



Mount Alexander Bioenergy from Waste

Neighbourhood Meeting
July 1 2021

For further information contact MAB on www.bioenergy.net.au

Presenters



Michael Lewin – MA Bioenergy Chair, MASG;
Manufacturing Consultant (retired), Energy Rater

Deane Belfield – MA Bioenergy Project Mgr,
ECO2Sys CEO, and MASG Committee Member

Bill Grant – MA Bioenergy Board Member,
Environmental Waste Consultant



AGENDA

1. Overview
2. Community Benefit
3. Community Engagement
4. Site Selection
5. Ownership and Operation
6. Planning Processes
7. Traffic
8. Facility Technology
9. Noise
10. Odour and Emissions
11. Other ?

Project overview



- Planned bioenergy from waste plant represents first community-led integrated bioenergy initiative of its kind in Victoria
- Embracing a ***circular economy*** zero waste approach, the project led by Mount Alexander Sustainability Group (MASG) will help the shire reach its Zero Net Emissions (ZNET) target by 2030
- An exemplar of how a communities can respond to Vic Government's circular economy goals (waste, recycling and renewable energy)

Project History



- MASG first explored the practicality of a *Bioenergy from Waste* facility in the shire in 2015 and subsequently embarked on a Pre-feasibility Study, funded with Philanthropic support.
- With the support of the Shire Council, Coliban Water, DON Smallgoods, and funding from State and Federal government along with the McKinnon Family Foundation, a Feasibility Study and Business Case was conducted in 2018
- The concept of the project was shared with Council, presented at a town hall community event and discussed in the media
- 8 potential sites identified, outstanding among those was that adjacent to DON Smallgoods' because of cost benefit to supply “behind the meter” energy

Community Benefits



1. Expected to drive an emissions reduction of 88,500 tonne CO₂e per annum to ZNET
2. Divert ~36,000 tonnes (20% from Don KRC) of organic waste from landfill annually
3. Expected reduction in noise and odour
4. Provide secure local employment opportunities in the shire
5. Anticipated future savings on waste costs for local rate payers, by avoiding landfill
6. Agricultural community to benefit through bio-fertiliser products
7. Contribution from profits to help fund future community projects
 - Community Bank type support of community projects
 - MASG Projects supported

Community Engagement



BEFORE SITE CHOSEN

- Presented concept at Town Hall MASG event in 2015 (Following Resource mapping project)
- Pre-feasibility Study presented to stakeholders in 2016
- Community Engagement Plan developed in 2017
- Earlier press releases before preferred site nominated, notably in Midland Express and 9 News in 2017
- Engagement will be ongoing, throughout the project's phases
- Biogas Feasibility Study and Business Case presented in 2018
- While negotiating with Don Smallgoods, had to maintain confidentiality until site agreed

Community Engagement

Stage 2 of Community Engagement



	Activity	Community	Timeframe	Engagement
Bioenergy from Waste Facility Project Development and Approvals	Community meetings (public meetings, information sessions, workshops)	<ul style="list-style-type: none"> Local residences and community members Local businesses and industry operators General public 	From commencement of project development process in 2018.	<ul style="list-style-type: none"> Neighbourhood informal meetings Facilitated meetings Site Visits
	Community Survey	<ul style="list-style-type: none"> Local residences and community members Local businesses and industry operators 	From commencement of project development process in 2018.	Online and/or offline survey
	Statutory Notice of Development Application	<ul style="list-style-type: none"> Local residences and community members Local businesses and industry operators General public 	With lodgment and assessment of development application	Newspaper advertisement (via EPA)

