DRAFT
NOT FOR RELEASE

Whakaaro-Kingsman

W-K

in conjunction with

RAMBOLL

(and all of New Zealand)

Kaitiaki Integrated Resource Recovery Facility (IRRF) Huntly

Placeholder name only, Tainui to offer name proposals please.

RAMBOLL

Whakaaro-Kingsman
W-K

Te whakapai ake i te taiao mo a tatou tamariki

- Improving the environment for our children -

EPC Proposal

EPC

For a NZ Wide Waste Minimisation

&

NZ Regional Recycling

(Including Regional composting and repair centres)

&

World Class, National & Pacific Island Scale Waste to Energy Facility

(Includes a tyre pyrolysis plant & research centre)

RW2E

for the

New Zealand Government

Discussions and communications with the following people and entities to date. (‘sort of’ Alphabetical - Ongoing)

Prime Minister Jacinda Ardern’s office
World Bank (Asia team)
Well Networks – Jack Ninnes
Waste Management - Tom Nickels
TGH – Chris Joblin
Teteira Rawiri (MIT Kaumātua)
Taroi Rawiri (Tainui Environ. Mngr)
KiwiRail - Steve Muir
A-Ward - Simon Ward
Swire Shipping Singapore - Simon Bennett
SPREP – Kosi Latu and Anthony Talouli
Robert Pigou (Reg. Dev. Fund)
Rob Williams (TCDC)
MP(Nat) Tim Van Der Molen
MP(Nat) Scott Simpson
MP Nania Mahuta
MP Jamie Strange
MP Eugenie Sage
Minister Shane Jones
Minister Megan Woods
Minister James Shaw

Minister Grant Robertson’s office
Minister David Parker’s office
Mike Bennetts (BP)
Michael Bassett-Foss Te Waka
Mayor Jan Barnes (MPDC)
Mayor Allan Sanson (WDC)
Matt Starke
Mark Whitworth – Port of Tauranga
Marae Tukere (GM Oranga at Waikato Tainui)
Landowners (2 sites identified)
Kosi Latu (SPREP – Moana Taka)
Harvey Brookes – Te Waka
EnviroWaste - Chris Lobb
EnviroWaste - Chris Aughton
Grant Lemin Acting Exec. GM Toll NZ
Dr. John Gallagher
Dr. David Wilson
Dallas Fisher – Te Waka
Craig Stephen
Clive Morgan – (WDC)


RAMBØLL
Whakaaro-Kingsman
W-K
1000000
90000
8000
3000
1000
900
700
500
400
FEASIBILITY
ECONOMIC
INVESTIGATION
RESEARCH
IMPLEMENTA
BUSINES
LEGAL
FACTORS
EVALUATION
STUDY
SCHED

Site facilities budget

Circa $650 Million

Plus national rail / sidings infrastructure and national collection network improvements etc.

Total = $1.4Billion

What will the feasibility deliver?

What?

Why ?

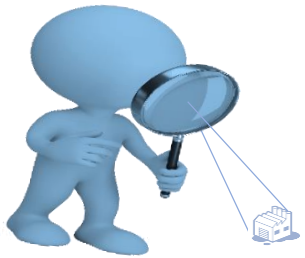
Where ?

How?

When?

Who?

How big?



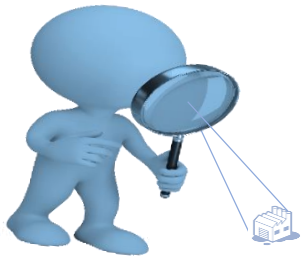
Considering future proofing, what is the smallest possible waste to energy facility we could design?

The goal is to ultimately, after all re-use, minimisation, recycling and repair options shave been considered, coordianted, planned and actioned, to design the smallest possible, scalable waste to energy plant, to service all of New zealands needs*

(*Considering our Pacific neighbours too)


GOALS

We all want this to stop…but how emotive is this?



