WILDFIRE ENERGY

October 2024 | 20 Min Introduction Presentation

Nauru Waste Power Project Wildfire Introduction and Feasibility Report Summary

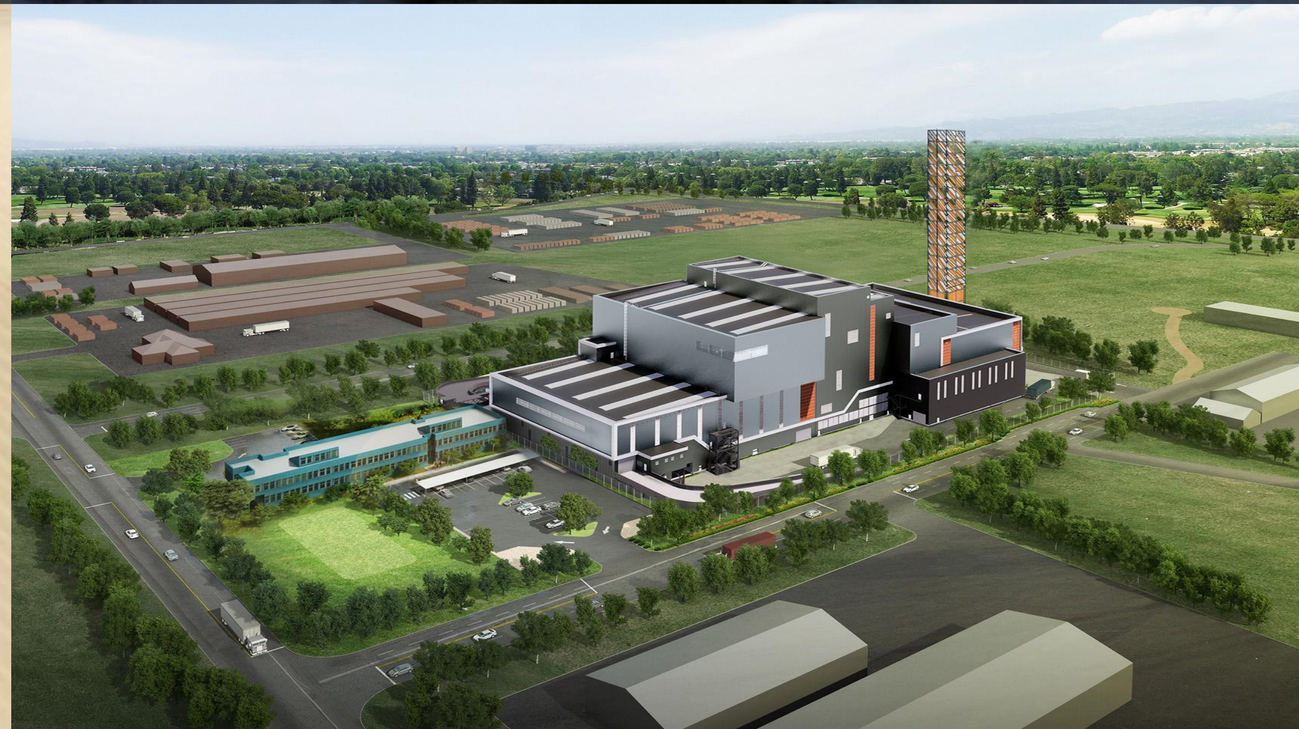
Jamie Roodenrys
GM Business Development and Strategic Partnerships

See product video here


Energy 9-20 MJ/kg

Greenhouse Gases

Leachate & Environment



The Problems:

- Pacific Islands producing large volumes of waste
- Up to 15% of the regions green house gas emissions from waste
- Water table and environmental impacts
- WtE only effective at major-project scale

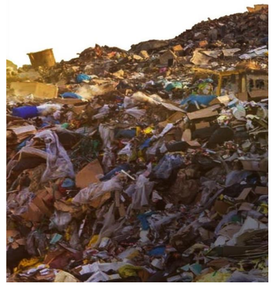
3.4 Billion

The Solution:

Wildfire Energy

Moving Injection Horizontal Gasification - MIHG

Circular Economy Outcomes

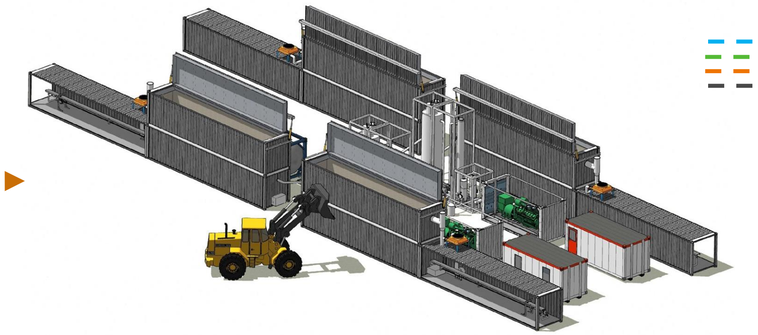


Landfill and environment

Today

Tomorrow

Wildfire MIHG Plant



Renewable Electricity and Heat

H_2 FCV Hydrogen

Methanol, SAF and other Biofuels

Construction Aggregate

PART 1

Introduction to Wildfire Energy and MIHG

Team

Experienced and Committed

Founders

Greg Perkins
CEO

- Mech. engineer PhD MBA (UCLA/NUS)
- CTO of top 200 ASX listed company
- Delivered gasification and hydrogen projects for Shell International

