blueprint PLANNING & DEVELOPMENT

7 July 2017 Ref: 1234

General Manager
Federation Council
100 Edward Street
COROWA NSW 2646

Sent by email only: Kate Larnach (kate.larnach@federationcouncil.nsw.gov.au)

Dear Sir/Madam

Re: **Development Application No. 2016/230: Organic waste management and composting facility: 142 Howlong-Goombargana Road, Howlong (Lot 7 DP595806)**

Further to the request for further information about the above development application from the Western JRPP dated 15 June 2017 please find the responses at **Attachment 1**, **Attachment 2**, **Attachment 3** and **Attachment 4**.

Should any further information be required I can be contacted on 02 6023 6844 or at james@blueprintplanning.com.au

Yours sincerely,
Blueprint Planning

James Laycock MPIA, RPIA
PRINCIPAL PLANNER

/Enc.

ATTACHMENT 1:

Responses to request for further information from the Western JRPP dated 15 June 2017

Information requested	**Response**
Air Quality	
• *Response from the Proponent to the issues raised by Dr Simon Leake in the SESL Australia submission dated March 2017. In particular –*	Refer to responses at **Attachment 2**.
• *Explanation as to why the receival shed could not be fully enclosed with a negative pressure system.*	The Receivals Shed *could* be fully enclosed with a negative air pressure system, however implementing such a system is not reasonably required or warranted, as doing so is not a proportional environmental or regulatory response to assessed air quality impact and risk. The specialist Air Quality Assessment (Todoroski Air Sciences, 2016) carried out as a part of the EIS (GHD, 2016) determined that the Receival Shed would have a low contribution to overall air quality emissions from the whole facility, even despite the application of worst-case-scenario and/or overestimated project-specific odour emission rates (refer to the letter from Blueprint Planning to Federation Council dated 30 May 2017 at **Attachment 3**). Additionally, the Air Quality Assessment was supported by sensitivity analysis (pp. 33-35) and details of how the Receivals Shed (and the remainder of the facility) would be operated and managed. Refer to the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D of the EIS (GHD, 2016); in particular refer to proposed 'preventative controls', 'detective controls', and 'corrective controls' (pp. 1-3). In this regard it is noted that implementation of an Operations Management Plan is a recommended condition of development consent as are comprehensive odour emissions monitoring and auditing conditions which will form part of the Environment Protection Licence from the EPA.
• *Information regarding the potential health risk of air-borne particles being*	The Air Quality Assessment (Todoroski Air Sciences, 2016) carried out as a part of the EIS (GHD, 2016) determined in relation to particulate matter (dust) impacts to nearby sensitive receivers that the proposed facility would comply (by orders of magnitude on a cumulative impact basis) with relevant PM_{10}, total suspended particulates (TSP), and deposited dust (DD) requirements (pp. 36-38) under the relevant EPA threshold guidelines – the *Approved Methods*

generated by operations at the site.	*for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2016).[1] The United Kingdom Environment Agency sets acceptable levels of exposure to bio-aerosols from composting operations at a distance of 250 metres (UK Environmental Agency, 2010).[2] Beyond this distance bio-aerosol concentrations tend to decline down to background levels. The buffer distance of the proposed facility to nearby sensitive receivers is sufficient to meet this guideline. Health impact issues in regard to respiratory concerns (Legionellosis and fungal lung infections) were considered and addressed by EnRiskS (2016) in the Preliminary Risk Screening in Appendix K of the EIS (GHD, 2016) and, in specific regard to the Proponent's staff working at the facility, the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D of the EIS (GHD, 2016) documents proposed staff training and awareness and general and specific work, health and safety 'preventative controls', 'detective controls', and 'corrective controls' (pp. 1-3). The Proponent has currently implemented environmental management, quality management, work, health and safety, and risk management systems across its whole organisation in compliance with[3]: • *AS/NZS ISO 14001:2004 – Environmental management systems – Requirements with guidance for use*; • *AS/NZS ISO 9001:2008 – Quality management systems – Requirements*; and • *AS/NZS 4801:2001 – Occupational health and safety management systems – Specification with guidance for use*. The Proponent's accreditations are periodically audited to maintain certification.
Traffic	
• *Justification for the use of 2005 traffic data and 2% per year cumulative growth for the Kywong-Howlong Road, Howlong-Goombargana Road and Drews Lane.*	Refer to the letter from GHD to Blueprint Planning dated 3 July 2017 at **Attachment 4**, with the conclusion being that traffic impacts are assessed conservatively.

[1] http://www.epa.nsw.gov.au/air/appmethods.htm

[2] *Composting and potential health effects from bio-aerosols: Our interim guidance for permit applicants* (United Kingdom Environment Agency, 2010).

[3] http://www.cleanaway.com.au/about-us/sustainability/accreditations

• *Confirmation that Kywong-Howlong Road, Howlong-Goombargana Road and Drews Lane have been constructed to an acceptable standard to accommodate the heavy vehicles associated with the development.*	Refer to the letter from GHD to Blueprint Planning dated 3 July 2017 at **Attachment 4**, with the conclusion being that all roads are currently constructed to acceptable traffic engineering standards except for the Howlong-Goombargana Road which does not currently comply i.e. even based on 2005 traffic data and/or if the Project did not proceed. The responsibility to upgrade this road is therefore Federation Council's responsibility and not the Proponent's responsibility.
Regional Waste	
• *Does the Regional Waste Management Committee have a waste strategy and is the facility consistent with that strategy?*	*Waste strategies* There is no single overarching 'regional waste management committee' for both sides of the NSW and Victorian state border in the area, however: • for NSW, the Riverina and Murray Regional Organisation of Councils (RAMROC)[4] has the *RAMROC Waste Strategy 2014-2020* (MRA Consulting Group, 2014)[5] that is applicable to its NSW member council areas (including all the council local government areas (LGAs) subject to the current municipal kerbside collection organics (green lidded bin) contract with the Proponent); and • for Victoria, the North East Regional Waste and Resource Recovery Group (NERWRRG)[6] has the *North East Waste and Resource Recovery Implementation Plan* (NERWRRG, 2016)[7] that is applicable to its Victorian member council areas (including all the council LGAs subject to the current municipal kerbside collection organics (green lidded bin) contract with the Proponent). *Consistency of the facility with the strategies* The facility would directly implement relevant objectives from each strategy to facilitate diversion of organic material from landfill and to recycle that organic material for beneficial local and regional purposes. Further