Community Engagement

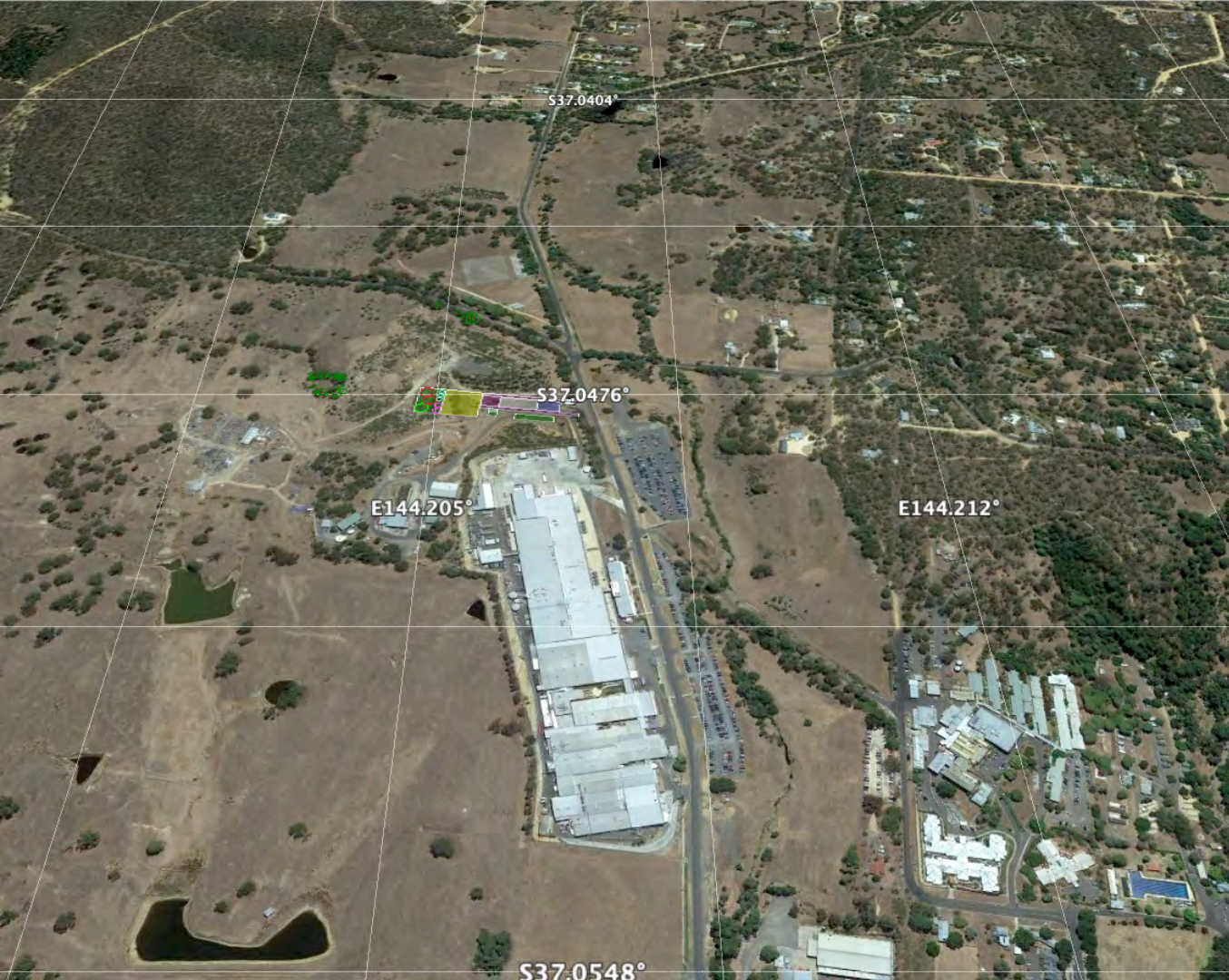


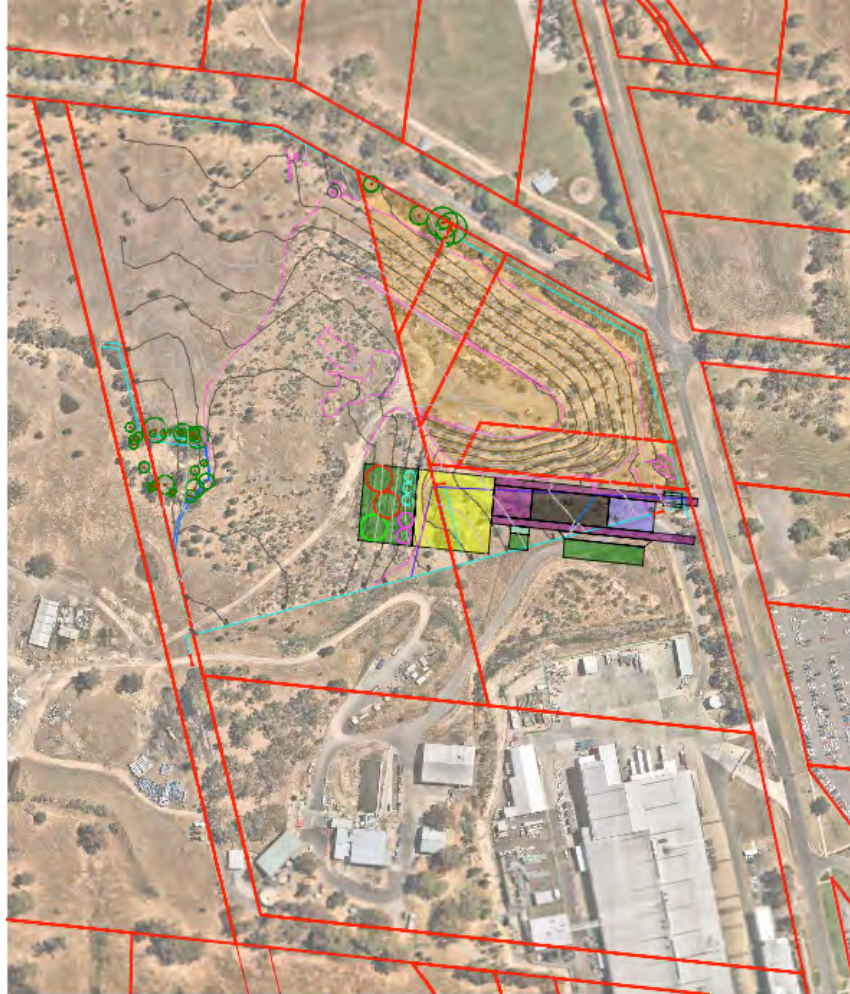
- June 3rd Neighbourhood Briefing, June 4 Stakeholder Briefing, Press Briefing
 - Was supposed to have door to door introductions / invitations – by Covid 19
 - Short time frame deliberate in that it needed to get to all simultaneously
 - Politicians, Public Servants, Press - commitments made for June 4
- Neighbour engagement – this is the second, following on from June 3 briefing/Q&A
- Broader Community engagement will be embraced with a Town Hall meeting
- All questions and will be responded to and shared as per Q&A releases Part 1 and 2
- Shared information through MAB web site (www.bioenergy.net.au)
- Local businesses are also being engaged for collaboration opportunities
- Engagement will be ongoing, throughout the project's phases

The site selected



- The external consultants who did Feasibility Study listed 8 sites (see Appendix)
- This was narrowed to 4 that were potentially available
- The leader of these were the council landfill and Don Smallgoods as they shared some waste and both were the sources of other wastes.
- Industrial Zoned land (I1Z) required
- Don Smallgoods stood out if they could be convinced to participate:
 - They could use all of the energy generated
 - They could take the energy in raw form (gas or heat) and not require it to be converted to electricity
 - They were a source of a significant amount of organic waste