Denis Doucet
CTO

- Mech. eng,. CPEng
- Experienced project manager
- Delivered projects from $20 million to $1 billion in power generation and gasification

Grant Bollaert
COO

- Process eng.IChemE
- Experienced engineering manager
- Delivered designs for petrochemical plants in Europe, Australia and South Africa

Team

Jamie Roodenrys
GM Strategic Partnerships

Mike Twohig
Operations Manager

Shane Fitzsimmons
Senior Process Engineer

Douw Jacobs
Lead Mechanical Engineer

Yu-Chaun Chiu
Mechanical Engineer

Advisory Board

Robert Williams
Director AgFood
Grain Innovate

Ali Clunies-Ross
Portfolio Manager
Artesian

Roop Judge
Commercilisation Manager
GRDC

Alloysius Heng
CEO
Highland Summit

Global Awards and Recognition

- **Winner** of Petronas FutureTech3.0 Accelerator 2023 (Malaysia)
- Completed Katapult Accelerator 2022 (Norway)
- Completed StartupX Hyperscale Accelerator in 2022 (Singapore)

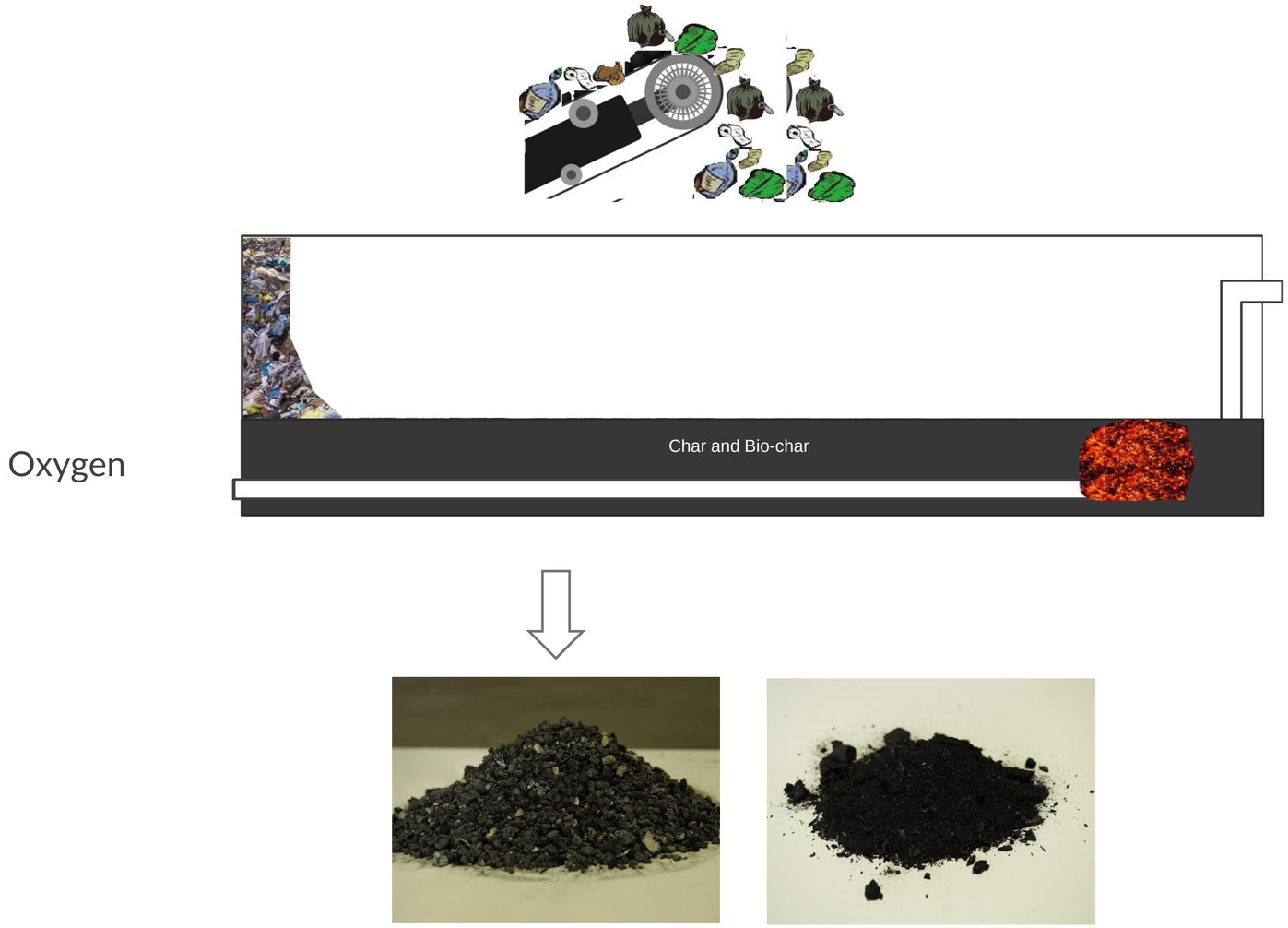
- Winner Hitachi global challenge for the circular economy, March 2021
- In top 3 teams from 107 startups
- Completed paid pilot with Hitachi in 2022/3 and planning first project in Japan 2024/5

