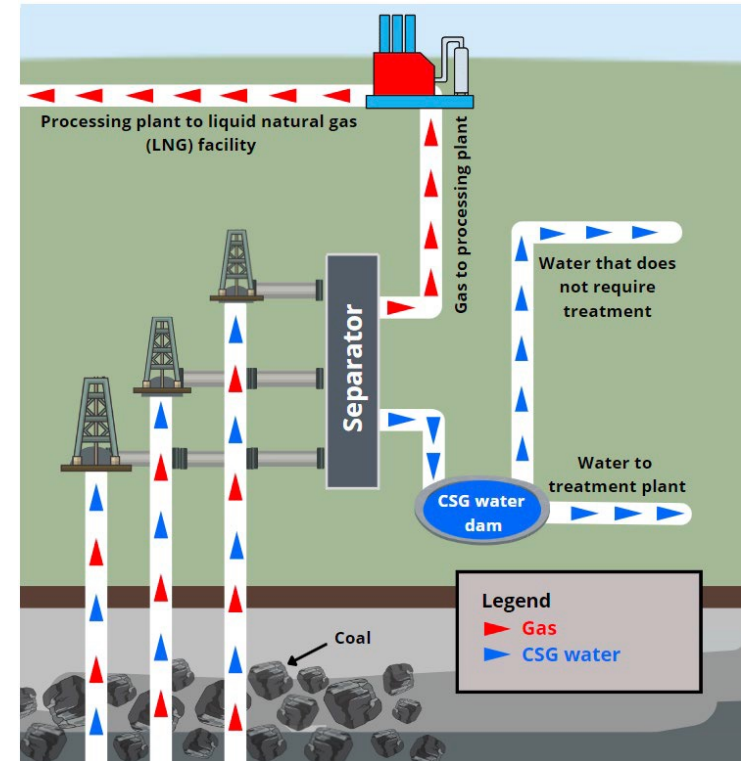
- The CSG water contains a wide range of impurities, including:
  - Dissolved salts (sodium chloride/bicarbonate/carbonate)
  - Other inorganic compounds (including heavy metals & halogens)
  - Range of organic compounds (including suspended solids)
  - Residual hydrocarbon related and other complex impurities

## Production of salt products

- Treatment of CSG water produces waste brine containing impurities
- The sustainable processing of CSG water involves exploring options for utilising waste brine and avoiding its ultimate disposal in the form of mixed salts, into landfill.

## No viable long-term solution

- Despite significant investment by industry, no viable long-term solution to processing waste brine sustainably, has been identified.

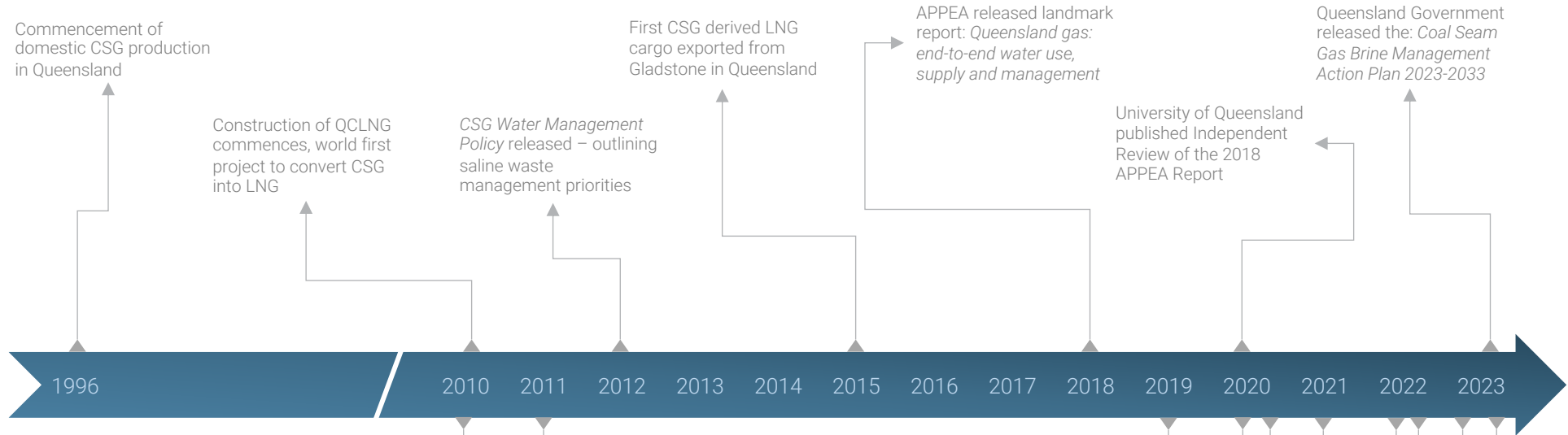


Queensland Government, Coal Seam Gas Brine Management Action Plan 2023-33.

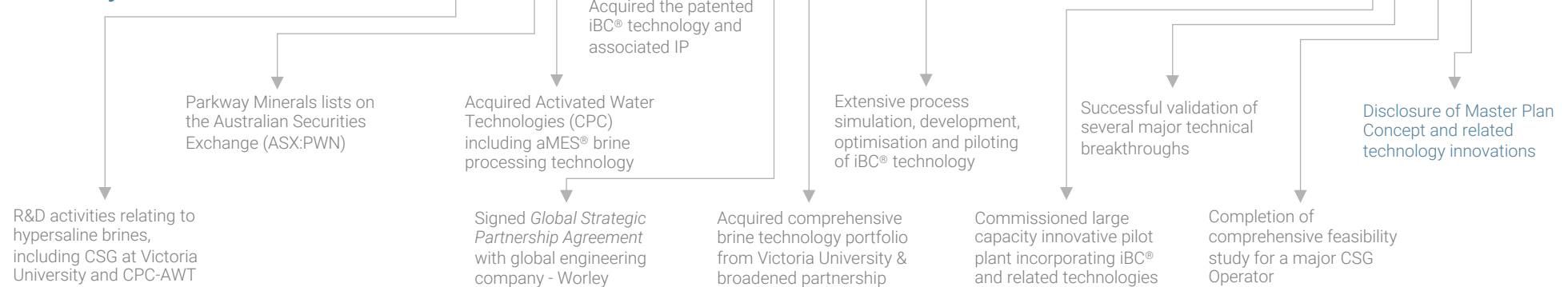
# QLD CSG-LNG Industry and Parkway Timeline



## CSG Industry Milestones



## Parkway Related Milestones



## 2: The Waste Brine & Salt Challenge

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### Overview

- CSG Brine & Salt Challenges in Queensland
- Existing Desalination Plants Produce Waste Brine
- Waste Brine Contains Significant Waste Salts
- The Scale of the Waste Salt Problem
- Shell QGC – Existing State-of-the-Art Technology
- CSG Regulatory Framework in Queensland
- CSG Policy Framework in Queensland
- Long-Term Brine & Salt Management Options
- Community Concerns & Scepticism

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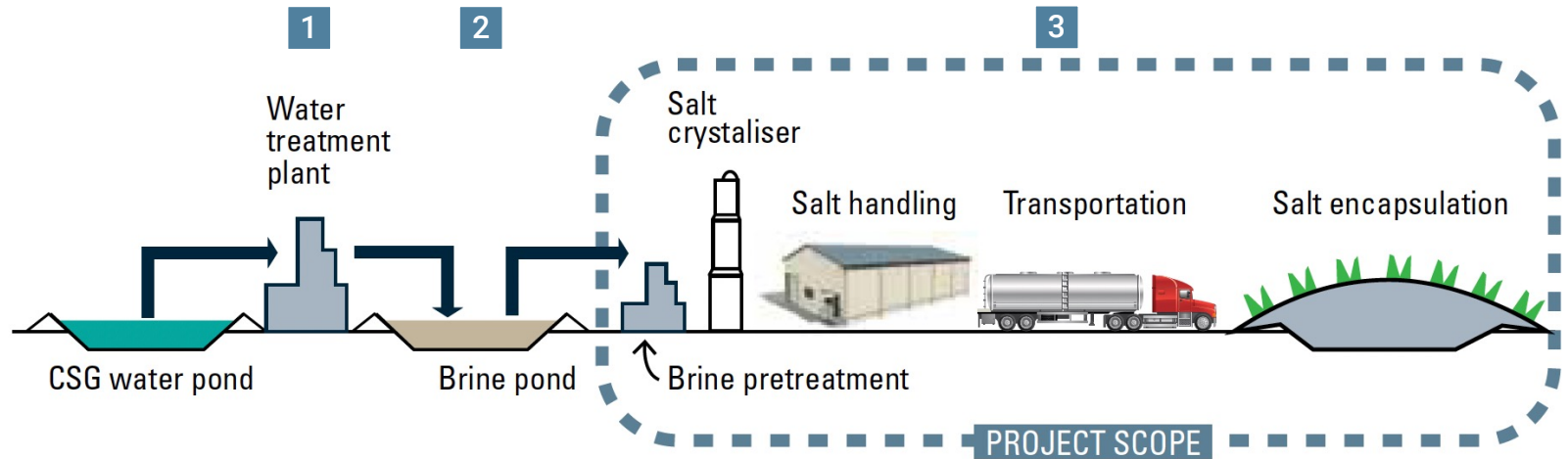
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# CSG Brine & Salt Challenges in Queensland

## Overview

- Production of CSG, results in large volumes of brine production, all of which are currently stored in brine ponds on an “interim” basis.
- Industry, through APPEA, has explored range of options, over many years, resulting in only 1 viable option, namely “salt encapsulation”.
- Salt encapsulation is expensive, complex, represents **unacceptable environmental risks** and faces significant community backlash.



Adapted from: APPEA, QUEENSLAND GAS: end-to-end water use, supply and management, 2018.

## 1. Water Treatment Plants

- x16 large capacity water treatment plants in operation

## 2. Regulated Brine Ponds

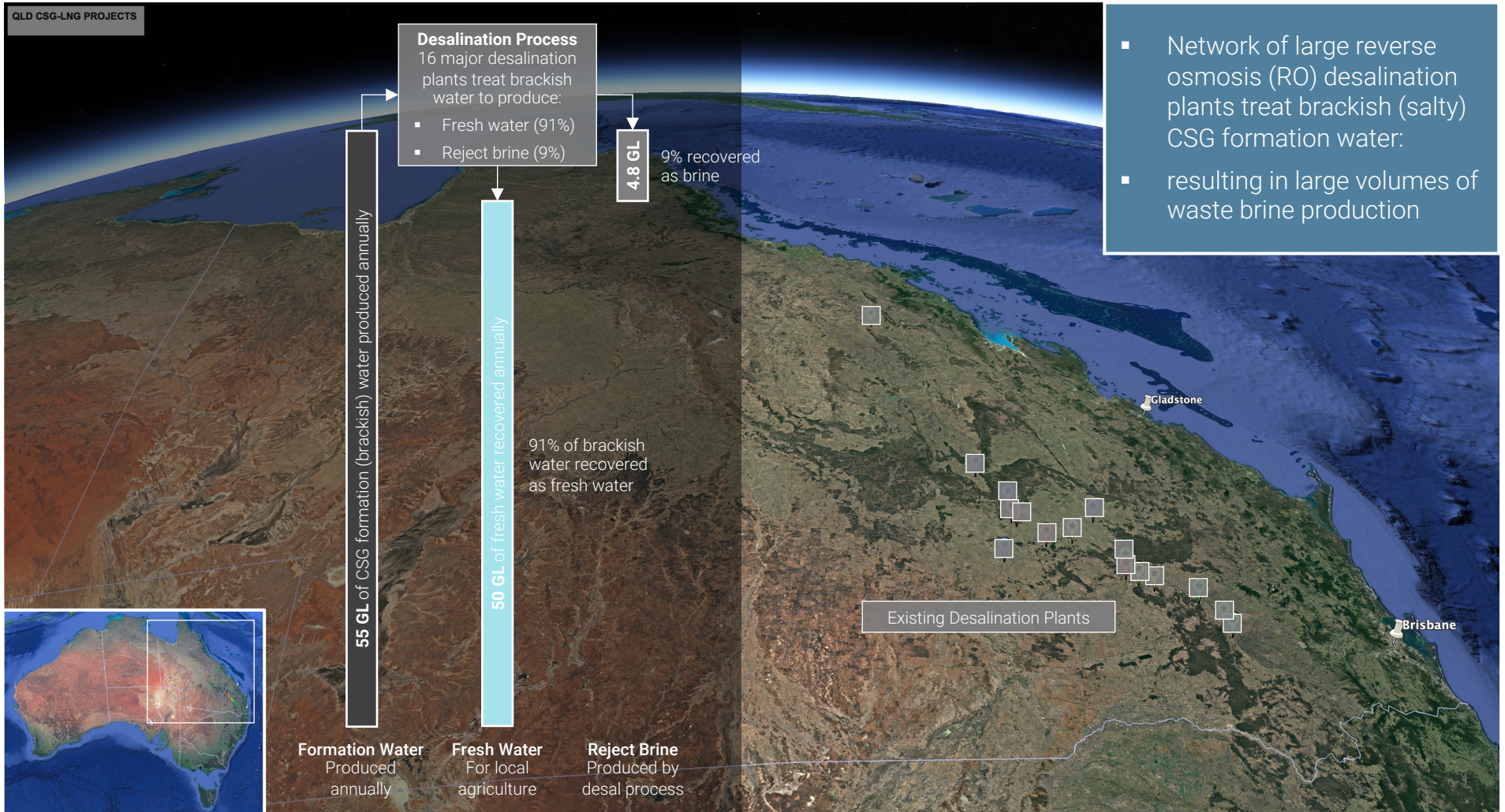
- x36 large brine ponds, storing waste CSG derived brines

## 3. Proposed Industry Solution (Base Case), involves:

- Transporting brine to a brine concentrator and salt crystalliser
- Crystallisation of waste salts that then need to be transported
- Waste salts to be disposed in a regulated waste facility (RWF)
- Fees payable to RWF operator as well as government levies