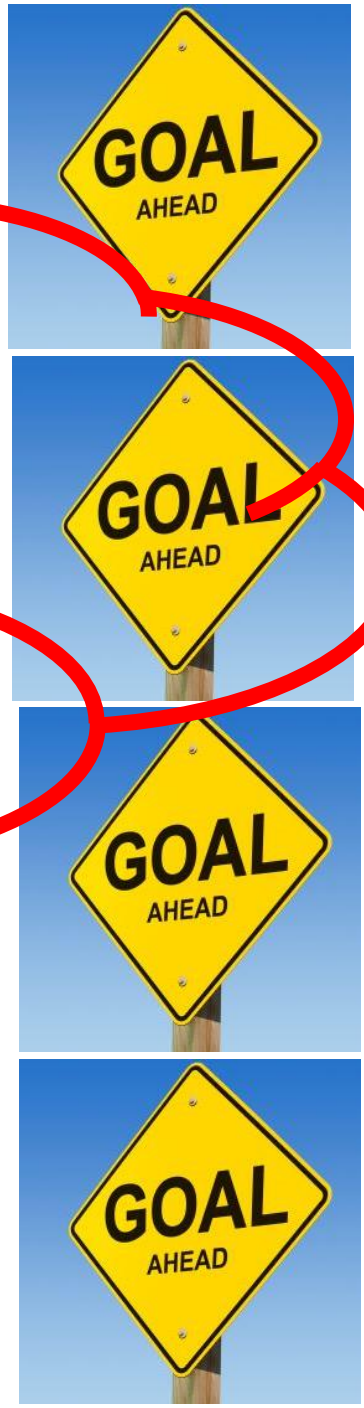
Minimise to ‘almost zero’ landfills

Maximise waste reduction

Maximise recycling & repair

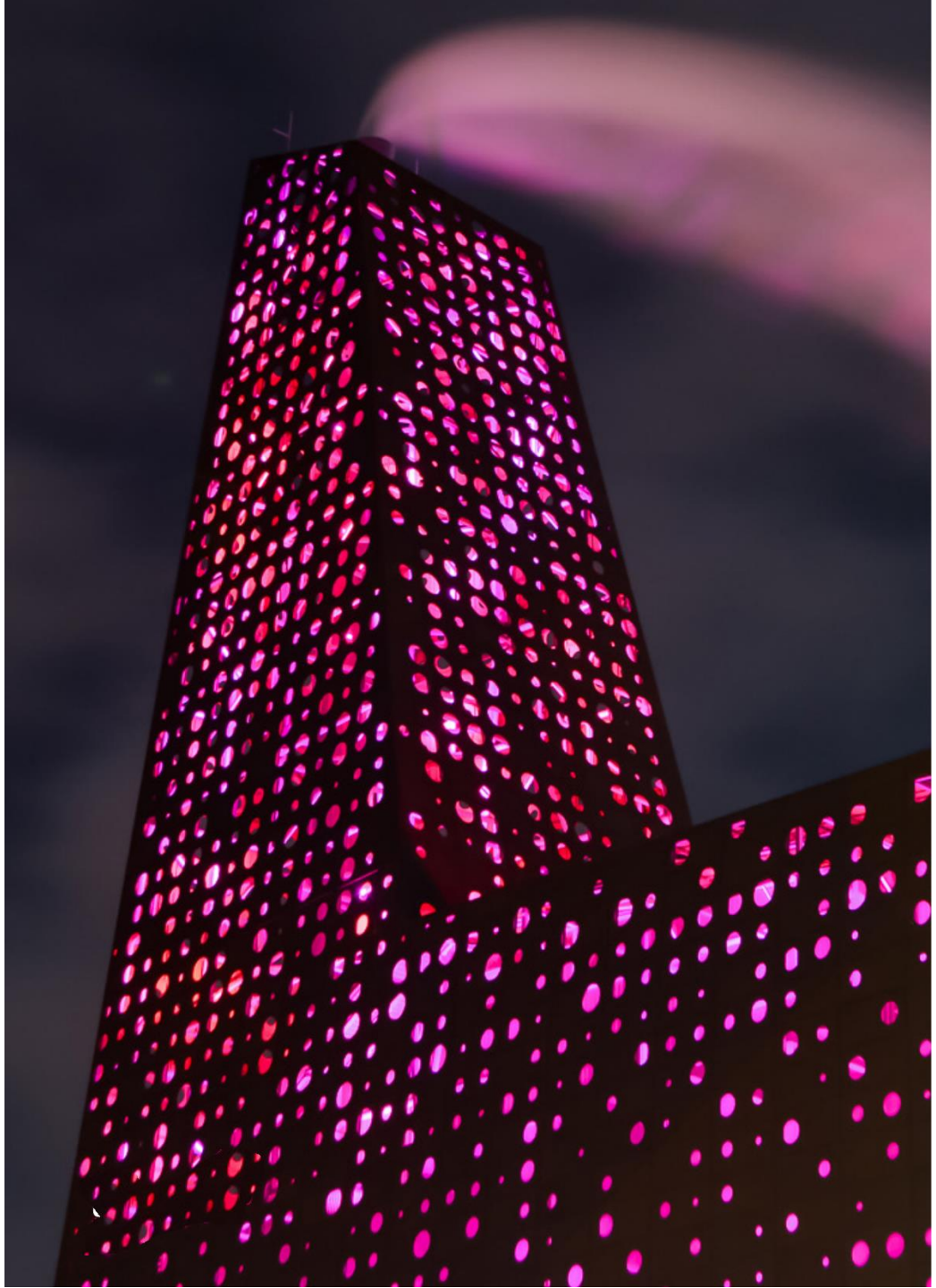
Minimise the size of a W2E plant

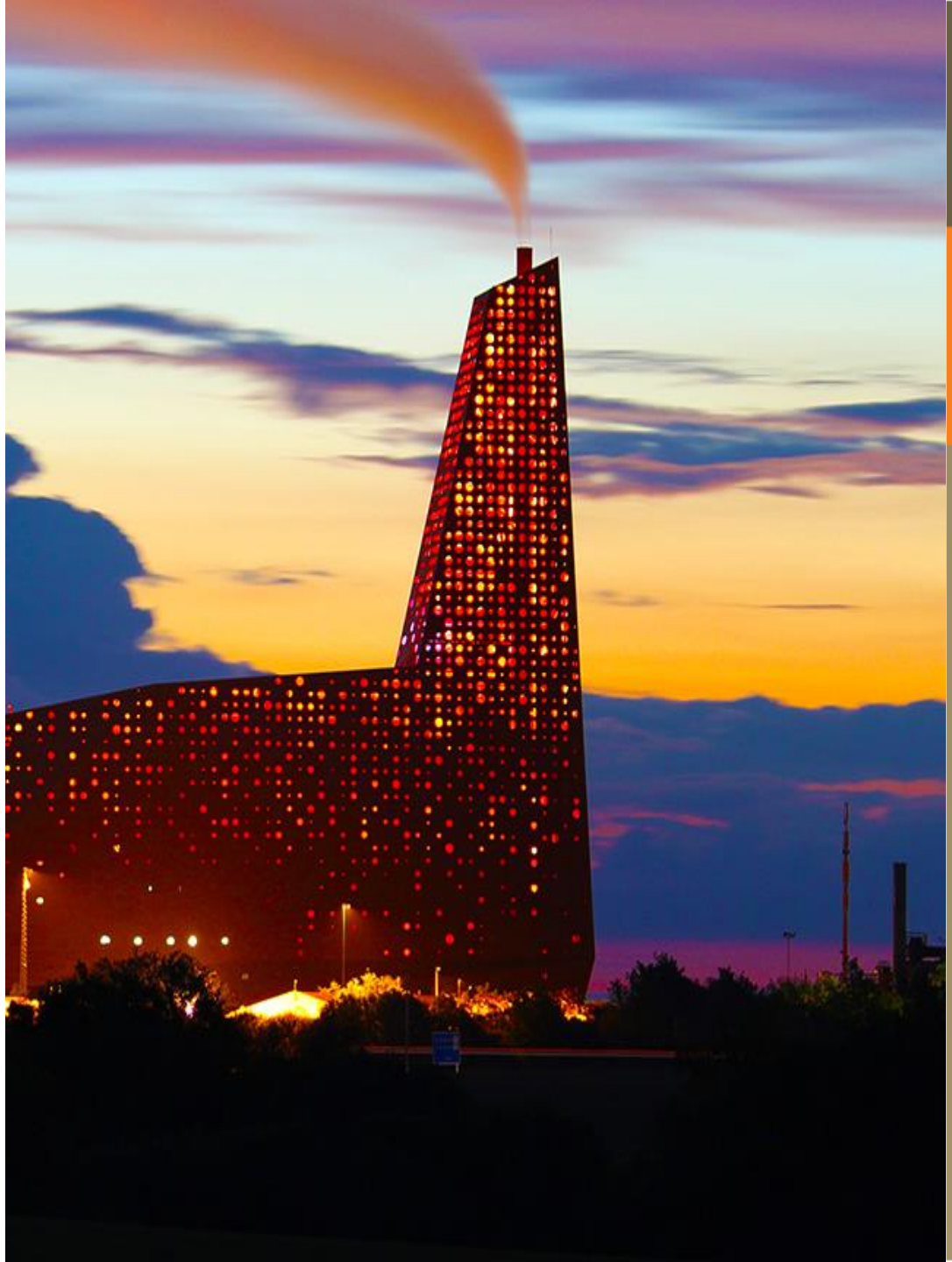
Maximise a long-term **regional** solution

