Mount Alexander Bioenergy

COMMUNITY Q+A

CONSOLIDATES ALL QUESTIONS RAISED AND RESPONSES

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Chair, Mount Alexander Bioenergy P/L

Questions / Responses

Proposed Mt Alexander Bioenergy Facility

This includes a consolidation of the questions raised at the Neighbourhood Briefing on Thursday June 3, 2021, the Thursday July 1, 2021 Neighbourhood Meeting and also those raised via email before and since.

Note that because of similar concerns shared by interested members of the community this document contains some repetition, based on individual questions being asked. We have attempted to combine like questions to contain the size of the document. Should you feel your questions have not been answered please contact us.

Revision Control Table

Date	Reference	Description
29/07/2021	All	Full revision issued - untracked
01/08/2021	Overview	Plant Operation rewritten
01/08/2021	A4, E8, F6, K23	Typo corrections
01/08/2021	A5	Added sentence
01/08/2021	A11	Added "Biogass recommendation" for clarification
01/08/2021	C4	Aug 12 limited to 88
01/08/2021	C6	*"The June 3 and June 4 briefings were the completion of the first stage" inserted*
01/08/2021	D5	*"….community engagement, construction contractor selection and investor sourcing." Inserted*
01/08/2021	H1	*Included employee traffic*
01/08/2021	I2	*Some simplification of language*
01/08/2021	I3, L10	*Punctuation corrections*
01/08/2021	I8	*88,000 Tonnes changed to 88,500 tonnes*
01/08/2021	J1	*Added sentence re operating hours.*
01/08/2021	K2	*expanded to "Woody waste, crop stibble, etc."*
01/08/2021	K6	*Expansion of text to make understanding clearer*
04/08/2021	D11	*Council ZNet target for 2025*
04/08/2021	A4	*Made clearer as to Kerbside waste use*
04/08/2021	L15	*Coliban treatment plant residues*
11/08/2021	L16	Why different feedstock to Richgrow in Jandakot
13/08/2021	A4	Added comment re introduction of FOGO bin in Castlemaine
15/08/2021	B5, Overview	Landfill diversion

15/08/2021	K24	ACT ban on thermal processing of waste
18/08/2021	I10	Aren't CO2 emissions from biomass greenhouse gasses too?
18/08/2021	K2	Modify overall emission statement
18/08/2021	K25	Environment Vic and others oppose thermal plants
18/08/2021	A14	MASG receipt of Court ordered donation to Regen Ag
18/08/2021	F9	Can MASG guarantee that future operators will not take a wide range of materials or things they shouldn't
19/08/2021	Overview	Clarification of syngas reference
19/08/2021	A5	Clarification of digestate reference
19/08/2021	K1	Explanation of CHP
19/08/2021	I9	Clarification
20/08/2021	E19	Why would Don Smallgoods not invest?
20/08/2021	E20	What if MASG's sells it share and gives up its seat on the board?
20/08/2021	K26	If Don Smallgoods were not using imported meat would it be different?
20/08/2021	K27	Why is a bioplant in Germany relevant?
20/08/2021	K28	How does this compare to IGCC and USCPC?
20/08/2021	K29	Has any plume modelling been done?
20/08/2021	I11	How many tonnes of CO2e will this plant emit per MWh?
21/08/2021	A4	Clarification
21/08/2021	L6	Clarification
24/08/2021	L17	Will we accept chipboard

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1. Technology Overview

This is primarily a renewable energy project, producing some 270,000GJ of renewable energy. The intent of renewable energy is to reduce greenhouse gas emissions by reducing our reliance on fossil fuel generation. By removing waste from landfill and using it as the source, we can make this renewable energy project doubly efficient, with an anticipated Greenhouse Gas saving of 88,500 tonnes CO2e. The technology below, and the selective control of the feedstocks, will ensure that no unwanted emissions result and that is genuine “GREEN” energy. The facility will divert approximately 36,000 tonnes of organic waste from landfill annually.

Anaerobic Digester

The biogas facility will use wastewater and organic waste from Don Smallgoods as well as suitable wasted 'wet' organics to produce biogas using anaerobic digestion. The biogas will be used as natural gas substitute at Don Smallgoods. The wet organics streams at the site will include wasted food organics/by products from food and beverage manufactures and retailers, food waste from cafes/restaurants, a 'wet' component extracted from kerbside FOGO at other sites, grease trap, and potentially poultry shed wastes and biosolids from wastewater treatment facilities, currently spread on farmland. These materials will be transported in accordance with EPA prescribed waste transport regulations, meaning they will be in sealed and odour-containing vehicles. The facility will upgrade Don Smallgoods wastewater and organic waste systems, reducing odour from existing management facilities. It will also reduce traffic and odour risk from these vehicles from the site. The materials will be received in a negative pressure sealed receival building where air from the building will pumped to air filters to remove odour. The nutrient-rich sludge (digestate) from the AD tanks will be converted into fertiliser by blending with biochar or being dried and used in the pyrolysis plant.

Biomass Plant

The biomass facility is not a waste incinerator - it will be a pyrolysis / gasification plant that heats organics to over 500°C in an airless environment cracking the chemicals in the cellulose to produce a syngas substitute for natural gas. What is left is biochar, a carbon-rich biproduct that can be bagged and sold to the agriculture sector, and wood vinegar soil conditioner products. When biochar is ploughed into topsoil it can help retain moisture and sequester carbon. It can also be added to feedstock to reduce cattle’s methane emissions. Syngas varies in composition, depending on feedstock and engineering design, and comprising hydrogen, carbon monoxide, carbon dioxide, nitrogen and methane, all in varying ratios, and burns cleanly.

The facility will only receive clean, source separated wasted woody materials (e.g. untreated timber off cuts from joinery work, single use untreated timber pallets, prunings) and tree waste from Harcourt orchards, straw, crop stubble and potentially 'oversize' screened woody mulch from commercial composting sites. None of this will have an odour being dry when received. The facility will also recover energy from unrecyclable quarantine cardboard from Dons, and potentially some unrecyclable quarantine polyethylene plastic from Dons - but this will be determined through the environmental approvals process. The technology can cleanly convert polyethylene back into the natural gas it was manufactured from. Management of this quarantine carboard and plastics at the site will reduce heavy traffic and odour risk associated

with vehicles from the site. No other plastics will be received. No mixed waste will be received. No toxic waste will be received.

The Plant Operation

The facility is a small scale wet and dry non-toxic organic waste processing facility. The Pyrolysis and Gasification plant will be a day operation only. The Anaerobic Digester is continuous but can be monitored remotely. The facility will be staffed with a single day shift by 3 to 5 employees only. The hours of operation and delivery will be included in EPA and planning approvals.

It is anticipated the addition to net truck traffic (it will reduce loads of waste leaving the Don Smallgoods site) will be two to three additional large vehicles per operating day. The intent is to have supply contracts with waste management companies that will supply consolidated large loads. All vehicle access will be via Walker St and Richards Road south.

While we will be supplied with all of the non-toxic organic waste available from Don Smallgoods, this is insufficient to reach a viable scale. This will meet MASG's objective of providing a better resource management option for such wastes regionally to reduce greenhouse gas emissions.

2. Questions and Answer

Reference	Question	Response
A	**GENERAL**	
1	Does MAB have funding for the project	*MAB have funding to take it through Pre-construction, including Regulatory approvals, up to the point of the selection of a construction contractor (EPC). Beyond that we would expect a design review and detailing requiring EPA and Planning finalisation and building permits. We would need to seek investors and draw up and finalise the necessary legal documents. We don't have sufficient funding, as yet, for this.*
2	How long will the plant last and what would happen if Don Smallgoods closed?	*The plant as commissioned would be expected to last 30 years or more. It would then be expected to be upgraded with technology improvements, not to disappear. Should Don Smallgoods close then we would revert to generating electricity and exporting it to the grid or providing piped biogas or steam to nearby parties such as the hospital or swimming pool. Their feedstock waste would easily be replaced.*
3	Should we be promoting Zero Net emissions within the shire population and not importing waste from outside to the benefit of others?	*Don Smallgoods is a major source of emissions through its use of gas and electricity and its use of motorised transport to dispose of waste. The 88,500 tonnes/yr of CO_{2e}* (equivalents) *saved by this proposed facility is a savings for the shire. The fact that much of the waste feedstock may come from outside the shire does not reduce this but can be claimed as savings in emissions elsewhere as that waste will be being transported significantly shorter distances than currently. Note that savings in electricity could be seen as 'indirect' savings in emissions in the La Trobe valley, however savings in gas consumption is directly related to the place where it is burnt. As electricity becomes more and more sourced from renewables, these emission savings reduce, however there is no available renewable way of creating gas other than biogas from an organic waste source. Green Hydrogen is possible down the line but MASG would expect that Don Smallgoods will have no need for it by the time it comes on stream.*

4	What about our own kerbside waste – will it be going to the facility?	*MASG supports MASC to take action to have a separate bin and collection for organic waste. The Victorian Government website* Standardising household recycling across Victoria | Victorian Government (www.vic.gov.au) *states that all households will have access to food and garden organics (FOGO) services by 2030.* *However our kerbside organics would only come to us via collection companies such as Veolia, Suez, Cleanaway, Richards, etc. indirectly and once consolidated for transport in sealed trucks. The intent is to have a few large loads rather than multiple smaller loads. However, even this relies on the organics being separated at the point of collection, kerbside, for these companies to have it available. At no time would the facility accept mixed or highly contaminated wastes. The biogas facility cannot easily process woody garden organics, so food and 'wet' garden organics would need to be separated from woody organics. FOGO from MASC, and other councils, should be sorted and screened prior to the clean wet fraction being delivered to the facility.* *Local Castlemaine food waste from cafes, restaurants and food manufacturers, or where households have a 'food only' collection service might be able to be received directly from a collection service at the Richards road site. This exception would be considered if separation compliance is demonstrated. It does not represent any additional traffic as the vehicle is already on the local roads. It is not in the interests of the MAB facility to receive contaminated materials as it would add to processing costs and could damage the performance of systems – contaminants could 'clog up' the biodigestor and reduce the value of digestate-derived fertilisers.* *The contamination levels in each load would be assessed. Loads with minor levels of contamination (e.g. up to 2-5% by weight) will be physically decontaminated and more contaminated loads would be removed from site and the source of the load informed of the need to improve their contamination management systems. Similar contamination management systems operate at other bioenergy and composting facilities. MAB intend that most or all loads will be decontaminated before coming*