[4] http://www.ramroc.org.au

[5] http://www.ramroc.org.au/projects/index.htm

[6] http://www.newrrg.vic.gov.au

[7] http://www.newrrg.vic.gov.au/wp-content/uploads/2015/09/Draft-North-East-Implementation-Plan-April-2016-Print.pdf

	information, and the relevant overarching objectives at state level for both NSW and Victoria, is set out at Section 4.1 of the EIS (GHD, 2016, pp. 36-39). Relevantly, the policies of each state are consistent with the Commonwealth Government's *National Waste Policy: Less Waste, More Resources* (Environment Protection and Heritage Council, 2009)[8], namely in regard to the objective to enhance biodegradable (organic) resource recovery and reduce greenhouse gas emissions from landfills through beneficial reuse via composting (p. 11). In particular, Section 4 of the *RAMROC Waste Strategy 2014-2020* (MRA Consulting Group, 2014, pp. 29-30) sets out options for organics processing (Table 17, p. 29) and criteria for assessing suitable actions (Figure 10, p. 30). For the 'eastern' RAMROC council LGAs, the former Gerogery composting facility proposal is mentioned (p. 13) as a work-in-progress development approval process (as it was in 2014 when the strategy was published) and for the 'western' RAMROC council LGAs it is proposed to establish a composting facility at Leeton (Section 5.2, p. 40). Effectively the geographical expanse of the RAMROC council LGAs requires that there must at least be a minimum of two regional composting facilities, and therefore, with the proposed Gerogery composting facility proposal being set aside for the time being as a means of servicing the 'eastern' RAMROC council LGAs, the subject Howlong composting facility is its alternative replacement. The former Gerogery proposal is briefly discussed in Section 7.2.1 of the EIS (GHD, 2016, p. 122).
• *Have alternative sites for the facility been considered in the context of any such waste strategy?*	Yes, alternative sites for the facility have been considered in the context of both of the above waste strategies as set out in Section 7.2 of the EIS (GHD, 2016, pp. 120-122). Specifically, member councils of the current municipal kerbside collection organics (green lidded bin) contract with the Proponent are driving the need for the facility in accordance with respective strategies.
• *Does the facility include capacity for growth in regional waste?*	Yes, the site layout and design of the facility allows for future growth if necessary, subject to prior consent. Obviously when/if further consent may be sought to expand the facility will be in the context of an established track record of Development Consent, Environment Protection Licence, onsite weather station and any complaints management records.
Site Management	
• *Information regarding the management and disposal of*	The management of physical, chemical, and biological contaminants as described under *AS 4454-2012 Composts, soil conditioners and mulches* and the disposal of receival load batches that contain more than 10% by weight of

[8] http://www.environment.gov.au/protection/national-waste-policy

contaminants extracted during the initial receival process.	non-organic material including physical contaminants (typically plastics, glass, metals, engineered wood products, preservative treated or coated wood residues) extracted during the initial receival process is documented in the: • EIS (GHD, 2016) at: o Section 3.5 (p. 25) in regard to decontamination, o Section 3.6 (p. 27) in regard to sampling, o Section 3.7 (p. 27) in regard to notification and tracking, o Appendix C in regards to relevant systems in the process flow chart, o Appendix D in the *draft Operations Management Plan* (Cleanaway, 2016) at: ▪ Section 4.6.1 (pp. 18-19) in regard to decontamination, ▪ Table 5.2 (p. 24) in regard to risk assessment and controls, ▪ Section 6.2 (pp. 27-29) in regard to training and awareness, ▪ Section 6.3 (pp. 29-30) in regard to communication, ▪ Section 7.1.3 and Table 7.6 (p. 37) in regard to monitoring and testing to inform training and awareness, ▪ Section 7.2 and Table 7.7 in regard to waste characterisation audits, ▪ Section 7.2.1 and Table 7.8 in regard to waste characterisation audits, ▪ Section 7.3 (p. 40) in regard to corrective action, ▪ Section 7.4 (p. 40) in regard to documentation and record keeping, ▪ Appendix A (p. 42) in regard to compost contamination, ▪ Appendix B (pp. 48-49; 52-54) in regard to screening, sampling, testing, management, reporting and corrective action of contaminants, ▪ Appendix C (p. 55) in regard to housekeeping of contaminants, ▪ Appendix I (p. 73) in regard to MGB rejection and waste transfer register records, and ▪ Appendix K (pp. 83-87) in regard to the Standard Operating Procedure – Feedstock Acceptance Protocol, including for municipal and commercial and industrial organics; Specifically in regard to: • Municipal kerbside organic bin (green lid) collections: Ongoing management of contaminant levels is undertaken through household, community, and interest group communications and awareness programs. The current audited contamination level of municipal kerbside organic bins from the Albury City, Wodonga City, Indigo Shire, and Federation municipal areas is 1.3%, which is one of the lowest in Australia.[9] Further information is available at: • http://halvewaste.com.au/organics/

[9] Pers. comm., Cleanaway, November 2016.