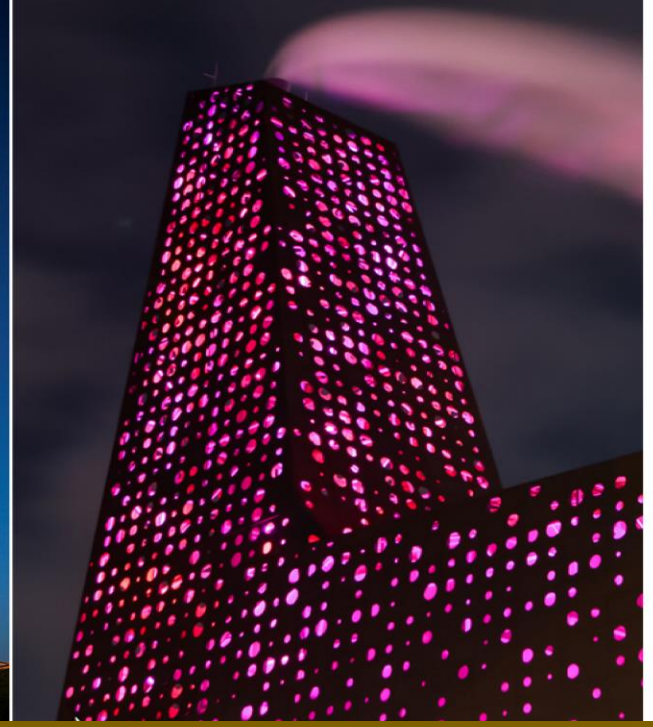


RAMBØLL

Whakaaro-Kingsman



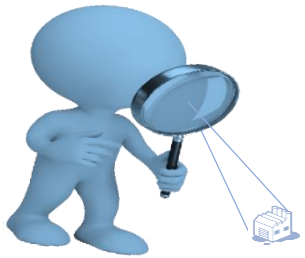


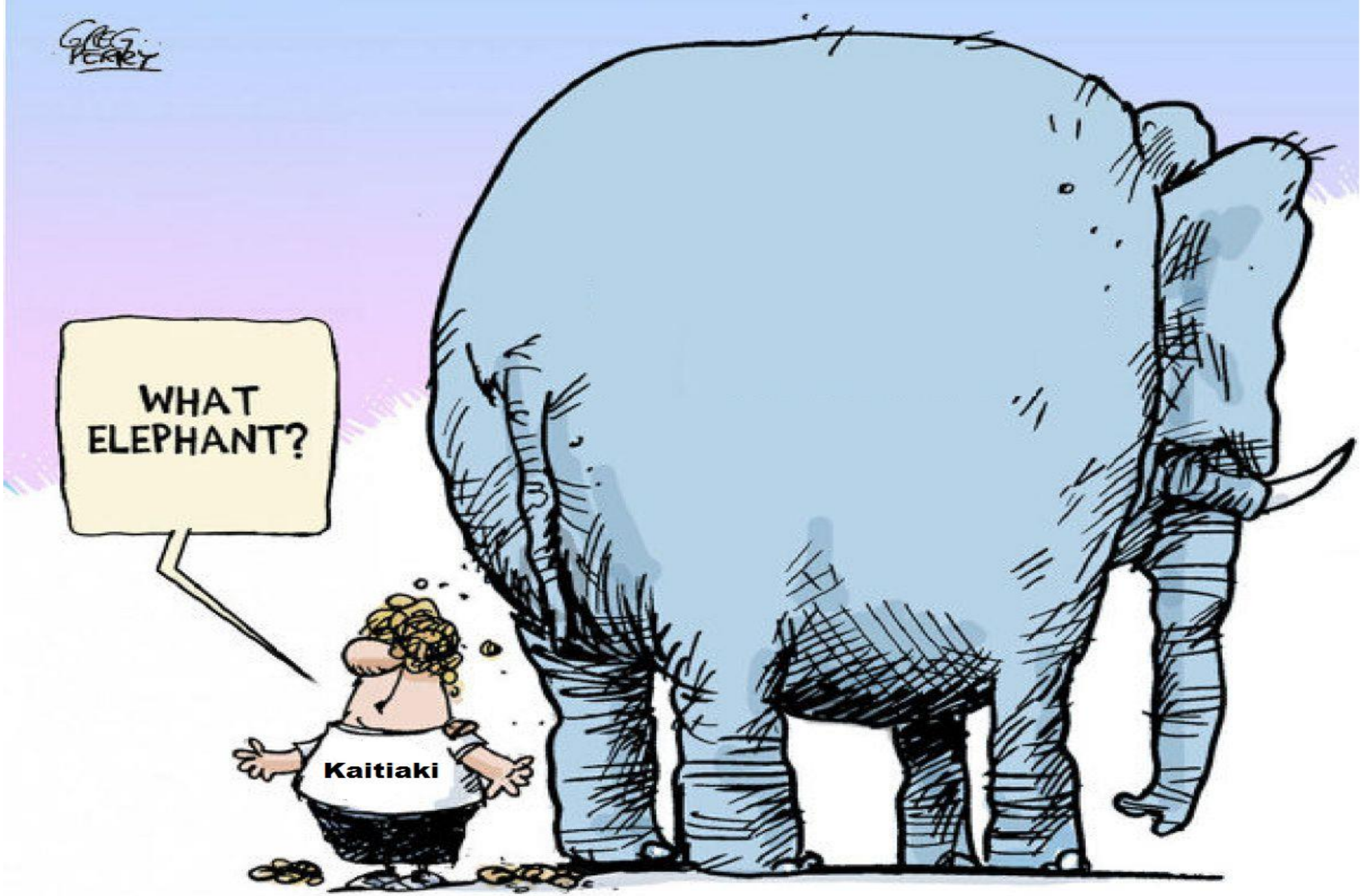


Concept - The worlds largest waka - Very rough draft image shown here. It will be professionally rendered for the final Govt. presentation in consultation with Tainui.

RAMBOLL

Whakaaro-Kingsman

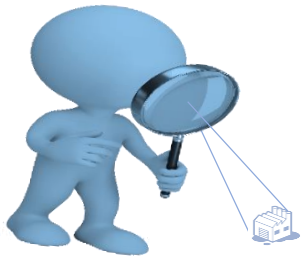




ELEPHANT IN THE ROOM

Over the course of the last few months we have engaged in discussion with numerous individuals and companies, including numerous businesses whose business it is to transport waste, some to then also place it into landfills.

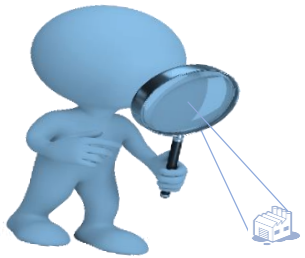
What we would now like to do is to bring everyone together to, at a very high level, to agree to co-fund a feasibility to see what a national rollout of a coordinated programme dealing with NZ's future of waste minimisation, re-use and energy generation may look like.



ELEPHANT IN THE ROOM Cont./

This is certainly a bit different as far as the waste business is concerned in NZ, up until now.
The larger business would have not possibly had any real desire or opportunity to work alongside each other, this is obviously the nature of commercial competitiveness and perhaps collaboration in some forms would be frowned upon from a Commerce Commission perspective….

THIS NOT THE CASE WITH THIS PROPOSAL – it is vital for the future of New Zealand that we all work together.