		onto the site, but recognises the need for each load to be assessed and screened as required. *The small amount of contaminates expected in the screening from organics will be recycled where possible or landfilled. No contaminated organics, plastics or non-organic wastes screened from organics will be used in the thermal energy recovery facility.* *The management procedures would be contained in the facility's documented Environmental Management System and EPA licence conditions, which will define what materials can be received, how they will be managed and require performance monitoring and continual improvement. The EPA licence will require reporting of performance. MASG invites community members to participate in the development of the EMS and licence conditions as part of the environmental and planning approvals process.*
5	Why not just the Anaerobic Digester (AD)	*The Biomass pyrolysis and gasification CHP plant can consume the digestate from the AD which would otherwise be required by EPA to go to landfill and contribute to providing syngas. There is also considerable dry organic waste material going to landfill, including that from Don Smallgoods, that can be used as a feedstock in the biomass plant for generating energy. Combining the two plants enables a zero waste outcome.*
6	It seems Don Smallgoods get everything and the community gets nothing?	*It is true that this is an attractive deal for Don Smallgoods. They will reduce their waste disposal costs and also reduce their greenhouse gas emissions. They will also get a significant contribution to their energy security and a protected cost of energy in an environment where gas is becoming more expensive. Yet by creating a more sustainable energy mix for Don Smallgoods' Castlemaine facility over time, the facility will help to underpin the future viability of Loddon Mallee region's largest employer. It is very attractive deal for the community and MASG. The community will get a dividend to spend on community projects through MASG, and an 88,500 tonne reduction in the greenhouse gas emissions. The community will also retain the*

		benefit of some employment in the MAB facility, anticipated to be 3 to 5 jobs post commissioning.
7	What has been completed under "Pre-construction"?	*Pre-construction refers to the steps we have to go through before any physical construction work is done. For us it has thus far involved gaining in principal support for the sale of energy, lease/purchase of site, supply of sufficient feedstock of organic waste, and a high level design.* *To come are the regulatory and development approval processes through Council Planning, EPA, Energy Safe Victoria and AQIS, continuing Community Engagement, seeking of investors and selection of Construction Contractors. Following this there are all the associated legal and contractual finalisations. Council are not formally involved until we submit applications for a Planning Permit. We have had informal discussions with some planning officers only at this stage.*
8	Don Smallgoods donation in 2010 to MASG"?	*A donation has been drawn to our attention, made in 2010 at the direction of the EPA. What this was spent on seems irrelevant to this project but I would suggest that all of MASG expenditure is on environmental programs, principally in energy efficiency, renewable energy and waste management. If you follow this link you will see the activities in 2010 that would have been funded from this. A MASG History – Mount Alexander Sustainability Group Inc.*
9	Council Donations to MASG?	*Council provides small annual community grants for specific targeted programs. These are always fully expended on the program nominated and provide no surplus income to MASG to use on administration or elsewhere. Council has provided no grant associated with this project. As stated elsewhere, Council sourced a State Government grant related to landfill of $10,000 that was provided for the Feasibility Study.*
10	MASG Charity Status and MAB status, are these in conflict?	*No, these are not in conflict. A charity may make a profit provided that the profit is used for its purposes. It is quite common for charities to own for-profit companies and many of the better known major charities do so. This was well researched by our lawyers at the time when we found it necessary to create the entity.*

		ACNC (https://www.acnc.gov.au/for-charities/start-charity/not-profit) says the following: *"A not-for-profit can make a profit, but any profit made must be used for its purposes. It can keep profits as long as there is a genuine reason for this and it is to do with its purpose. For example, a good reason to keep profits may be to save up for a new project, new infrastructure or a building, or to accumulate a reserve so it can continue to be sustainable. "* *We established a separate subsidiary company (MAB) as a special purpose vehicle to run the project as a project. It was also necessary to have this sort of company to be eligible for an ARENA grant for the Feasibility Study. The grant was not available unless a company was established to receive it. As such MAB had to be a Pty Ltd company.* *The directors are all MASG board members but one, who has stood aside from the MASG board due to limitations on the number on the MASG Board.* *MASG has Charity status, but MAB itself does not.* *Once investors come on board and the MASG stake is diminished, MAB would be expected to make profits for shareholders other than MASG. But even then, MASG can legitimately hold a share of a profit-making company.*
11	Does MASG have a conflict of interest in its dealings with Don Smallgoods?	*We have potentially negotiated a win – win agreement between 2 independent parties.* *The Feasibility Study, which was conducted by independent consultants Biogass Pty Ltd, who designed and built one of the leading biodigesters in Australia, was largely state and federal government funded, with small and* ***equal*** *contributions from Coliban Water and Don Smallgoods and some Philanthropic funding. The period following this, where a site was selected from the shortlist, relied on some State government funding but largely drew on volunteer time and money MASG could ill afford. We received no money to influence the site selection. The independent*

		Biogass recommendation was to locate the site adjacent to Dons Smallgoods. MASG approached Don Smallgoods who were initially quite sceptical, however the merits of the proposition encouraged Don to consider this seriously as the benefits became clear; this took 3 years.
12	Can other businesses benefit from the facility outputs	*The energy, in the form of gas, will all be supplied to Don Smallgoods only as they can use it all. Biochar, the by-product of the Biomass plant can be provided to the garden and farm supply businesses and can be used as a fertilizer when blended with other materials.*
13	Why was the Biomass plant not mentioned in the initial letter	*This was a mistake and we apologise for that. It slipped through the editing unnoticed. Note this was distributed as an invitation to join the June 3 briefing. The June 3 briefing included information about the biomass plant.*
14	Did MASG have any influence in the decision to award money to Regen Ag	*As we all now know, GWF pleaded guilty to breaches of EPA regulations, and the court with the agreement of the EPA, imposed a $100,000 fine on the company as well as receiving binding undertakings in relation to future activities. GWF were seeking community projects to mitigate the environmental impacts in the local area. MASG was asked what projects it had going that GWF could propose to the court. GWF may have asked other organisations also, we would not know. We outlined a number of projects. They considered these and came back to us with the proposition they would like to put the Regenerative Agriculture project forward. We did not know the dollar value of the judgement at this time. Don Smallgoods are clearly well aware of MASG as we have worked with them on the Maines Power project back in 2008/2009 and since on the Bioenergy project through its various stages. What the EPA or the court would have known about MASG and Don Smallgoods association over the years we would not know, but there was a similar ruling in 2010 so one would think it was not hidden and nor should it need to be. The court ruling is clear that the donated money must be fully consumed on the Regenerative Agriculture Project and the items of that expenditure are laid out in some detail. This detail*

		shows that the vast majority of the expenditure will go on materials, equipment and external services. There will be an oversight committee which will include non MASG community members and its progress will be reported in our Annual Report, albeit it will not apply until the 2022/23 Financial year.
B	**COMMUNITY BENEFIT**	
1	What is in it for the community?	*The MASG community benefits in a number of ways, firstly as there will be a direct dividend paid to a community investment body out of which support can be given to Community Projects, much along the Lines of the Maldon Community Bank, secondly, MASG will receive a direct dividend to support its environmental projects. In addition the community will benefit both directly and indirectly from a more cost effective means of disposing of organic waste and reducing emissions.* *It is envisaged that the investors will be the next best community investors, namely superannuation funds, with hopefully the funds allocated representing in part, local contributions. The super funds are desperate to do this and so maybe we can help them.*
2	How is this community led?	*MASG is a community organisation made up of a membership of people who want to see action on climate change and a sustainable environment. It takes leadership in this through projects that fit this vision. Its key activities are in renewable energy, waste reduction and energy efficiency and all lead to a circular economy with a zero waste objective.* *Membership is open to all. All committee members stand for election annually at the AGM.*
3	What energy is produced	270,000 GJ per annum of clean green energy. This energy, transported as biogas and syngas, will replace natural gas used by Don Smallgoods.
4	Emissions savings	*88,500 tonnes of CO2e. To indicate the size of this, it equates to the total emissions of the households of Mt Alexander Shire (principally gas and electricity)*
5	How much landfill is diverted	*Diverts ~36,000 tonnes (20% of this is from Don KRC) of organic waste from landfill annually.*

C	COMMUNITY ENGAGEMENT	
1	Why has there been such short notice for the initial neighbour briefing on June 3rd	*There was a schedule of events arranged to follow this with a Stakeholders Briefing and Press Briefing arranged for the Friday. This involved coordinating a number of parties, politicians, councils, businesses, and community groups that have supported us. These were not easily moved when Covid 19 struck. The advice we were given was that these should all happen in a short time frame to avoid the very thing you suggest, that people have not been informed. It was not the end it was the beginning of the consultation process.*
2	What was the council involvement in these briefings?	*None. Council was informed not consulted. They were invited to the Stakeholders briefing so that they could be informed on the project and to allow us to address any questions they may have had.*
3	Why was community consultation delayed given the project started 6 years ago.	*The project was presented in 2015 at the Town hall as part of a broader community briefing. In 2017 we issued press releases, were interviewed on Channel 9. We have issued briefs on the MASG newsletter. This project has been presented at many Bioenergy forums as well. Your concern I expect is related to consultation with regard to the choosing of the site. The three years since the completion of the Feasibility Study and the presentation of a short list of sites, that has led to this proposal, had to be done behind closed doors. Such negotiations could not be held in an open forum. Once we were sure this site stacked up we have started the engagement, firstly with the neighbours.*
4	The size of the Community Engagement seems to be controlled	*The Neighbourhood consultation is limited to neighbours as a courtesy to them, as their interests may be different to the broader community. We have endeavoured to ensure that we have reached all of the neighbours within a kilometre of the site (some 40) and have expanded that to some 90 households. The June 3 briefing was only limited by this distribution of the flyers inviting attendance.* *The follow up meeting on July 1 was felt to be adequately catered for in the hall we chose. In fact, it turned out that way as all who registered were included. In fact, we ended up with some available places.*