	• http://www.alburycity.nsw.gov.au/environment-and-waste/waste-and-recycling/waste-education • http://www.alburycity.nsw.gov.au/environment-and-waste/waste-and-recycling/kerbside-collection-service/organics • http://www.wodonga.vic.gov.au/roads-rates-rubbish/rubbish-collection/organicsbin.asp • http://www.indigoshire.vic.gov.au/What_We_Do/Waste_and_recycling/Waste_collection_and_charges • https://www.federationcouncil.nsw.gov.au/Environment-Waste/Waste-Recycling
• *Clarification of proposed construction hours. Recommended Conditions 8 and 99 are inconsistent.*	Any mention of "construction" in proposed draft Condition 8 should be deleted to ensure consistency with EPA GTA Condition 99 (refer to the letter from Blueprint Planning to Federation Council dated 8 June 2017).
• *Confirmation that sufficient water is stored on site for bushfire management purposes.*	The facility would be connected to reticulated water supply and therefore complies with the minimum requirements under *Planning for Bushfire Protection* (RFS, 2006) and draft *Planning for Bush Fire Protection* (RFS, April 2017) which is currently on public exhibition for comment. In regard to water supplies provided in addition to reticulated supply (with a header tank), as mentioned in the EIS at Section 5.5.4 (pp. 87-91): *Water for fire suppression purposes would be available from a number of sources within the Site. There would be a dedicated 10 kL water supply tank and a 1 ML stormwater storage and fire water supply dam. The 10 kL water tank would contain a 65 mm metal Storz outlet with a gate or ball valve and would be compatible with Rural Fire Service equipment.* *The facility would be equipped with a portable fire-fighting unit, knapsacks and fire extinguishers.* The facility also has a number of other static water supplies (SWS) which could also be used in an emergency and documented in the facility's Site Emergency Management Plan (Appendix L of the *draft Operations Management Plan* (Cleanaway, 2016)).
• *Details of site closure and decommissioning should operations cease.*	Site closure and decommissioning of the facility would be in accordance with the *Environmental Guidelines - Composting and Related Organics Processing Facilities* (DEC, 2004), namely: • Compliance with Environment Protection Licence conditions of the EPA concerning site closure and decommissioning (pp. 20-21); and

- Preparation of a closure plan for approval by the EPA (p. 33) including the following details:
  - products, feedstock, adjuvant inputs, contaminated products, process residues or chemicals must not remain on the premises;
  - all equipment (including appliances, bins and process areas) must be emptied, cleaned and disinfected;
  - all equipment must be removed from the premises, unless it can be demonstrated that the equipment that remains will not have the potential to cause environmental impacts and is needed for subsequent uses of the site;
  - the facility must be revegetated or otherwise made stable and suitable for the proposed future land use of the site. The revegetation of any exposed working areas must be started within 30 days of cessation of composting and related organics processing (weather permitting), and the final revegetation layer must be of a depth and type sufficient to support the revegetation scheme proposed;
  - the final surfaces prepared on the site must control surface erosion and protect local amenity; and
  - groundwater monitoring and monitoring of surface water bodies must be continued until it demonstrates the absence of any pollution that would pose a threat to the quality of groundwater, surface waters or surface water bodies.

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ATTACHMENT 2:

Responses to SESL Australia submission dated March 2017

Issue raised (SESL Australia submission dated March 2017)	**Response**
Mass balance and composting process	
Adjuvant inputs	Adjuvant inputs are mentioned/shown in the EIS (GHD, 2016) in Table 8 (p. 27) and the Process Flow Chart at Appendix C. The average annual tonnage of bulking material and carbonaceous material that would be used at the facility would be a combined average of 5 to 10% by weight of incoming material to be composted or 5 to 10% of 20,000 tonnes per annum which is 1,000 to 2,000 tonnes per annum. Water use (and reuse) is not included in this tonnage range, with proposed water usage documented in the EIS at Appendix E. This information was forwarded to the EPA following a further information request during processing of the DA and has resulted in Condition L3.2 of the EPA's GTA – ***L3.2*** *The total tonnage of material composted on site must not exceed 22,000 tonnes per annum measured on an as received basis. The licensee must maintain daily records of the quantity received and yearly total.* No adjuvant inputs would be added to material that would be composted offsite prior to transport offsite (GHD, 2016, p. 26).
Claim that Cleanaway has "a record of conducting unapproved waste management activities"	This statement is misleading and is nothing more than ill-informed speculation.
Composting feedstock	SESL seeks to create confusion about composting feedstock using multiple ill-informed assumptions and scenarios which are not relevant. As stated in the EIS (GHD, 2016, p. 23) - *Whilst there may be variations in the composition of the waste stream generated, this does not dictate the composition of the composting material. It is proposed that there would be no more than 20% by weight of liquid waste included in the composting material. Blends of food waste and green waste would not contain more than 20% by weight of food waste in the mixture prepared for composting.*

	The procedures to facilitate the preparation of compliant composting feedstock is documented in the EIS (GHD, 2016) in the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D – in particular the Feedstock Mixing Guidelines (Appendix J) and its relevant 'preventative controls', 'detective controls', and 'corrective controls' (pp. 1-3). In this regard it is also noted that the EPA has imposed Condition 06.11 in their GTA – ***06.11*** *The total combined weight of solid and liquid food waste incorporated into the compost must be less than 20% by weight of the blended compost mixture. The licensee must establish and maintain a record keeping system to demonstrate compliance with this requirement.* Therefore the claim/inference that liquid or food waste material arriving at the facility that exceeds 20% by weight will directly translate to composting feedstock with liquid or food waste material exceeding 20% by weight is seriously misguided.
Mass and volume balance assumptions	
Adjuvant inputs	Refer to comments above for "Mass balance and composting process". It is noted that the tables in the EIS (GHD, 2016) which show the quantity range of non-water adjuvant input types were provided to demonstrate volume versus weight range relationships (Table 7, p. 26; Table 8, p. 27) to assist understanding about required non-water adjuvant input stockpile volumes and surface areas required to inform related impact assessments in regard to water and odour.
Volume versus weight relationship	SESL seeks to create confusion about composting volume versus weight relationships by inferring that volume is more important than weight but the critical point that is not made by SESL is that a given batch of composting feedstock on the first day of Phase 1 will NOT be the same volume as the last day of Phase 3 due to the significant losses of material (weight as well as volume) being consumed by micro-organisms and expelled through the Gore® cover as CO_2 and water vapour. Certainly water adjuvant inputs (clean water) would be added during Phase 1-3 composting on an 'as required' basis depending on probe results and analysis but such additions would not significantly offset material volume losses. To have it SESL's way does not explain why the input of 20,000 tonnes per annum of composting feedstock plus up to 2,000 tonnes per annum of non-water adjuvant inputs equates to approximately 9,238 tonnes per annum of compost products!