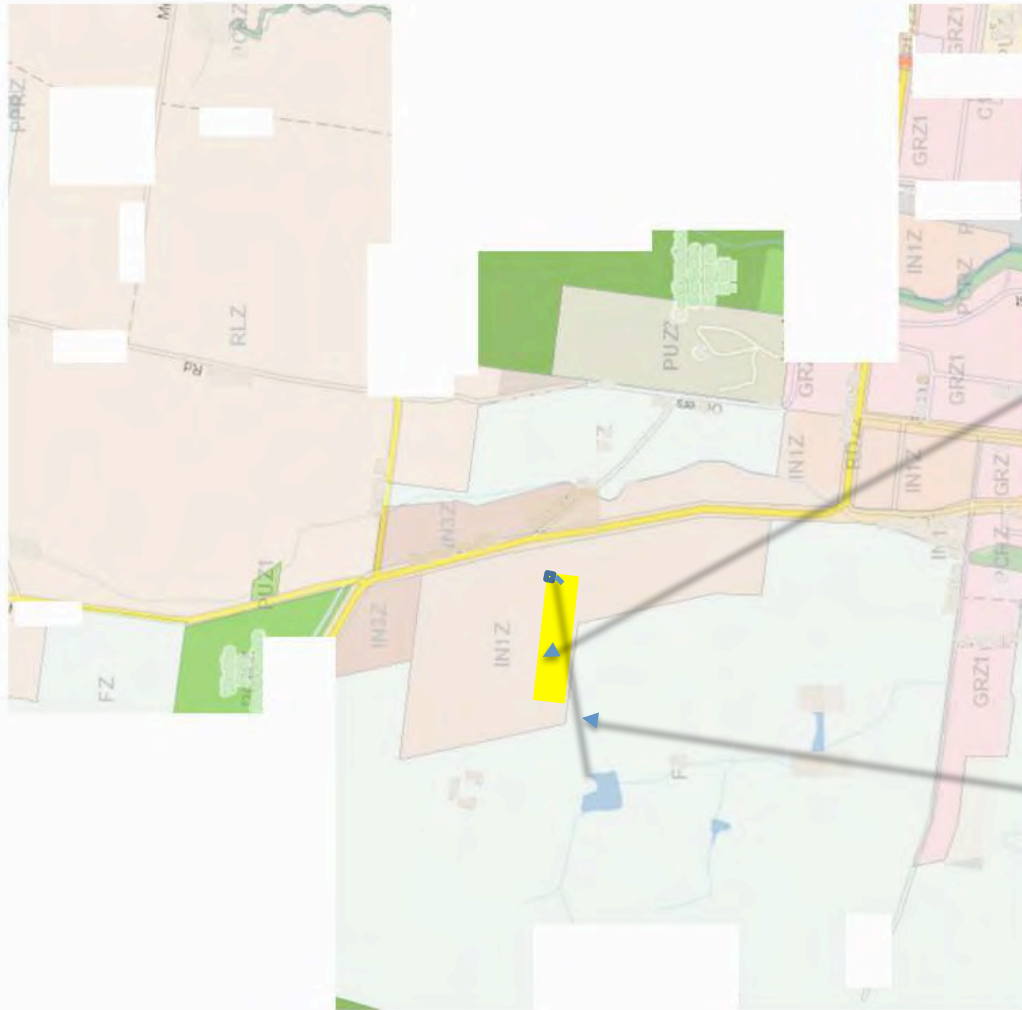


Plant Location
Scale 1:3,500



Proposed facility

Existing Chain Mesh fence



Ownership and Operation



- MAB is currently 100% owned by MASG
- As investors come on, this will diminish and be a minor holding.
- MASG will seek a guaranteed seat on the MAB board
- MAB will be responsible for operation but may take on contractor
- MAB will set conditions on contract with regard to traffic movements, feedstock types and quality allowed, noise and emissions

Planning Processes



- Pre-construction phase is currently underway including regulatory approvals
- Submit a Planning application during late 2021, includes:
 - Community Engagement
 - Traffic Management
 - Fire Management
 - Odour, Noise and Emissions thresholds – as per EPA
- Submit an EPA application during late 2021
- Seek AQIS approval for handling of prescribed waste

Traffic



- The expected truck movements of 3 to 5 per day by contracted parties
(This is a net 2 to 3 as there will be a reduction in Don Smallgoods)
- Contracted companies, most probably from companies such as Cleanaway, Veolia, Suez, JJ Richards., etc. will be have enforced conditions that they approach and leave from the South.
- Operating Staff, expected to be 3 to 5 on site, will be essentially working a day shift only, between 8am and 6pm. They will be instructed to access from the south where coming from other than the local Castlemaine area.
- During construction we would expect some 30 odd deliveries over a 6 month period. We can request that these come from the south
- Numbers of construction workers would vary between 5 and 15 over the 6 months and equally can be requested to approach from the south.