2022 Awards
Sustainability Award Winner

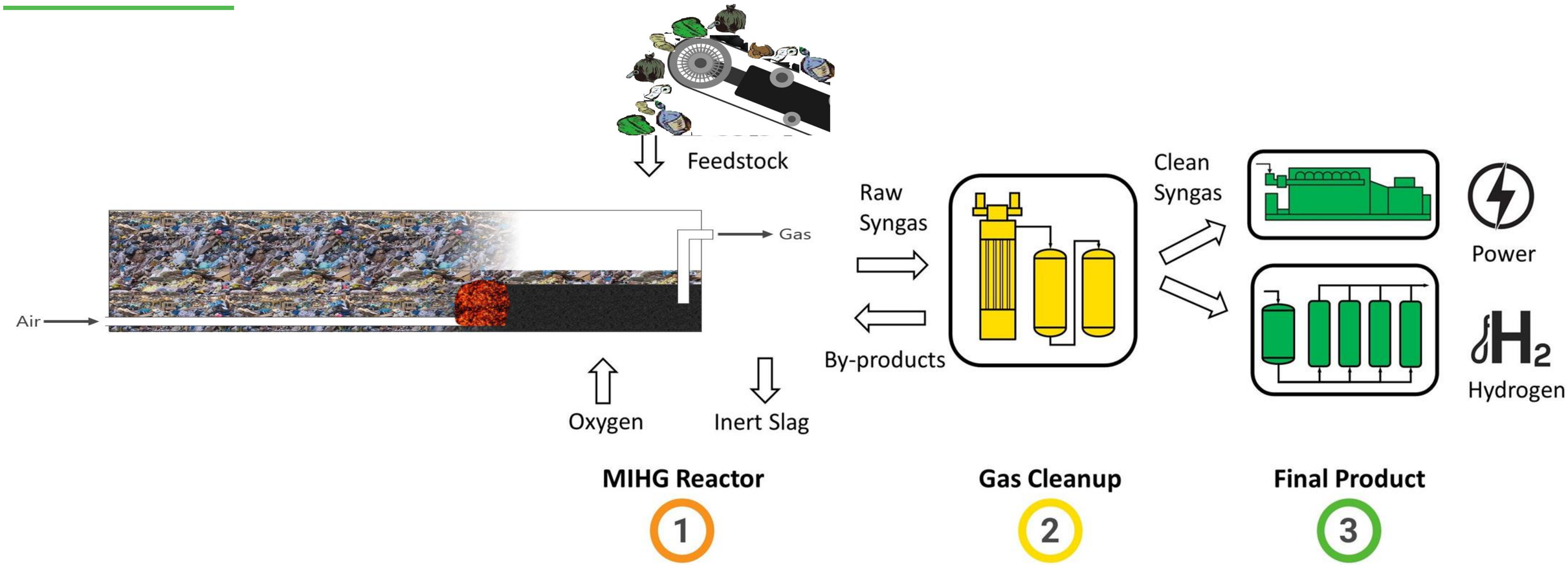
- Winner **Sustainability Innovation Award** for CORE Innovations Hot 30 for 2022
- In HolonIQ Top 100 Australia & New Zealand Climatetech 100 for 2022 and 2023

- Won **$2.8 million AUD** of competitive government grants over the past three years
- **$1 million AUD** for technology commercialisation in 2023/24
- **$1 million AUD** for pilot plant upgrades to process grain crops into hydrogen 2021/22

Simple and Robust Batch Process



MIHG – How Does It Work?



Pilot Plant

5 years R&D

- Continuous MIHG evolution
- >130 batches processed
- Proven technology and outcomes
- Huge knowledge base