RAMBØLL

Whakaaro-Kingsman

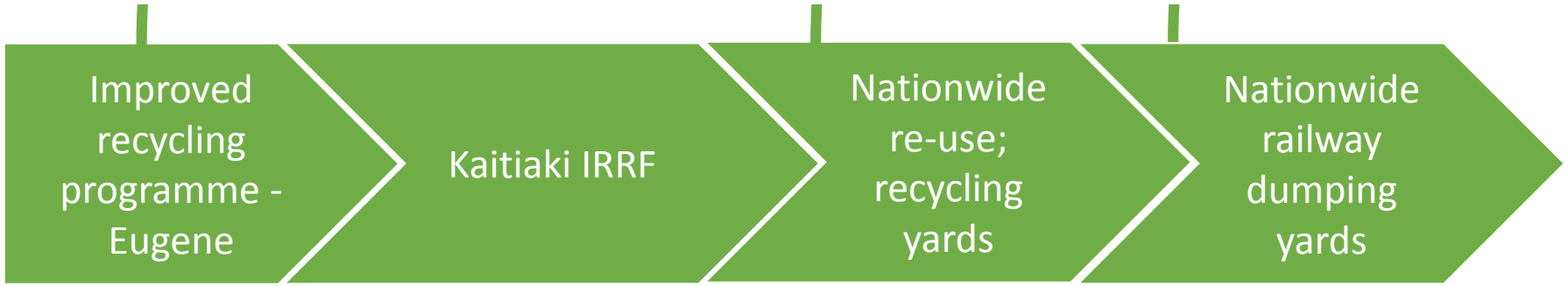
W-K

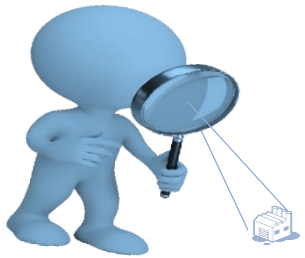
3 Minute Video

Brescia, Italy

For a coordinated and effective National solution such as this, there has to be legislative intervention.

Some parties may not enjoy some of the changes that this will have on their businesses, but with both short, medium and long term investment and business opportunities available, there will be ample opportunities to adapt….





EPC Proposal

For **a New Zealand wide Scale World Class Recycling / Tyre pyrolysis / Waste to Energy Facility**

Proposed client - New Zealand Government

Funding streams – Local investors, International investors and the New Zealand Government

ROOC - Project related: $Circa 650Mill, NZ wide infrastructure / ancillary projects etc.: $750Mill.

Two sites have been identified but the feasibility exercise will ultimately recommend a preferred site.

PROJECT BACKGROUND / INFORMATION

The aim of this project is to construct a **full-circle economic model** that will not just deal with our waste issues but go far further and create jobs, improvement of the selected sites nearby towns economic well-being, provide new housing to the area and become involved with improving social issues that the proposed area has at present. **It includes solutions from hand held smart phone Apps to kitchen bar code scanners to the final waste to energy incineration operations and everything in between**.

It will create a solution for:

A. a waste minimisation and vastly improved New Zealand wide Scale recycling system which is desperately required ✔

B. a New Zealand wide Scale solution for our used tyres issue ✔

C. a New Zealand wide Scale solution for correcting the contaminated recycling issue ✔

D. the wider regions (**Pacific Islands**) waste issues and to be a more collaborative and responsible for waste as one of the two major economies in the region ✔

PROJECT ADVANTAGES / SOLUTIONS

A. This proposed solution streamlines and will mostly solve the National issues highlighted in points A to D above

B. It provides a national **incentivised recycling system** via redeemable vouchers/Points

C. It provides a streamlined solution for 'deposit' fee programmes to be managed through

D. It will **improve the effectiveness of our export of selected recyclable materials** by either this facility or by private entities

E. It will provide a solution to solve (close most of) our rapidly filling landfill sites

F. It will create a massive requirement for Kiwi Rail to upgrade their service, fleet and will create jobs for Kiwi Rail and TOLL

G. It will require a number of specialist engineering skills to be resident in the local community thus bringing in more revenue, skills and industry support growth.

H. It **will create jobs** for the local community and regional New Zealand drop-off sites

I. It will improve the selected sites nearby towns economic well-being

J. It will provide **new housing to the area**

K. The facility will become involved in improving social issues that the proposed area has

L. It provides a new tourist destination and educational venue

M. The intent is to use 'open ground' for community gardens with fertiliser generated from the facility

N. **The integration with the neighbouring Kimihia Lake project**

N. The massive scale of this project will in itself generate hundreds of jobs for the duration of the contract

O. It will solve a major part of **our Pacific Island neighbour's waste issues**, as people who visit them a lot, we owe them this service.

THE REGIONAL DEVELOPMENT FUND APPLICATION FORM TICK BOXES - KAITIAKI IRRF TICKS ALL OF 10 BOXES!

PGF Outcome	
1. Increase economic output	✓
2. Enhance utilisation of and/or returns for Māori assets	✓
3. Increase productivity and growth	✓
4. Increase local employment and wages (in general and for Māori)	✓
5. Increase local employment, education and/or training opportunities for youth (in general and for Māori)	✓
6. Improve digital communications, within and/or between regions	✓
7. Improve resilience and sustainability of transport infrastructure, within and/or between regions	✓
8. Contribute to mitigating or adapting to climate change	✓
9. Increase the sustainable use of and benefit from natural assets	✓
10. Enhance wellbeing, within and/or between regions	✓
Total number of outcomes project contributes to	10/10

ADJACENT PROJECT - Kimihia Lakes

The intention is that these two projects collaborate on numerous fronts including examples such as:

- Clean water from Kaitiaki IRRF be diverted into the lake
- Composts etc. generated by the IRRF be used for planting etc. at Kimihia.
- Shared labour and employment opportunities

There will be numerous other opportunities to explore too, once we begin the more detailed analysis of both projects.

(See attached File on the Kimihia proposal)

NATIONAL CIRCULAR STRATEGY

Minimise **(all waste generators)**

Maximise **(recycling - public education)**

Maximise **(ease and QUALITY of recycling / Re-use)**

Maximise (all recycling/re-use possibilities)

Maximise **(waste to energy facility efficiency and population benefit)**

Maximise **(the creation of long-term sustainable jobs NZ wide)**

Maximise **(our effectiveness in the wider Pacific Island region)**

eugène

by UZER

THE BARCODE SCANNER THAT MAKES HOME RECYCLING A FUN, REWARDING AND CONVENIENT ROUTINE

42 second Video

EUGÈNE

An App and a barcode scanner that makes home recycling a fun, rewarding, and convenient routine.

No more mistakes

Recycling mistakes are history.
Just scan your product barcode and Eugène will display the right sorting instructions.

Recycling is a winning game

Eugène will reward you for your gesture.
Earn 1 point for each scanned product. Convert your points into euros or discount vouchers on your next grocery list.
Get $30 in cash-back !

Shop in 1 click

Each scanned product will be added to you next shopping list.

Suppliers

Access a unique consumer panel in real time via our online E-Scan platform.
Measure your products' performance and access statistics to better understand your clients' needs and habits.
By digitizing the right sorting instructions, you reduce your products' environmental footprint and foster proper recycling.

Take the initiative and guide them through their consumption process by highlighting product characteristics via enriched content (sorting instructions, quality labels, nutritional values, etc.)

Eugène-René Poubelle (15 April 1831 – 15 July 1907) was a French lawyer and diplomat who introduced dustbins to Paris and made their use compulsory.
This introduction was so innovative at the time that Poubelle's surname became synonymous with dustbins (la poubelle) and remains the most common French word for it.