Process control and management	
Assumptions	Again, SESL seeks to create confusion by assuming that the Proponent will do things which are not proposed. The EIS (GHD, 2016) and in particular the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D should be relied upon to inform how 'human factors' (operations) will integrate with and account for the science of composting. In this regard the *draft Operations Management Plan* has been prepared with reference to not only *Australian Standard 4454-2012 Composts, Soil Conditioning and Mulches* but also to the Proponent's current operational experience with the same types of facility.
Surrounding environment and buffer distances	
Sensitive receivers	The claim that sensitive receivers beyond those mentioned in Section 2.2.3 of the EIS (GHD, 2016, p. 12) are not considered in the EIS is misleading. Section 2.2.3 of the EIS is titled "surrounding land use" under the heading of "site description" and is merely an overview of contextual circumstances under the relevant subject heading. Of course, the EIS specifically addresses sensitive receivers in its specialist reports including at Appendix F (Air Quality Assessment), Appendix J (Noise Assessment) and Appendix K (Preliminary Risk Screening). In these reports an extensive range of sensitive receivers are considered.
Buffer distances	Refer to the letter from Blueprint Planning to Federation Council dated 30 May 2017 at **Attachment 3**.
Operational procedures	Each and every 'potential odour impact' identified has been assessed based on worst-case-scenario and/or overestimated project-specific odour emission rates (refer to the letter from Blueprint Planning to Federation Council dated 30 May 2017 at **Attachment 3**).
Odour	
Expert opinion	SESL state "I am not expert in odour modelling methods and do not propose to critique these" but SESL does exactly the opposite. Expert opinion on air quality issues should rightfully be left to air quality experts.
Project-specific odour emission rates	The claim that the project-specific odour emission rates used for the specialist air quality assessment in the EIS

	(GHD, 2016, Appendix F) were not based on "peer review" is false. The relevant paper - *Odour Measurement Data for Composting of Green Waste with the Addition of Food Organics or Grease Trap Waste Using Gore Covers* (Todoroski and Cowan, 2015) was peer reviewed by leading Australian subject matter experts before being accepted for publication by the Clean Air Society of Australia and New Zealand (CASANZ) (refer to the letter from Blueprint Planning to Federation Council dated 30 May 2017 at **Attachment 3**).
Claim that Cleanaway conducted an unlawful composting trial	This statement is misleading (and even if the trial was unlawful then such would not make the odour emission rates somehow invalid!).
Assumptions	The composting trial was carried out using 20% food and liquid waste (including grease trap waste) by weight with feedstock preparation procedure as generally set out in the EIS (GHD, 2016) in the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D. In this regard it is noted that the facility is not proposed to receive, process or compost any grease trap waste. The greatest assumption defects that SESL have stem from lack of understanding regarding proposed feedstock preparation. In this regard it is noted that SESL have not once made any critique of the Feedstock Mixing Guidelines (Appendix J) and its relevant 'preventative controls', 'detective controls', and 'corrective controls' (pp. 1-3) in the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D of the EIS (GHD, 2016). Indeed SESL state that composting parameters concerning 'total moisture content', 'effective carbon to nitrogen ratio', and 'porosity' "are laudable aims" (p. 8). The fact that the subject trial used 20 metre long windrows and not 50 metre long windrows is immaterial to the utility of the subject project-specific odour emission rates. The comment that Gore® covers would hold a greater seal than modelled only serves to highlight conservatism in the air quality modelling undertaken. For all other assumption claims refer to the letter from Blueprint Planning to Federation Council dated 30 May 2017 at **Attachment 3**.
High-moisture and liquid food waste	The claim that the odour emission rates for high-moisture and liquid food waste application to Gore® cells are not valid is unfounded, same with the claim that specific procedures will not be implemented or that any spills will not be contained or that material will be left exposed all day with no Gore® cover. Further, the claim that the

	methodology for the application of high-moisture and liquid food waste is "crude" is subjective and it is noted that no alternative methodology is suggested. The proposed methodology is based on best-practice based on the Proponent's industry experience. The claim that no modelling has taken place of high-moisture and liquid food waste content in compost feedstock at 20% by weight is also unfounded – the specialist Air Quality Assessment (Todoroski Air Sciences, 2016) at Appendix F of the EIS (GHD, 2016) included such modelling in its assessment.
Contact water storage	The claims that the contact water storage will not be aerated or will be anaerobic are unfounded, and the claim that odour emission rates for the contact water storage are not reliable are also unfounded. The EIS (GHD, 2016) states that the contact water storage will be aerated (pp. xi; 76) with such aeration to be managed to prevent anaerobic conditions developing as per the *draft Operations Management Plan* (Cleanaway, 2016, pp. 43; 56; 60; 63; 72) at Appendix D. The specialist Air Quality Assessment (Todoroski Air Sciences, 2016) at Appendix F of the EIS (GHD, 2016) addresses these issues (pp. 22; 24; 40; 42; 43).
Overnight storage of material inside the Receivals Shed	Whilst odour modelling includes odour emission rates for overnight storage of material inside the Receivals Shed it is noted that the EPA effectively requires that any such material be stored in a bin with a lid as per EPA GTA Condition O6.1 (p. 8).
Temporary removal of Gore® cover for application of additional water for moisture control	The claim that odour modelling has not taken into account the temporary removal of Gore® covers for application of additional water for moisture control is unfounded same with the assumption that covers would be off for a full day. The specific technological advantage of having oxygen and temperature probes along each Gore® cell allows for 'moisture' and/or 'porosity' issues in the composting material to be readily identified, located and corrected/resolved – meaning that any removal of Gore® covers would be targeted and time limited. The specialist Air Quality Assessment (Todoroski Air Sciences, 2016) at Appendix F of the EIS (GHD, 2016) addresses these issues in the context of 'break apart' emissions (pp. 6; 22-23).
Best practice	
Available technology	The proposed Gore® cover composting technology is a tried and tested forced aeration composting process which is widely used around the world, is technically advanced but simple to operate, and incorporates a range of environmental safeguards. The Gore® cover technology is accredited in Europe as an in-vessel system and internationally well regarded. Active composting takes place in a Gore® cell under a Gore® cover. This prevents