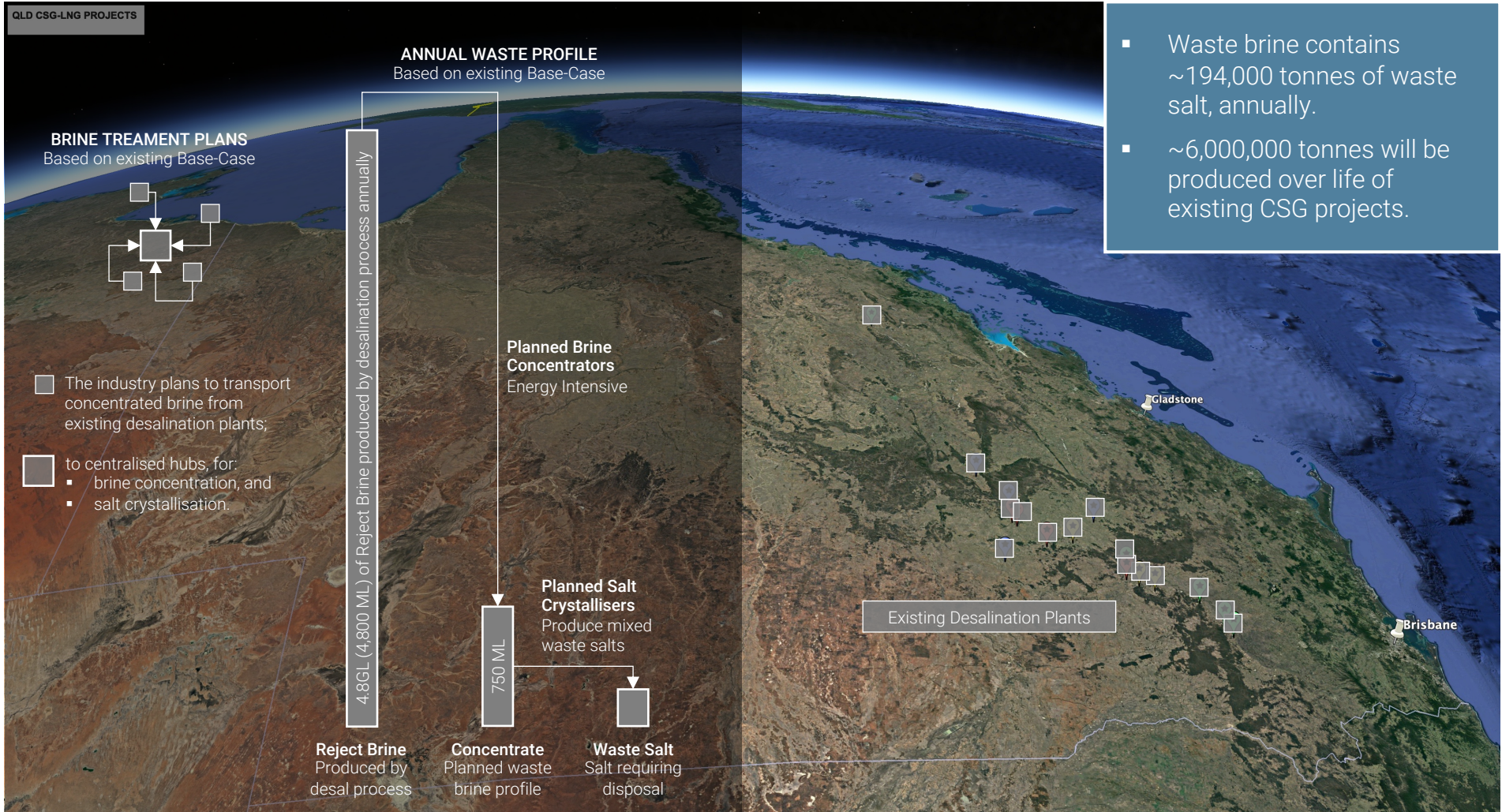


# Existing Desalination Plants Produce Waste Brine





# Waste Brine Contains Significant Waste Salts



- Waste brine contains ~194,000 tonnes of waste salt, annually.
- ~6,000,000 tonnes will be produced over life of existing CSG projects.



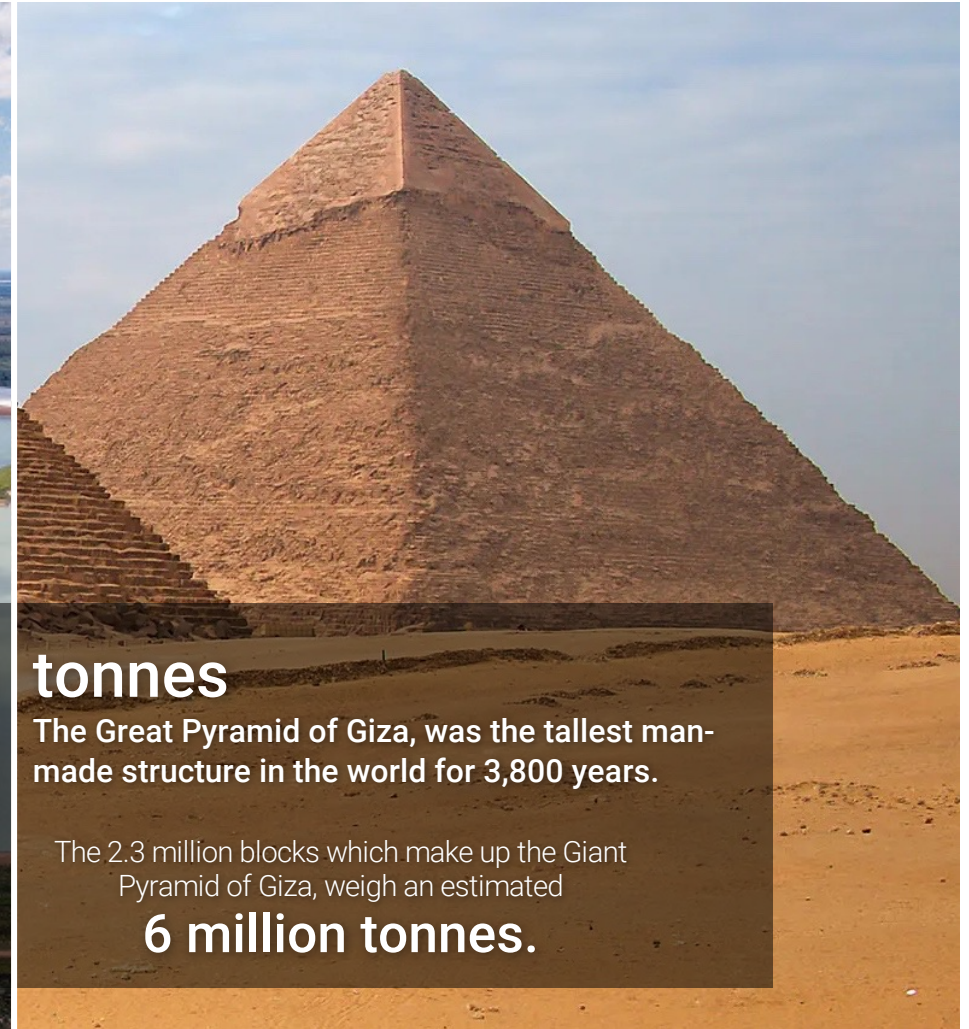
# The Scale of the Waste Salt Problem



**6 million**  
tonnes of waste salts dissolved in water (brine),  
over the life of 4 major existing CSG projects.

The 4 major CSG projects in Queensland store  
brine in 36 ponds with large proportion of salts  
**already produced.**

Waste brine ponds associated with Shell QGC Orana Water Treatment Plant.



**6 million**  
tonnes  
The Great Pyramid of Giza, was the tallest man-  
made structure in the world for 3,800 years.

The 2.3 million blocks which make up the Giant  
Pyramid of Giza, weigh an estimated  
**6 million tonnes.**



# Legacy of Potash Mining in Germany



"Monte Kali", a mountain of residual waste salts from historical potash mining, overlooking the town of Heringen in Hesse, Germany.



# Shell QGC – Existing State-of-the-Art Technology

## Overview

- During 2011-13, QGC (BG, now Shell) invested ~\$1 billion to build two large-scale brine concentration plants.
- The brine concentration plants, take the reject brine from the desalination (RO) plants, and concentrate this brine approximately 7x, thereby reducing the waste brine volumes significantly.

## Operations

- The brine concentration plants are operated and maintained by Veolia under an \$800 million, 20-year service contract, which commenced in 2013.

## Outcome

- Despite the significant CAPEX and OPEX, the brine concentration plants only concentrate the salts in brine, but do not produce any clean or mixed salts (for sale or disposal, respectively), as the installation of salt crystallisers are required to enable salt production.



Shell QGC, 100 MLD Northern Water Treatment Plant built by Consortium of GE and Laing O'Rourke. Image courtesy of GE.

# CSG Regulatory Framework in Queensland

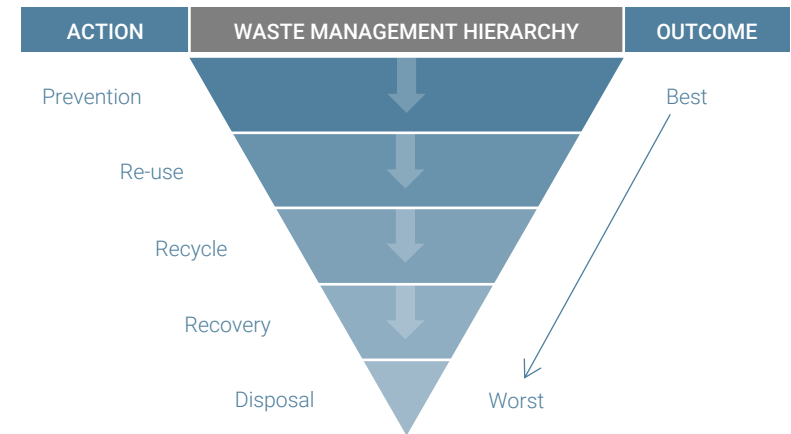
## Overview

- The regulatory framework applicable to CSG projects in Queensland is primarily determined by Queensland Government legislation governing the industry, requiring compliance with certain performance and environmental standards. In addition, CSG projects are also impacted by Commonwealth Government legislation, including the EPBC Act 1999.

## Queensland Government

The Queensland Government has a rigorous framework in place for the regulation of resource and prescribed activities. This regulatory framework is comprised by a range of legislation and associated regulations, policies, and guidance materials which impose a number of requirements and restrictions on an operator when undertaking an activity.

- *The Environment Protection Act 1994*
- *Coal Seam Gas Water Management Policy 2012*
  - Includes the **prioritisation hierarchy for managing saline waste**
- *State Development and Public Works Organisation Act 1971*
- *Planning Act 2016*
- *Waste Reduction and Recycling Act 2011*
  - Includes the **waste levy framework**
- *Regional Planning Interests Act 2014*



## Commonwealth Government

- The Commonwealth Government also regulates CSG activities through the “water trigger” in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). Under the water trigger, large CSG developments that are likely to have a significant impact on a water resource are a matter of national environmental significance, requiring Commonwealth approval.



## Key Principles of CSG Brine Management

- In March 2023, the Queensland Government released the *Coal Seam Gas Brine Management Action Plan 2023-2033*.
- The plan reiterated (from *Coal Seam Gas Water Management Policy 2012*) the prioritisation hierarchy for managing saline waste is:
  - **Priority 1** Brine or salt residues are treated to **create useable products wherever feasible**.
  - **Priority 2** After assessing the feasibility of treating the brine or solid salt residues to create useable and saleable products, disposing of the brine and salt residues in accordance with strict standards that protect the environment.
- The Action Plan indicated that, “*Management of brine requires the consideration of a range of elements including water management, waste management, water quality, site characteristics, environmental impacts, economic consideration, and safety. To achieve the best outcomes for the environment, industry and the community regarding the management of brine, the following four key principles are to be used to guide future actions for the long-term management of brine*”.

 <p>Ensuring a robust regulatory framework</p> <p>Strengthening Queensland's existing environmental regulatory framework to ensure CSG brine management practices protect Queensland's environment and its people.</p>	 <p>Promoting a circular economy</p> <p>Ensuring the CSG brine waste is managed in a way that is consistent with the waste management hierarchy under Queensland legislation, including by prioritising the reduction of waste generated, reuse of wastes and promoting a circular economy, and building economic opportunity.</p>	 <p>Investing in research and development</p> <p>Committing to continue investment in research and development activities to identify ecologically and economically sustainable ways to manage CSG brine waste.</p>	 <p>Increasing transparency and stakeholder engagement</p> <p>Implementing transparent and accountable practices for CSG brine management that promotes active engagement and the sharing of data and information with stakeholders (including landholders).</p>
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Queensland Government, *Coal Seam Gas Brine Management Action Plan 2023-33*.

Additional information: [https://environment.des.qld.gov.au/\\_data/assets/pdf\\_file/0025/306466/csg-brine-management-action-plan-2023-33.pdf](https://environment.des.qld.gov.au/_data/assets/pdf_file/0025/306466/csg-brine-management-action-plan-2023-33.pdf)

## Implications for Master Plan

- The adoption of Master Plan would prevent the disposal of 6,000,000 tonnes of waste salt into landfill, potentially the highest impact project.
- The conversion of waste salts into useable products (as achieved by the Master Plan) is also a key circular economy related priority.
- The **role of innovation** in achieving optimal outcomes is acknowledged.

## Queensland New Industry Development Strategy

- In May 2023, the Queensland Government Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) announced the launch of *Queensland New Industry Development Strategy*, which is similarly aligned with Master Plan.

Additional information: <https://www.statedevelopment.qld.gov.au/industry/queensland-new-industry-development-strategy>

## Background

- The Queensland Government as the primary environmental regulator, has over the last decade considered possible options for the long-term management of brine within the CSG industry.
- **APPEA Report:** In working towards a solution, in 2017 the government asked APPEA, the peak body for Australia's oil and gas industry, to develop a report to identify industry-wide solutions for the long-term management of brine generated from CSG activities.