DANGER
TOXIC GAS
DANGER
NO SMOKING,
SPARKS or
NAKED FLAMES

MIHG Feedstock Options

Urban Biomass

Woodchips

Green waste

Shredded wood waste

Heterogeneous, Size variation

Mixed & Contaminated

MSW

ASR

MDF

Chlorine, Sulfur, Heavy Metals

Agricultural Residues

Wheat straw

Manure & straw

Manure & rice hulls

Heterogeneous, High Moisture

WWTP Residues

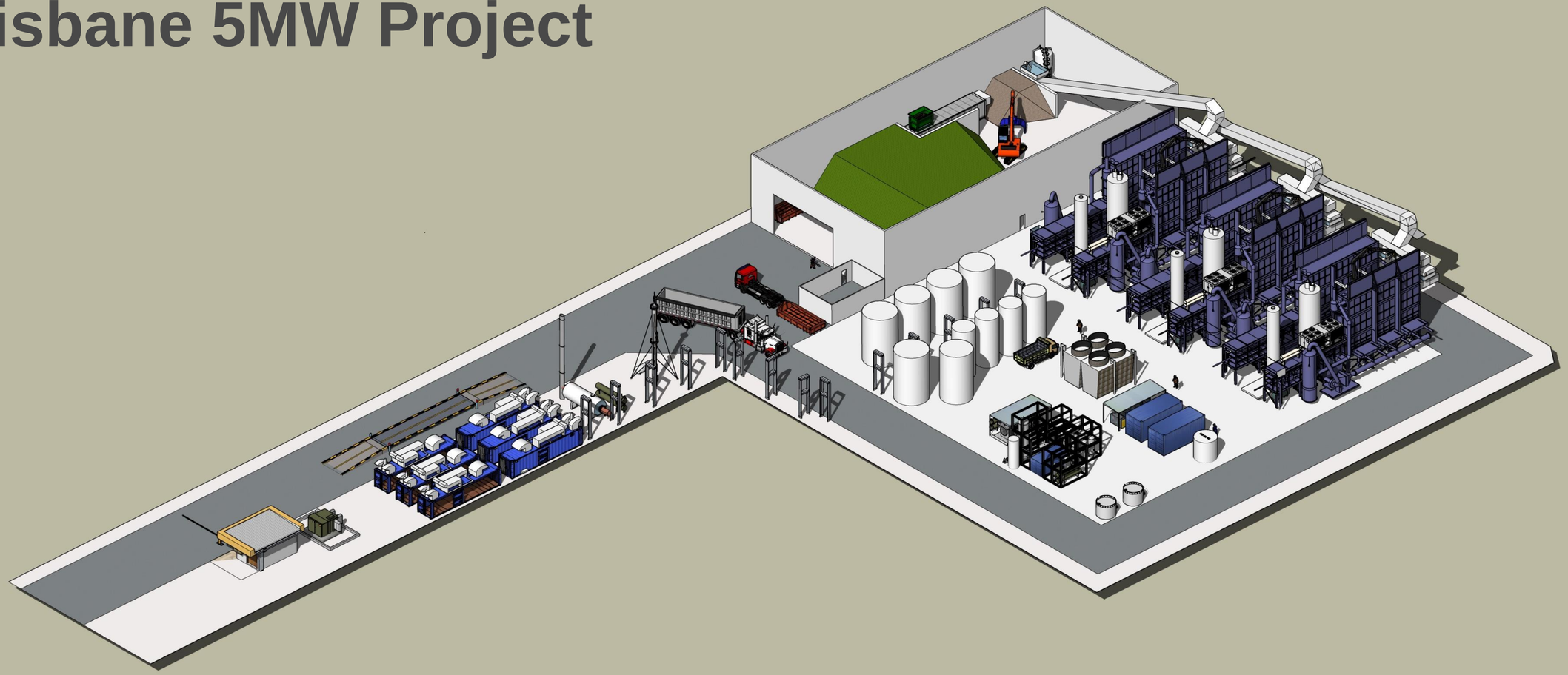
Biosolids/woodchi

Pelletised biosolids

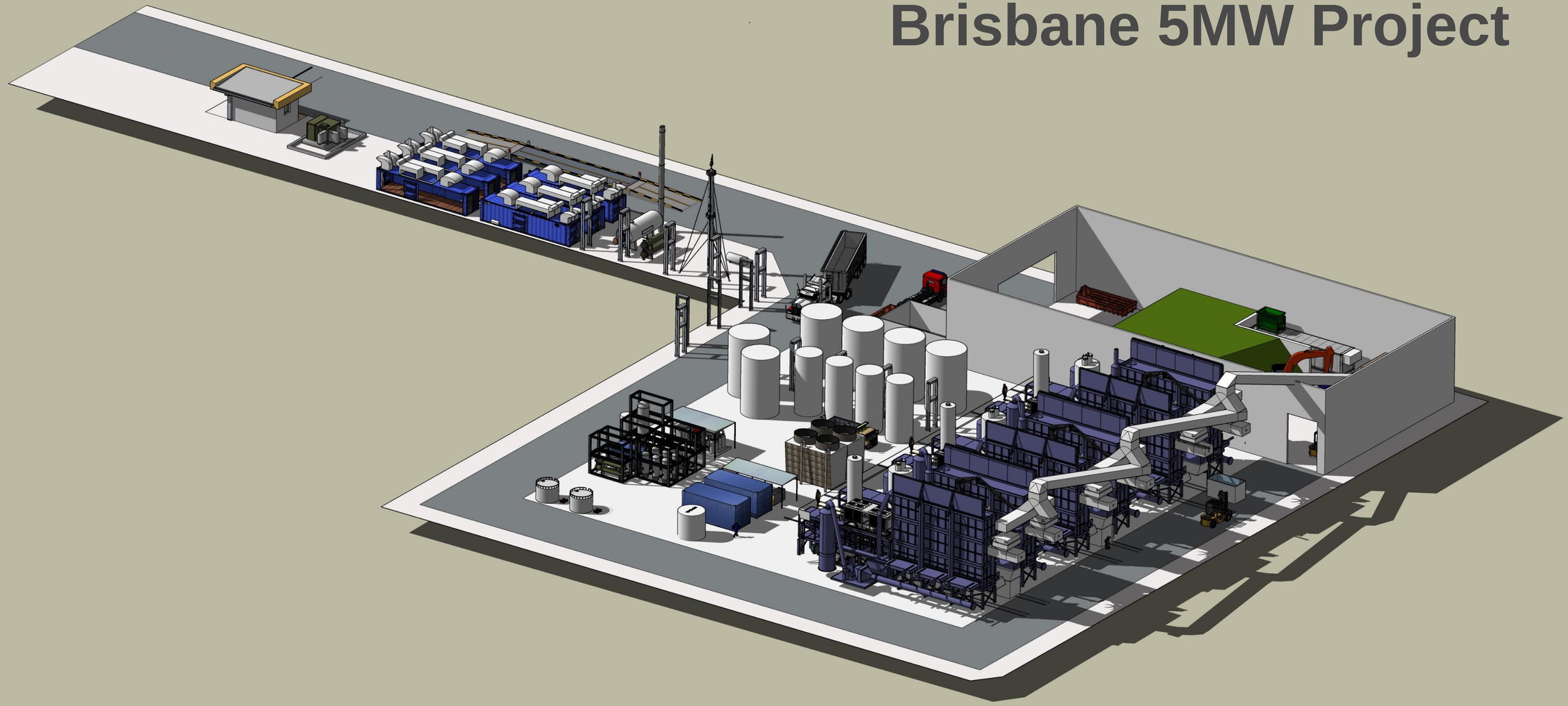