	the attraction of pest and feral animals and reduces the emission of dust, bio-aerosols and volatile organic compounds during the most rapid phases of decomposition. The 1993 guidelines referred to do not mention Gore® technology as this technology was not known to be used in Australia at that time. An overview of best practice technology is set out in the EIS (GHD, 206) at Appendix F in the specialist Air Quality Assessment (Todoroski Air Sciences, 2016) at Section 8 (pp. 39-40).
Water	
Maintenance of drainage systems	The comprehensive drainage system maintenance program detailed in the EIS (GHD, 2016) in the *draft Operations Management Plan* (Cleanaway, 2016) at Appendix D will be implemented to ensure system efficiency and effectiveness. The periodic review of the *draft Operations Management Plan* consistent with *AS/NZS ISO 9001:2008 – Quality management systems – Requirements* will ensure that any specific improvement issues are captured and addressed. Obviously detailed civil engineering design of the drainage system will take place prior to construction.
Water quality versus onsite storage, detention and reuse	SESL significantly misunderstand the reasons for the different water catchments and therefore the reasons for the sizes of their water storages. For example it is not water quality which determines the size of the relevant water storage it is the catchment area combined with water evaporation and reuse which are the determining factors (refer to the EIS (GHD, 2016) and the specialist soil and water assessment at Appendix E – in particular the Water Cycle Schematic (p. 27)). This misunderstanding is further compounded by many other misunderstandings mentioned such as the continued assumption that the contact water storage would not be aerated or that any identified issues would not be addressed and resolved.
Conclusions	Each of SESL's "conclusions" are set out below in full with direct corresponding responses for clarity.
Errors and omissions in the mass balance and stated acceptance of wastes.	There are no errors or omissions in the EIS (GHD, 2016) in regard to mass balance or waste acceptance, although SESL's misunderstanding about some issues can be explained by SESL not knowing of proposed non-water adjuvant input tonnages which the EPA are aware of and which comprise a condition in their GTA (Condition L3.2).

Lack of clarity in the relationship between mass and volume which may result in an under-estimate of the plant capacity or excessive throughput.	There is no underestimate (or overestimate) in the EIS (GHD, 2016) in regard to plant capacity or throughput.
Errors in planning assumptions. The proposal is Integrated Development.	There are no errors in planning assumptions in the EIS (GHD, 2016) – it is assumed that SESL did not read Section 4.2.1 (p. 42).
The proposal ignores sensitive land use receptors and whole residential areas that are well within the zone that could reasonable (sic) *be expected to be affected by odour from composting.*	No sensitive receiver relevant to consideration is omitted from the EIS (GHD, 2016).
The proposal is within the buffers distance recommendations from the Victorian EPA related to Composting Buffer Distances.	The facility would comply with all relevant NSW EPA requirements as demonstrated in the EIS (GHD, 2016) and the issuing of NSW EPA GTA, noting that the Victorian EPA does not specifically provide for guidelines relevant to forced aeration composting using Gore® covers.
The method of operation, covered windrows with no odour capture is not best practice according to NSW EPA guidelines.	The facility recognises best-practice as demonstrated in the EIS (GHD, 2016), noting that the 1993 guidelines referred to do not specifically provide for guidelines relevant to forced aeration composting using Gore® covers.
The odour strength assumptions that have been used are not representative of the likely odour flux from this facility and this type of composting.	This is misleading and SESL even admit that they are not air quality experts and do not wish to comment on air quality issues (p. 11) yet they do.

The use of open air methods to process food and green organics (FOGO) and mix it with liquid high strength food and abattoir wastes are crude and not best practice.	The proposed methodology to apply high-moisture and liquid food waste to Phase 1 Gore® cells is considered best-practice noting that SESL offer no alternative methodology and that relevant odour impacts comply on a cumulative impact assessment basis.
The use of open sheds for storage of Category 2 and 3 organic waste is not best practice according to NSW EPA guidelines.	The only 'storage' of any material (no matter the category) would be in a bin with a lid (refer to EPA GTA Condition O6.1 (p. 8)).
The necessity to add water without covers over the compost has not been included in modeling (sic).	This is misleading (refer to above comments).
The number of turns and compost movements have not been correctly considered in the odour modeling (sic).	This is misleading (refer to above comments).
The odour strength assumptions from the maturation piles are likely seriously underestimated.	This is misleading (refer to above comments) with no substantive reasons offered in support of this opinion.
A similar facility in the USA using Gore cover system was prosecuted for odour complaints from residents up to 4.8klm away supporting a view that the odour modeling (sic) *for this system is* (sic) *should not be considered reliable.*	The proposition that the proposed facility should not proceed because one facility using the same technology elsewhere in the world has had problems is illogical. For example, how is the proposed facility so similar that it can be directly compared? Are the two facilities designed, constructed and operated exactly the same? etc.

Quality and quantity of polluted stormwater is likely underestimated with potentially serious consequences for discharge to the environment and odour issues.	This is misleading (refer to above comments) with no substantive reasons offered in support of this opinion.