Whakaaro – Kingsman have secured the rights for this system for NZ and Australia.

One in every kiwi home. Generates a shopping list on your phone App. Advertising opportunities.

Recovering energy from residual waste that cannot be recycled should be a cornerstone in any integrated resource management system.

This primarily involves reducing the generation of waste, ensuring high-quality recycling and using residual waste for efficient and clean energy generation.

The cost of dumping waste by low income households NEEDS TO BE RESOLVED and penalties for dumping illegally massively increased.

A well engineered W2E plant will be vertically scalable, i.e. it will allow New Zealand to deal with the present crisis, catch up with how far we are behind in our management of waste, repair and recover polluted areas. A W2E facility we design needs to always be able to accept all the waste we have to incinerate, be that from domestic or offshore sources, to ensure the plant is always running at it's desired capacity* for the foreseeable future.

A real opportunity exists to establish an on-site leading edge research laboratory at Kaitiaki IRRF, to investigate new ways of reusing waste.

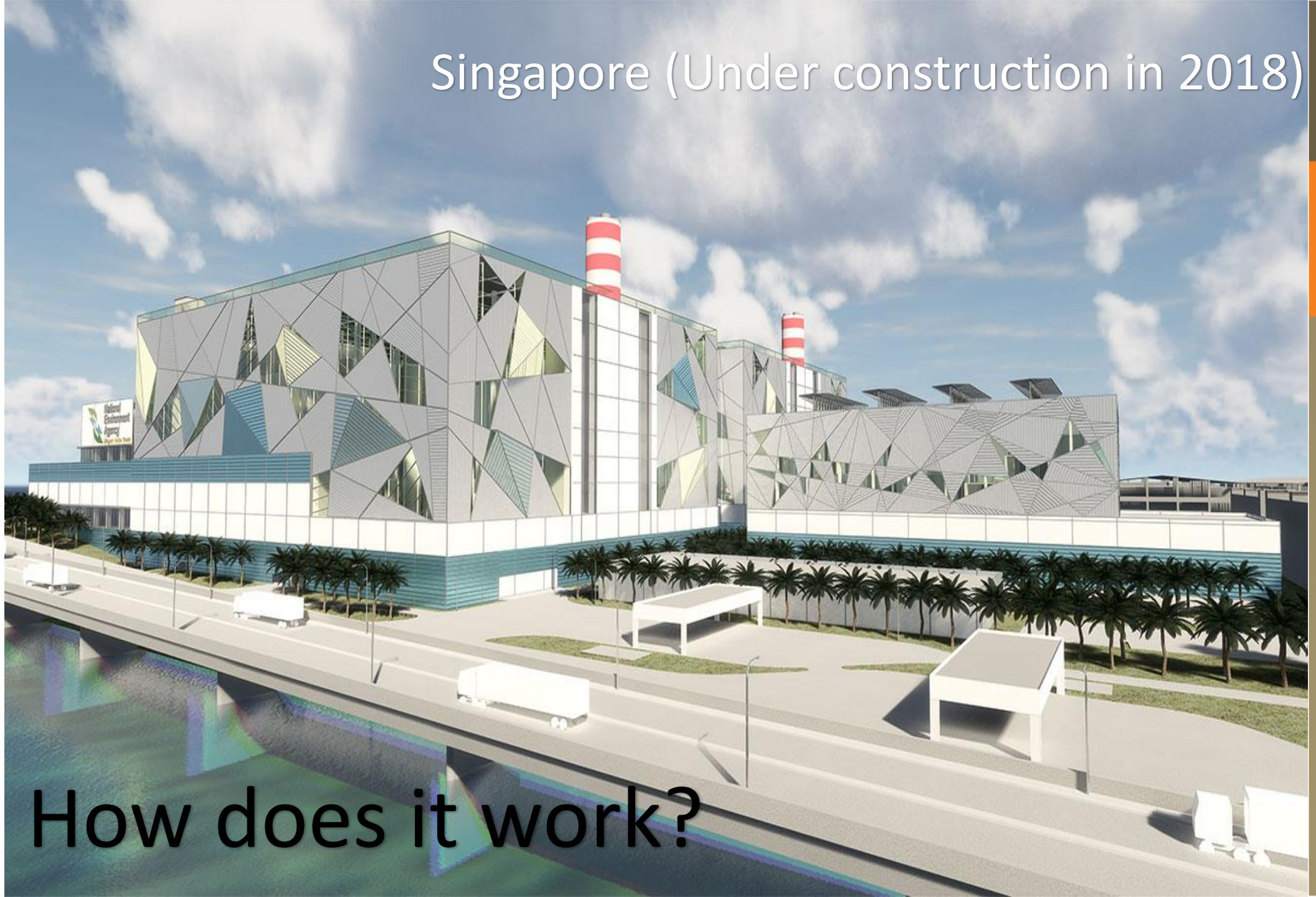
A waste-to-energy facility typically has an operational lifetime in excess of 20 years.
During this period, circumstances are bound to change.

Operational circumstances may call for changes; for instance, a replacement of the grate to increase the lifetime of the facility. New or further developed technologies may pave the way for increased efficiency; for instance, installing an economiser or flue gas condensation, all of these scenarios are planned for during the preliminary design process.