Additional information: [https://environment.des.qld.gov.au/\\_data/assets/pdf\\_file/0016/240316/appea-end-to-end-water-management-report.pdf](https://environment.des.qld.gov.au/_data/assets/pdf_file/0016/240316/appea-end-to-end-water-management-report.pdf)

- **UQ Report:** The University of Queensland Centre for Natural Gas (UQ) was subsequently engaged by the Department of Environment & Science (DES) to undertake a peer review of the APPEA Report and provide advice, conclusions and recommendations.

Additional information: [https://environment.des.qld.gov.au/\\_data/assets/pdf\\_file/0018/240318/independent-review-brine-salt-management-report.pdf](https://environment.des.qld.gov.au/_data/assets/pdf_file/0018/240318/independent-review-brine-salt-management-report.pdf)

## Evaluation of Potential Options

- The various investigations, identified four key options, each of which were evaluated on their merits regarding environmental, economic, and social outcomes. Details of the key findings, including commentary by Parkway, are provided below.
- **Selective Salt Recovery (reuse):** Identified as the *most suitable option*, however, given the low product recoveries, poor product matrix (low value products targeting small domestic markets) and residual waste generation, this approach was found to be challenging. The challenges were further compounded by the very high CAPEX and OPEX, particularly energy use.
- **Ocean Outfall (release):** The disposal of brine via ocean outfall would require a main transfer pipeline traversing thousands of properties (including in urban areas), for hundreds of kilometres. Significant concerns over cost and water quality also exist.
- **Brine Injection (disposal):** The APPEA report concluded that no geological formations have been identified that could be considered appropriate for injection of waste brine. Concerns include downstream contamination, including of the Great Artesian Basin (GAB).
- **Salt Encapsulation (disposal):** Salt encapsulation involves the disposal of salt via placement in a landfill facility that has been sited, designed, constructed and operated for the salt waste. There are significant environmental challenges, as well as community opposition. At the time of the release of the APPEA and UQ Reports, salt encapsulation was deemed to be the *most "viable" option*.



Salt Encapsulation  
(disposal)

Selective Salt Recovery  
(reuse)

Brine Injection  
(disposal)

Ocean Outfall  
(release)



# Community Concerns & Scepticism

## Community Concerns

- The CSG industry in Queensland faces opposition from a range of stakeholders, mostly on environmental grounds.
- The long term disposal of CSG derived brine and salts is a topic that has generated significant backlash.
- The encapsulation approach proposed by the CSG industry has created a **major (social) license-to-operate challenge**.

## General Disclaimer

- The news articles and YouTube video presented in this section are provided for general reference only, to demonstrate the significant community concerns about the CSG industry's approach to waste brine and salt management and scepticism regarding the industry acting responsibly, in relation to waste disposal.
- The views presented in these news articles do not represent the views of Parkway, QBS, our directors, officers, employees and/or those of our partners.



### Coal seam gas waste plan risks washing '5m tonnes of salt into the Murray-Darling Basin'

Critics say a proposal to dispose of salt from waste brine by burying it in lined landfill is 'not a long-term solution'

- Sign up for the Rural Network email newsletter
- Join the Rural Network group on Facebook to be part of the community



❏ Lakes and reverse osmosis plants in Kumbailla state forest. A Queensland government plan to store coal seam gas brine in lined landfill sites has been criticised by environmentalists. Photograph: Lock the Gate Alliance

Local landholders and advocacy groups in southern Queensland have criticised the state government's plans to store millions of tonnes of coal seam gas waste in lined landfills, saying it risks contaminating the Murray-Darling Basin.

They have also questioned the integrity of the government's long-awaited waste management action plan for coal seam gas brine, saying it relies on research from oil and gas lobby group the Australian Petroleum Production and Exploration Association (Appa) and the University of Queensland Centre for Natural Gas, whose donors include Arrow Energy, Australia Pacific LNG and Santos.

Brine generated by CSG production is now stored in dams. The report recommended that brine be crystallised and the resulting salt - which it said was expected to amount to 5m tonnes over the life of the industry - be disposed of in lined landfill sites in a process called encapsulation.

The Guardian, Coal Seam Gas Waste Plan Risks Washing 5m tonnes of salt into the Murray-Darling Basin, 8 April 2023.

Accessed at: <https://www.theguardian.com/australia-news/2023/apr/08/coal-seam-gas-waste-plan-risks-washing-5m-tonnes-of-salt-into-the-murray-darling-basin> 0000

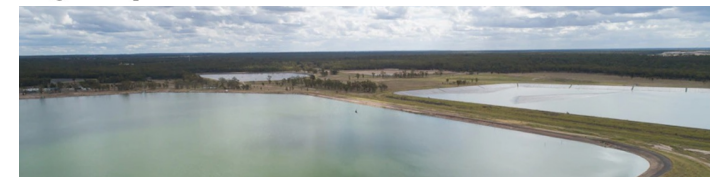


Juice Media, Honest Government Ad | We Make Everything Good Sh!t, 9 June 2022.

Accessed at: <https://www.youtube.com/watch?v=uXo7wtGW7M>



### Queensland's coal seam gas industry still has a big salt problem



A leading environmental engineer says the issue of waste salt from the coal seam gas industry has been underestimated and the 'preferred' industry plan 'needs active management forever'.

The Queensland government has just released the latest draft of its Coal Seam Gas Brine Management Action Plan.

#### Key points:

- Up to six million tonnes of waste

ABC News, Queensland's coal seam gas industry still has a big salt problem, 26 April 2022. Accessed at: <https://www.abc.net.au/news/rural/2022-04-26/queensland-coal-seam-gas-industry-big-salt-problem/100990978>

# 3: The QBS Technology-Based Solution

## Overview

- Cracking the CSG Brine Code with Technology
- Proprietary Process Technology Platform
- Process Technology Commercialisation
- QBS – Upstream Technology Package
- QBS – Downstream Technology Package
- QBS – Integrated Technology Package (Hub)
- QBS – Transforming Waste Brine with Technology
- QBS Optimisation 1: Residual Brine Reprocessing
- QBS Optimisation 2: Chlor-Alkali Plant Integration

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# Cracking the CSG Brine Code with Technology

## Parkway Has Recently Achieved Multiple CSG Brine Processing Related Breakthroughs

- Despite significant investment (>\$100 m) by the CSG industry over many years, supported by leading wastewater solution providers, to identify a long-term solution to treating waste brine and salts, salt encapsulation is the only “viable” pathway identified to date.
- Parkway recently announced it is **technically viable to treat concentrated CSG brines through a proprietary technology platform.**

Problem >	Pre-Treatment >	Core-Process >	Post-Treatment >	Solution
				 <ul style="list-style-type: none"> <li>High-purity water</li> <li>Industrial salt</li> <li>Agricultural lime</li> <li>Caustic soda</li> <li>Residual brine</li> </ul>
<p><b>CSG Wastewater - Annual</b></p> <ul style="list-style-type: none"> <li>55,000,000,000 litres (55GL) of associated water produced by QLD CSG industry.</li> <li>4,800,000,000 litres of reverse osmosis (RO) brine produced.</li> <li>No viable long-term option to treat waste brine and salts.</li> </ul>	<p><b>Upstream Brine Processing</b></p> <ul style="list-style-type: none"> <li>Range of proprietary iBC® mediated brine <b>pre-treatment, concentration &amp; conditioning</b> related stages.</li> </ul> 	<p><b>Downstream Brine Processing</b></p> <ul style="list-style-type: none"> <li>Core iBC® mediated brine processing, involving <b>range of technology capabilities</b> including aMES® related.</li> </ul> 	<p><b>iBC® Brine Post-Treatment</b></p> <ul style="list-style-type: none"> <li>Range of proprietary iBC® mediated brine <b>post-treatment and conditioning</b> related processes.</li> </ul> 	<p><b>Chemical Products</b></p> <ul style="list-style-type: none"> <li>&gt;98% product recovery.</li> <li>Primary product is an industrial caustic product.</li> <li><b>Product spec confirmed.</b></li> </ul> 



# Proprietary Process Technology Platform

## Overview

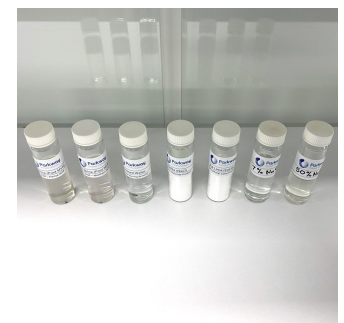
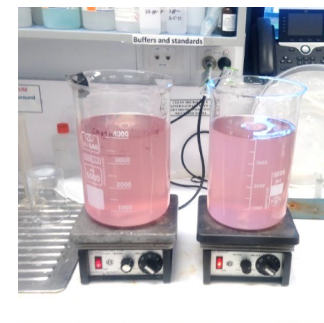
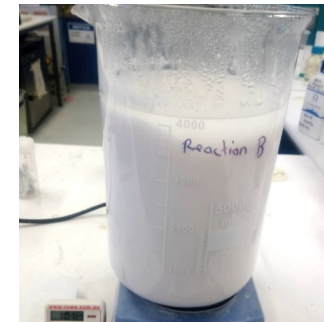
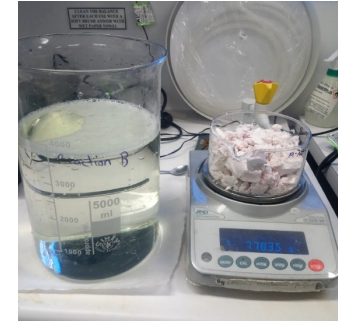
- Provenance of core process technologies extends over a >10 year period, with extensive background intellectual property (IP), all owned by Parkway.
- Incorporates proprietary features from several patented technologies, including:
  - aMES<sup>®</sup> - activated Mineral Extraction System, and
  - iBC<sup>®</sup> - integrated Brine Causticisation technology.

## Proprietary Process Development

- Developing process technologies for processing of concentrated and complex brines has been a core focus of Parkway for several years.
- Technology development led by team of experienced researchers and engineers.
- Extensive process modelling, through proprietary in-house simulation systems.
- Extensive experimental activities, to refine process models through iterative and systematic process development methodologies.
- Extensive bench-scale and large-scale piloting with **CSG derived brines** from several major upstream CSG projects in Queensland.

## Major Process Development Milestones

- 29 Nov 2022, Parkway announced *Cracking the CSG Brine Code*.  
Additional information: <https://investorhub.pwnps.com/announcements/4226473>
- 23 Dec 2022, Parkway announced *Successful Scale-up of Brine Processing tech*.  
Additional information: <https://investorhub.pwnps.com/announcements/4236496>



# Process Technology Commercialisation

## Process Optimisation

- Core proprietary brine processing technology has been integrated with various pre and post treatments, to provide a comprehensive brine treatment solution.
- As a process innovation, **low technical risk** given successful scale-up in piloting.

## New Upstream Brine Beneficiation & Concentration Technology

- Recently developed technology achieves more efficient concentration and processing of CSG derived brines, enabling concentrated brines to be readily transported to downstream facilities, to improve overall project performance.

## Technology Commercialisation

- In-house development of a **complete end-to-end brine processing solution** based on proprietary process technology package, **underpins Master Plan**.
- Process technology has undergone various techno-economic evaluations including scoping level evaluations across multiple major CSG projects.
- Feasibility study with major CSG project operator recently successfully finalised.
- **Technology roll-out, from feasibility study and FEED, through to FID, supported by global engineering company, Worley.** Post-FID, the role of Worley will transition to EPCM contractor to manage the execution phase of projects.

## Positioning QBS to Provide Solution for Queensland CSG Industry

- Established Queensland Brine Solutions (QBS) as a dedicated process technology commercialisation entity to advance the objectives of Master Plan.

Additional information: <https://investorhub.pwnps.com/announcements/4366666>



# QBS – Upstream Technology Package

## Overview

- The Parkway upstream technology package available to QBS, enables the more efficient concentration and processing of CSG derived waste brines.

## Advantages

- Modular design provides opportunities for staged and cost-effective deployment to align with project requirements.
- Significantly lower cost compared to conventional processes.
- Produces concentrated brines in a more energy efficient manner than conventional processes. Opportunities to also integrate renewable energy.
- Concentrated brines with substantial reduction in volume, are able to be more readily transported to downstream facilities.
- Produces fresh water onsite at upstream operations.

## Technology

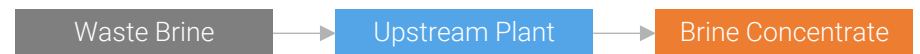
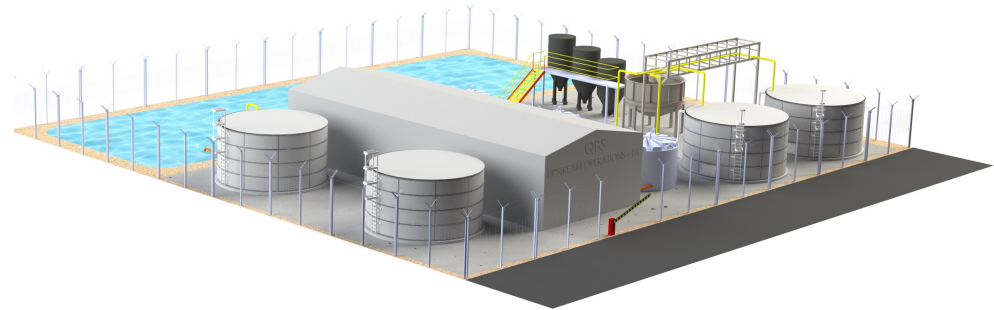
- Based on proprietary process technology package incorporating IP from aMES<sup>®</sup>, iBC<sup>®</sup> & several other undisclosed technologies.

## Ownership

- All the proprietary IP associated with the upstream technology package is owned by Parkway on a 100% basis.