Supermarket food waste

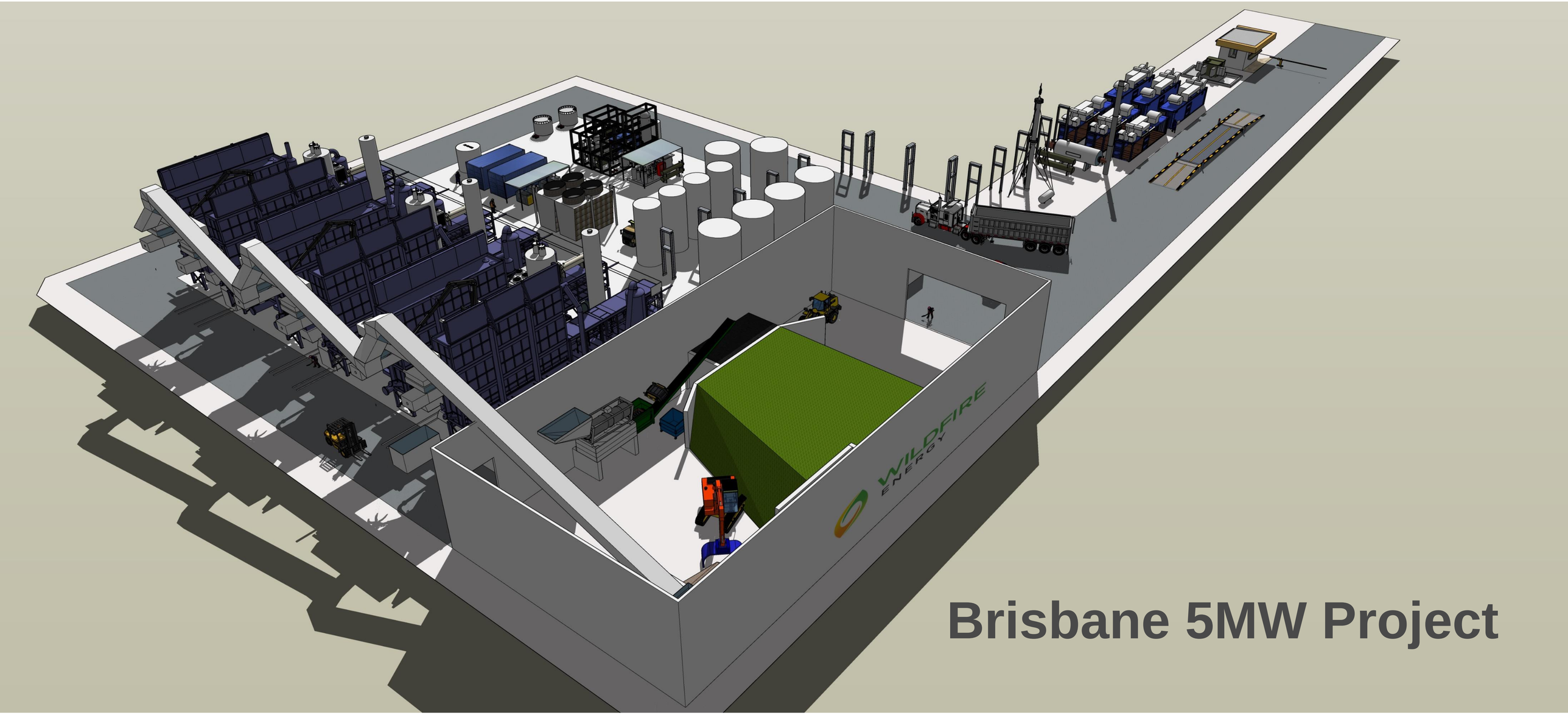
High PFAS, N_2, Chlorine

Brisbane 5MW Project



Brisbane 5MW Project





Brisbane 5MW Project

PART 2

Nauru Waste Power Project Feasibility Report Summary

Part 1 - Pilot Plant Trials

Part 2 - Site Scoping Study

Part 3 - Feasibility Study

Milestone 1 – Pilot Plant Trials

Process

- Visited sites
- Studied data
- Replicated waste composition in Brisbane
- 6x batch loads processed