RAMBØLL

Whakaaro-Kingsman

9 minute
Virtual tour
video



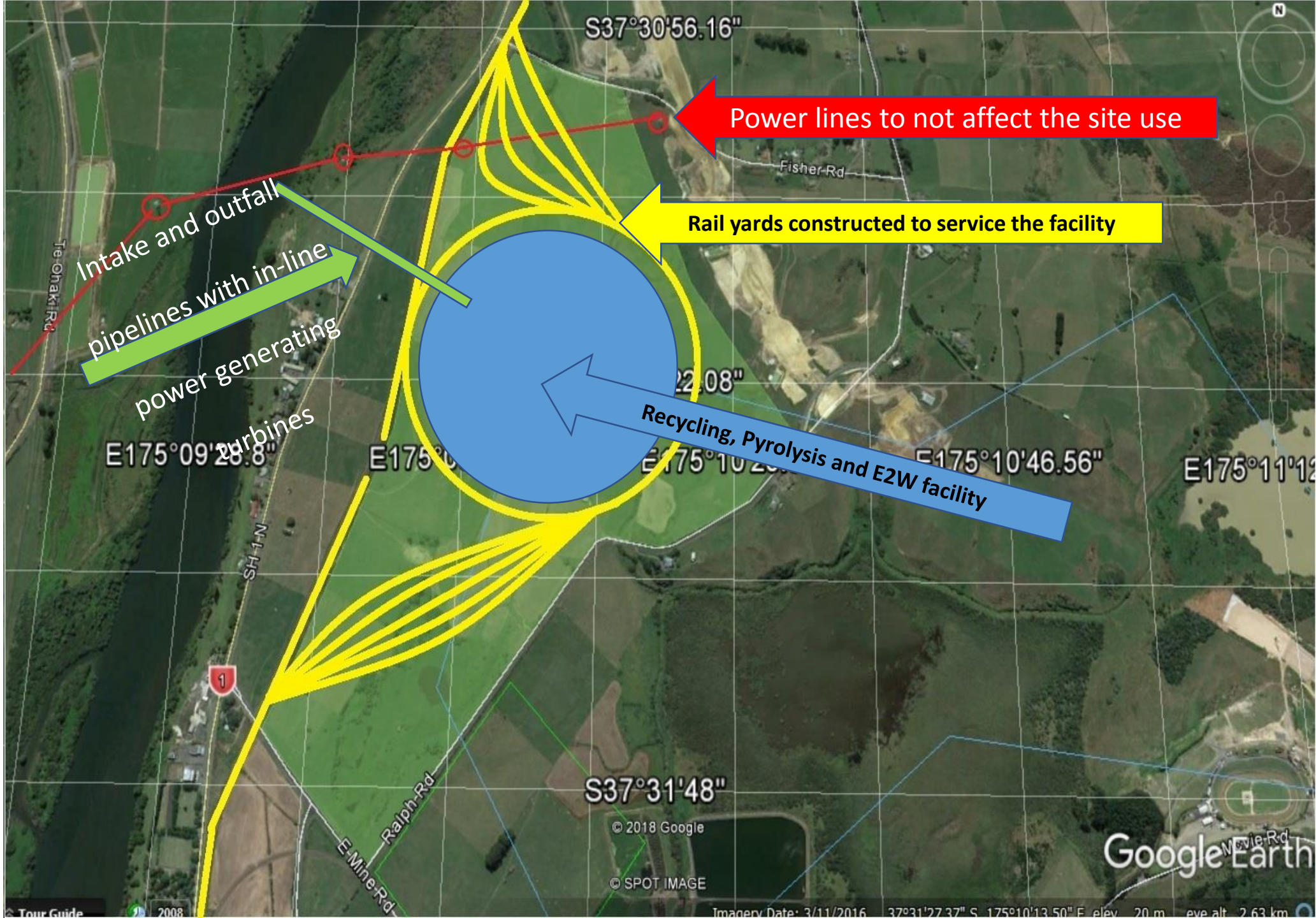
Construct an Integrated Resource Recovery Facility (IRRF) that incorporates recycling / re-use facilities as well as a tyre pyrolysis reactor.
This multi-functional IRRF plant would handle the entire North Islands waste and possibly even the South Islands a large proportion of the Pacific Islands waste.

Where?

Huntly, Waikato

One of the proposed sites

(There are 2 or 3 options identified)


S37°30'56.16"
Power lines to not affect the site use
Fisher Rd
Rail yards constructed to service the facility
Intake and outfall
pipelines with in-line
power generating
turbines
Recycling, Pyrolysis and E2W facility
E175°09'28.8"
E175°10'46.56"
E175°11'12
SH 1 N
Te Ohaki Rd
S37°31'48"
Ralph Rd
E Mine Rd
© 2018 Google
© SPOT IMAGE
Google Earth

RAMBØLL

Whakaaro-Kingsman

Hundreds of jobs across NZ

Approx. 100 jobs in Huntly alone to replace the coal power station's jobs

Massive opportunity to uplift Huntly's economy, standard of living, schooling, social issues etc.

Initiate our 'rent for no drugs' initiative for employees undergoing drug or alcohol rehab

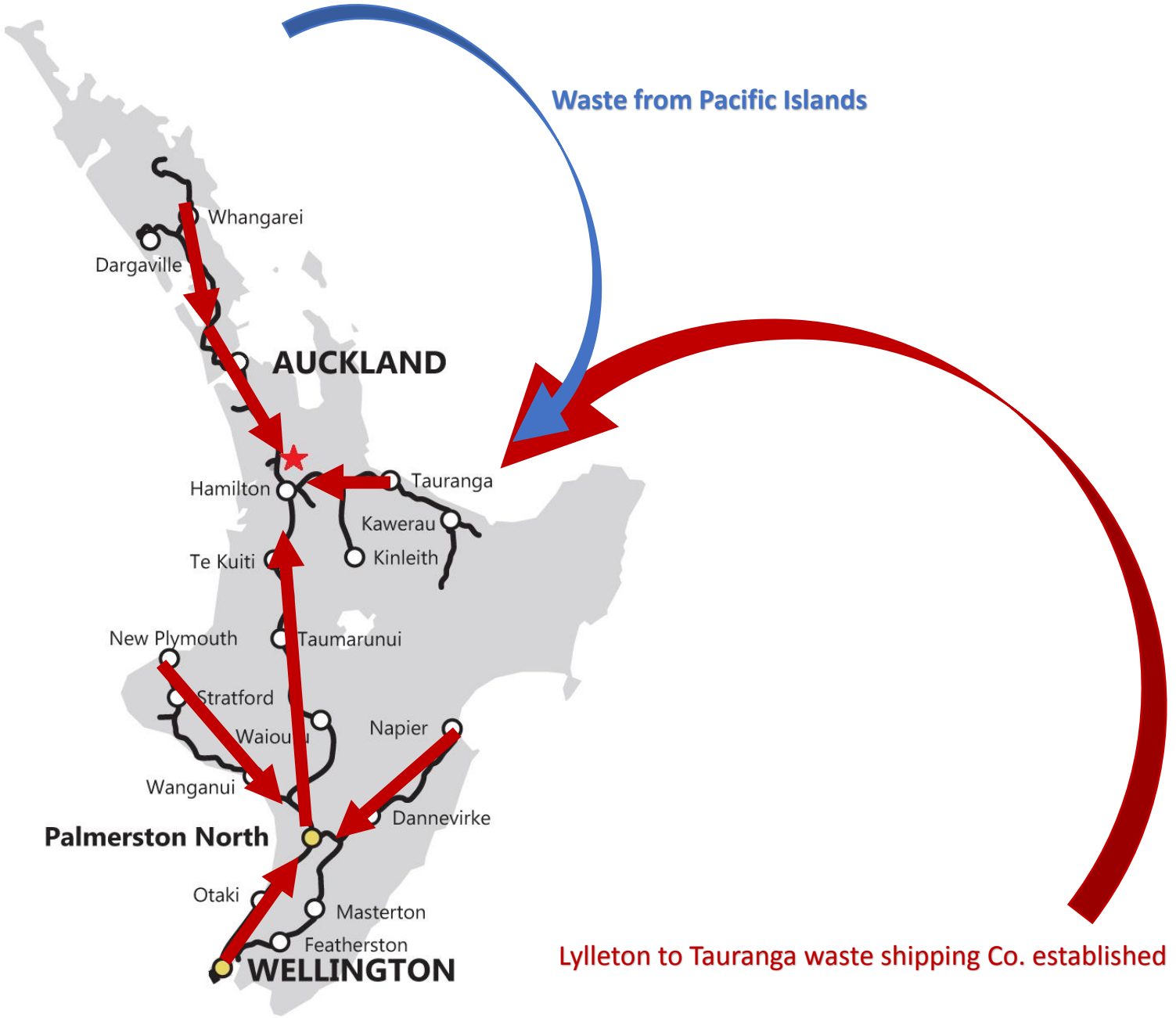
Landscaped with community vegetable gardens

Tourist group interest (more jobs)

Opportunities for artists who excel in using scrap for art to set up small studios

Massive increase in Kiwirail's operations

Opportunity to not only clean up NZ but our Pacific Islands cousins islands too



Kiwirail's network revitalized and grown to become the backbone of our waste management system.