## QBS Upstream Plant – Generalised Plant Layout

- The QBS upstream plant concentrates waste brines derived from existing CSG related desalination plants, to produce brine concentrates suitable for downstream processing.



# QBS – Downstream Technology Package

## Overview

- The Parkway downstream technology available to QBS, enables the systematic conversion of waste salts in concentrated CSG derived brines, into a range of industrial chemical products.

## Advantages

- Smaller downstream plant capacity requirement, given upstream concentration stage reduces waste brine volumes.
- Significantly lower cost compared to conventional processes.
- Produces a range of high-specification and high-value industrial products including:
  - Caustic soda (50% NaOH, w/w% basis)
  - Agricultural lime
  - Industrial salt

## Technology

- Based on proprietary process technology package incorporating IP from aMES<sup>®</sup>, iBC<sup>®</sup> & several other undisclosed technologies.

## Ownership

- All the proprietary IP associated with the downstream technology package is owned by Parkway on a 100% basis.

## QBS Downstream Plant – Generalised Plant Layout

- The QBS downstream plants process brine concentrates from upstream plants, to produce a range of high value products as well as fresh water.





# QBS – Integrated Technology Package (Hub)

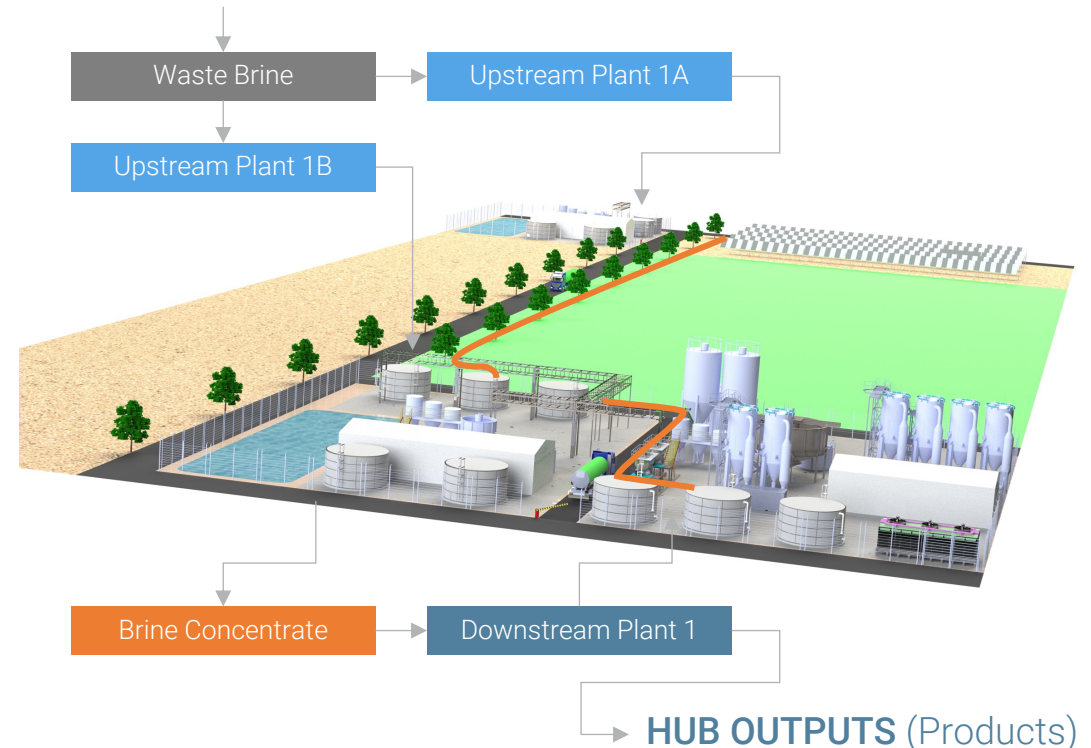
## OVERVIEW

- Several **upstream** plants are integrated into a local **downstream** plant, to form a central processing complex (hub) incorporating the complete proprietary QBS process technology package.
- The standard nameplate capacity of each central processing hub is 75 ktpa of contained salts (in waste brine) equivalent to 1.5 Mt of waste salt processing over 20 years.
- At the indicated capacity (75 ktpa), the industry would **require 4 central hubs** to process all of the industry's 6 million tonnes of salt (in brine) over the life of currently operating CSG projects.

## ADVANTAGES

- The proposed QBS central processing hubs minimise the requirement for transport to a single facility, and also enable the production of high value products.
- The combination of the upstream pre-treatment, and the innovative downstream process, enable the more efficient processing of waste brines, resulting in:
  - Substantially lower operating costs, and
  - Significantly lower CO<sub>2</sub> emissions.

### INPUT (RO Reject Brine)

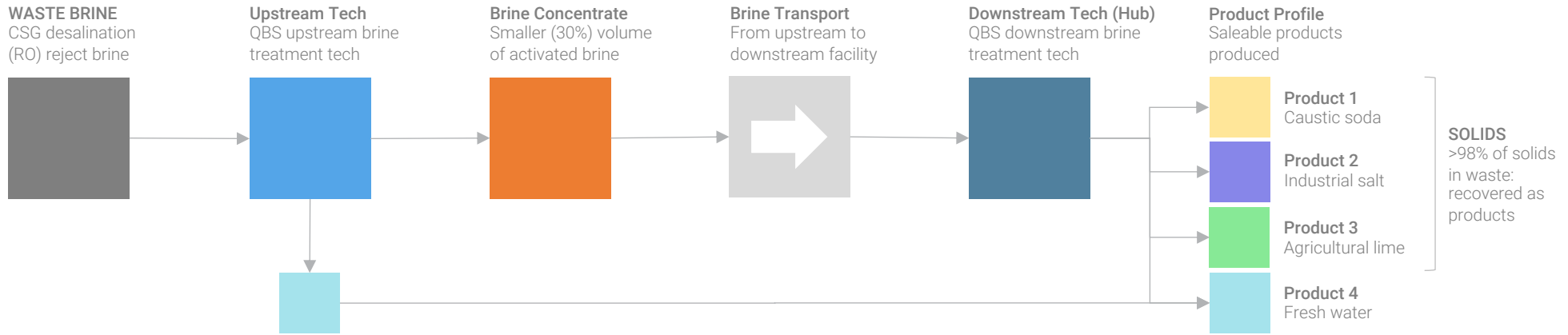


### HUB OUTPUTS (Products)

Caustic soda	32 ktpa
Agricultural lime	32 ktpa
Industrial salt	43 ktpa
Fresh water	>6 GLpa

# QBS – Transforming Waste Brine with Technology

## QBS – Master Plan



### ADVANTAGES OF QBS APPROACH

**Upstream Brine Concentration**  
reduces brine volume by 70%

**Less Brine Transport**  
70% less brine to transport

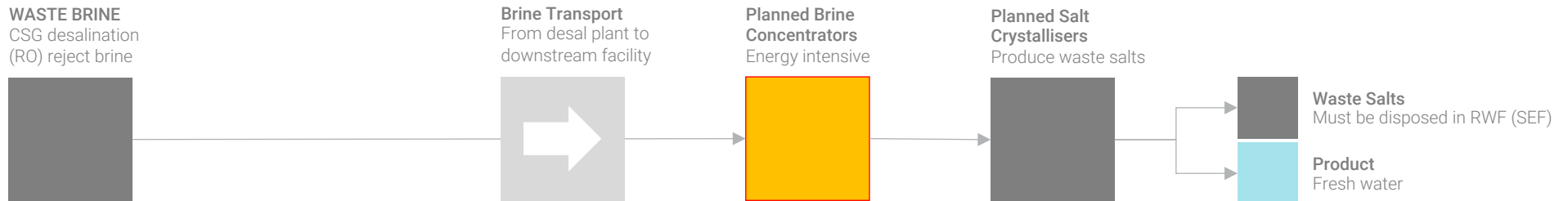
**Less Brine Dewatering**  
70% less water to remove from brine

**Lower CAPEX & OPEX**  
smaller downstream footprint and no RWF

**Valuable Product Mix**  
produce products instead of waste

**Revenue Generation**  
and significant waste savings

## Industry – Base Case Scenario (SEF)





# QBS Optimisation 1: Residual Brine Reprocessing

## Overview

- The residual waste brine (1-2% of total volume) from the QBS downstream plant contains a number of impurities.
- Given the relatively small volumes of residual waste, especially when compared to alternative approaches (100% waste generation in industry Base Case, and 20% for SSR approach) it is not envisaged that this waste will be processed further, initially.
- However, by utilising a series of chemical fractionation related processes (QBS Optimisation 1), the impurities may also be recovered as valuable chemical products.

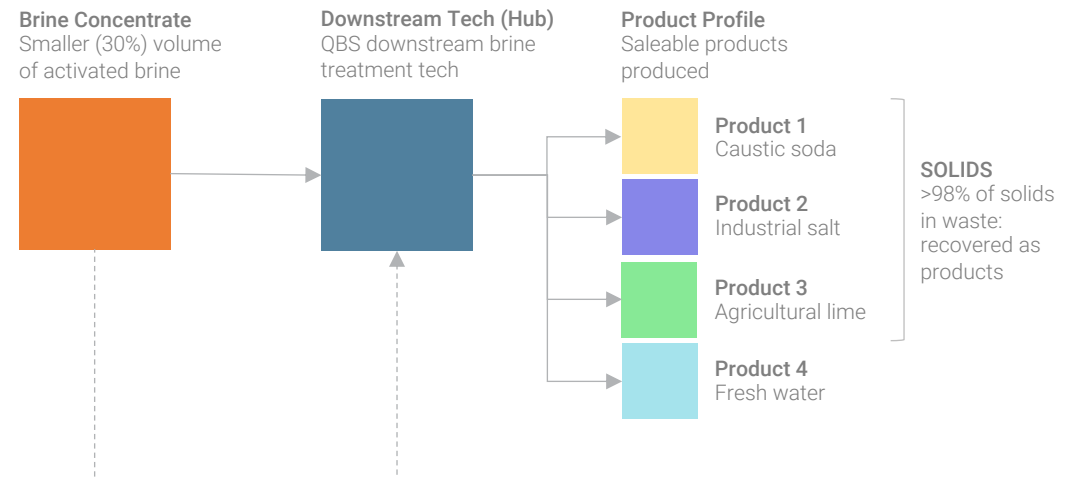
## Chemical Products

- Domestic production of range of halogens, including:
  - Bromine (Br)
  - Fluorine (F)
  - Iodine (I)
- Production of muriate of potash (MOP, KCl).

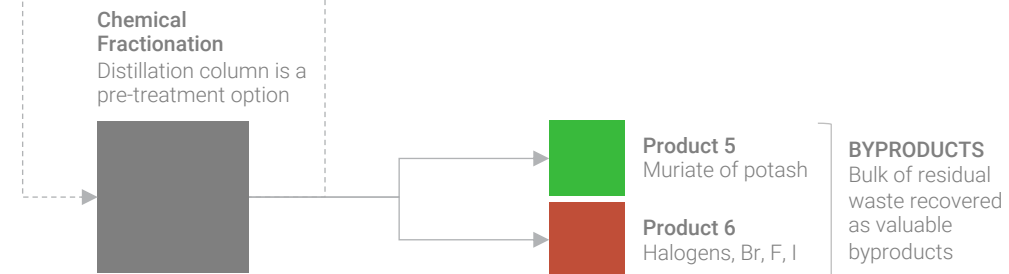
## Value Proposition

- Strong incremental economics, given waste profile is reduced, and revenue from byproducts increased.

## QBS – Core Processing Route (Excludes Optimisation Options)



## QBS – Optimisation 1



# QBS Optimisation 2: Chlor-Alkali Plant Integration

## Overview

- The Chlor-Alkali process is an industrial chemical process utilising electrolysis to convert salt (NaCl) in brine into caustic soda, as well as chlorine and hydrogen gas.
- The Chlor-Alkali process requires very high-purity NaCl brine, for reliable and efficient production.
- Based on the extensive pre-treatments in the various QBS upstream processes, **QBS activated brine is well suited for utilisation in an integrated Chlor-Alkali plant.**
- Extensive in-house Chlor-Alkali OEM/EPC/Tech expertise.

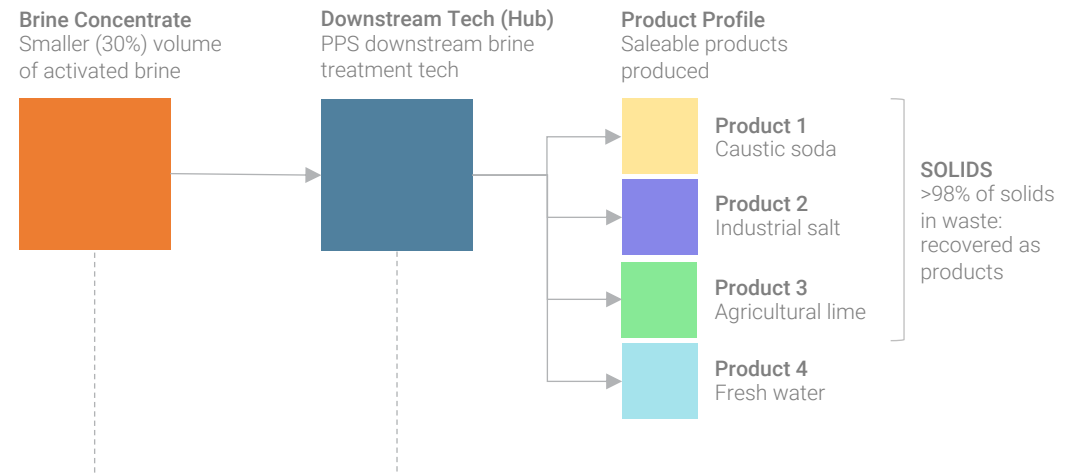
## Chemical Products

- Industrial chemical products, including:
  - 50% Caustic soda (additional >200 ktpa)
  - Chlorine gas ( $\text{Cl}_2$ , >100 ktpa)
  - Hydrogen gas ( $\text{H}_2$ , 3 ktpa)
- Production estimates, are based on a 100% basis for converting all QLD CSG derived NaCl salts into products.