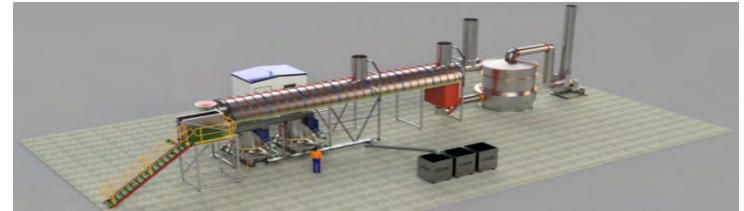
Facility Technology



The planned facility comprises two clean energy technologies – **anaerobic digestion** (AD) and **biomass** (thermal) from clean organic waste streams:

AD technology [~1 MW] - provides biogas (mostly methane) to produce heat and some electricity

Biomass thermal technology [3 to 4 MWt] – pyrolysis and gasification to provide fuel (syngas), heat (water, steam) and biochar as bio-fertiliser



Noise



- Anaerobic Digestion is near silent
- Biomass Pyrolysis and Gasification
 - Day operation Monday to Friday (8am to 6pm)
 - Within the Vic EPA threshold guidelines for a bioenergy facility.

EPA Noise limits – Day = 48 dBA, Evening = 42 dBA, Night = 41 dBA

- Reduction anticipated on Don Smallgoods noise levels
- Baffles and acoustic insulation will be fitted to work facilities and equipment
- Testing will be done to verify this before commissioning

Odour and Emissions



- Odour must be contained within the facility boundaries under the EPA regulations
- Precinct emissions will decrease as will odour
- Wet organics, such as food waste, will be held in enclosed, negative pressure, storage facilities and cannot be held for more than 48 hours
- The pyrolysis- gasification process will have little if any noticeable emissions as this is determined by the feedstock. In MABs case timber, saw dust, crop stubble, etc.
- Storage of these materials does not produce odour and may be held outside
- There maybe a limited supply of soiled imported cardboard and plastic wrap that currently goes from Don Smallgoods for deep burial landfill. This plastic will only be accepted if it can be established it can produce no toxic emissions. It is believed to be polyethylene and thus would break down to carbon dioxide and water vapour only. No other will be accepted