ATTACHMENT 3:

Letter from Blueprint Planning to Federation Council dated 30 May 2017

blueprint | PLANNING & DEVELOPMENT

30 May 2017 Ref: 1234

General Manager
Federation Council
100 Edward Street
COROWA NSW 2646

Sent by email only: Kate Larnach (kate.larnach@federationcouncil.nsw.gov.au)

Dear Sir/Madam

Re: **Development Application No. 2016/230: Organic waste management and composting facility: 142 Howlong-Goombargana Road, Howlong (Lot 7 DP595806)**

Further to the letter from the EPA to Council dated 3 May 2017 containing a cover letter with comments and General Terms of Approval conditions, please find the **attached** comments in response to the cover letter and a summary of air quality impact modelling assumptions from Aleks Todoroski of Todoroski Air Sciences, being the air quality expert who prepared the Air Quality Assessment report contained in the EIS. This information is provided to Council and the Western JRPP in the interests of assisting a fair and balanced interpretation and assessment of the EPA's cover letter comments in regard to asserted "risk".

Should any further information be required I can be contacted on 02 6023 6844 or at james@blueprintplanning.com.au

Yours sincerely,
Blueprint Planning

James Laycock MPIA, RPIA
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/Encl.

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30 May 2017

James Laycock
Blueprint Planning
3/576 Kiewa Street
ALBURY NSW 2640

By email only: James Laycock <james@blueprintplanning.com.au>

Dear James,

RE: Development Application No. 2016/230: Organic waste management and composting facility: 142 Howlong-Goombargana Road, Howlong (Lot 7 DP595806) – Air Dispersion Modelling Assumptions

In light of the EPA's General Terms of Approval and cover letter dated 3 May 2017 for the above proposed facility identifying potential "risk" associated with odour emissions, the following provides our response to this assertion and outlines the assumptions applied in the modelling assessment in order to assist understanding.

Firstly, I disagree with the EPA's implied characterisation of the project as having any tangible risk of odour that may be problematic once operational. I consider that this is perhaps one of the least risky greenfield composting projects I have encountered in over 25 years of work in the field, including ten years at EPA where I was responsible for assessing such projects. Whilst there is always some level of risk inherent in any project, I consider that this project has a very low level of risk, lower than any other similar project I have encountered. The predicted project emissions are based on a comprehensive set of project specific odour emissions data collected during a full-scale trial conducted in a Wodonga industrial area adjoining a residential area. I personally attended and collected samples to ensure the worst case, maximum odour emissions were collected. Furthermore, the trial was also inspected by an independent odour expert. This expert later co-authored a paper with myself which sets out the odour results collected during the trial. This paper was further peer reviewed by leading Australian subject matter experts before being accepted for publication by the *Clean Air Society of Australia and New Zealand* (CASANZ). I am unaware of any odour emission data which is better or more representative of the project. To imply otherwise raises unfounded concern.

I consider that the modelling used for the impact assessment is highly conservative, and for the critical windrow emissions, and the other odour sources, the modelling included many significant overestimations,

which are collated and summarised in **Table 1**, and which outlines assumptions included in the air dispersion modelling for each of the odour sources.

Furthermore, the project site is relatively flat, and this makes it amenable to accurate meteorological modelling. Our firm can demonstrate a long record of exceptionally accurate meteorological modelling, and has applied such approaches in this instance. The examination of the data shows that predicted impacts are as would be expected, that the modelling responds correctly to the terrain features away from the site, and the drainage flows are along the river valleys.

Based on the assumptions made and the approach taken in the dispersion modelling, we consider that the actual odour impacts would be significantly lower than presented in the modelling assessment.

As the modelled odour emission rates are within the EPA criteria, and the actual odour levels are likely to be significantly lower, there is a large margin of compliance and an exceptionally low risk of any unexpected odour impacts arising.

We reaffirm our opinion that this project presents a very low risk of potential offensive odour impact.

Please feel free to contact me to discuss or clarify any aspect of this letter.

Yours faithfully,

Todoroski Air Sciences

Aleks Todoroski

Table 1: Summary of air dispersion modelling assumptions related to odour emissions

Item	Description	Modelling assumption	Actual operation	Level of conservatism
1	Compost windrow	Modelled emission rates are based on a full scale trial conducted in 2013-14 in Wodonga. More than 50 measurements were made at each stage of the process. Only the maximum rates of odour were used in the assessment. Thus odour from compost windrows are assumed to emit the maximum rate of odour continuously at all times. The maximum rate of odour at the start of each week is used in the model for each phase of the process. All windrows are assumed to be completely filled with compost at all times.	The odour from the windrows will most often be less than the maximum rate modelled. Actual odour from a windrow reduces very rapidly after the first day or two and becomes quite low after two to four weeks. Compost windrows will be emptied and filled progressively. Gore® covers will cover all Phase 1 and Phase 2 windrows when being filled or moved. Filling a complete windrow may take approximately three days. There will always be one or more empty windrows (out of only six). The empty windrows cannot actually emit odour at the modelled emission rates.	High - modelling represents an approximate 20% to 40% overestimation of the likely actual level of odour that may be emitted each hour of the day over a full year.
2	Compost windrow – break apart and re-formation	Modelled emission rates for windrow turning are based on the maximum rates measured during a full scale trial conducted in 2013-14 in Wodonga. Specific measurements were made to characterise the peak and thence return to normal odour levels after a few hours that occurs due to turning. Modelling further assumes that the odour emissions increase by an approximate factor of four times more than the maximum measured increase in emission rates due to break apart and re-formation (i.e. approx. eight times the underlying odour emission level). Also, assumes all six windrows are full at all times and turned as needed.	Actual odour emissions would be less than half the modelled emission rate. In practice one or more windrows would be empty and will not have material available for turning. Turning is a brief event that occurs at the start of week four and six of the eight weeks windrow cycle. Turning only occurs during day-time hours, when there is better dispersion than at night.	Medium - modelling represents more than a 100% overestimation in the actual likely level of odour emissions during windrow turning. However this does not occur frequently or persist for a long period.
3	Receival shed – odour emissions	Modelled emission rates for windrow turning are based on the maximum rates measured during a full scale trial conducted in 2013-14 in Wodonga. Odour from the receival shed is assumed to be emitted at a much higher rate than the actual emission rate. The modelled	It is impossible to work in the shed if the working floor is filled with odorous material, thus in reality there will be significantly less material and significantly less odour emission from the shed at any time. The amount of material in the shed, and hence the shed odour emission is likely to be much lower than modelled outside of the few hours of the peak	Medium - There is more than a 100% overestimation in emission rates from the shed, and continuous night time emissions are modelled that would not actually occur.