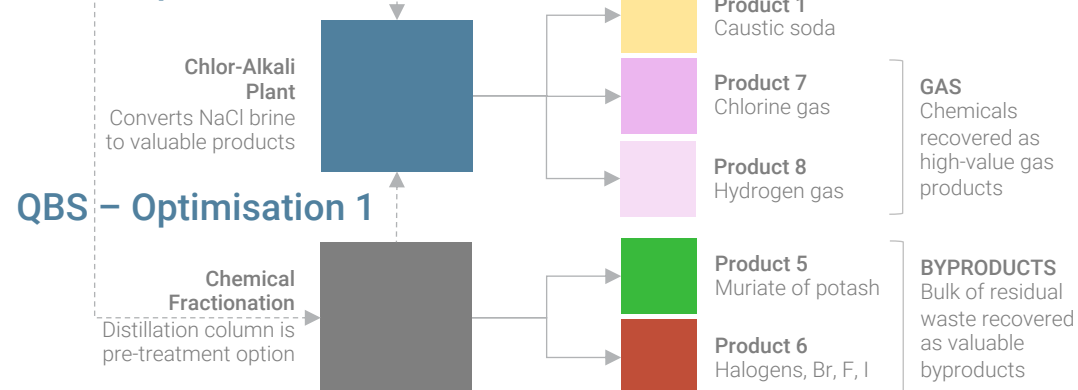
## Value Proposition

- >\$200m/yr increase in revenue **without additional CAPEX.**
- Major future opportunity to capture downstream value.

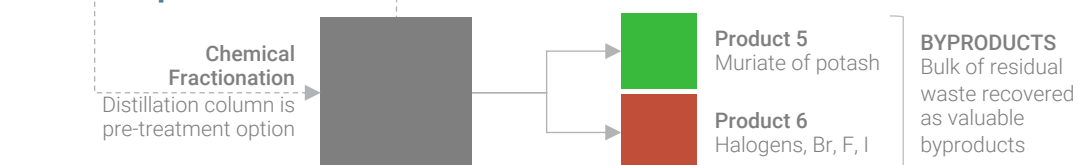
## QBS – Core Processing Route (Excludes Optimisation Options)



## QBS – Optimisation 2



## QBS – Optimisation 1



# 4: QBS Master Plan – Overview

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## Overview

- QBS Master Plan – Central Processing Hubs
- QBS Master Plan – Indicative Roadmap
- QBS Master Plan – Overview
- QBS Master Plan – Near Term Priorities

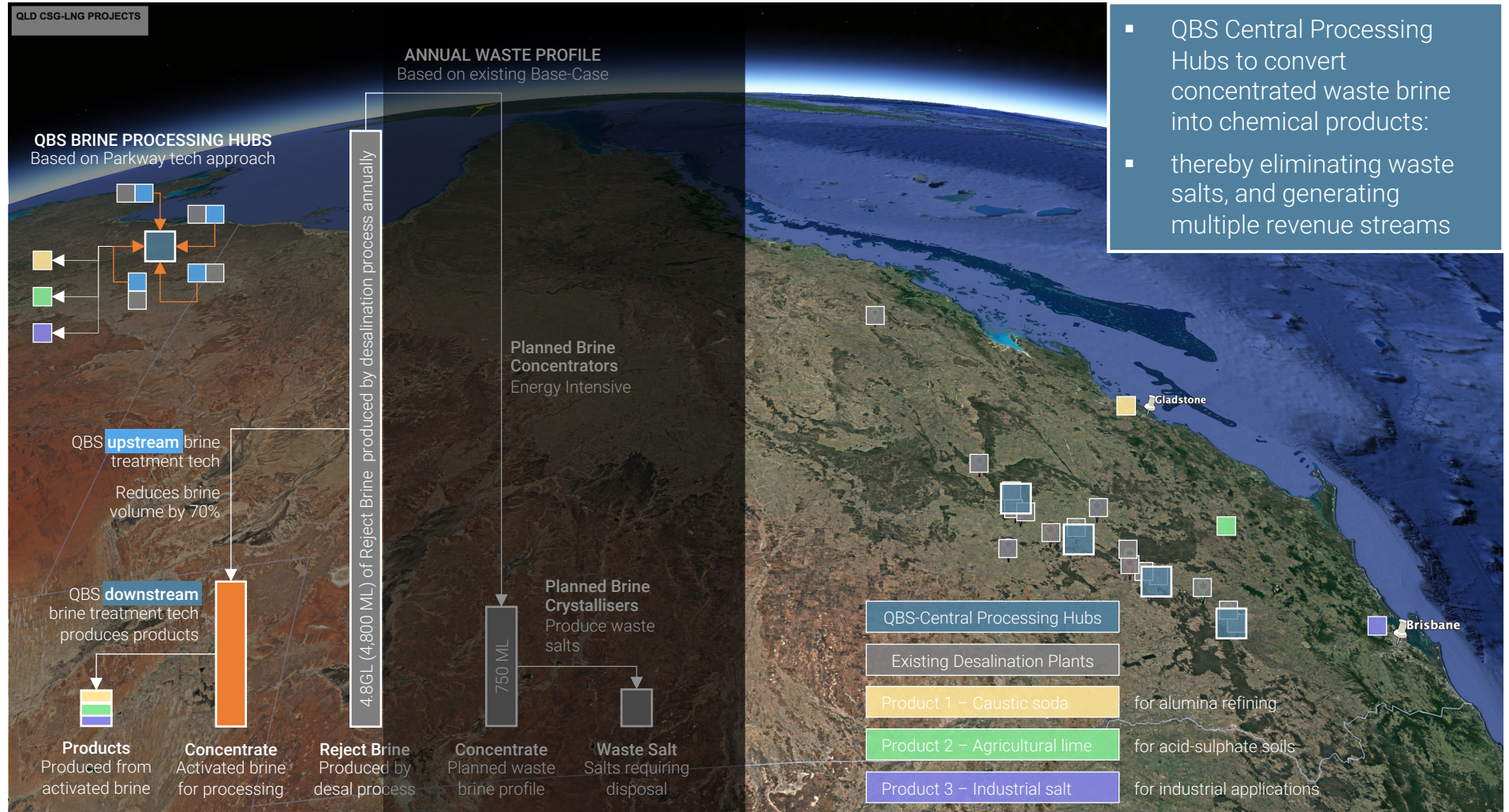
## Presentation Outline

- Section 1: Introduction to QLD CSG-LNG Sector
- Section 2: The Waste Brine & Salt Challenge
- Section 3: The QBS Technology-Based Solution
- **Section 4: QBS Master Plan – Overview**
- Section 5: QBS Master Plan – Value Creation

## Appendices

- Parkway – About Us
- Parkway – An Experienced Team
- Parkway – Group Structure
- Parkway – Key Markets
- Parkway – Next-Generation Solutions
- Parkway – Multilayered IP Protection Strategy
- Additional Information

# QBS Master Plan – Central Processing Hubs



- QBS Central Processing Hubs to convert concentrated waste brine into chemical products:
- thereby eliminating waste salts, and generating multiple revenue streams



# QBS Master Plan – Indicative Roadmap

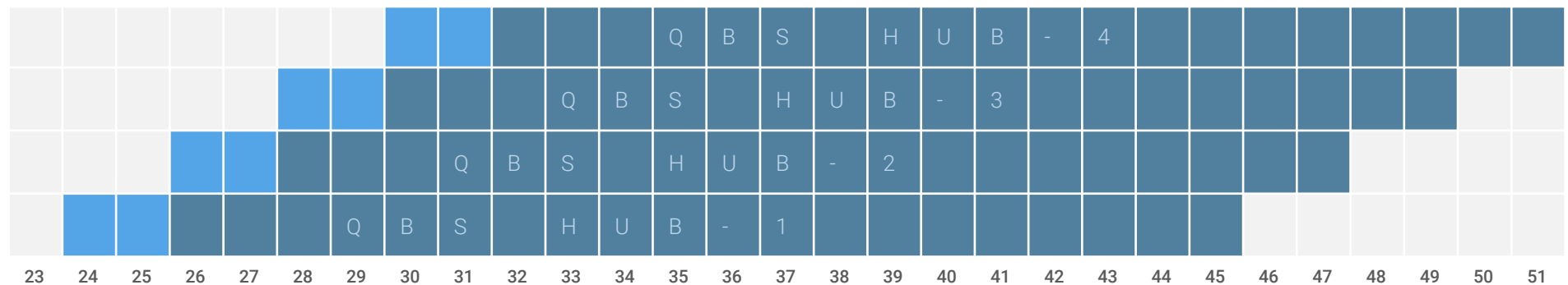
## Overview

- The optimal timing of each QBS Central Processing Hub will be determined to ensure alignment with CSG industry requirements.
- Each QBS Hub has a nominal project life of 20 years (excluding upstream), but can be extended to 25 years, if required.

## Project Sequencing

- **QBS Upstream Plants**
- Sufficient QBS Upstream plant capacity will be required, before a QBS Downstream plant can be commissioned.
- Opportunities for various small-scale QBS Upstream plants to be deployed, prior to scaling to required downstream capacity.

- **QBS Downstream Plants**
- The timing of QBS Downstream plant capacity remains flexible, although necessary to establish operational QBS Hub.
- Over the 20 year project life, the **4 proposed QBS Hubs will treat total brine volumes containing 6 million tonnes** of waste salt.



## What is Master Plan?

- A concept developed by Parkway to address the CSG derived waste brine and salt challenges in Queensland, Australia.

## What is the Primary Objective of Master Plan?

- To utilise a proprietary process technology package developed by Parkway, to convert all of the CSG derived waste brine and salts produced in Queensland, into saleable products, and thereby:
  - Provide a sustainable waste “disposal” (conversion of waste-to-products) option for industry, and
  - Concurrently generate revenue from sale of products.

## Who is Queensland Brine Solutions?

- QBS was recently incorporated by Parkway, in order to pursue the commercialisation of the Master Plan concept.
- Parkway intends to introduce strategic partners into QBS.

## How will QBS Pursue Master Plan?

- Through a series of 4 proposed central (waste brine) processing hubs, QBS, together with leading strategic partners intends to progressively provide an industry wide solution.

## How will Master Plan Impact Key Stakeholders?

### ▪ CSG Industry including CSG Operators

- Provide an attractive pathway to addressing long term brine and salt disposal related challenges.
- Provide an opportunity for the industry to demonstrate adoption of innovative technologies to achieve improved financial and ESG related outcomes.

### ▪ Rural Communities

- Eliminate concerns around the long term risks associated with disposal of waste salts in landfill.

### ▪ Regional Industries

- Provide locally produced agricultural lime to regional farmers to improve soil quality, particularly acid-sulphate soils.
- Provide large caustic soda consumers (such as alumina refineries in Gladstone), with a domestically produced source of more sustainable caustic soda.

### ▪ Queensland Government

- The opportunity to be a catalyst in the adoption of an innovative process technology to address very significant and complex ESG related challenges.
- Position Queensland as the Smart & Sustainable State.

## Ongoing Stakeholder Engagement

- Industry
  - CSG project owners and operators
  - Australian Petroleum Production & Exploration Association (APPEA)
- Regulatory Authorities
  - Infrastructure planning
  - Resource management
  - Environmental compliance

*Demonstrate that Master Plan concept, provides a vastly superior roadmap compared to all other alternatives.*

## Commercial Alignment

- Progress discussions with industry to develop mutually beneficial risk and value sharing models
- Strategic Parties
  - Strategic partners
  - Strategic investors
  - Product off-takers

*Develop a mutually beneficial value-proposition for all stakeholders.*

## Commercialisation

- Position QBS as a viable option to provide long term solution.

*Commercially pragmatic. Everybody needs to win.*



# 5: QBS Master Plan – Value Creation

## Overview

- CSG Industry – Waste Brine Treatment Options
- CSG Industry – QBS Brine Treatment Comparison
- QBS Master Plan – Financial Benchmarking
- Brine Treatment Options – Comparative Analysis
- QBS Business Model – Monetisation Options
- QBS Business Model – Scenario Analysis
- QBS Master Plan – Potential Funding Options
- QBS – Creating Value Through Technology
- Summary of Advantages of Master Plan

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### IMPORTANT INFORMATION

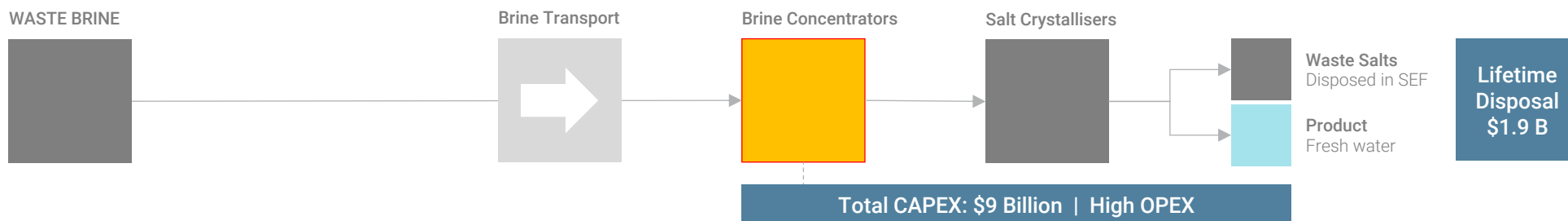
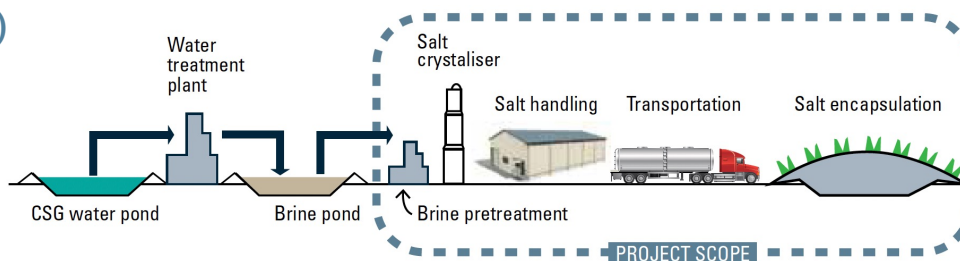
This section of the presentation includes a range of estimates regarding potential market opportunities, various financial estimates relating to capital and operating expenditure (CAPEX and OPEX, respectively) as well as potential revenue generation opportunities. Whilst reasonable care has been taken in the preparation of any estimates, these estimates nonetheless represent a range of risks and uncertainties. It should be noted, that this information, including any estimates are intended as an indicative guide only, and should not be relied upon for any specific purpose, including any investment related purposes. Further cautionary statements, including details regarding forward-looking statements, are outlined in the *Disclaimer* section at the beginning of this presentation.