Landfills generally shut NZ wide, bar possibly some exceptions due to location.

The same Pacific island, 23 years apart

The Moana Taka Partnership

CHINA NAVIGATION
SWIRE

SPREP PROE

Joint news release

20 March 2018 I *For immediate release*

"Moana Taka Partnership"
unfolds exciting recycling possibilities for the Pacific islands

The China Navigation Company (CNCo) and the Secretariat of the Pacific Regional Environment Programme (SPREP) have today signed a memorandum of understanding (MOU) to address critical waste management issues in the Pacific islands.

Known as the "Moana Taka Partnership", this MOU allows for CNCo vessels to carry containers of recyclable waste from eligible Pacific island ports, *pro bono*, to be sustainably treated and recycled in suitable ports in Asia Pacific.

"This historic partnership will be of great benefit to our Pacific islands, and one for which we are very appreciative to The China Navigation Company," said Mr Kosi Latu, Director General of SPREP.

"Our Pacific islands face an immense waste management challenge. With many geographical limitations, the Moana Taka Partnership can help us address the problem of taking our recyclable waste off island for proper recycling. This is a great step, or shall we say paddle, in the right direction."

Mr James Woodrow, Managing Director of CNCo said, "China Navigation has provided sustainable shipping solutions to the Pacific islands for 80 years. Today, the communities in the Pacific islands are facing some of the most pressing environmental challenges of our time and CNCo is committed to being part of the solution. As soon as we became aware of the critical need for sustainable waste management in the region, we worked urgently with the SPREP and UN Environment to put this partnership in place."

Under this agreement, Pacific island countries who have insufficient or inappropriate landfill space to store waste, have inadequate waste treatment facilities, and the financial inability to ship recyclable waste are eligible for this opportunity. The types of materials that are considered recyclable include plastics, aluminium cans, waste oil and ozone depleting substances.

The signing took place across Samoa and Singapore on 20 March to mark the Global Recycling Day 2018.

"Better waste management is absolutely critical for Pacific island nations. Landfills should be the last option and throwing it all in the ocean is not an option. We need to innovate, and this kind of public-private partnership is the way forward. Only when we work together can we overcome one of the biggest environmental challenges of our time," said Mr Erik Solheim, Executive Director of UN Environment.

21 countries are eligible for these opportunities: American Samoa, Cook Islands, Commonwealth of Northern Mariana Islands, Guam, Fiji, French Polynesia, Kiribati, Republic of the Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu, Vanuatu and Wallis and Futuna.

Enclosed: **Photograph of the MOU signing in Singapore.**
Photograph of CNCo vessel, MV *Coral Chief*, at Port Moresby, PNG.

/Ends

About SPREP
SPREP is the regional coordinating organisation for the protection and sustainable development of the Pacific island environment. SPREP was established by its Member government's in1992 to support cooperation and coordination across the region. With headquarters located in Apia, Samoa, SPREP works closely with its 26 Member countries and territories – along with partners, donors and local communities – to deliver on environmental management and sustainable development in the region. For more information on SPREP, visit www.sprep.org.

About CNCo
The China Navigation Company (CNCo) is the wholly-owned, deep-sea shipping arm of the Swire group. Headquartered in Singapore, the company has branches in 15 countries operating a global network of multipurpose liner, dry bulk and bulk logistics shipping services through its three business divisions – Swire Shipping, Swire Bulk and Swire Bulk Logistics. CNCo was founded in 1872 to operate Mississippi-style paddle steamers on China's Yangtze River. Today, it owns and operates a fleet of over 100 eco-friendly container and multipurpose vessels, bulk and cement carriers, providing sustainable shipping solutions to enable global trade. For more information of CNCo, visit www.swirecnco.com.

For further information please contact:

Anthony Talouli, Pollution Adviser from SPREP at anthonyt@sprep.org

or

Simon Bennett, General Manager, Sustainable Development from CNCo at simon.bennett@swirecnco.com.

WHAT ABOUT EMISSIONS?

Outfall concerns from farmers especially Fonterra and others is to be expected.
All these concerns will form part of the feasibility strategy however, at this juncture, it can be stated with certainty that a ‘zero’ emissions facility is achievable if that is what we set out to deliver.

There are three prevailing technologies for flue gas treatment : dry system, semidry system and wet system.

The dry system is the cheapest in CAPEX, has high OPEX and not very good environmental performance. The semidry a little more CAPEX, little better env. performance, and little lower OPEX. The wet system has the highest CAPEX, lowest OPEX and best env. performance. The wet system captures Cl, S, F and Hg with water and wet solution with soda or lime.

Copenhagen, Denmark. A W2E plant in the central city

BACKGROUND

New Zealand has a massive and ever increasing problem with waste, but we don't have a **national answer** as to how to manage our waste and how to be great custodians of our children's future environment. The Kaitiaki IRRF is the solution.

- The export of 'recyclables' to China has been stopped
- We do not have physical space to continue dumping economically, the land that is nearby our main centres is too valuable
- **NEWS LINK @ 04/08/2018**
- The leeching of human waste that is dumped into landfills that filters through to ground water tables will become an ever increasing issue
- Many recycling and sorting sites are issues within themselves from an environmental perspective and as they are overflowing and sometimes mismanaged.

- There have a been a few well documented attempts at investigating W2E facilities, the latest being the attempt to get one going for the West Coast but the scale, location and volume of available waste will make this venture unviable.

57 Second Video

Finland

“real savings are in reducing landfill methane emissions. For every ton of waste that goes through the facility, a ton of greenhouse gas emissions is avoided. Two-thirds of the incinerated material is biomass. The remaining one-third is essentially a fossil fuel.” – Scientific American

Annually, approx. three to four million tyres are sent to landfill in NZ

That means that since records started being kept in 1988, we have buried in excess of 90,000,000 (ninety million) tyres

Example of a small continuous pyrolysis tyre recycling plant


Isle Of Man


Waikato

Stage # 1 of this EPC Project
Fee Proposal
Research & Preliminary Design
Feb. 2019 to Feb. 2020