Item	Description	Modelling assumption	Actual operation	Level of conservatism
		emission rate is based on all of the internal working area of the shed being completely filled with fresh, maximum odour material, at all times. The shed odour is modelled continuously, at the maximum rate of odour, 24 hours per day, apart from the "shredder machine" which is modelled at a constant maximum emission rate during day-time weekday operating hours. Any material gained from the decontamination process would be stored in a 34 cubic metre (m^3) skip bin with a lid.	material receiving period. The shed does not operate at night, when air dispersion is poor, thus very much lower rates of emission than modelled would occur at night. This means that far less odour impacts than modelled for the shed would occur in reality.	
4	Receival shed – modelling source	Assume the odour sources are positioned out in the open and in the direct influence of the prevailing dispersion conditions	Receival shed would consist of three walls and roof with openings to allow for truck access.	Low - lower emission would occur in reality as the material in the shed would be sheltered from direct wind, rain etc.
5	Screen	Assumes the screen is operating continuously during operation periods at the facility. Odour is constant.	Likely to have periods where screen is not operating.	Low - less emissions would occur; proportional with the limited screen operating hours.
6	Maturation and storage	Assumes the maximum rate of odour emission from the maximum possible area for maturation and storage is at capacity. Odour is constantly emitted from this source.	The site cannot function day to day if the entire maturation storage area is always completely full. In reality a significant part of the area would be empty most of the time to allow room for filling and emptying the pile. It is noted that there is an EPA recommended GTA condition that would only permit a maximum of 750 tonnes of compost (non-matured and matured) to be stored onsite at any one time.	Low - There will be less odour in reality than modelled, however the maturation area is a relatively small part of the total emissions.
7	On-site water storages	Assumes the maximum area for on-site water storage is at capacity. And that odour is constantly emitted from this source.	Likely to have periods where on-site water storage is not at capacity. A spare aeration pump will be on hand to ensure that no increase in odour levels can arise even if the existing pump breaks down.	Low - There will be less odour in reality than modelled, however the water storages are a relatively small part of the total emissions.
8	Wheel-loader	Assume there are four wheel-loaders operating at all times and all four are always completely full of odorous material.	Only one wheel-loader would be operational.	Low - whilst this is a >400% overestimation, the wheel- loaders are a small part of the total emissions.

ATTACHMENT 4:

Letter from GHD to Blueprint Planning dated 3 July 2017

3 July 2017

James Laycock
Principal Planner
Blueprint Planning
3/576 Kiewa St
ALBURY NSW 2640

Our ref: 31/34291 8784

Your ref:

Dear James

Organic Waste Processing and Composting Facility
Response to traffic matters raised by JRPP

1 Introduction

GHD has been requested by Blueprint Planning to provide additional information in response to traffic-related matters raised by the Western Joint Regional Planning Panel (JRPP) as part of its assessment of DA-2016/230, the proposed Cleanaway Organic Waste Processing and Composting Facility. This report responds specifically to the JRPP request for:

1. Justification for the use of 2005 traffic data and 2% per year cumulative growth for the Kywong-Howlong Road, Howlong-Goombargana Road and Drews Lane; and
2. Confirmation that Kywong-Howlong Road, Howlong-Goombargana Road and Drew Lane are at an acceptable standard to accommodate the heavy vehicles associated with the development.

2 Background

Cleanaway Waste Management Ltd (Cleanaway) (the Proponent) proposes to construct and operate an organic waste processing and composting facility (the Project) near Howlong in southern New South Wales (NSW). A Traffic Impact Assessment (TIA) report was prepared to provide an assessment of the traffic and transport impacts of the Project as an input to the Environmental Impact Statement (EIS).

This addendum report has been prepared to address the JRPP's information requests as stated in Section 1, and is based on the data and findings presented in the Cleanaway Waste Management Traffic Impact Assessment, Revision D dated 25 November 2016 (GHD, 2016) (TIA). All information, assumptions and conclusions made in the Traffic Impact Assessment report are considered to remain valid unless otherwise stated.

2.1 Assumptions

The following assumptions have been made as part of undertaking the assessment, which are in addition to assumptions made in the TIA report. These include:

- The time frame / point of the assessment is now (i.e. current existing road and road usage conditions);
- TIA data on the current and proposed traffic volumes and types has been utilised;
- The intersection of the Riverina Highway and Howlong-Goombargana Road, and the access way intersection with Howlong-Goombargana Road are to be upgraded to BAR/BAL type intersections consistent with Austroads (consistent with a proposed development consent condition by the RMS and Federation Council); and

- The speed limit of Drew Lane is to be reduced to 60 km/h (currently 100 km/h) (consistent with a proposed development consent condition by the Federation Council).

3 Justification for the use of 2005 traffic data and 2% cumulative growth

Commentary 5 in the Austroads Guide to Traffic Management (AGTM) Part 12 (Austroads, 2016a) provides guidance on the determination of traffic growth rates. Specifically –

"Determine a traffic growth rate for roads in the area, using historical data for rural areas, or population growth estimates and traffic modelling for urban areas. If sufficient data is not available rates from similar roads in the region might be used."