All dollar (\$) amounts in this section of the presentation refer to Australian dollars, in real terms (in 2023 Australian dollars).

# CSG Industry – Waste Brine Treatment Options

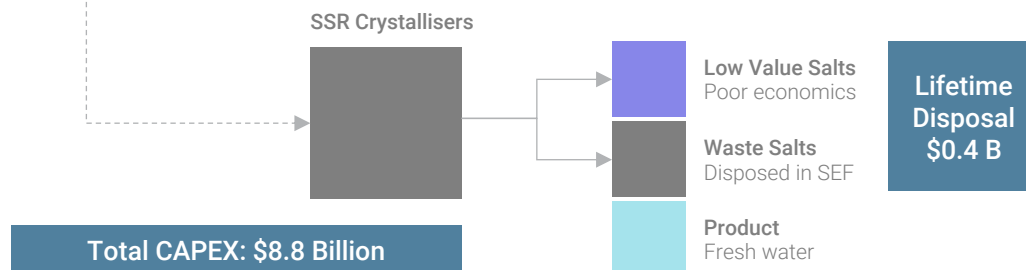
## Industry – Base Case Scenario (SEF)

- Significant plant and SEF related CAPEX
- Very high i) plant operating, ii) transport and iii) salt disposal related annual operating costs (OPEX)



## Industry – Alternative Scenario (SSR)

- Whilst SSR plant CAPEX is higher, the SEF CAPEX is lower
- Very high transport related costs and even higher OPEX
- Lower costs for salt disposal as proportion of salts sold
- Minor revenue generation from low value products



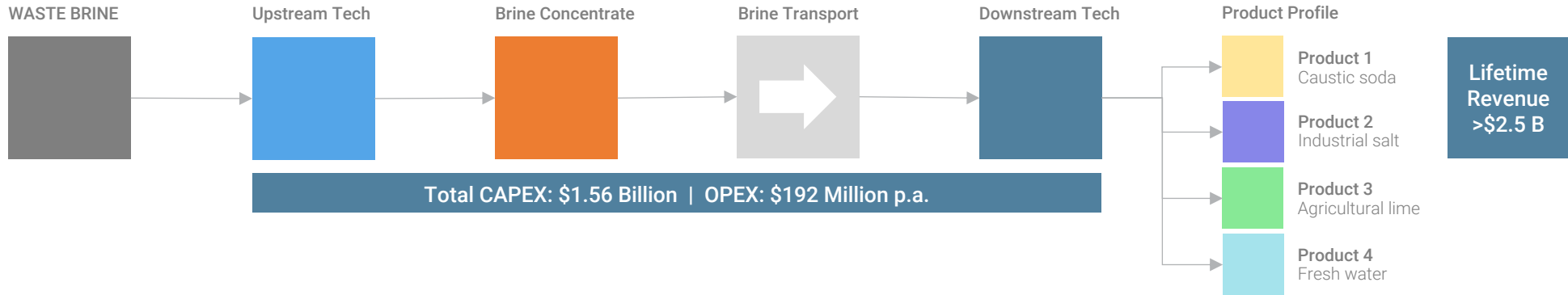
### KEY CHALLENGE

- The minor revenues and disposal savings, are unlikely to justify the risks and incremental investment of SSR.

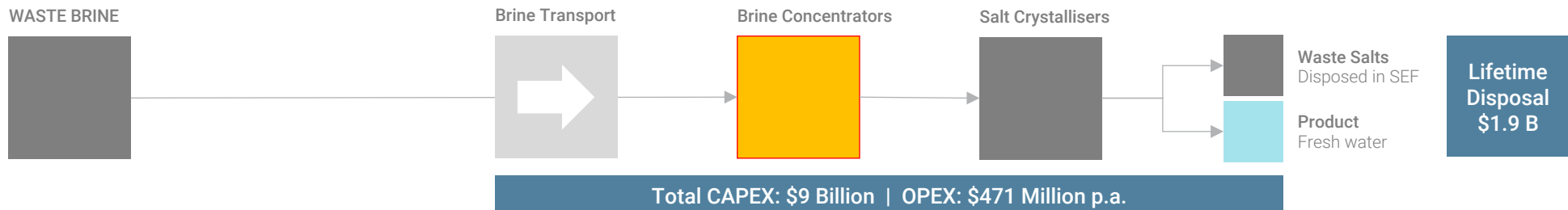
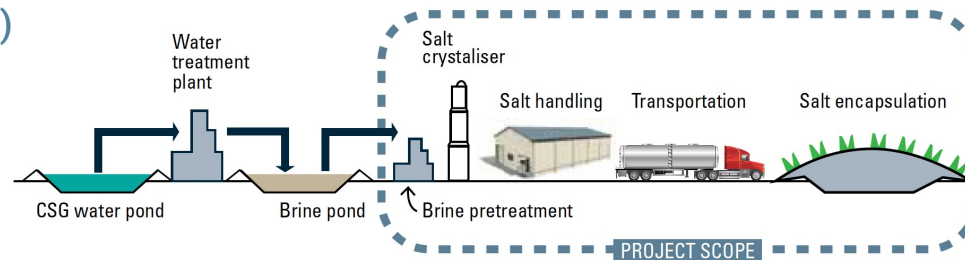
All dollar (\$) amounts refer to Australian dollars, in real terms (2023). All financial estimates, including but not limited to CAPEX, OPEX and disposal costs, have been derived by Parkway from a range of industry sources, including APPEA reports and indexed to account for various factors including industrial inflation & currency impacts, amongst others. This information is intended as a guide only, and should not be relied upon for any specific purpose. Further details, refer to the *Disclaimer* section in this presentation.

# CSG Industry – QBS Brine Treatment Comparison

## QBS – Master Plan (Industry-Wide Solution)



## Industry – Base Case Scenario (SEF)

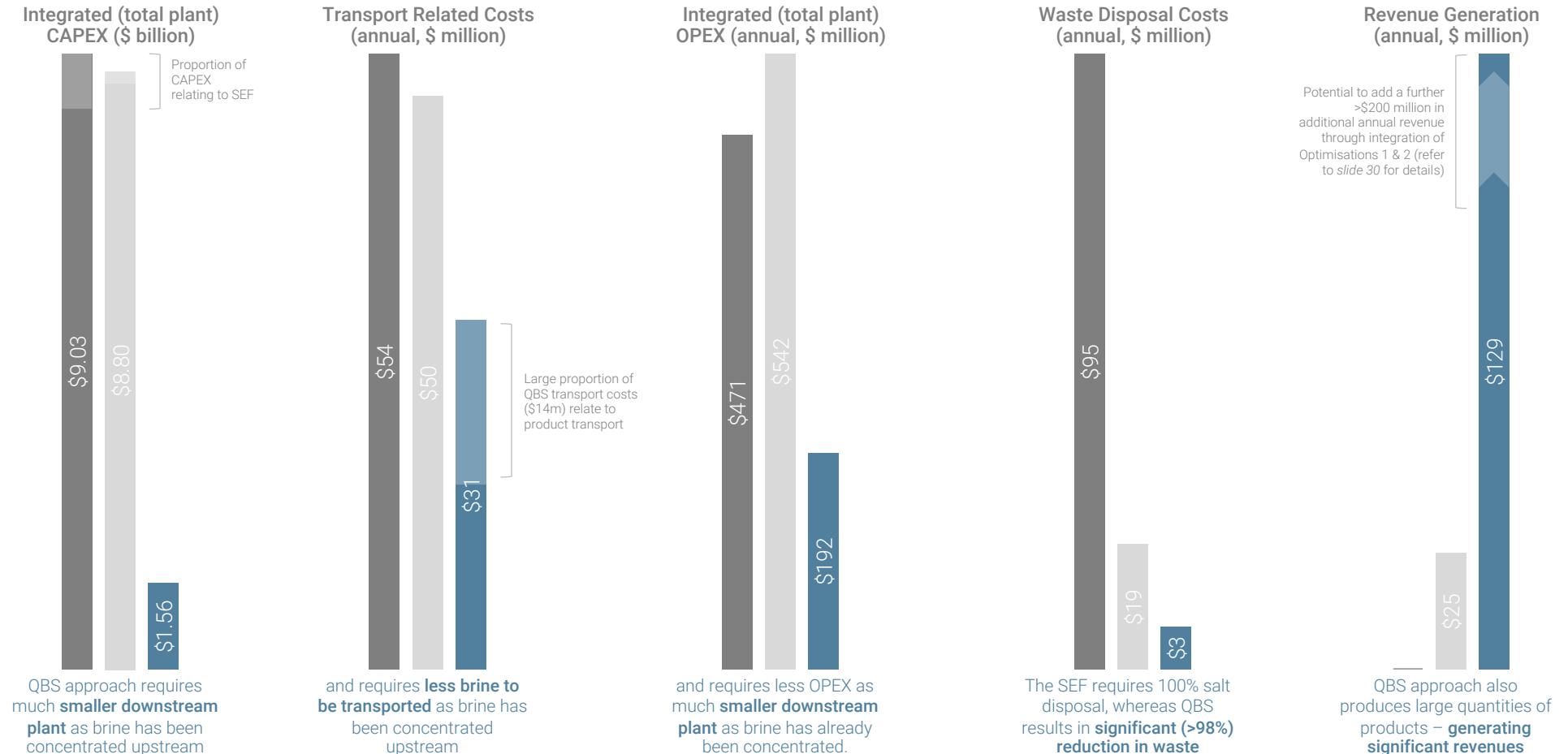




# QBS Master Plan – Financial Benchmarking

## Brine Processing Options – Estimates based on complete industry wide solution achieved through 4 Central Hubs

- Comparison between *Industry Base Case* (Salt Encapsulation, **SEF**), *Selective Salt Recovery* (**SSR**) and the *Master Plan* (**QBS**).



# Brine Treatment Options – Comparative Analysis

	Alternate (SSR) Salt Recovery Processes	Salt Encapsulation (SEF) Approaches	Proprietary (QBS) Processing Route
<b>Overview</b>	Range of historical “selective salt recovery (SSR)” approaches considered, mostly a decade ago. <b>Considered “most suitable* option”.</b>	Involves crystallising brine into mixed salt form and encapsulating it for long-term storage in purpose built cells. <b>Considered “most viable* option”.</b>	Highly innovative proprietary flowsheet that transforms majority of waste brine & salt into saleable industrial products. <b>Intrinsically superior option.</b>
<b>Environmental Metrics</b>	✘	✘ ✘ ✘	✔ ✔ ✔
<b>Solid Waste Profile</b>	Only a fraction of salts are recovered	All of the salts are disposed	>98% of salts are recovered
<b>Liquid Waste Profile</b>	No liquid products are recovered	No liquid products are recovered	>98% of liquid recovered as product
<b>Ongoing Monitoring</b>	Residual waste streams are significant and require disposal and monitoring	Waste salt cells require >150 yr design life & requires ongoing management	As vast majority of wastes are recovered - residual waste is minimal
<b>Social Metrics</b>	✔	✘ ✘ ✘	✔ ✔ ✔
<b>Social License</b>	Infrastructure investment delivering partial solution is a poor outcome	Creates range of social-license related challenges impacting project viability	The sale of products eliminates the vast majority of long-term liabilities
<b>Freedom to Operate</b>	Sets poor precedent about resource custodianship and utilisation	Long term management & monitoring of waste facilities is highly undesirable	Provides freedom-to-operate by adopting best-available technology
<b>Financial Metrics</b>	✘ ✘ ✘	✘ ✘ ✘	✔ ✔ ✔
<b>Project Revenues</b>	Generates limited revenues from low-value products – must pay levies	Does not generate any revenues and instead must pay waste levies	Substantial revenues from sale of industrial-grade solid & liquid products
<b>Project CAPEX</b>	Extremely high plant costs	Very high sustaining CAPEX	Modest CAPEX - productive capital
<b>Life of Project</b>	Prohibitive CAPEX to produce limited revenue is poor investment option	Substantial ongoing disposal and levy costs are highly problematic	Revenues fund waste treatment – thereby saving waste disposal costs

\* - As outlined in the, Queensland Government, Coal Seam Gas Brine Management Action Plan 2023-33.

# QBS Business Model – Monetisation Options

## Overview

- As the owner of the proprietary process technology package with potential to create significant value (>\$15 billion) for the industry, Parkway (through QBS) is well placed to **capture value through a range of business models**, to ensure reasonable value distribution.

## Indicative Business Model: Based on Licensing

- A CSG Operator may wish to own and operate a waste processing facility based on QBS (potentially BAT) technology.
- QBS (as Licensor) would provide a process technology package to the CSG Operator (Licensee), as part of a licensing agreement.