		A Community Meeting will be held on August 12 in the Town Hall from 7pm to 9pm. However, this will be open to all interested community members and will not focus on the issues of the neighbours. This will be limited to 88 under Covid restrictions.
5	You would need to expand the radius for near neighbours, you only have a 500m radius.	*We have shown a radius of 1000m from the proposed site. This identified some 40 neighbours however we have engaged with some 90 neighbours with the delivery of the letters inviting residents to the Neighbourhood Briefing, including those on Tomkies Rd, which is well outside the 1km radius.*
6	What is the process for community consultation from this point?	*We have a Community Engagement Plan which defines 4 stages. The June 3 and June 4 briefings were the completion of the first stage, "Feasibility Study, Siting and Design". Stage 2, "Bioenergy from Waste Facility Project Development and Approvals", includes community meetings, information sessions, surveys and statutory notices of development applications. Stage 3 is during construction and stage 4 is during operation. Thus we expect that Stage 2 is the one including the elements you request.* *As you requested, we held a meeting with the interested community on July 1.*
7	What role did Don KR have in the Public Relations, including community consultation?	*DON collaborated with MASG in communications planning and timings.* *The presentation you were shown is 100% ours, the language ours, the distributed letters ours and the Press Release issued the next day was ours. The timing and structure of these briefings were agreed in collaboration with DON Smallgoods, as an important partner of the planned initiative. As you no doubt saw, there was no Don Smallgoods presence at the Neighbourhood Briefing. The proposed bioenergy from waste facility is not a Don Smallgoods project, it is an MASG facility and project. MASG, as a not-for-profit Environmental Organisation, consists almost entirely of volunteers. Every activity MASG undertakes has a cost, be it volunteers time or cash expenditure. Rightly or wrongly, we will do our best.*

8	Can we visit an Anaerobic Digester in Victoria?	*You are welcome to do so. We can advise on those most similar to MAB's proposed technology and would be happy to discuss. Yarra Valley Water and the Melton Waste to Energy Facility are two such.*
9	Would MASG fund 2 local residents to visit 2 or 3 sites in urban areas to conduct their own survey of pollution issues?	*MASG as a not-for-profit is cash strapped and relies on significant voluntary contributions or philanthropic support, with the occasional grant. We would be prepared to facilitate a site visit for a small group and would consult with the community about which site would best suit.*
D	**COUNCIL & GOVERNMENT**	
1	Why don't council officers know anything about this	*We cannot answer for the council. Like any householder or business, we take the opportunity to sit down with council planning officers to discuss their requirements. The council environment officer was on the Steering Committee for the Feasibility Study, completed in 2018. The Steering Committee has not existed beyond that. MASG have worked through the site options it presented which has at times involved seeking information from Council Planning and from the Landfill management. Just as, when you as a householder, may meet with planning, these conversations would not be recorded and not be available to others, until such time as a Planning Permit application is made.*
2	What was the council involvement in these initial briefings?	*None. Council were informed not consulted. They were invited to the Stakeholders briefing so that they could be informed on the project and to allow us to address any questions they may have had.*
3	What was council involvement to date	*The Council Environment Office was on the Steering Committee that oversaw the Feasibility Study. This was along with representatives of Coliban Water, Don Smallgoods and MASG. The Steering Committee disbanded when the Feasibility Study was completed. Council then had no part in the ongoing work, including the site selection.*

4	Is there a formal process as part of the regulatory/planning approvals process?	*Once a Planning application has been submitted, there will be the normal advertising required and the opportunity for express views and to raise objections. The facility will also have to be approved by EPA via a public approvals process and will hold an EPA license requiring compliance with environmental protection measures. The Council and EPA coordinate their requirements for this.*
5	What is the process from now on the project	*We consider that we are about a third of the way through Pre-construction. This involves all regulatory approvals, detailed design, community engagement, construction contractor selection and investor sourcing.*
6	Who is responsible for the project and how are they accountable to the local community?	*MASG, as sole shareholder of Mt Alexander Bioenergy, is responsible. We are a community group with community members and subscribers to our e News. We are always open to new members. MASG committee is accountable to the members by annual election at the AGM.*
7	How does Council intend to engage with the local community about the proposal? [IS THIS A COUNCIL FUNCTION?]	*Engaging with the local community on the bioenergy plant is MAB's function not the that of the council. We will have to satisfy the council planning and the EPA to progress.*
8	Does Council have a financial interest in the proposal and have any ratepayer funds been spent on or allocated to the proposal?	*The council has no financial interest. In 2016 the council was a small ($10,000) co-funder of the Feasibility Study which it sourced directly from a State Government grant specifically for landfill diversion projects. No rate payer money has been used.*
9	Are the Commonwealth and/or Victorian State Governments involved in the assessment of the proposal?	*The State Government will be required to give approval through the EPA and Energy Safe Victoria. The federal government may be involved for bio-security permits if/as appropriate via AQIS.*
10	MASG MOU with Council	*MASG has had a series of MOU agreements with the council. These are 3 year agreements under which council supports community organisations by offering access to facilities when available. MASG has to submit every 3 years for renewal, stipulating its programme in the community. The fact that MASG has a for profit*

		subsidiary that is not a charity is not an issue and it may make a profit provided that the profit is used for MASG's purposes. Refer ACNC (https://www.acnc.gov.au/for-charities/start-charity/not-profit).
11	Council's Net Zero Emissions by 2025 roadmap	*MASG supports this council goal. However, their goal is only for emissions from council operations only. The current council greenhouse strategy and target is for corporate emissions and their accounting methods to exclude emissions that occur outside the shire. Landfilled waste generated and collected by council within the shire is transferred to landfill outside the shire. It should be recognised that emissions from landfills outside the shire will be reduced if the bioenergy facility diverts organics from these landfills, and our estimates of greenhouse gas emissions include these.*
E	**SITE, OWNERSHIP & OPERATION**	
1	Why this site?	*Our Feasibility Study identified eight potential sites independent of any prior arrangement with the site owners. These were quickly reduced to a short list of four. These were looked at from the perspective of potential grid connection costs, proximity for energy use or export, access for vehicles, suitable land and zoning. All of these but one would have relied on us converting the energy captured as gas into heat to generate electricity with accompanying efficiency losses. The Don Smallgoods site had two great advantages, we could supply the energy in raw form (gas), and we could by-pass the electricity grid and even the gas grid. Don Smallgoods could take all the energy we produced and more and we would not need to export elsewhere. This meant a considerably smaller capital cost, an assured income, and a ready made supply of 20% of our required feedstock. Note the feedstock tonnage planned was such as required to achieve economies of scale. A facility that only processed the Don Smallgoods feedstock was not viable.*
2	Why is it so close to Residential areas	*It is positioned on industrial land. There is industrial land around it and across the road. We don't believe it is close to residences.* *There is an approach to it from a road that is designed and approved for industrial traffic.*

		There are only 3, possibly 4 residences within 500m, two of whom will have a filtered view of the facility. There are 40 odd residences, including these, within 1000m most of whom will not see the facility. The plant will be odourless, noiseless and will have minimal impact on traffic. The other sites we looked at were closer to residences than this.
3	Why is it not in the land west of the Don KRC current facility?	*Don Smallgoods have three zone types on their property. Industrial Zone 1 IN1Z (heavy), Industrial Zone 3 IN3Z (light) and Farming Zone. The Industrial Zone land runs along Richards Rd and includes the existing Don Smallgoods facilities. It extends north to our proposed site with the very corner block being Industrial Zone 3. To place any plant works on Farming Zone would require rezoning and an application to planning would probably be rejected. That is the advice Council Planning have given us. While our type of operation is not excluded from Industrial Zone 3, this is preferred as a buffer zone. Our siting is essentially on the Industrial Zone 1 although we don't rule out possible staff car park or other low tech use of the southern portion of the buffer zone.*
4	Who owns the land where the proposed Bioenergy Plant is to be built? Who owns the plant?	*Don Smallgoods will either lease the land or sell the land to Mt Alexander Bioenergy Pty Ltd. This is yet to be negotiated. Mount Alexander Bioenergy will own the plant either way. At this stage Mt Alexander Bioenergy is 100% owned by Mt Alexander Sustainability Group but that will change as investors come on board.*
5	Will the bioenergy processor be owned and operated ENTIRELY INDEPENDENT of Don KR management?	*MAB is currently 100% owned by MASG. However, MASG will seek investors and expect to retain a minor share-holding, perhaps 5% by time it is built. Don Smallgoods have made it clear they have no interest in entering the Waste processing business. This must be seen in the context of a plant that is not viable if only processing Don Smallgoods' waste.*
6	Who will manage & operate the plant? MASG? Don KR?	*MAB will be expected to be the owner operator although it may be that they appoint an operating contractor. Don Smallgoods has no involvement other than being an arms length provider of waste and a purchaser of the renewable energy.*

7	If successful, what is to prevent the plant from expanding to fill the surrounding area?	*The business case is built around volumes of 22,000tpa and 14,000 tpa respectively which would require a footprint area of 5,000 to 10,000m2 footprint. This area is inherently limited by the title boundaries.* *The land we purchase (or lease) will be on a separate title. It will not include neighbouring farming zone land. It is a tight area and would only allow for the minor expansion by an additional tank or two as already shown in the layout we presented.*
8	What if Don Smallgoods purchased the facility later and expanded it?	*Don Smallgoods, like most industries these days, is focussed on its core activity, namely food production. They have stated they have no interest in going into the Waste Processing business; to the contrary they would prefer to hand waste management to a third party.*
9	What if Don Smallgoods ceased to buy the energy or cancelled the agreement?	*The Term Sheet we have agreed in principle, stipulates a whole lot of conditions under which we must comply over and above EPA requirements, so that if we don't in anyway damage their reputation. They can cease to honour the purchase agreement or supply agreement should MAB breach these. However, they cannot resume the land or plant. If they refused to take the energy produced, MAB would supply to the grid with some plant reconfiguration. We would not expect that to be likely.*
10	Can we limit Don Smallgoods influence on MAB What is Don KR's stake long term	*We don't know of Don Smallgoods' long term plans other than that they do not want to enter into the Waste processing business. Even if they did seek a seat on the board, they would always be a minor player, that has been made clear, and it could be structured so that they remained so.*
11	Can MAB stop Don KR from expanding their facility	*MAB would not be involved in such Don Smallgoods decisions other than as a neighbour requiring consultation.*
12	What are the hours of operation?	*The Anaerobic Digester is a continuous biological (bacteria) process that breaks down wet organic waste within a tank. It is therefore doing this 24 hours a day, 7 days a week.* *The Biomass pyrolysis and gasification process is batched and hours of operation will be limited to normal day shift work hours. We would expect this to fall between 7am and 6pm, Monday to Friday.*