Outcomes

- Thorough process of waste
- 10,000 persons = 30TPD feed, 1MW electricity and 4TPD aggregate

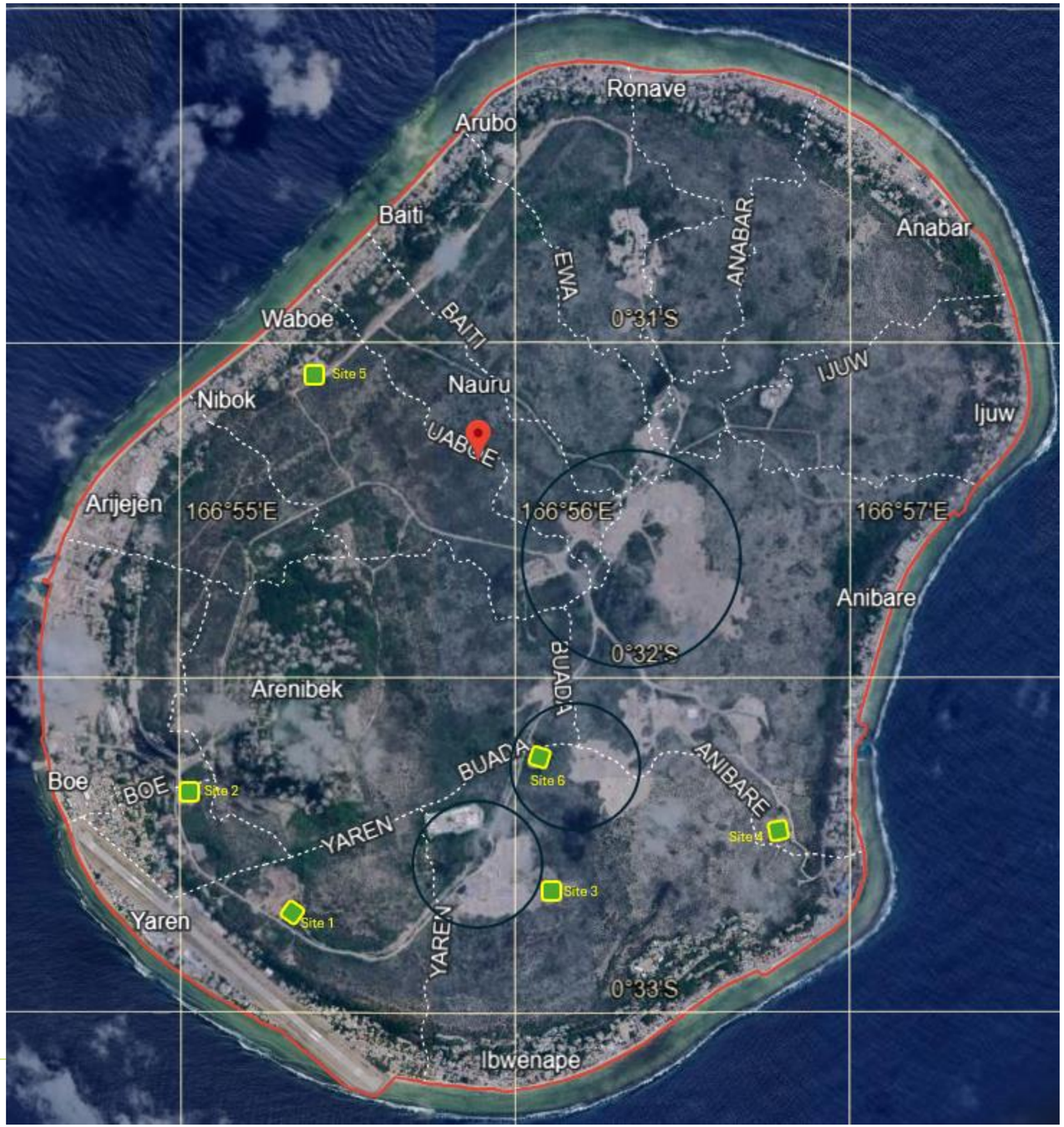
WILDFIRE ENERGY

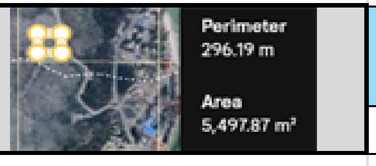
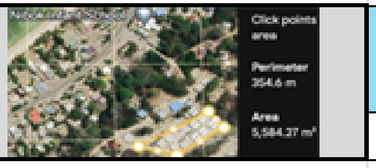
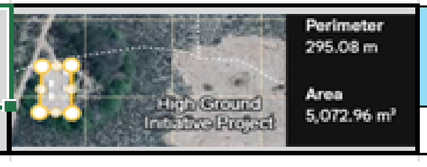
Milestone 2 – Site Scoping Study