### Indicative Structure

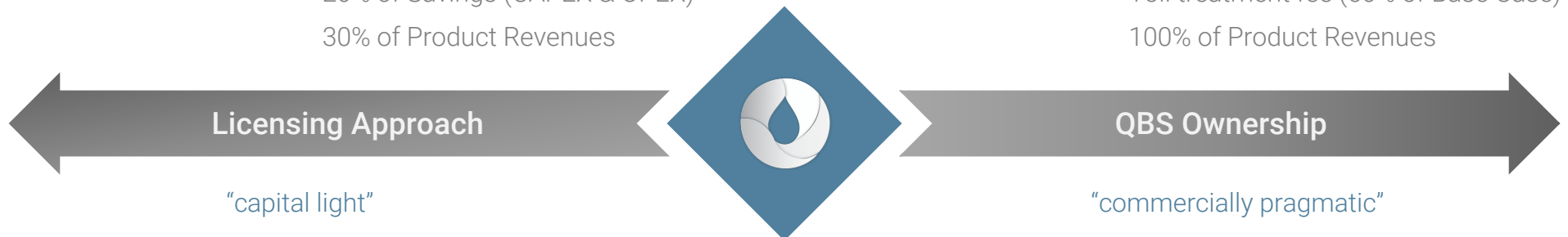
- Project Owner: CSG Operator
- Licensor: QBS
- EPCM: Worley
- Licence Fees: Indicative metrics equivalent to:  
20% of Savings (CAPEX & OPEX)  
30% of Product Revenues

## Indicative Business Model: Based on QBS Ownership

- QBS would deliver a solution to CSG Operator/s under long term take-or-pay contractual arrangements with pre-payments.
- Pre-payments would assist in funding CAPEX for a waste processing facility, with strong ongoing FCF generation.

### Indicative Structure

- Project Owner: QBS (through SPV)
- EPCM: Worley
- Client/s: CSG Operator/s
- Revenues: Indicative metrics equivalent to:  
Toll treatment fee (50% of Base Case)  
100% of Product Revenues

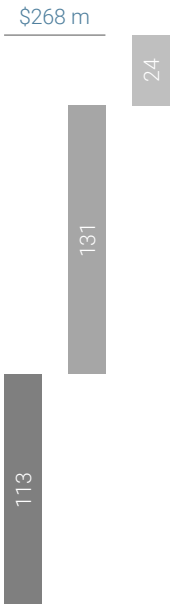




# QBS Business Model – Scenario Analysis

## CSG Project Operator – Base Case Scenario (SEF)

- Assuming a CSG Operator builds a waste processing hub (brine concentrator, salt crystalliser & SEF) representing 25% of the waste brine and salt capacity of the QLD-CSG industry.
- The CSG Operator will likely incur significant upfront CAPEX, estimated to be in the order of ~\$2.25 billion.
- Despite the significant CAPEX and ongoing OPEX, the project will still involve substantial long term risks, associated with liabilities from the disposal of waste salts.

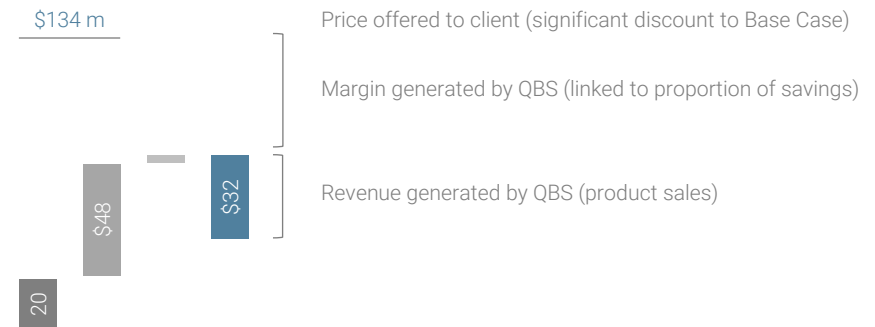


### Estimated Costs (annualised):

- CAPEX** (amortised over 20yr project life)
- OPEX** (inclusive of transport)
- Waste disposal costs** (inclusive of levies)
- Revenue** only applicable to Master Plan

## Alternative Scenario – Master Plan (QBS Hub)

- A Master Plan option of the same capacity as the Base Case (instead based on QBS Hub), provides QBS with the potential to offer a CSG Operator a waste processing option that is:
  - <50% of the cost of all other available options
    - Resulting in significant savings for the client.
  - Option only available to client, if they commit to life of project take-or-pay contract, with pre-payment terms.
  - Eliminates long term liabilities associated with SEF.**
- QBS generates margin from “disposal substitute”.
  - Also generates revenue from product sales.
- A win-win for the client (CSG operator/s), gas industry, QBS, environment, local communities and all other stakeholders.



# QBS Master Plan – Potential Funding Options

## Funding Alignment

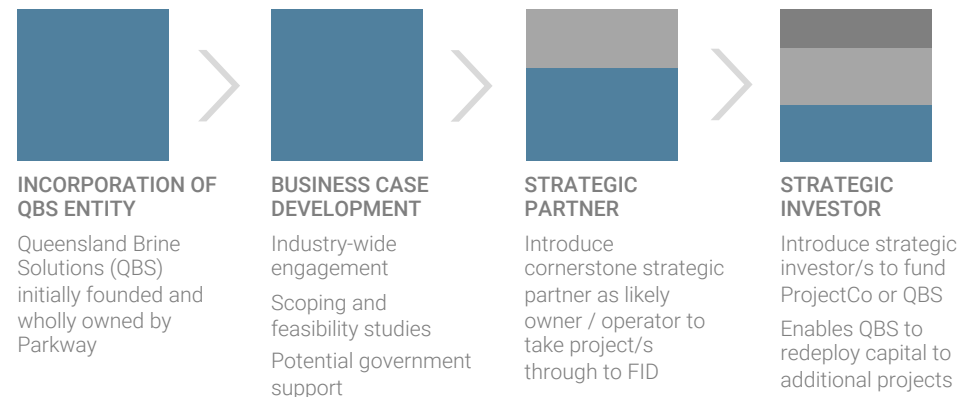
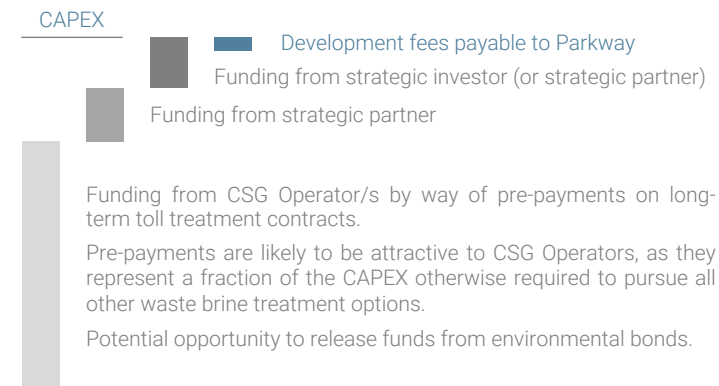
- Regulatory obligations require CSG Operators to make significant investments (\$9 billion in CAPEX for the industry-wide Base Case scenario) in waste brine treatment, however they are not the natural owners and/or operators of these specialised critical assets.
- The CSG Operators are attracted to contracting third-party contractor/s to process waste brine streams, on a toll treatment basis.
- On this basis, QBS is well placed to deliver a long-term sustainable solution, **vastly superior to all alternatives**, on attractive terms.
- Given the very strong revenue generation potential of QBS, external investment from strategic partners and investors is anticipated.

## QBS – Central Processing Hub Funding

- The primary funding for the central processing hubs, is anticipated to be provided by CSG Operators as pre-payments.
- Investment from strategic partners and investors, is expected to generate strong returns, given strong value proposition.

## QBS – Strategic Funding

- Parkway to gradually introduce strategic partners and investors into QBS or SPV, in order to provide project financing & support.
- Parkway and Worley to generate range of fees, particularly as project/s reach Define (FEED) and Execute phases.



## Operational & ESG Requirements

- CSG Operators are required to address the growing inventory of concentrated waste brines, to avoid operational challenges.
- Widespread community concerns and pushback present risks.

*Need to address the waste issue.*

## Regulatory Requirement

- The waste management hierarchy (refer *slide 16*) requires brine or salt residues to be treated to create useable products.

*Required to address the waste issue, and produce useable products, as a priority.*

## Superior Technology

- The QBS approach is superior to all other alternatives including:
  - Salt encapsulation, as this requires the large-scale disposal and monitoring of salts in landfill.
  - Selective salt recovery, as this is prohibitively expensive, and still only produces low-value products.
- The QBS approach produces high-value products, including both solid and liquid products with large local markets.

*All options are expensive, but **waste processing facilities must be built.***

*QBS option is vastly cheaper to build and operate, eliminates waste and generates valuable product streams.*

## Best Available Technology

- Genuine opportunity for the Parkway technology platform to become **best available technology (BAT)** and for QBS to potentially provide a complete industry-wide solution.

*Innovative technology to transform brine disposal across the CSG industry.*



# QBS – Summary of Advantages of Master Plan



## The Problem

- Enormous volumes of waste brine produced
- Waste brine contains 6 million tonnes of salts
- No practically viable treatment options identified by industry to date

## Industry Needs Permanent Solution

- To address range of operational and long term challenges
- Strong regulatory framework requires solution
- Social license challenges demand solution

## QBS Master Plan

- Underpinned by two core proprietary technology portfolios
- Tech has undergone extensive technical and commercial evaluations
- World-class partners, including global engineering company (Worley)

## Sustainable Value Creation

- Provides CSG industry with **highly attractive and permanent solution**
- Opportunity for Queensland Brine Solutions to create significant value
- Aligns with government priorities in relation to circular economy, waste-to-products, sustainability and environment.

## Value Creation

The Master Plan approach proposed by QBS has the potential to create significant value compared to the Base Case scenario contemplated by the CSG industry in Queensland, including:

- Significant CAPEX savings
  - ~\$7.5 billion compared to Base Case
  - ~\$7.3 billion compared to SSR approach
- Significant OPEX savings
  - >\$6 billion over life of projects
- Waste disposal savings
  - ~\$1.8 billion
- Product sales
  - >\$2.5 billion in revenue
- In summary, the Master Plan has the potential to **create >\$15 billion in value** over the life of the existing Queensland CSG-LNG projects.
- The Master Plan also provides a permanent solution to CSG derived brine and salt issues, without the ongoing risks and liabilities associated with salt disposal in landfill (SEF).

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- Parkway – An Experienced Team
- Parkway – Group Structure
- Parkway – Key Markets
- Parkway – Next-Generation Solutions
- Parkway – Multilayered IP Protection Strategy
- Additional Information

## Presentation Outline

- Section 1: Introduction to QLD CSG-LNG Sector
- Section 2: The Waste Brine & Salt Challenge
- Section 3: The QBS Technology-Based Solution
- Section 4: QBS Master Plan – Overview
- Section 5: QBS Master Plan – Value Creation

## Appendices

- Parkway – About Us
- Parkway – An Experienced Team
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# Parkway – About Us

## About Us

- We are an innovative industrial water treatment **technology** company.

## What Problem are we Solving?

- We develop solutions for **concentrated and complex process & wastewater** streams from the energy and mining sector, to achieve improved outcomes.
- These markets represent **multi billion dollar opportunities**.

## How are we Different?

- We own **innovative technologies** that enable us to create value by:
  - Reducing wastewater volumes (significant cost savings), and
  - Recovering valuable products (generating revenue).

## Defined Strategy

- Building an advanced **industrial water treatment technology company**.
- Staged approach to **generating revenue & commercialising technology**.
- Commercially pragmatic to ensure optimal value creation & capture.

## Experienced Team

- Strong corporate, strategic, M&A, industrial and technology experience.
- Highly focused team **methodically executing** corporate strategy.



*Building and innovative  
industrial water treatment  
technology company.*

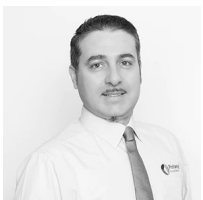
# Parkway – An Experienced Team



**Stephen van der Sluys**  
Non-Executive Chairman

## Board of Directors

- Highly experienced board with **significant domain expertise** in industrial, energy, mining, waste and technology sectors.
- Strong corporate experience including M&A
- Mr Stephen van der Sluys
  - Investment banker, ex-Citi, JPM, CIBC, Queensland Nickel (QNI), JRV
- Mr Bahay Ozcakmak
  - Significant industrial technology commercialisation expertise
  - Leading development and execution of growth strategy including Master Plan
- Ms Penny Creswell
  - Experienced senior lawyer, currently Head of Environment and Regulatory Compliance at ASX: CWY
- Ms Ayten Saridas
  - Experienced CFO/finance executive, ex-AWE, CRN, OSH, STO, WOW



**Bahay Ozcakmak**  
Group MD & CEO



**Penny Creswell**  
Non-Executive Director



**Ayten Saridas**  
Non-Executive Director



**Mike Hodgkinson**  
Chief Commercial Officer

## Commercial & Technical

- Extensive inhouse **commercial & technical expertise** underpins:
  - Process technology development program, and
  - Technology commercialisation related activities.
- Mr Mike Hodgkinson
  - Broad corporate and technology commercialisation experience
- Mr Raza Hasan
  - Senior roles, including as principal process engineer with leading global EPC & chemical companies
- Dr Rudy Dubbelboer
  - Senior process engineer with global EPC, chemical & tech companies
- Mr Anthony Gunadi
  - Senior brine treatment specialist with extensive EPC experience