13	How can the community be sure that future failures in traffic, odours, noise, etc will not be blame shifted from Don KR to MAB and vice versa.	*MAB are committed to abiding by all the rules established in their approval by the EPA and by Council Planning. We are prepared to install monitoring equipment and provide access to any of this. In this way, if we fail in anyway, we can be brought to task.*
14	Was council involved in the site selection?	*No. During the Feasibility Study, Council were represented through their Environment Officer. This process derived the short list of sites. The evaluation of these was done post Feasibility Study and only involved the council in that the council landfill was one of the sites looked at.*
15	What if MASG / MAB committees are taken over with people with different agendas	*MASG Committee of Management will always be composed of members elected every year at the AGM by its members. It is unlikely that members would not share its ideals. It is true that MASG will not continue to have a controlling membership of the MAB board when it is operating. However, we (MASG) will insist on a Constitution that enshrines its ideals of zero waste and lays down conditions under which any changes can be made. These can include community consultation through MASG members and the local neighbourhood.*
16	With Carbon Accounting, why can't the plant be sited elsewhere.	*There are carbon savings in the reduced transport of Don Smallgoods waste. Should the plant be located elsewhere there would be a significant loss in power production and hence emissions offset as the technology to convert heat to electricity is only 16% efficient (ref Organic Ranking Cycle engine or turbine) plus a low price to supply to the grid. Gas to electricity is more efficient at 40% efficient where the heat is lost, and over 85% for combined cycle (or CHP) units if the heat is also captured, however that requires co-location with an industrial facility that can use the heat (or steam). The emissions saving is also dependent on what fossil fuel energy is displaced or avoided. So there is both an environmental and commercial disincentive to locate elsewhere.*
17	Site Environment, Flora and Fauna	*The site is a strip between a mound of fill from the 2010 excavations and an internal roadway used by Don Smallgoods. There is an existing crossover to Richards Rd. A second cross over will be added some 20m from this one. There is a driveway which*

		had been created for the transport of the fill from the excavations running up the middle. Either side of this there is some grasses, weed and regrowth since 2010. Eltham Copper Butterfly is unlikely to be found in this degraded environment, but we will investigate. The opportunity exists for the revegetation of the corner block, the mound of fill, with Don Smallgoods participation.
18	Clearing of trees for the facility	*There will not be a need to clear many established trees. We will need to create a second cross over onto Richards Rd and this may require the removal of two or three trees. The buildings themselves will be largely on cleared land with some regrowth trees requiring to be removed at the western end of the site. These will be subject to the normal conditions of council planning that will require appropriate planting to compensate. An aerial photograph is included at the end of this document.*
19	Why would Don Smallgoods not invest in their own waste treatment to reduce their emissions.	*This is essentially a question for Don Smallgoods. We understand that their expertise in in food production and not in waste recovery, a very different technology.*
20	What if MASG's sells it share and gives up its seat on the board	*The operation of the plant will be strictly governed by the conditions agreed to in the EPA license and to some extent, the council Planning Permit. Feedstock, operating hours, etc. will be among the items controlled such. It is unlikely that a MASG board would elect to do that, and the community could easily prevent this through representation in MASG.*
F	**PLANNING**	
1	Does the proposal need to go through normal planning processes?	*We have to submit for council's Planning Approval, the EPA approval, Energy Safe Victoria approval and also to satisfy AQIS (Australian Quarantine and Inspection Service) that we are safely handing imported waste. The fact that council have encouraged us as a solution in part to their landfill issues, has no influence when we seek approvals against the planning regulations.* *The Environment Protection Authority will oversee the licensed premises throughout its operating life. Most of the organic wastes transported to the site will also have been regulated and overseen by EPA waste transport tracking systems.*

2	Have the pre-construction works already completed received Council approval and, if so, can you please provide us with full details?	*No works have been undertaken.* *No works will be undertaken until all regulatory approvals are obtained.* *While council have supported the project in principle as a means to reduce their landfill, there is no application in with council planning as yet. We hope to get the application submitted before September end. It will have to go through the normal council planning processes.* *EPA approvals process will take at least three months after submission of a permissions approval and licensing application.* *We term this phase Pre-construction as it is after the Feasibility Study completed in 2018. Choosing the site from the short-listed ones and negotiating with Don Smallgoods to get access to land, sell them the energy produced and take their organic waste were the first steps in this. We have then sought to secure future commitments for feedstock of waste and to come up with a high-level design that presented as viable. Community Engagement, with the site now known and thus the neighbours identified, is now underway.* *All of these were essential before we could apply to council planning or the EPA.*
3	Given the proposed development is located in a Bushfire Management Overlay is there a risk of fire/explosion in the event of fire?	*A Fire Management Plan will be required for the Planning Permit*
4	What emergency procedures will be in place in case of fire?	*This will be addressed in the Fire Management plan.*
5	If the local residents object will you listen and look for another site?	*We will hope that we will be able to address all of your concerns to your satisfaction. We are a community group and need to have community support for our projects to claim that title. Should we have overwhelming support but a few objections then we would make a decision on whether to press ahead based on the reasonable nature of the objections. We will do all we can to ensure unanimous or at a minimum, majority support. Note the site must be commercially viable and that was a key part of evaluating all 8 possible sites during the Feasibility Study. Another site is a big deal*

		for us as it will mean throwing away a lot of time and money invested over the last 3 or 4 years in the negotiations, analysis and design that is peculiar to this site.
6	Are there any developed drawings/site plan so as we can get a better idea of the development and its potential impact on nearby residents/properties?	*We have completed a High Level Design document, which includes these two graphic impression images as shown in our presentation, however until the detailed design is done there are no further details available. We have no more detailed planning documents than this at this stage. The site plan we have shown should answer that question. The Flyer letter, we distributed showed a 1km radius circle as an indication of the proximity to neighbours. The corner block is the Industrial zone IN3Z and the site proposed is adjacent to this on the edge of zone IN1Z.* *We are only able to do a preliminary planning application at this time, based on the high level design, as ultimately we will require the detailed design before the EPA and Council will issue final permits. We envisage that once a construction (EPC) contractor is selected, they will want to have input into the detailed design.*
7	Why did this proposal not show up on property searches when we purchased our home last year given that the proponent says on its website that a steering report recommending the site location was delivered in February 2018?	*The Feasibility Study presented a short list of sites. Initially we believed that it would be at the council landfill site and we spent time looking into that and adjacent land. I can't imagine how a property search could show you such things given no planning application has been submitted as yet.*
8	Where are the Feasibility Studies, Steering Committee report available to download online/read and what input did Council have in them?	*The Council, Coliban Water and Don Smallgoods were part of a Steering Committee that oversaw the project up until the Feasibility Study was completed. The Feasibility Study was contracted to a company from WA called Biogass. The details in the FS are covered by Confidentiality Agreements but we can make an Executive Summary available. Given we have moved a long way since 2018, I am not sure what these will tell you. Coliban Water, Don Smallgoods and Council were interested parties given that all had significant waste disposal issues. This was widely publicised at the time.*

9	Can MASG guarantee that future operators will not take a wide range of materials or things they shouldn't?	*The answer is EPA license, our seat on the board of management and the likelihood/intent that it will be financed by investment funds rather than a waste management business. It is not in the interests of the operator to take materials it is not licensed to take and that the facility is not designed to process. It will get prosecuted and shut down if it does or fails to meet emissions standards. The new EPA regulations give EPA more teeth and despite what people think, EPA does close down non-compliant waste facilities. There are off-the-shelf emissions monitoring systems that can be fitted to stacks to log emissions 24/7 and we'd expect this to be part of the facility.*
G	**VISUAL IMPACT**	
1	What will the visual impact be. How high will the buildings and tanks be?	*The building will be low profile with minimal visibility from the road or residents. Tree planting will be undertaken as appropriate to provide screening. Concrete holding tanks can be recessed into the ground and buildings will enclose the actual bioenergy machinery.* *The facility will be behind the mound created by previous excavation fill and not be visible from the north or west. It will be screened by trees, mostly already existing, but enhanced by plantings, from the East. From the South it will be visible but that is over what is already an industrial landscape.*
2	How high will the Biomass chimney or flue be required to be?	*Depending on the quality of the input feedstock (timber or similar) the EPA requires the flue stack to be from 5m (clean organics) to 10m (MSW). Ground modelling may help determine this.*
3	Is this a big facility?	*The size of MAB pyrolysis/gasifier is small, at 2-5%, by volume of the incinerators in existence or being proposed (6 in Vic). This is a very small facility and is essentially the minimum size it can be and be viable. Refer to the Technology Notes following.*
4	Removal of screening trees	*There will not be a need to clear many established trees. We will need to create a second cross over onto Richards Rd and this may require the removal of two or three trees. The buildings themselves will be largely on cleared land with some regrowth trees requiring to be removed at the western end of the site. These will be subject to*

		the normal conditions of council planning that will require appropriate planting to compensate. An aerial photograph is included at the end of this document.
H	**TRAFFIC**	
1	Traffic volumes?	*We anticipate 3 to 5 employees to be on site for a day shift only. When viewed in comparison to shift change volumes at Don Smallgoods, this is insignificant.* *The bioenergy plant expects 4 to 5 truck deliveries per day; however, it is estimated there will be a counter reduction in current truck traffic from the DON Smallgoods plant due to a decrease in waste being trucked from the site to landfill. Thus, a nett increase of truck movements would be only 2 to 3. They will only be from and to the south on Richards Rd, not the northern Mary St route.*
2	*How did we calculate the number of trucks.*	*At this point we can only go on the advice we have been getting from Waste contractors and others experienced in the proscribed and other waste cartage. There could be variation in this that can only be clarified once we get to finally lock in the feedstock supply. However, to give an indicative figure for truck movements the following calculation has been applied.* *The 22,000 tonne of wet organics planned, less the Don Smallgoods supply 4,500 tonne, leaves 17,500 tonnes that would come by road.* ***That's 70 tonne per day****. Looking at the truck capacity from the likely waste cartage contractors, it seems that these specialised wet waste vehicles can vary from 10,000L to 40,000L. These are not your kerbside lift trucks but bulk wet and liquid cartage trucks. Most wet waste will be high in water content but some less so. We thus expect a litre to equate to a kilogram or slightly less.* *We think it is fair to expect that we would be averaging about 30 tonne per shipment received.* ***That would suggest 2.3 trucks per day****.* *The 13,600 tonne of dry woody waste planned, less the 2,720 tonne provided by Don Smallgoods, leaves 10,880 tonnes to come by road. That's 43 tonnes per day.* *The dry woody waste will be more variable we expect. It is expected to be heavier but more variable in load type and size. However, it won't need the high tech truck*

		transport and we believe a 20 tonne load would be a reasonable assumption. We may have semi-trailers or truck and trailer options, mixed with fixed axle trucks. ***That would suggest 2.15 trucks per day****.* *We would be accepting full loads only but the number on any given day could vary.* ***Thus, a total of 4 to 5 trucks per day seems reasonable.***
3	Traffic on what roads?	*Trucks will be told to approach from the South on Richards Rd and to Exit to South on Richards Rd. This is in line with the council designation of the road as suitable for this traffic.*
4	Can the use of the South approach on Richards Road be enforced	*We anticipate that we will have supply contracts with only a few companies. It may be as few as 1 or at most 4. Contracts with these companies can enforce that this approach is used.*
5	Are staff included for using the south of Richards Rd?	*We expect to have between 3 and 5 staff on site. Generally normal hours will be between 7am and 6pm. Staff will be told to come from the south on Richards Rd and to exit to the south on Richards Rd unless they are Castlemaine residents. Unless staff lived in that Northern area it is not likely they would want to use these north sector roads. The issue would be expected to be with staff coming from outside of the town, such as Bendigo and Harcourt. They will be asked to approach from the south.*
6	What about traffic during construction?	*Construction workers and deliveries will be harder to control because many will be only involved for very short time. They will always be during normal hours, say 7am to 6 pm. However, they will be instructed to use Richards Rd south. We would expect there to be 30 to 40 deliveries over a 6 months period during construction and for there to be up to 30 workers with numbers on site at anytime varying from 5 to 15. We will impose strict control of their working hours in their contracts.*
I	**ODOUR and EMISSIONS**	
1	We have experienced odour leaks in the past. What can we expect from the Anaerobic Digester?	*Odour cannot be emitted beyond the boundary under the EPA controls.*