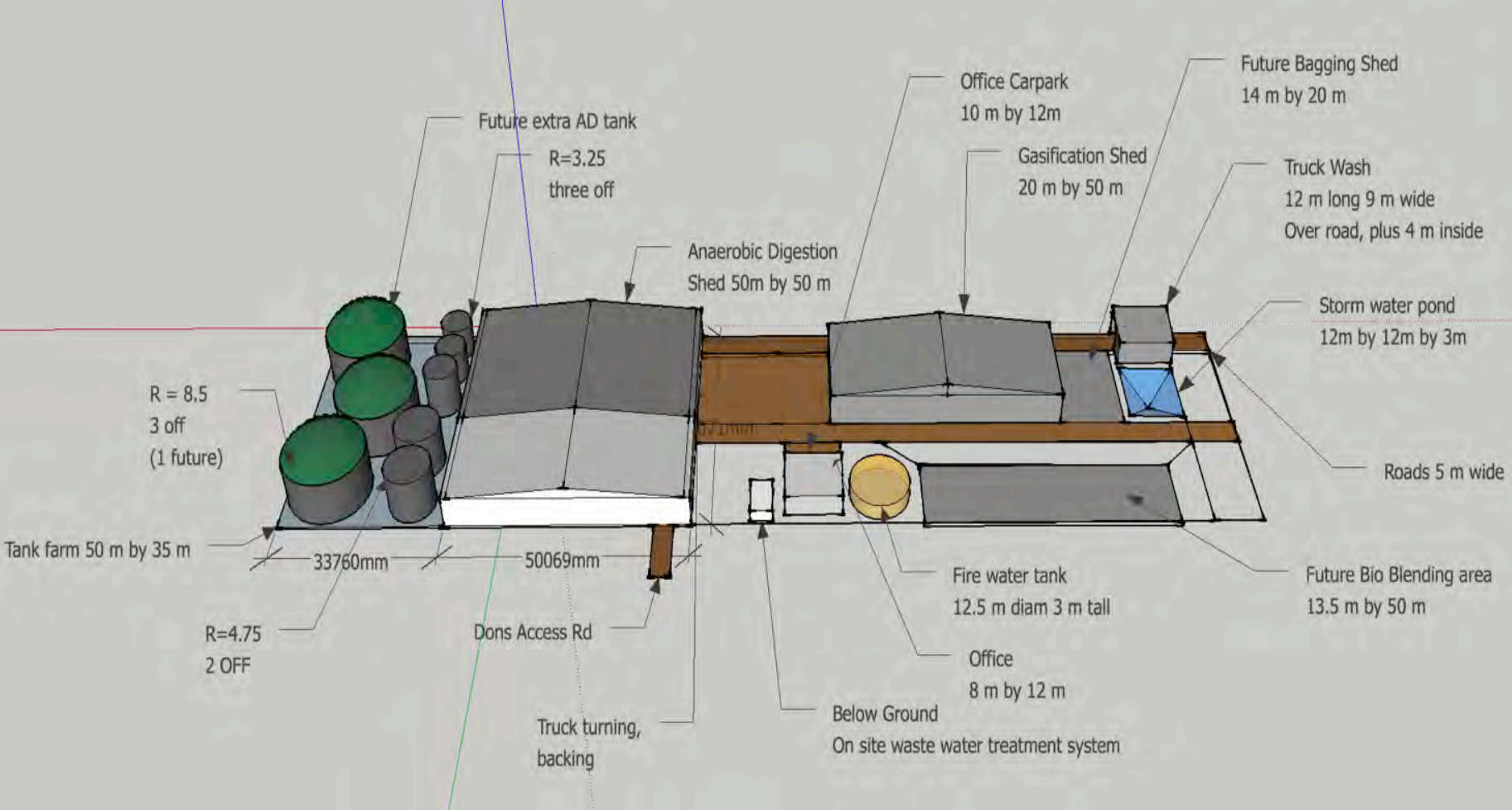
Other



Questions from the floor

Appendix

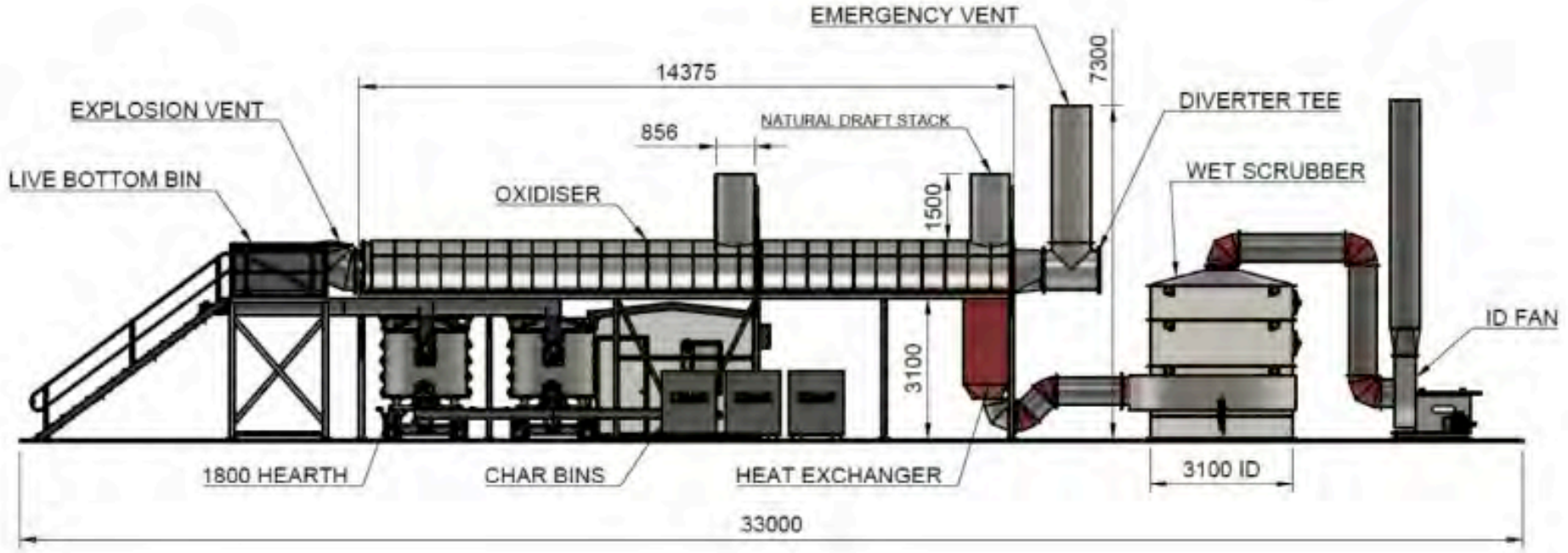




(indicative only; technology selection has not been undertaken)

1. Proposed PyroCal 1800 CCT

Stack height is proportional to quality of input material (from 5-10m) for clean to dirty waste (organic to MSW)



(indicative only; technology selection has not been undertaken)



2. Pyrolysis – Gasifier (indicative figures only; technology selection has not been undertaken)

The Gasification systems are a staged oxidation process designed to provide optimal energy and environmental performance.