Process

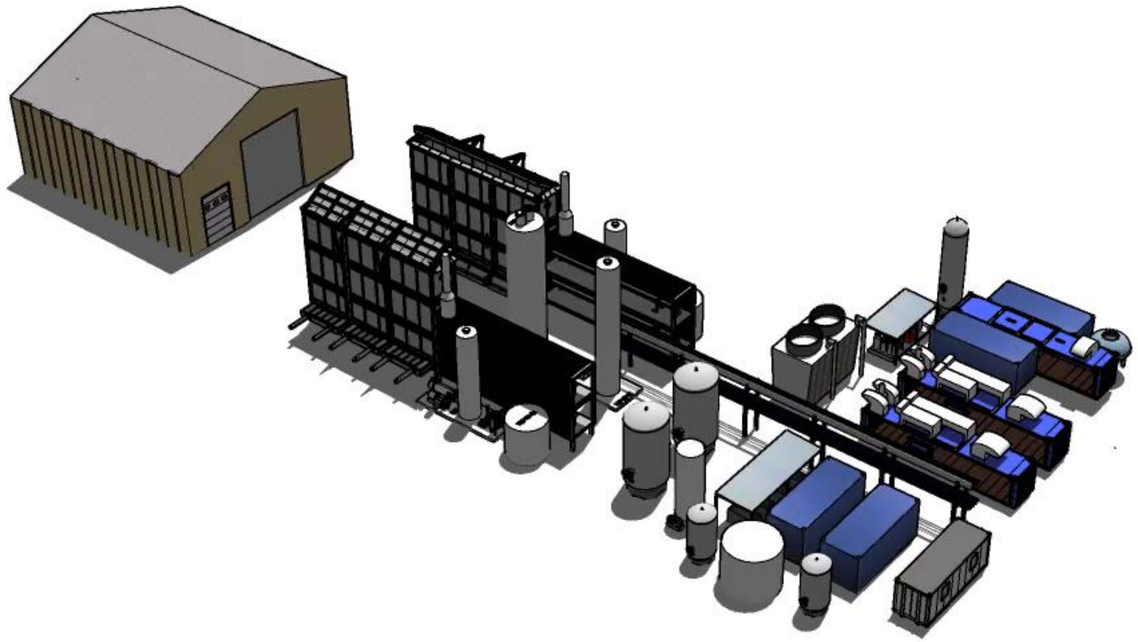
- 6 potential sites identified
- Each site range of pros/cons
- Multi Criteria Evaluation (MCE) undertaken

- *Environmental impact/footprint - 20%*
- *Proximity to existing dwellings - 20%*
- *Ease of development - 20%*
- *Availability of land - 20%*
- *Utilities accessible or nearby - 10%*
- *Future developments - 10%*



	Description	Location Guide NTS	Land Availability		Site Access to Utilities		Ease of Development		Environment		Proximity to Habitation		Future devt Issues		Weighted Score
			Score	Factor	Score	Factor	Score	Factor	Score	Factor	Score	Factor	Score	Factor	
				20%		10%		20%		20%		20%		10%	100%
Site 1	**Existing Landfill Site**		5	20%	4	10%	5	20%	5	20%	3	20%	5	10%	**3.8**
Grid ref	166°56'17"E 0°32'43"S		15,000m2 available		Power + Road		Clear Site		Maintain exist use		50m to nearest		No Devt plans		
Site 2	**Land adj First Solar Farm**		3	20%	4	10%	5	20%	4	20%	3	20%	0	10%	**2.8**
Grid ref	166°55'E 0°32'21"S		5,200m2 available		Power + Road		Clean site		Wind drift/odour		50m to nearest		Future Devt plans		
Site 3	**Second Solar Farm**		5	20%	4	10%	1	20%	5	20%	5	20%	3	10%	**3.3**
Grid ref	166°55'47"E 0°32'43"S		No space limit		Power + Road		Pinnacles removal		Maintain exist use		400m to nearest		Possible future solar expansion		
Site 4	**Mining Site Above Menon Hotel**		5	20%	4	10%	1	20%	4	20%	4	20%	4	10%	**3.0**
Grid ref	166°56'45"E 0°32'25"S		No space limit		Power + Road		Pinnacles removal		Wind drift/odour		175m to nearest		Unlikely Devt plans		
Site 5	**Nibok Settlement Site**		*4*	20%	5	10%	3	20%	4	20%	0	20%	4	10%	**2.6**
Grid ref	166°55'24"E 0°31'05"S		>7,500m2		Power + Road + water		Services Removal		Minimal		<50m		Unlikely Devt plans		
Site 6	**Fly Camp Site adj High Ground Initiative**		0	20%	4	10%	3	20%	4	20%	5	20%	0	10%	**2.3**
Grid ref	166°56'03"E 0°32'15"S		Land not available		Power + Road		Existing infra remove		Minimal		350m to nearest		Future Devt plans		