2	Does Biomass plant release toxic air pollutants?	*Pollutants can arise from incinerating co-mixed waste of various levels of unknown contamination that includes, plastic, metals, etc. MAB's plant takes a very different approach (not incineration) using a pyrolysis and gasification process that produces a natural gas substitute, consisting mainly of methane and hydrogen gas. The pyrolysis process subjects organics to high temperature (500^{o}C) in a humid low oxygen environment that drives off volatile hydrocarbons and hydrogen and leaves behind biochar, which is a very stable form of carbon and effectively removes carbon from the atmosphere and biosphere, 'drawing down' carbon pollution. The proposed facility will operate in a stringently controlled manner, and use organic material consisting of mainly woody waste and crop stubble, not mixed industrial and household waste. The only cardboard that will be accepted will be soiled from meat packaging and otherwise has to go for deep burial landfill. It will only be accepted from Don Smallgoods and is not a significant amount. We are examining their soiled plastic wrapping which similarly has to go for deep burial. If, as we believe to be the case, this is polyethylene, then we will also process it as it only breaks down to carbon dioxide and water vapour, much the same as wood. No other plastics will be accepted. Otherwise, it is a strictly clean organic feedstock, hence eliminating the potential for toxic emissions.* *Air emissions from both the biogas and pyrolysis gas combustion will be similar to and a substitute for emissions from natural gas currently combusted at the Don's site. Carbon dioxide from biomass is not considered to be a greenhouse gas because plants recently drew that carbon from the atmosphere, and the release of carbon dioxide is the same as would occur if the organic material was composted. Keeping organics out of landfill reduces production of methane and toxic gases and reduces the greenhouse gas impacts by 1-2 tonnes carbon dioxide equivalents per tonne of organics.* *The proposed facility will need to be approved by EPA and hold an EPA license. This means EPA will need to be satisfied that environmental risks will be well managed*

		with emissions to be measured and reported to EPA throughout the operating life of the facility. Emissions filtration systems may be installed, but the proposed feedstocks and technology should make this unnecessary. Refer to the Technology Notes following.
3	What are the emissions?	*There will be a decrease in emissions. The carbon equivalent emissions reduction is 88,500 tonne/yr (which was determined by an independent Life Cycle Analysis, LCA study[1] and based on a set of assumptions about feedstock mix and energy off-take requirements in 2017; this will be updated once the final configuration is settled). The pyrolysis-gasification process will have little if no perceptible emissions as this is determined by the feedstock which, in MAB's case, is organic material (timber, saw dust etc.) and not non-organic material (such as rubber) which could otherwise generate emissions). The pyrolysis occurs in what is largely an oxygen-free environment and relies on the volatile gases within the material for combustion, hence the carbon remains as biochar and not released as carbon-dioxide, ash and harmful particulates. Because air pollution control devices (electrostatic scrubbers) are employed, the external emissions from pyrolysis is cleaner than a home wood stove, natural gas stove, or water heater on a per unit basis. MAB has no plans to take materials that can find a higher value elsewhere in the circular economy, have chemical contaminants or can/should be source-separated (such as MSW). MAB does not support incineration. EPA license conditions will require monitoring and reporting of emissions to demonstrate compliance with emissions standards.*
4	What is the odour risk from the Thermal Plant?	*The Thermal Plant will be processing dry organics such as wood. There is no associated odour.*
5	Does Biomass plant produce toxic ash that has to go to Hazardous Waste Landfill?	*The pyrolysis process produces a renewable gas (used as fuel) and biochar, a much valued material for use by gardeners and farmers. It will produce almost no ash (~2%). The feedstock used in the pyrolysis process will mainly be plant material, and*

[1] Proof of Concept LCA, Mount Alexander Sustainability Group, Energy from Waste: Biogas-Biomass Facility, Aug 2018 – prepared by LifeCycle Logic

		potentially, a small amount of unrecyclable carboard and polyethylene from Don Smallgoods that is soiled packaging waste. In addition to wood, dry organic material such as the digestate from the Anaerobic Digester can be used. Pyrolysis is an extremely clean non-toxic process, and actually avoids having to send hazardous waste to landfill.
6	Can you please explain how you create a negative pressure building that will need to be accessed for the waste to enter the processing plant? Also, under what conditions will the waste being unloaded from trucks be stored whilst it is waiting to be processed?	*This is common engineering design technology used to manage the flow of air and ventilation (such as found in hospitals) whereby air will flow into rather than out of the building as pressures try to equalise; up to 4 to 5 air exchanges are made hourly. Pumps are used to achieve this, coupled with sealed exit and entry points. Pumps are used to achieve this, coupled with sealed exit and entry points. All in-bound waste will be brought into a receival hall that operates under negative pressure. Treatment of exhaust gases from the process are bio-filtered. Waste storage is subject to strict EPA guidelines based on the composition of the waste stream (putrescibility, location, duration, with-holding time), prior to it being sorted, blended, pasteurised and anaerobically digested.*
7	Truck Washings – where do these go	*The facility will be designed to catch all washings from the trucks and other sources and these will then be recovered and fed into the Anaerobic Digester.*
8	Why does Bill Grant support the plant	*Bill Grant is on the MAB board. Bill has been an opponent to mixed waste to energy facilities and assisted community organisations opposed to these developments. He has also been an expert witness in VCAT supporting composting facilities. Bill supports the MASG/MAB project because it is converting biomass that would otherwise be wasted and landfilled (such as food waste, timber waste and potentially unmarketable dry woody waste from composting facilities) into renewable energy, biochar and fertiliser products and these will result in net greenhouse gas emissions reductions of over 80,500 tonnes CO2-equivalents per year. Bill supports composting, but recognises the Victorian market is oversupplied and new processing infrastructure is needed to process organics diverted from landfill. The composting process is a net generator of greenhouse gases but the MAB project will result in*

		significant net reductions in greenhouse gas emissions and better environmental outcomes than if the wasted organic resources are composted.
9	What Fly ash will be created	*No fly ash will be produced. There will be a very small amount of non-combustible ash (minerals residues) and filter particulate material (via scrubbers, cyclones or electrostatic precipitators) that will need to go to landfill or to farm land. Fly ash is typically associated with a specific type of particulate from coal fired power stations.*
10	Aren't CO2 emissions from biomass greenhouse gasses too?	*CO2 emissions from organic waste biomass are not considered by the IPCC and National Greenhouse and Energy Reporting Scheme (NGERS) to contribute to anthropogenic (human-made) global warming (AGW). This is because they are not adding any "new" carbon to the carbon cycle the way fossil fuels do. Plants absorb atmospheric carbon which is released to the atmosphere when it is used to produce biomass energy and is then again absorbed by plants. Where bioenergy from renewable sources substitutes for fossil fuels it is seen to reduce greenhouse gas emissions. The MAB project will generate such renewable and carbon-neutral energy. It will also divert organic waste from landfill, reducing methane emissions that are considered to contribute to AGW and produce biochar, which 'draws down' atmospheric carbon and keeps it out of the carbon cycle for centuries. Biochar and digestate soil conditioner products made by the MAB project will improve soil health and productivity, reduce the need for greenhouse intensive synthetic fertilisers and reduce emissions of the potent greenhouse gas nitrous oxide from soils. The net average greenhouse savings from the project are estimated to be in the order of at least 2-3 tonnes of CO2-equivalents per tonne of organics diverted from landfill and 88,500 tonnes CO2-e per year overall. The net emissions from bioenergy are lower than if the same organics were commercially composted.*
11	How many tonnes of CO2e will this plant emit per MWh of energy produced?	*This plant will not be co2e positive, the converse applies. the 88,500 tco2e reduction figure (i.e. carbon negative) is net, meaning this this already factors in any fugitive emissions. note that the CO2 from biomass plant either goes into biochar or part of*

		the syngas which is then combusted in the gas engine to produce energy for Don Smallgoods.
J	**NOISE LEVELS**	
1	I'm a local resident to Don KR and the complex breaches EPA noise levels by as much as 15 decibels on a regular basis. What guarantees can you offer that this project will abide by EPA limits which is 41 decibels. Or is it only going to add to the night time noise levels which disturb sleep of local residents?	*The facility will be designed in strict accordance with the Vic EPA guidelines. Unless this is done there will be no DA (development approval) or operational licence granted to the facility. This includes noise levels conditions and threshold levels across the full 24 hour period. As appropriate additional sound attenuation technology will be installed (e.g. in pump sheds).* *Independent noise and odour studies are usually required as part of the approvals process.* *Refer to EPA Guidelines* *Noise limits – Day = 48 dBA, Evening = 42 dBA, Night = 41 dBA* It is planned to operate the facility only in day shift hours and only some pumps and fans are expected to be operating outside these.
2	What will be the noise levels throughout the day?	*They will lie within the Vic EPA threshold guidelines for a bioenergy facility.* *EPA Noise limits – Day = 48 dBA, Evening = 42 dBA, Night = 41 dBA*
3	Could you please find all the readings for noise decibels and odour for the Girgarre plant?	*This plant is not yet operational. Refer to EPA Guidelines with which they must comply, in the same manner as MAB's proposed facility. We have been given these as a guide and fully expect these will be complied with:* *Noise limits – Day = 48 dBA, Evening = 42 dBA, Night = 41 dBA* *We will make further enquiries of existing operations to assess their experience*.
4	Will there be more traffic, noise and emissions. Are there existing examples of a plant of this nature being built within a city's boundaries?	*We don't anticipate any increase in noise levels, to the contrary, we expect that the net overall noise level currently being experienced will reduce. The AD system is silent and noise would be only from pumps, fans, unloading of vehicles, etc. This noise, should it exceed the defined EPA limits, is typically silenced using sound proof baffles around the enclosure (e.g. pump room). The traffic increases would be so*