**Raza Hasan**  
Head of Engineering



**Dr Rudy Dubbelboer**  
Process Innovation Engineer



**Anthony Gunadi**  
Water Treatment Specialist



# Parkway – Group Structure

## Overview

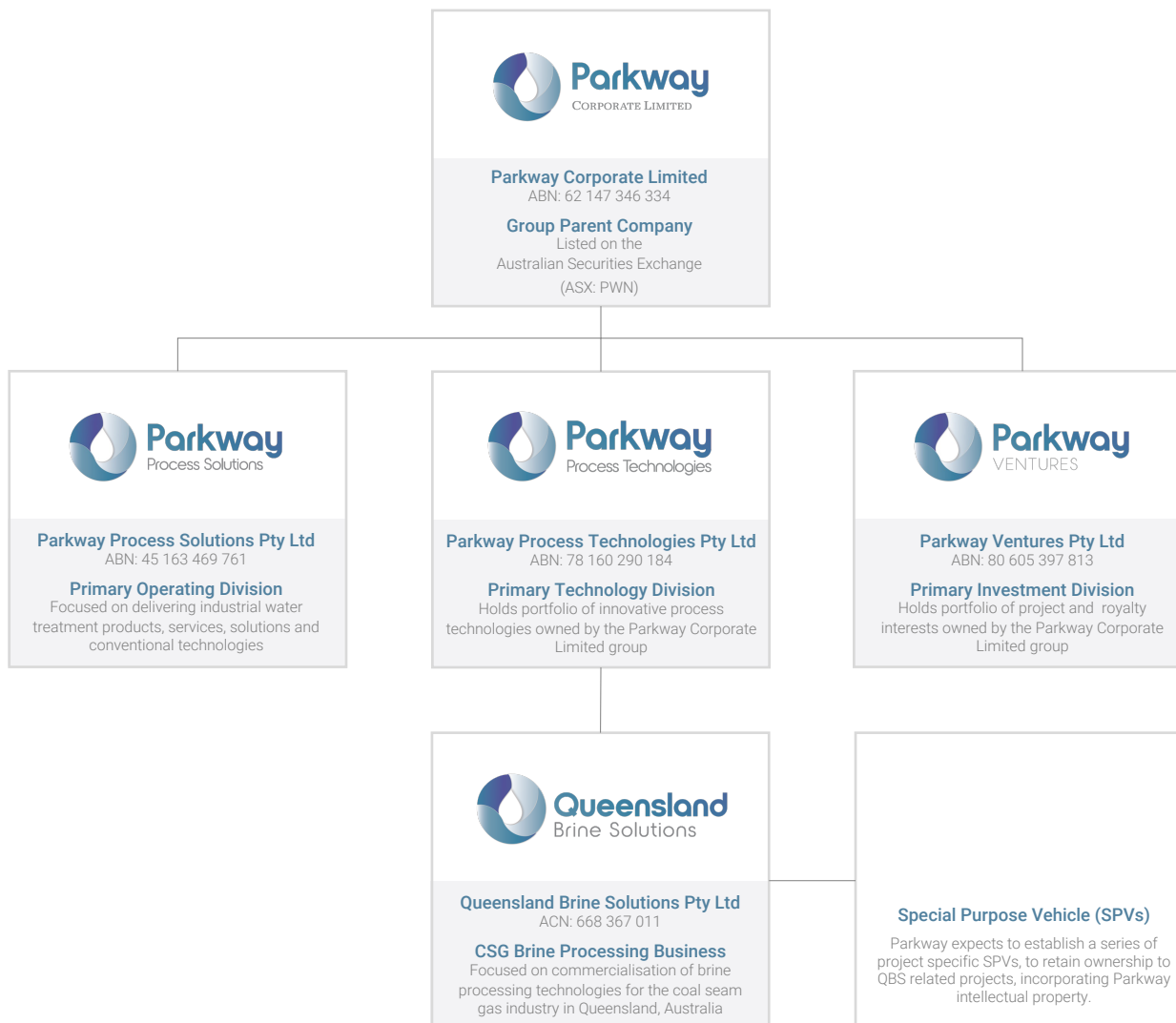
- Parkway Corporate Limited, the group parent company, has been listed on the Australian Securities Exchange since May 2011.
- Parkway is an industrial water treatment, technology company.

## Key Business Units

- Parkway operates through two key business units:
  - Parkway Process Solutions (PPS)
  - Parkway Process Technologies (PPT)

## Queensland Brine Solutions

- The commercialisation of brine processing technologies for the CSG industry in Queensland, through Master Plan, is being pursued by Queensland Brine Solutions (QBS).
- QBS is a wholly owned subsidiary of PPT.
- The ownership of Master Plan related projects will be achieved through SPV structures.



# Parkway – Key Markets

## Key Markets

- Wastewater treatment opportunities
- < 10% of wastewater currently recycled
- Large and growing global markets

## Mining & Energy



## Industrial Wastewater



## Municipal & Desalination



## Challenges

- Major challenges impacting industry

- Limited access to freshwater is driving need to recycle wastewater
- Wastewater storage is problematic
- Processing of waste is complex

- Access to freshwater is becoming more difficult, costly and uncertain
- Wastewater discharge is difficult
- Processing of waste is expensive

- Wastewater storage and discharge is increasingly being scrutinised
- Conventional treatment can be complex due to salts and organics

## PPS Markets

- Parkway Process Solutions (PPS)

- Projects require range of products and **conventional** solutions
- Solid-liquid separation options including chemistry as well as membrane based approaches

- Projects require range of products and **conventional** solutions
- Removal of contaminants and organics to meet wastewater discharge requirements

- Projects require range of products and **conventional** solutions
- Removal of salts, nutrients and organics to meet wastewater discharge requirements

## PPT Markets

- Parkway Process Technologies (PPT)

- Projects require range of products and **next-generation** solutions
- Opportunity to recover economic quantities of products & reagents
- Product recovery funds treatment

- Projects require range of products and **next-generation** solutions
- Opportunity to recover (and sell) and/or destroy contaminants, allowing subsequent discharge

- Projects require range of products and **next-generation** solutions
- The requirement for zero liquid discharge (ZLD) is increasing with the objective of reducing volumes

## Global Market Size

> \$25 Billion / yr

> \$100 Billion / yr

> \$25 Billion / yr

Market size estimates, in Australian dollars

# Parkway – Next-Generation Solutions

## The Problem we are Solving

- We are focused on industrial, **energy** & **mining** sectors, where;
- Less than 10% of industrial wastewater globally, is recycled;
  - this is not acceptable.
- We believe **industrial process technologies** are the **answer**.

## Our Process Technologies

- We own a **deep portfolio** of proprietary process technologies.
- Our technologies **improve the sustainability** of industrial operations, and;
- Have the potential to **disrupt** and/or impact the viability of **major global industries**.

## We are Building TechCo to Provide Solutions

- We are developing solutions to large and complex challenges.
- We have Tier-1:
  - Partners (OEMs, Victoria University, Worley)
  - Clients (Glencore, Newmont, Rio Tinto, Shell, South32)
- Highly focused team methodically executing strategy.
- Achieved significant milestones, with near-term catalysts.

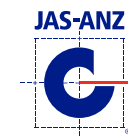
## Established Strategic Partnerships

- VU is leading industrial wastewater research organisation.
- Worley, is a **leading global engineering** company, with a focus on the energy, chemicals & resources sectors



## ISO Certifications

- Parkway is ISO certified for quality, environment and safety.



## Memberships

- Parkway is a member of the Initiative for Responsible Mining Assurance (IRMA), and has provided early engagement.



## Approved Vendor

- Parkway is an **approved vendor** for many major companies.

# Parkway – Multilayered IP Protection Strategy

## Overview

- Parkway has developed a broad intellectual property (IP) strategy to protect valuable IP portfolio.
- The IP portfolio consists of i) Trade Secrets, ii) Know-how, iii) Trademarks and iv) Patents.

## Protecting Process Technologies

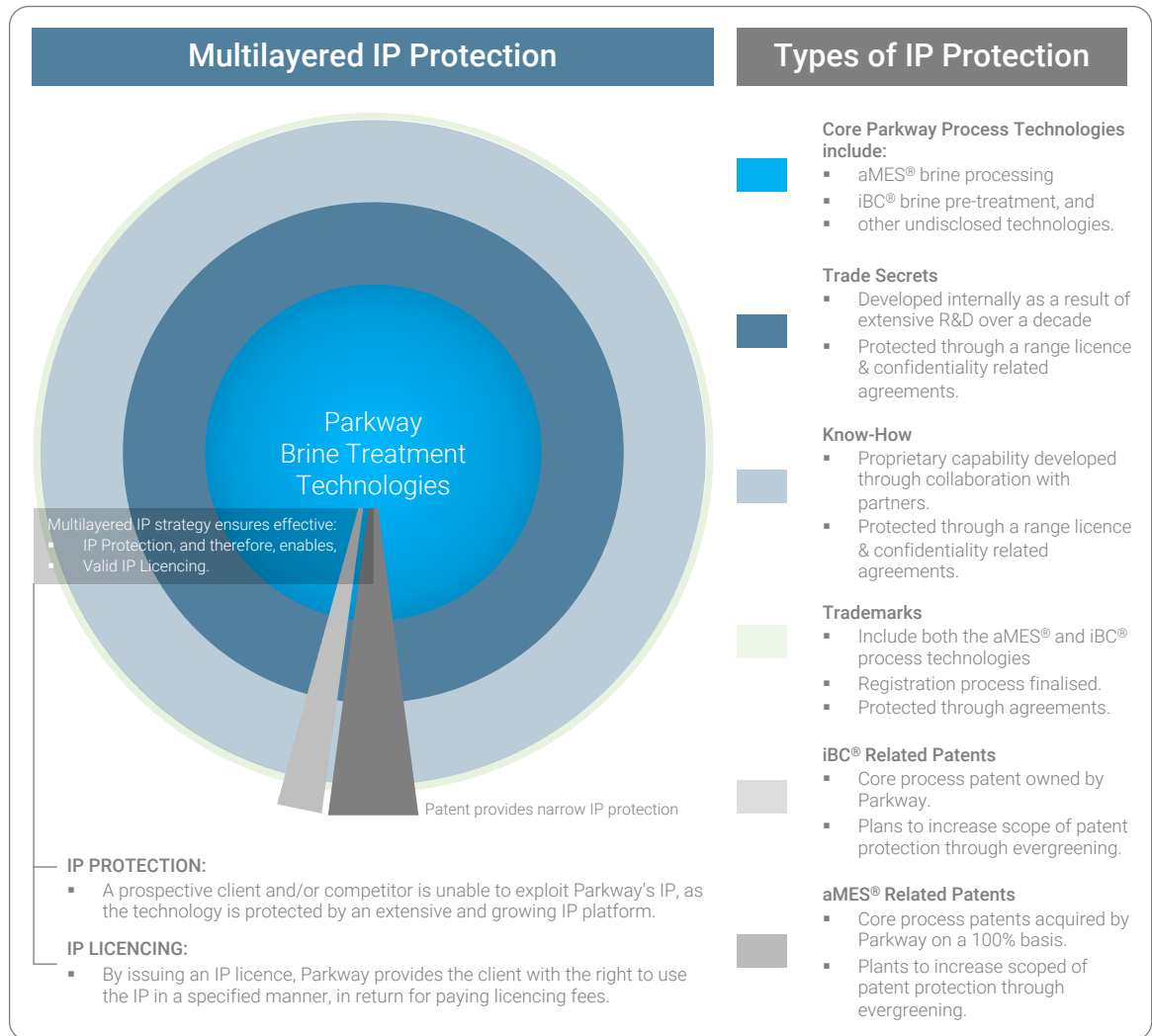
- It is common for complex process technologies to be protected through Trade Secrets as opposed to patenting.
- The strongest form of IP protection, is secrecy.

## Disadvantages of the Patenting Process

- Patenting process requires full disclosure of process novelty, which may enable misappropriation through:
  - Unpermitted or “mistaken” use, and/or
  - Development of a “variant” process derived through reverse engineering of patented IP.
- Patents have a fixed-term and are jurisdiction specific, therefore limiting the useful commercial life of the patent. This can be problematic when licensing IP as a solution.

## Advantages of Trade Secrets & Knowhow

- Enduring obligation to keep IP secret, providing ultimate protection in all jurisdictions, indefinitely.
- Protected through confidentiality agreements (clients, partners, employees) which requires the counterparty to agree to not challenge the IP and **prevents unpermitted disclosure**, misappropriation and direct competition.





## Parkway Related

### Corporate Details

- [Corporate Profile Group](#)
  - Group Structure
  - Board & Management
- [Investor Centre](#)
  - ASX Reports
  - Capital Structure
    - T20 Shareholders
- [Investor Hub](#)
  - ASX Announcements
  - ASX Presentations
  - Independent Research Reports

### Parkway Corporate – Presentations

- Corporate Presentation – [03 Oct 2022](#)
- 2022 AGM – MD Presentation – [29 Nov 2022](#)

### Next-Generation Technologies

- Technology Platform ([link](#))
- Business Model ([link](#))
- IP Strategy ([link](#))

## Contact Details

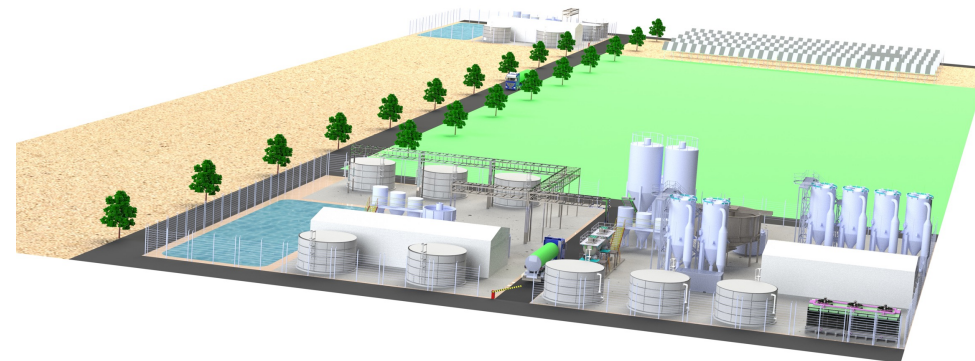
### Enquiries – Master Plan Related

- [solutions@pwnps.com](mailto:solutions@pwnps.com)

### Enquiries – Investor Relations Related

- [ir@pwnps.com](mailto:ir@pwnps.com)

## QBS Master Plan – Conceptual Layout for Central Processing Hub 1





# MASTER PLAN

CONCEPT

OPPORTUNITY | TECHNOLOGY | PARTNERS | SUSTAINABILITY | SOLUTION