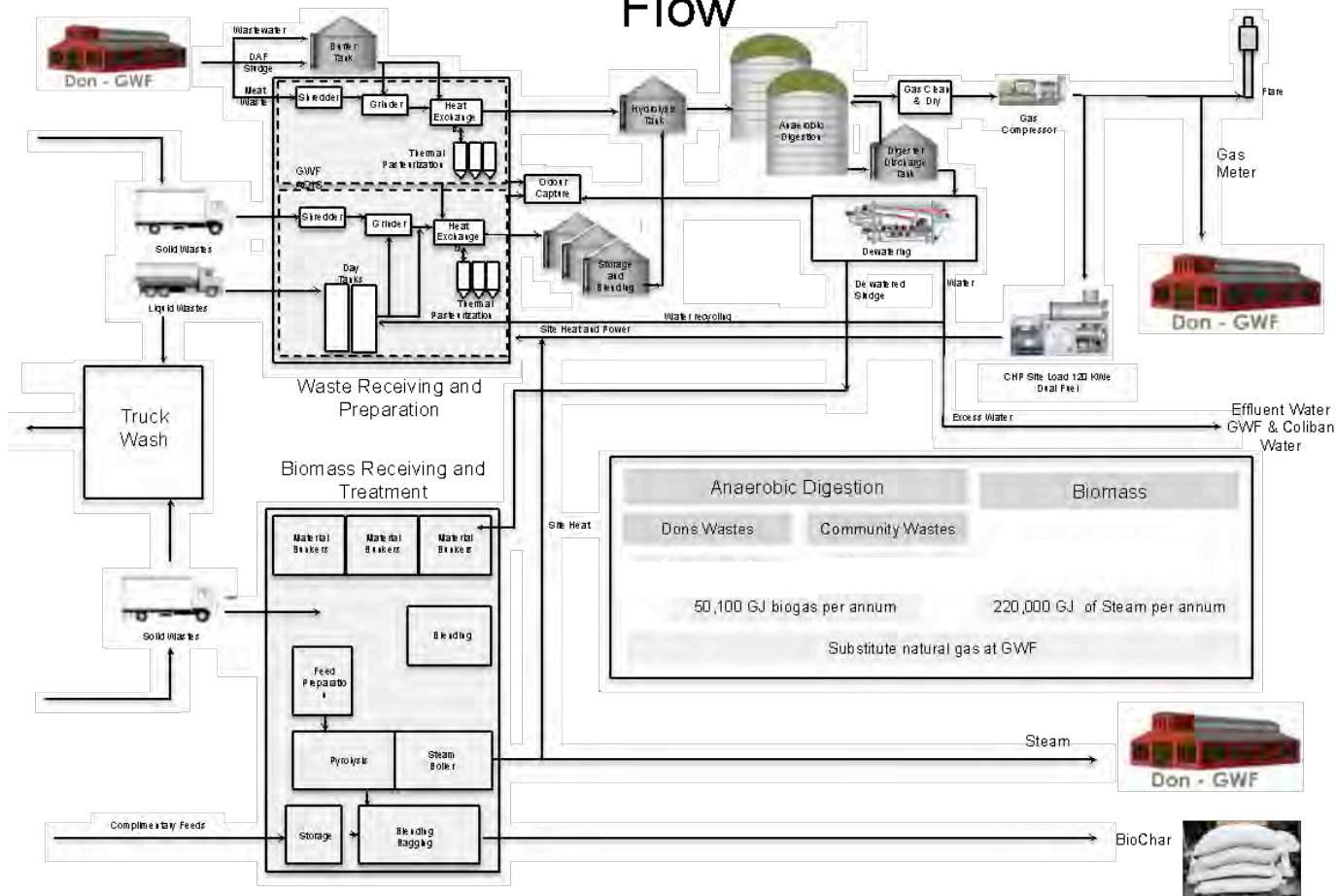
The process reactions take place in two locations:

- The Primary Gasification Chamber
- The secondary Oxidation Chamber

□

- Flue gas is 35C at the stack
- Minimal CO (carbon monoxide)
- 4-6 ppm; 12% is similar to human breath. Air (80%)
- Stack height (5 to 10m) is set by the EPA and dependent on the material combusted.
If MSW it is ~12m; if clean organics it is ~5m
- Building Code requires 3.6m above highest structure
- Emissions profile for atmospheric air is determined by ground modelling to determine min. height
- Much cleaner than your car exhaust or wood stove
- Pyramid Hill demo site available for visit from Sept'21

MASG Process Flow



Indicative Only

This diagram does not constitute an engineering design

Zero waste goal

Appendix – Site Selection



Initial List of Prospective Sites and Analysis											
		INPUTS			OUTPUTS			INFRASTRUCTURE			POLITICAL & COMMUNITY
Criteria	OVERALL WEIGHTED SCORE	Substantial feed available to support significant project throughout year	Access to higher yielding co-digestion	Cleanliness of the wastes, reflecting the difficulty to achieve A Class bio solids and prescribed wastes	Site electrical need and waste potential balanced	Site thermal need and waste potential balanced	Site's ability to utilise value in digestate	Proximity to Castlemaine	Suitable existing roads	Power grid suitable for embedded generation and exporting power	Overall likelihood of community and political support
Don KR - External Waste Streams (with Hospital)	7.94	6	5	7	10	10	0	10	5	5	7
Don KR - External Waste Streams	7.54	6	5	7	10	10	0	10	5	5	5
Coliban Water Epsom WWTP - External Waste Streams	6.47	8	7	7	7	1	0	4	5	5	8
Tarrngower Prison, Maldon - External Waste Streams plus VDJR Energy Crops	6.17	10	7	7	5	1	0	5	10	5	6
Loddon Prison Castlemaine - External Waste Streams plus VDJR Energy Crops	6.02	10	7	7	5	1	0	9	3	5	6
Tarrngower Prison, Maldon - External Waste Streams	4.54	2	5	7	5	1	0	5	10	5	6
Loddon Prison Castlemaine - External Waste Streams	4.39	2	5	7	5	1	0	9	3	5	6
Harcourt Coldstores	3.36	3	5	5	1	2	0	7	3	5	6
Castlemaine Landfill	3.26	3	5	5	0	0	0	10	8	5	6

Appendix – EPA guideline

Guideline: Energy from waste



Environment
Protection
Authority Victoria



Publication 1559.1* July 2017.

*This publication replaces 1559 released December 2013.

Introduction

As outlined in *Getting Full Value: the Victorian Waste and Resource Recovery Policy*, ('Getting Full Value Policy') the Victorian Government is committed to an integrated, statewide waste and resource recovery system that protects the environment and public health, maximises the productive value of resources, and minimises the long-term costs to households, industry and government.

The Victorian Government also outlined that it welcomes investments in energy from waste and other alternative technology that can convert waste into useful products, if it can be demonstrated that investment will deliver strong environmental, public health and economic outcomes.

This guideline outlines how the Environment Protection Act 1970 ('the Act') and associated statutory policies and regulations are applied to the assessment of proposals that recover energy from waste. The document provides high-level guidance for industry, government and the community on EPA Victoria's (EPA) expectations and requirements for the siting, design, construction and operation of such facilities.

Efficient recovery of energy from the thermal or biological processing of waste is considered a resource recovery as opposed to a waste disposal option. Recovery of energy should not compete with avoidance, reuse or recycling.

Legal status of this guideline

This guideline provides a summary of the Act's key principles and environment protection requirements as well as subordinate legislation. The technical details in this guideline describe measures to assist in meeting these requirements.

The guideline does not represent a comprehensive statement of the law as it applies to either particular problems or individuals or serves as a substitute for legal advice.

What is 'energy from waste'?

Noise limits – Day = 48 dBA, Evening = 42 dBA, Night = 41 dBA
Odour – Must not be emitted beyond the boundary
Discharge to air – limits most likely captured in permission.