		insignificant as to be within the margin for error in the current statistics and will be limited to day time when the plant is in operation. *This is by design a noiseless process, with equipment such as pumps, fans, etc being housed in sound insulated enclosures, compliant with EPA guidelines.* *As the proposed bioenergy plant will take all Don Smallgoods' non-aqueous organic waste streams directly between the two neighbouring sites, there will be no need for the current flow of trucks taking this organic waste away from Don for landfill deep burial.*
K	**TECHNICAL, PLANT & PROCESSES**	
1	The technology – summary?	*The planned facility will draw on two complementary technologies:* • *Biogas technology, which consists of a bio-digestion plant to reduce organic waste into water, sludge (digestate) and biogas. This process uses bacteria to break organic material down in the absence of oxygen. The biogas is mostly methane (like LNG).* • *Biomass CHP* (Pyrolysis-Gasification) technology is a two stage process, which enables dry waste materials (e.g. woody waste, crop stubble, etc.) to be converted in an oxygen starved chamber into energy rich gas ('syngas') comprising mostly carbon-monoxide and hydrogen, with lesser amounts of carbon-dioxide, methane, hydrocarbons and nitrogen and particulates.* • *Don Smallgoods will use this syngas and biogas energy as a clean fuel, displacing LNG, to produce either steam, hot water or electricity.* * *Combined Heat and Power*
2	Is MASG concerned about Toxic emissions close to the hospital, etc.	*There will be no toxic emissions. This is achieved by preventing any toxic material from being used as a feedstock material, for either the anaerobic digester or the thermal plant. No toxins in = no toxic emissions. In recent times we have seen timber waste being used to fire biomass boilers as a substitute for LPG at the Beaufort*

		Hospital and also the Skipton Hospital, saving money and CO2e emissions. While this is not what we are proposing it demonstrates the point. *There are no 'new emissions' from the proposed facility – they just replace the emissions from natural gas and will be as clean as these but without the greenhouse impact.*
3	Isn't there a furnace for the thermal part of the operations? What emissions come from this?	*We propose a pyrolysis and gasification process which is a carefully controlled closed energy recovery process. The emissions are naturally occurring gases found in the atmosphere however they are enclosed and then converted into a valuable mix of high quality gases, referred to as syngas. The carbon is converted into biochar through the application of heat which frees up the volatile gases held in the cells of the woody material. Typically, about 30% of the feedstock volume becomes biochar. The majority (~80%) of the emissions will be nitrogen (air is 78%N). No toxic emissions will arise from this feedstock if it does not contain toxins (therefore no chemically treated timber would be used, for example). Note that in this 'renewable' process there is no net CO2 emissions.* ***This is not an incinerator.***
4	Given the gas will be burnt by Don KR, how is this zero carbon emissions	*Currently Don Smallgoods burn natural gas to heat water and create steam. This is fossil fuel gas and is not renewable. The gas we produce will have come from organic materials that were created through photosynthesis whereby atmospheric carbon-dioxide becomes plant sugars which then form the physical structure of the plant (e.g. grass, tree) which in turn may have been consumed by animals to create protein (meat) which contains organic nitrogen. This organic material is broken down through either bacteria or heat to become biogas or syngas (both green gas). It is therefore derived from a renewable resource.* *The only exception to this will be if we choose to accept the small amount of soiled polyethylene from Don Smallgoods. In this case, the only carbon emissions saving is in fossil fuel for the handling and transporting it for deep burial in remote landfills.*

5	Given that Don KRC are expected to contribute only 20% of the waste to be processed, what enquiries have you made with other businesses in the area to warrant the capacity to run such a plant? Have other local food businesses such as Hazeldenes, Moria Macs and True Foods been approached to provide waste?	*We have contacted many potential feedstock suppliers from north and central Vic. We have secured commitments in Letters of Intent or equivalent for the supply of sufficient waste to ensure adequate supply.* *There is no firm commitment that MAB will be taking waste from Hazeldenes or other similar providers however the potential exists. They do have organic waste streams that presently have to be transported very long distances; re-directing this waste to MAB could be attractive for a number of reasons, including solving an emission generating waste disposal issue (diversion from landfill) and alignment with MAB's bioenergy circular economy zero waste approach.* *We are expecting most waste will come from the existing collections of the major waste companies, Cleanaway, Veolia, Suez, JJRichards, etc, that otherwise are transporting this waste out of central Victoria to distant landfill sites.* *We don't intend running any of our own trucks. They would collect from businesses and hopefully in the future kerb site pick up from Organic waste bins.*
6	What is the proposed capacity of this waste plant? i.e. how many tonnes of waste are expected to be processed to make this project viable?	*Approximately 22,000 tpa of waste organic waste (e.g. FOGO, food & beverage waste) will be processed by the Anaerobic Digestor and 13,600 tpa of dry timber and other organic waste or equivalent, for the Biomass Plant, totalling circa 142 tonnes waste received per working day, including that from Don Smallgoods. This is the minimal level of waste considered necessary for plant viability.*
7	How many tonnes of waste do you propose to have sitting onsite at any given time waiting to be processed – in terms of storage capacity? Will this waste also be kept under negative pressure?	*All wet waste will be held inside the controlled environment of the fully sealed receival hall (under negative pressure) waiting to be processed by anaerobic digestion. EPA typically requires wet organics to be processed within 24-48 hours of receival (i.e. up to 2 days). Blending, pasteurisation, buffer tanks will hold the waste prior to digestion. The AD plant is completely sealed.* *Only the low odour dry (less than 20% moisture) woody or lignose waste will be stored in an open 'wood shed' or similar, just like firewood in your back yard, with stock-piling being constrained to comply with EPA regulations.*

8	What is the (MW) capacity of the Biomass heat plant proposed?	*The biomass plant is nominally 4.8MW(thermal). We now expect it to be about 20% less than this, closer to 3.9MW(t). The AD will have capacity to produce under 1MW(e) although the units are in GJ for the biogas. By industry standards these are quite small.*
9	What percentage of the energy components to be used in the biomass plant, including: • Animal products / meat waste • Crops • Organic waste from landfill • Woody Waste • Recyclables e.g. cardboard, etc. • Manure • Municipal solid waste (MSW) • Chemically treated wood products • Railway sleeper, ties, pallets, etc. • Tyre derived fuel (TDF or TCR) • Crumb rubber	*As the plant has not yet undertaken the detailed engineering design we do not have the information to answer this question. It will depend on the commercial agreements with the prospective waste stream supplier parties, suffice to say that it will be a commercial decision based on quality of waste, the gate fee to take the waste stream, distance travelled and frequency of supply. MAB has no plans to take materials that can find a higher value elsewhere in the circular economy, have chemical contaminants or can/should be sourced separated (such as MSW) and does not support incineration. That therefore would exclude tyres, treated wooden products, rubber, cardboard, plastics, etc. Manure would likely be more suitable for the AD plant although there are no plans to use manure as a feedstock.*
10	What is the estimated Biomass plant consumption of woody material / trees, etc?	*The annual target is approximately 14,000 tonnes of dry organic waste. None of this timber will be sourced by clearing native vegetation of environmental and biodiversity value, nor will it impact on the environment in any adverse way. To the contrary, the intention is the biochar will be recycled back into the ecological environment of farm lands, parks and gardens, help re-build healthy soil and help offset the need for synthetic (fossil fuel derived) fertiliser. Hence it can make a significant contribute to carbon emission reduction across the whole Shire.*
11	What is the plan for replanting of lost vegetation?	*There are no plans as this will not occur. This question incorrectly assumes vegetation will be lost as a consequence of the proposed bioenergy plant. This*

		assumption has no foundation; it is untrue. MAB is sourcing only organic waste material. There will be no clearing of indigenous or native vegetation that we otherwise believe should be conserved. MAB's whole approach is one of ecological sensitivity, consistent with the notion of ecologically sustainable development (ESD) and enhancing our natural capital, not eroding it. *The bioenergy plant will result in the diversion of organic waste away from landfill or in-paddock burning or in-situ microbial breakdown which typically generates methane, a potent greenhouse gas. It is possible that the waste liquor of the bioenergy facility could be used by local agriculture to grow wood-lots which in turn could be harvested for bioenergy or even for community use. That is not an immediate plan.*
12	In the future, could enough gas be produced to be sold to other organisations/businesses so that more trucks will visit the site? And more waste needed to fuel the process?	*No this is not envisaged. It would not be commercially feasible to lay the required pipes to supply to other organisations, or even to truck it elsewhere. Should we decide to export energy off site it would be more practical to use it to generate electricity on site and export to the grid. Given we will be nowhere near meeting Don Smallgoods total needs, there is no need to consider selling gas off-site. Either way, no more trucks would be involved.*
13	What does "Behind the Meter" mean?	*This means the same as it does for a solar PV installation on your roof. You consume the energy generated from these before you interact with the electricity grid. We will provide all of the energy we produce directly to Don Smallgoods via our Purchase Agreement and not export any to the gas or electricity grid. There are major cost savings here in infrastructure and in connection charges, plus we are able to set a price that does not include distribution costs.*
14	Storage of waste outside?	*There will be no anaerobic digestor destined waste stored in the open air. It will arrive in the receival hall and remain there until it has been digested into biogas. For the biomass plant, there may be some timber or wood chip material stored outside, under cover, from time to time, just like people store wood for their home fire.*