Nauru 1.1MW Project

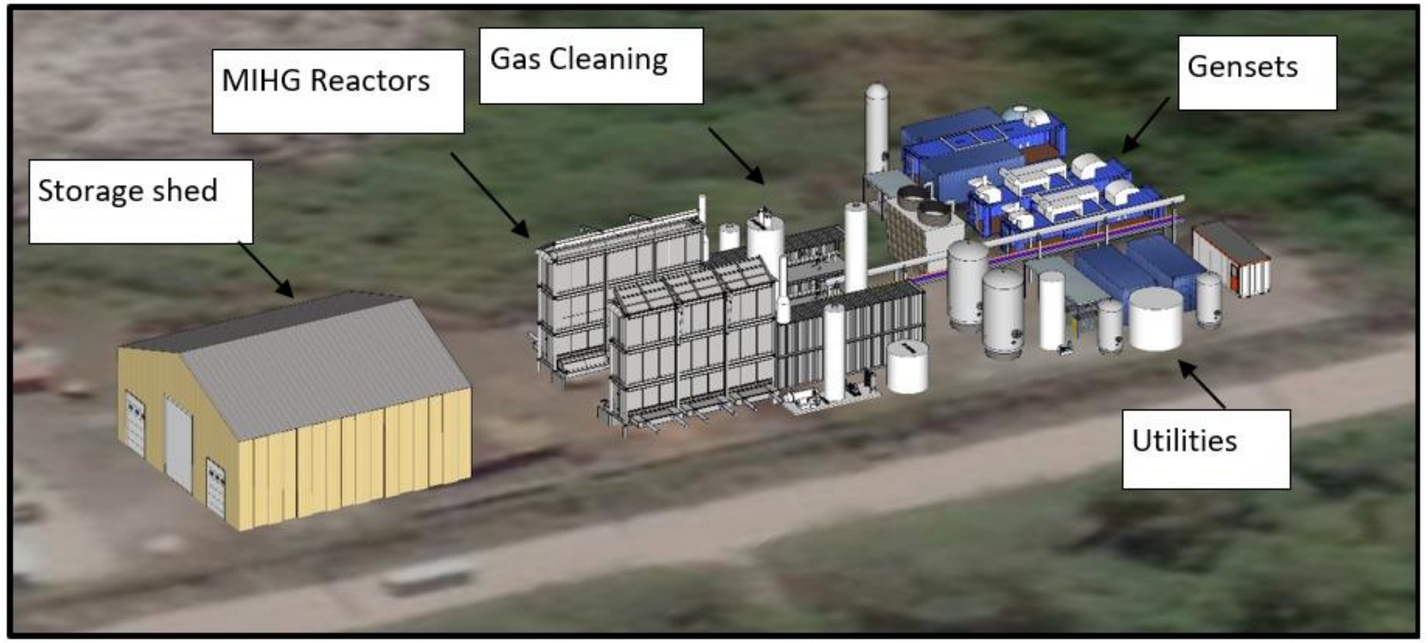


Milestone 3 – Feasibility Study

Process

- Detailed CAPEX OPEX estimates +/- 30%
- Based on detailed 20 year business model and agreed assumptions
- Includes consumables, maintenance, price esc, discount factor etc

Parameter	Unit	Value
Weighted average cost of capital	%/year	10
Discount factor	%/year	10
Debt interest rate	%/year	10
Capital contribution per project	%	20
Debt contribution per project	%	0
Grant contribution per project	%	80
Price escalation	%/year	2
Cost escalation	%/year	2



Milestone 3 – Feasibility Study

Outcomes – general

- Robust - can process waste oil and proportion of existing landfill
- 95-98% reduction in landfill disposal
- +10,000TPA CO2e GHG = potentially 15% reduction in island total
- Elimination of leachate damage to water table
- Significant reduction in odour
- Production of 1,800TPA of construction aggregate
- Generate 13x full time jobs + university pathway for engineers
- Compact site – 5,000m2

Milestone 3 – Feasibility Study

Outcomes - commercial

- Commercially viable
- 1.1MW power
- Fixed dispatchable 24/7
- 76% renewable total
- Levelised Cost of Electricity (incl CAPEX) 20% less than current
- Levelised Operating Cost of Electricity = $249/MWh
- Proceed to FEED

WILDFIRE ENERGY

- **Massive environmental outcomes**
- **Commercially viable**
- **Projects in Nauru and Brisbane**
- **Seeking next Pacific projects**

Questions?

WILDFIRE ENERGY

Disclaimer

Wildfire Energy Pty Ltd ABN 21 612 418 121

While all reasonable care is taken in the preparation of the material in this presentation, to the extent allowed by legislation Wildfire Energy accept no liability whatsoever for reliance on it. All opinions, conclusions, forecasts or recommendations are reasonably held at the time of compilation but are subject to change without notice. Wildfire Energy assumes no obligation to update this presentation after it has been issued. You should seek professional advice before acting on any material.

The information contained is of a general nature only and does not take into account your objectives, financial situation or needs. You should consider whether the information is suitable for you and your personal circumstances. Before you make any decisions in relations to a financial product, you should obtain and read the relevant Product Disclosure Statement or information statement. You should seek personal financial advice before acting on any material.

Contact: jamie.roodenrys@wildfireenergy.com.au