RAMBØLL

Whakaaro-Kingsman

W-K

57 Video

PROJECT PHASE # 1 SCOPE AND TIMING

Nov.' 2018

Lodge EOI with NZ Government

February 2019

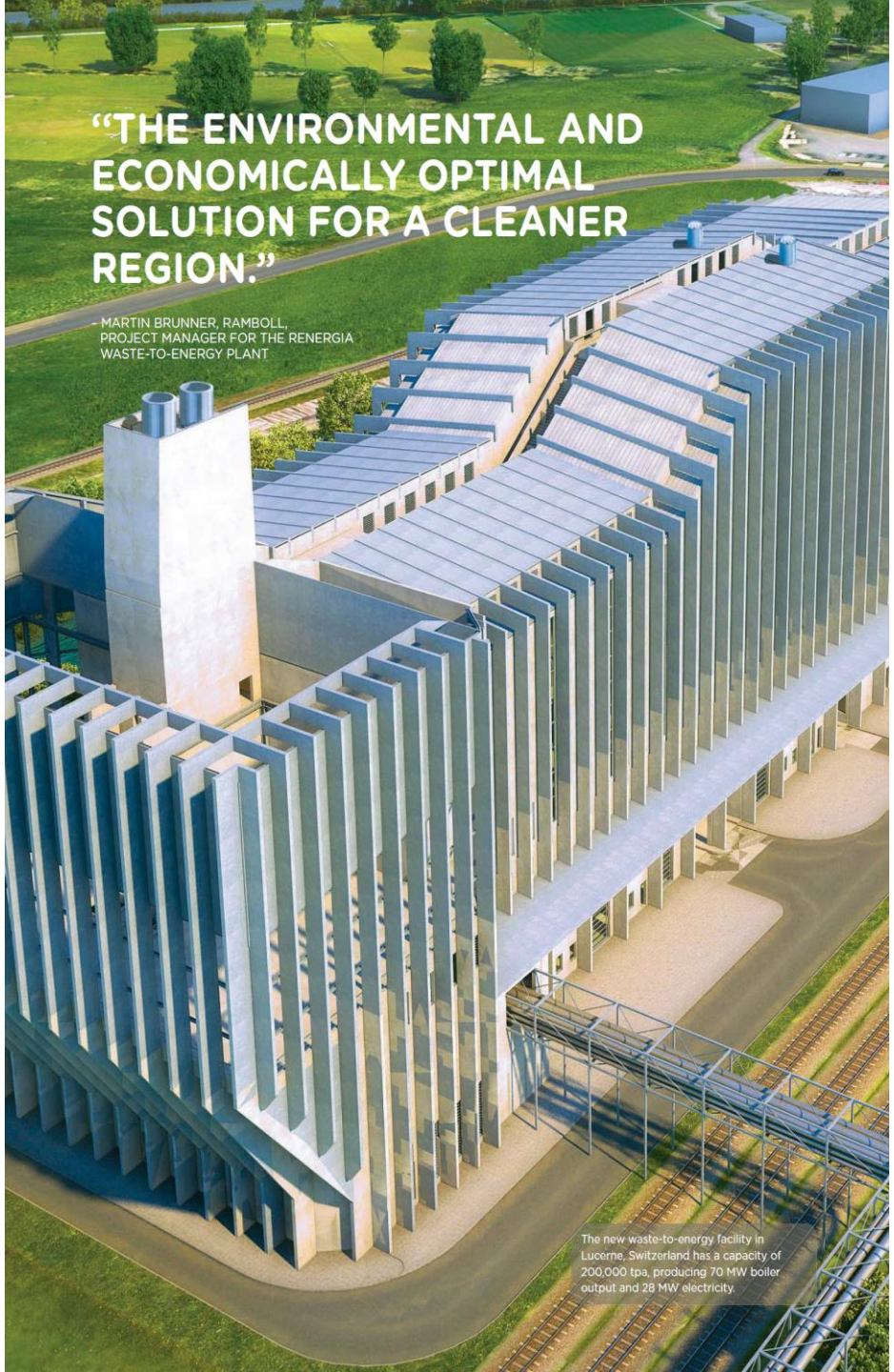
Government approve Phase # 1

February 2020

Ramboll team complete study/analysis

RAMBØLL

Whakaaro-Kingsman
W-K



"THE ENVIRONMENTAL AND ECONOMICALLY OPTIMAL SOLUTION FOR A CLEANER REGION."

– MARTIN BRUNNER, RAMBOLL, PROJECT MANAGER FOR THE RENERGIA WASTE-TO-ENERGY PLANT

The new waste-to-energy facility in Lucerne, Switzerland has a capacity of 200,000 tpa, producing 70 MW boiler output and 28 MW electricity.

"IN THIS FINAL PHASE IT IS ESSENTIAL TO HAVE A CONSULTANT TO MAKE SURE THAT THE SUPPLIERS DELIVER A FACILITY THAT LIVES UP TO THE CONTRACT."

– JONAS EEK, MANAGER OF SYSAV ENERGY

Sysav's waste-to-energy facility in Malmö is one of the largest in Europe. It has the capacity to treat 650,000 tonnes of waste annually. The facility has been extended several times – in 2003 and again in 2008 – to accommodate increasing waste amounts. Ramboll was Sysav's consultant when the two new units were established and has also assisted in the upgrading of the two older units.

FEE PROPOSAL TO UNDERTAKE THE REVIEW / BUSINESS CASE / ACTION PLAN / METHODOLOGY / INDUSTRY INTERACTION / PRICE TO CONSTRUCT ETC.
ESTIMATE - $2.0 MILL. NZ – FUNDING STREAM PROPOSAL

RAMBOLL

Whakaaro-Kingsman W-K

$1Mill NZ
What we will ask the NZ Govt. for.

$1.0 Mill NZ
What we will tell the NZ Govt. that private investors will contribute. *

[*-If Govt. agrees to contribute their portion]

IWI	$100,000.00
NZ WASTE COMPANIES (2) [= Offshore investment]	$200,000.00
Industry etc. x (6)	$600,000.00
NZ Power Co.'s / Other offshore opportunities	$100,000.00

For discussion only

For discussion only

PROJECT FUNDING STREAM PROPOSAL
ROOC - $1.4BILLION

RAMBØLL

Whakaaro-Kingsman

NZ Govt. Contribution

$500 Million

Private investors contribution

$900Million

IWI	$100Mill
NZ Waste companies (2) [= Offshore investment] / Local Capital funds	$300Mill
KIWI RAIL (Excludes rolling stock) / TOLL etc.	$100Mill
NZ Energy Businesses / Other	$100Mill
International Funds – United Nations/ADB	$150Mill
Ramboll / Off shore investors	$150Mill

Motivated by the Moana Taka Partnership Scheme.


West Palm Beach, USA

Example of legislation & action points

To ensure a robust and functional business case, network, infrastructure and beyond everything else the recovery of our environment and it's betterment going forward, **some overarching legislation will be required.**

The reason for this is that some businesses will be negatively affected (they will have opportunity to adapt (or die)) and some citizens will not be really interested to do their bit….so a bit of "bouquet and brick-bat" may be required.

An initial assumption of low level legislation to ensure functionality of the overall vision of this multi-faceted project would be:

- Increase costs to dump (Opportunities for poorer household to dump for free)
- Closure of most landfills unless for materials that provide no other pathways of disposal.
- Absolute minimisation of 'dumpable' materials
- Reward schemes / deposit schemes for recycling
- **Enforcement of ALL packing to have a bar code (some don't at present) e.g. imported fruit wrapping, with the products 'recyclability' data contained on the bar code.**
- HEAVY Increase in fines for dumping
- **Curb side collection systems streamlined nationally (ONE SYSTEM), not province / council driven.**

End.

Thank you / nga mihi / tak skal du have.