15	Storage of waste internally – for how long?	*Normally this will be for a maximum of 24-48 hours. This is factored into the high-level design and is typical of all biodigesters.*
16	Leaks of gases and water wastes?	*The EPA has very strict regulations about such matters. The system design will ensure the risks for these potential abnormal occurrences are mitigated and compliant with the EPA Works Approval process. The EPA is on top of all these issues. We have already been in discussion with them to confirm this understanding. It is not in the interests of MAB to allow this to happen, from a regulatory, environmental, commercial or reputational perspective.*
17	What emergency notification procedures would be in place on gas leak?	*The gas approval process includes Energy Safe Victoria to both assess MAB's gas handling system and hazards system to ensure community and employee safety. It must also comply with Emergency Victoria and CFA requirements. Regular audits keep on top of this.* *Note: What typically is of concern to people is LPG; being heavier than air it sinks. In contrast Biogas is lighter than air, having a lower density, and rises (hence the domed tanks). However the MAB plant has no need for nor will it use LPG.*
18	Is there a danger of explosions	*These plants will be producing biogas and syngas respectively and be displacing an equivalent volume of fossil fuel derived polluting natural gas. A small plant of this size can be easily managed and will comply with the EPA, Council Planning, Energy Safe Victoria, supported by a Fire management Plan. The biogas will be contained in sealed/ airproof tanks and syngas combusted in sealed units, so there will be no open flames on site. The volumes of stored biogas and design of storage tanks would ensure that in the highly unlikely event that could trigger an explosion, this would be averted by flaring this biogas, hence the chimney stack. There would be little to no offsite impact from a brief upward flare of gas rather than a lateral percussive explosion. Management of LPG and LNG gas stored in tanks exists in many places across the Shire, including every service station.*

19	Can you please provide examples of where bioenergy waste plants with this type of technology are currently operational within Australia?	*The most appropriate Australian example is the Richgro Bioenergy Plant (AD) in Jandakot WA, south of Perth. The proposed MAB facility is expected to use equivalent AD technology. In Victoria the most similar AD plants are at Yarra Valley Water (Epping) and Western Water (Melton). There is also a long-running AD facility at Camellia NSW, called Earthpower, that takes a range of food and beverage wastes from businesses and some households to produce bioenergy.*
20	How many plants are there in Australia which produce bioenergy?	*Bioenergy is a generic term that includes several different technology types: anaerobic digestion (AD) to produce biogas; CAL that produce biogas; wood fired boilers that produce heat/steam; pyrolysis-gasifiers that produce steam/heat and biochar. By contrast incinerators are not generally considered as bioenergy as they mostly take mixed industrial waste stream (which may/not include an organic component). MAB's proposed bioenergy plant is not an incinerator.* *We understand there are at least 10 Anaerobic Digesters in Victoria either in production or in development, 6 are at waste water facilities (Yarra Valley Water, City West Water, SE Water, Barwon Water) and 3 at Piggeries and several others similar to the MAB proposal. The majority are CAL (covered anaerobic lagoons) connected to waste water treatment plants. There are some AD facilities in other states, albeit it is a nascent industry in Australia.* *In Germany alone there are over 10,000 AD plants. They are very common and are not to be confused with industrial incinerators.*
21	How many of these are situated in residential areas? And how close to residential areas?	*The number of bioenergy plants in Australia is limited. In EU and UK they are widespread, many being located on farms and in towns, close to residential areas and are largely invisible. Germany alone accounts for over 10,000 biodigesters. Beaufort Hospital and Skipton Hospital both have small biomass boilers (located at the hospital) because it saves them $ as LPG replacement; no known issues have been experienced.* *The MAB bioenergy facility will process clean woody wastes sourced off-site, and small amounts of non-recyclable cardboard and possibly a small amount of*

		polyethylene plastic (breaks down into H2O and CO2) from the Dons site. It will use a pyrolysis technology that produces a syn-gas for use as a gas substitute and there will not be any direct combustion of waste. It will comply with emissions standards as part of its EPA licence. *Note: Bioenergy is not to be confused with mixed waste incinerators which tend to be very large, incinerate mixed solid waste and are generally located in an industrial zone. MSW waste to energy facilities are up to 100-500 times greater (i.e.MW capacity) than the proposed MAB bioenergy facility.*
22	Does anything from the facility go to landfill	*One of the design criteria of the bioenergy plant is to be zero waste and not have any 'waste' go to landfill. There may be an extremely small amount of filtration materials used to remove non-toxic contaminants such as particulates and sulphur that may be produced (via the scrubber / electrostatic precipitator). If they cannot be re-used they go to landfill.*
23	Why not composting	*Commercial composting uses power and fuel to shred, screen, aerate and turn /move organic materials and is a net emitter of greenhouse gases. Most food is biodegraded through the composting process, so it contributes little to the organic carbon in the final compost. A lot of the nitrogen in food is also lost as gases during the composting process. The proposed bioenergy facility will recover bio-gas from the decomposition of food and concentrate the remaining nutrients and organic carbon in a 'digestate' sludge that can be used as fertiliser. Most commercial compost facilities generate an unsellable dry woody 'oversize' mulch that has to be landfilled or reprocessed (using more energy). This oversize material could be used by the bioenergy facility if it is clean enough. The conversion of woody organics to a fuel gas and biochar will further reduce greenhouse gas emissions by more than 500 kg CO2-equivalents per tonne, not including the avoided landfill emissions.* *The proposed scale of the MAB project is small compared to commercial composting facilities, and the relatively small amounts of organics it processes will not reduce the*

		availability of compost. It will reduce greenhouse gas emissions by more than if the same organics were composted.
24	The ACT ban on thermal processing of Waste	*The ACT 'ban' is for any thermal treatment of residual waste (i.e. what's left in the general garbage stream once recyclables and organics have been removed, or what might be extracted from a mixed waste stream). We don't believe it applies to clean source-separated woody biomass. The ACT policy encourages anaerobic digestion biogas energy recovery. It also allows production of refuse derived fuel for thermal energy recovery if exported out of the ACT. The policy reflects community opposition to thermal energy recovery from mixed waste, not to woody biomass being used. Victorian and national policies favour source separated woody biomass energy recovery, and that such facilities are common in the EU where there is a stronger focus on reducing greenhouse gas emission through renewable biomass energy.* *It is not clear that it would apply to a clean woody waste biomass facility such as we are proposing and it would be a 180 degree reversal in the previous policy if it does. The policy supports AD.*
25	Environment Vic and others oppose thermal plants	*The Victorian government, Bioenergy Australia, Environment Victoria and other environmental organisations are supportive of AD and renewable/waste woody biomass energy recovery facilities. They make it clear that if feedstock includes toxic materials then the results can be toxic. We will not include any such materials.*
26	If Don Smallgoods were not using imported meats would it still be considered contaminated	*The evidence from the EPA suggests that it is still considered as a hazardous substance (i.e. pathogens), and not just because of the pork origins. Being imported adds a layer of control.*
27	Because there is a bioplant in Germany doesn't mean we want the same in our town	*This example is provided to demonstrate and hopefully alleviate concerns about the safety and environmental risk of such plants. the technology is used prolifically and well proven. there are thousands that are in close proximity and hence this example is to provide evidence of such; that we are not in unchartered waters and not placing*

		our community at risk. to the contrary. otherwise the EPA would not issue an operating licence]
28	How does this compare to IGCC and USCPC	*While not experts in this technology, from what we understand these are technologies designed to prepare carbon emissions from the burning of coal and other fossil fuels in preparation for sequestration. Thus they are part of the Carbon Capture and Storage industry.*
29	Has any plume modelling been done? How will that impact people living down wind of the plant?	*Such modelling will be part of the EPA process that we will be undertaking; This is not an incinerator as used in Sweden to combust mixed wastes. There will be very little emissions.*
L	**FEEDSTOCK**	
1	Wet organic waste	*Wet organic waste will consist of the meat processing waste from Don Smallgoods which will be meat processing off-cuts and wash-down particles. Other meat wastes may be sought elsewhere such as from poultry processors. Clean food waste free (via separator) from non-organic matter, grass cuttings, weeds, etc. These can be filtered for metal or plastic contaminants.*
2	Dry organic waste	*This will be made up of cuttings and pruning from orchards, wineries, stables, farms , timber manufacturers, etc. It will also include woody waste from sawmills, sawdust, crop stubble and the digestate from the Anaerobic Digester. Other industrial sources of timber waste will be sought and may not be as yet known. Contaminants will be stripped out before processing.*
3	Will Recyclables be accepted	*No. Nothing recyclable will be processed. It will not be sourced by MAB.* *Some out of date foodstuffs may be supplied but will be stripped of the contents and the containers sent to recycling.*
4	Will timber be taken that may be used elsewhere	*No, however it is possible some timber derivatives (such as saw dust) could be used elsewhere for compost or animal bedding. That is outside MAB's control.*
5	Does that exclude wood lots	*Wood lots are sometimes proposed as a sustainable source of timber. They tend to be proposed as a means to revegetate degraded land and to create a renewable*

		source of supply for home fireplaces. Most house solid fuel heaters are burning timber being stripped from northern Victorian and NSW farming properties and do not come from renewable sources. Wood lots would be an unlikely source of material for our plant but where environmentally approved it would not be excluded. Many wineries grow coppice woodlots (e.g. sugar gums or arundo donax) explicitly for this purpose.
6	Will material need to be chipped/pulped or shredded on site.	*No - Due to noise and storage limitations chipping of woody waste will be done off-site before delivery. Some shredding of soiled cardboard and breakdown of other materials may be required on site, e.g. de-packaging of out of date foodstuffs, will be done on site. Any such processing will be done within the sound proofed shed.*
7	Will cardboard and paper be accepted	*No, with possible exception below. MAB would encourage cardboard and paper to remain within the recycling stream.*
8	Are there any exceptions	*Don Smallgoods have cardboard in which imported meat is wrapped. This will be accepted from them as it must go for specific deep burial landfill under AQIS regulations. This is about 20% of Don Smallgoods waste provided by tonnage.*
9	Will plastic or metals be accepted	*No, with possible exception below. Definitely no metal, tyres, mixed plastics or other non-organic material.*
10	Are there any exceptions	*Don Smallgoods have plastic in which imported meat is wrapped. We are investigating this to see if it is a plastic that is not toxic when combusted. If it is, for instance polyethylene, which breaks down to carbon dioxide and water, this will be accepted from them only, as it must go for specific deep burial landfill under AQIS regulations; this 'approach' is considered the most environmentally responsible outcome for this waste stream. This is about 20% of Don Smallgoods waste provided by tonnage.*
11	Can we control the feedstock for Biomass?	*Absolutely. The main input is a clean source of separated woody materials that would otherwise be wasted. The range of materials that can be used as a feedstock for the biomass facility will be strictly controlled by MAB and scrutinised during the technology and regulatory approvals process.*

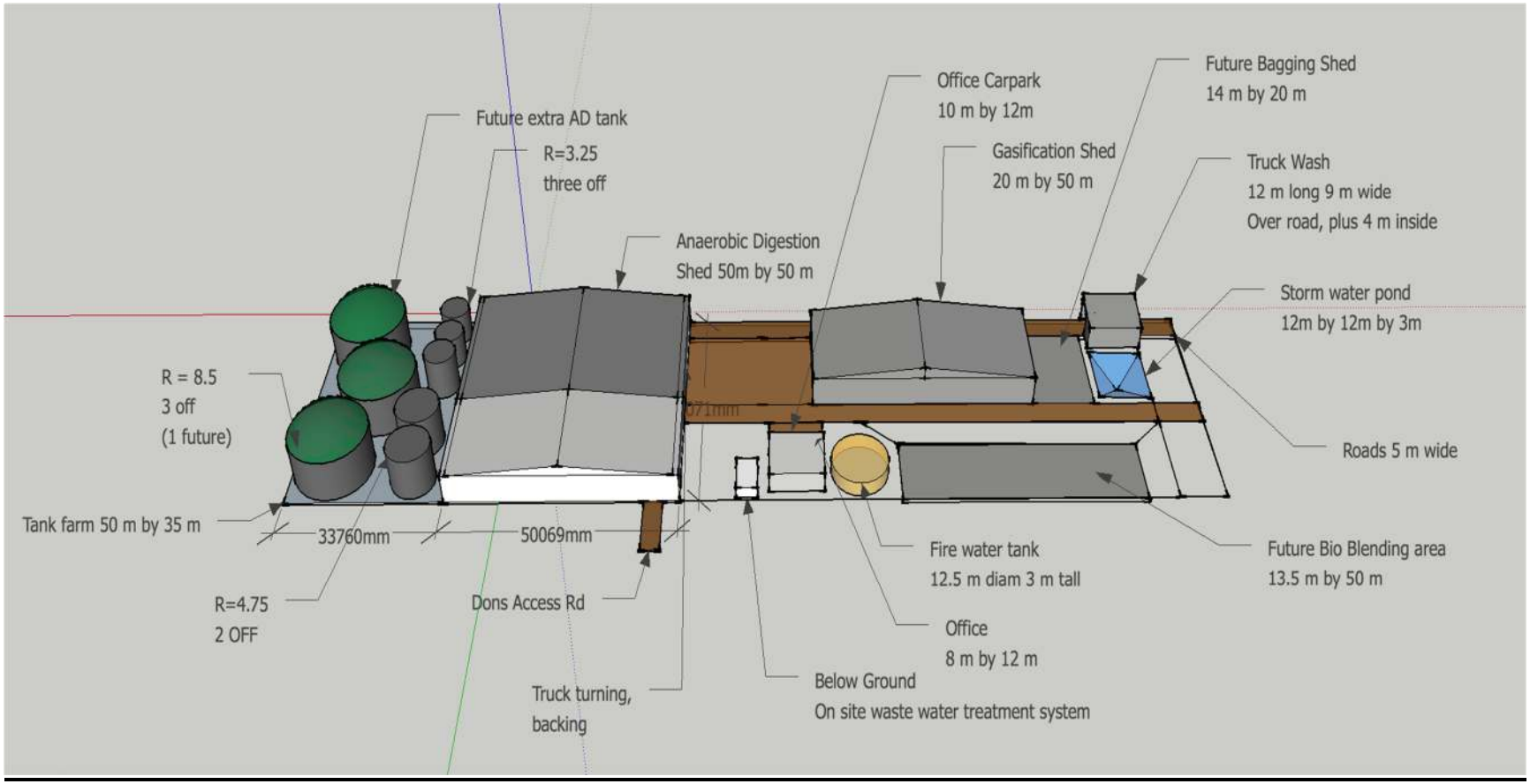
		We will have contracted suppliers only and the materials they will provide will be clearly specified in these contracts, with penalties for non-compliance. No random waste will ever enter the premises.
12	Will demolition waste be included	*No, however if there is a clean source separated supply of uncontaminated timber it will be considered. Source separation is key.*
13	What meat does Don KR import	*We do not have that information. A known example of the soiled cardboard and polyethylene is that used to wrap boxes of imported meat product.*
14	Can the community be involved in setting the rules for what is included	*We can do that. We can agree rules as to what is excluded. Once contracts are set then it is a matter of administering them and screening the deliveries, supported by regular audits and a continuing adherence and compliance with regulations.*
15	Will Coliban Water treatment plant waste be used	*While it is possible that such residue biosolids could be a feedstock for an Anaerobic Digester, this is not planned. The business case for the facility is not reliant on receiving these materials, but if the selected technology had capacity to process them and manage odour risks, it may be considered in the future. Any approval to use them would be subject to future EPA approvals. This residue from the processing is currently trucked to contracted local farms where it is distributed safely.*
16	Why different feedstock to Richgrow in Jandakot	*We suggest you read the information directly:* Richgro Bioenergy Plant, Jandakot, Western Australia - Waste Management Review *This clearly states "Every day, trucks bring in about 100 tonnes of solid food and liquid waste to the reception building from commercial and industrial sectors, such as fruit and vegetables from markets, and food and drink waste from supermarkets, abattoirs, agricultural companies, and food manufacturing facilities."* *This is no different to what we expect to be our feedstocks. There are a lot of hurdles to be got over before council wastes collections would be considered. At the moment organics are not separated in Mt Alexander Shire. Even if this happens it will not come to us unless it is established that it is compliant. We will have the capability of separating out minor incursions of metals and plastics from any source.*

17	Will we accept chipboard	*Only suitable untreated timber products and woody biomass will be received. This woody materials stream may include some composite timber products if the thermal technology selected has a proven track record processing such materials, but these materials will be a minor component of the received woody materials stream. No timber containing heavy metal preservatives will be received. Studies of thermal energy recovery from particleboard have found only similar levels of emissions as from raw timber.*

3. The Proposed Site of Facility

Yellow lines show approximate boundaries of site.

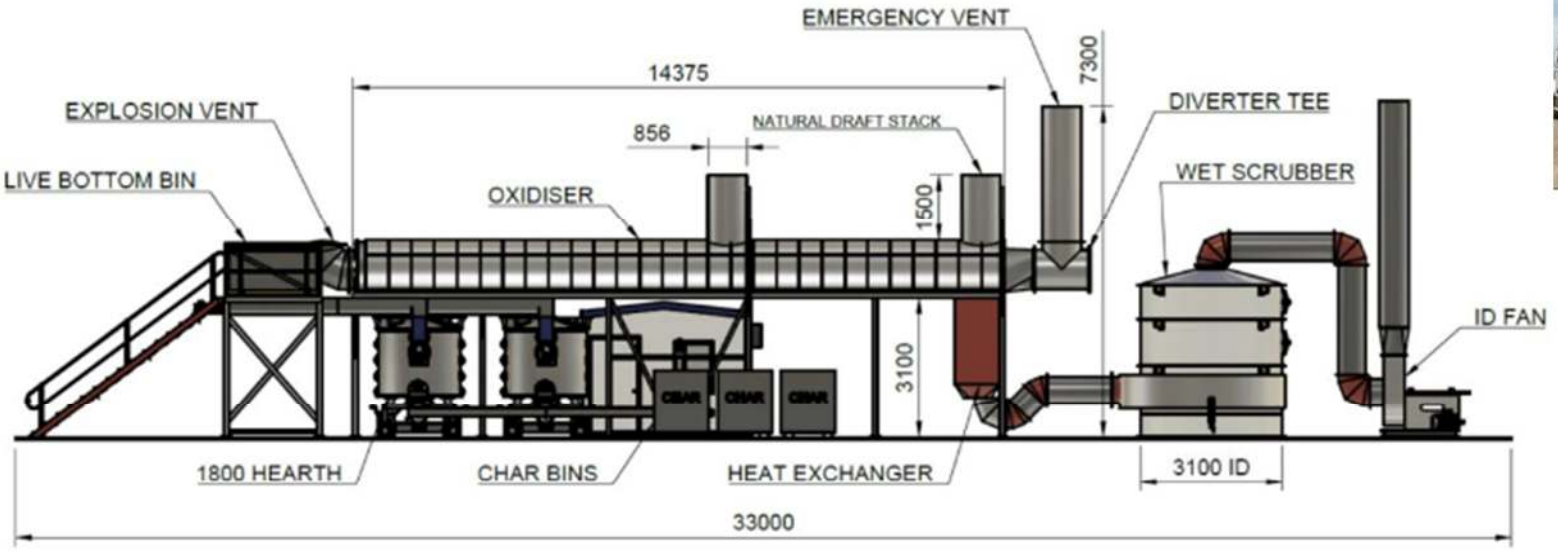
4. The Proposed Facility Layout



5 Two possible biomass thermal options being considered

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)



Zero Net Emissions by 2030

2. Pyrolysis – Gasifier (https://www.advancedenergytech.com.au)

The IQ Gasification systems are a staged oxidation process designed to provide optimal energy and environmental performance. The process reactions take place in two locations: (1) the **Primary Gasification Chamber** and (2) the **Secondary Oxidation Chamber**.

The **Primary Gasification Chamber** is where gasification of the target fuel into producer gas occurs. The **Secondary Oxidization Chamber** is where high temperature oxidation and full combustion of the produced gasses occur. Dilution of the flue gas to a desired target temperature range occurs immediately following the secondary oxidization chamber.

The Primary Gasification Chamber is an oxygen starved (fuel rich) chamber that promotes the production of CO, CH4, and H2 at relatively low temperatures. A small amount of CO2 is created in the chamber to provide the energy for the gasification process. As the amount of moisture increases in the fuel, additional heat must be produced to maintain the target temperatures. This balance is accurately maintained by controlling the air/fuel ratio in the primary chamber and the resulting "producer gas" is then ducted to the Oxidation Chamber.

The Oxidation Chamber is cylindrical in shape with staged air added in a directional manner. This produces a spinning reaction area that promotes vigorous blending of the combustible producer gas with oxygen-rich process air. As the gas reacts it produces useable heat energy. Additional air is added to keep the temperature within the target range.

The automation system controls the air distribution system ensuring complete oxidation of the producer gas while adding enough [illegible]at-extraction system giving up its thermal

Expected Emission Profile - Biomass(Woody Materials)

Substance	Unit of Measure	Before Scrubbers	After Cyclones + Scrubbers
NOx	mg/Nm3	180	< 150
SO2	g/Gj	10-15	<5
CO	g/Gj	0	0
CO2	% Dry	12	12
O2	% Dry	8	8
THC (C3H8)	g/GJ	0	0
HCL	g/GJ	0	0
*Dioxans/Furans	ng/dscm	0	0
Mercury	mg/dscm	0	0
Total Particulate	mg/Nm3	190	< 5
Visible Emissions	%	< 5	< 5

* Destroyed in Thermal Oxidixer at temperatures of 950-1000 C for 1.5 -2.5 seconds

- 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 car exhaust or wood stove
- Pyramid Hill demo site available for visit from Sept 21