In the TIA report, 2005 traffic volumes for Howlong-Goombargana Road, Kywong-Howlong Road and Drew Lane were used as the basis for analysis. These were the most recent traffic volume data available from Federation Shire (formerly Corowa Shire Council) for the subject roads.

A 2% per annum growth rate was assumed for the subject roads, with sensitivity analysis of the data also undertaken assuming a 3% per annum growth rate. These rates were applied and used to calculate the traffic volumes for the design year (2016).

Based on the quoted Austroads guidance, historical traffic volume data and growth rates from roads within the region of the development have been sourced in order to provide comparative figures in justifying the use of 2005 volumes and stated growth rates.

River Road 210 m south of Cross Street, Howlong, NSW

River Road is an undivided two-way two-lane sealed arterial road approximately 3 km south of the Project site. Historical traffic volume data has been sourced from the Roads and Maritime Service's (RMS) Traffic Volume Viewer and is presented in Figure 1.

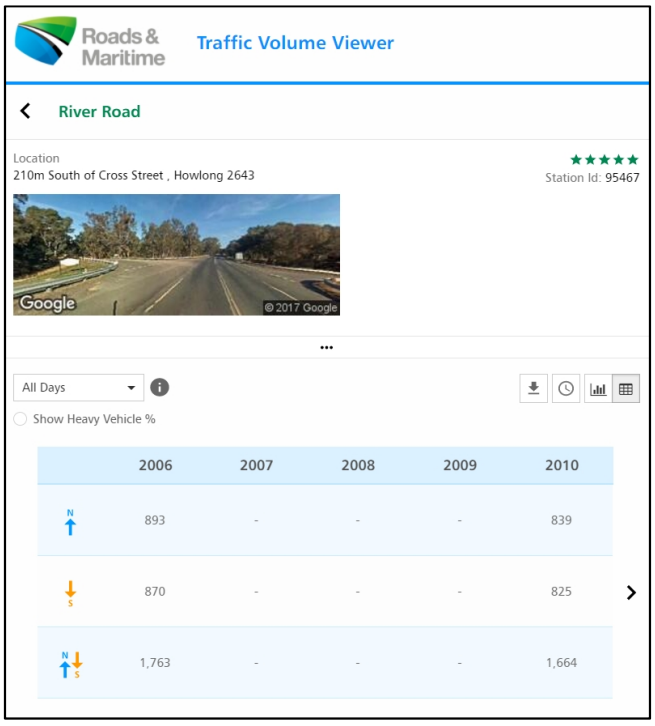

Figure 1: Historical traffic volumes for River Road

A traffic volume growth rate of **-1.39%** per annum occurred on River Road between 2006 and 2010. No traffic volume data is available for any other years (including subsequent years).

Riverina Highway 1.58 km west of Martin Street, Howlong, NSW

The Riverina Highway traffic volume monitoring location is located on an undivided two-way two-lane sealed highway approximately 2.5 km southwest of the Project site. Historical traffic volume data has been sourced from the Roads and Maritime Service's (RMS) Traffic Volume Viewer and is presented in Figure 2.

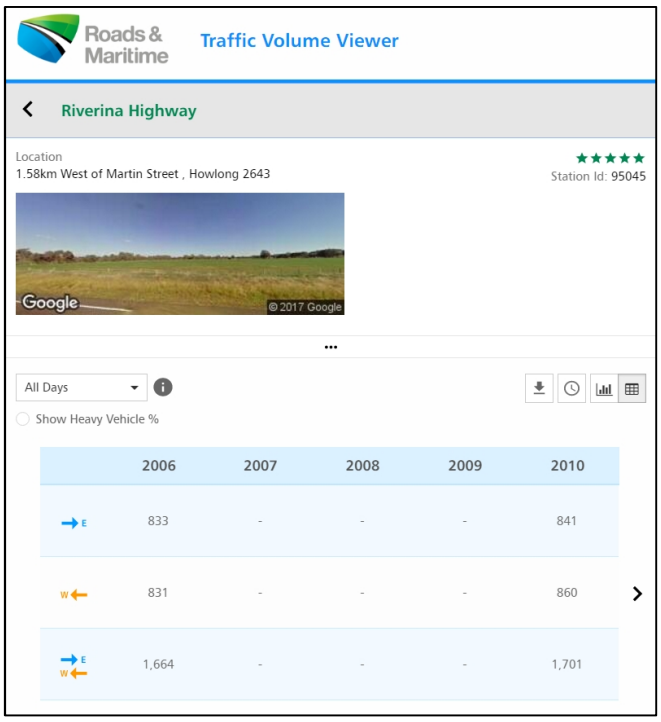

Figure 2: Historical traffic volumes for Riverina Highway

A traffic volume growth rate of **0.55%** per annum occurred on the Riverina Highway between 2006 and 2010. No traffic volume data is available for any other years (including subsequent years).

Chiltern-Howlong Road between Sharps Bridge and Barnawartha Road, Victoria

Chiltern-Howlong Road is an undivided two-way two-lane sealed highway approximately 5.5 km south of the Project site. Historical traffic volume data has been sourced from the VicRoads Open Data portal and is presented in Figure 3.

Traffic_Volume: 9508	
LOCATION_ID	9508
MIDPNT_LAT	146.62
MIDPNT_LON	-36.02
HMGNS_FLOW_ID	9,508
HMGNS_LNK_ID	4,279
HMGNS_LNK_DESC	CHILTERN-HOWLONG ROAD btwn SHARPS BRIDGE & BARNAWARTHA ROAD
FLOW	NORTH BOUND
ALLVEHS_MMW	910
ALLVEH_CALC	E
ALLVEHS_AADT	964
TRUCKS_AADT	111
TRUCK_CALC	E
PER_TRUCKS	0.14
TWO_WAY_AADT	1900
ALLVEH_AMPEAK	
ALLVEH_PMPEAK	
GROWTH_RATE	0.005
CI	0.003
YR	2,017
LABEL	964* (12% 111*) NORTH BOUND

Figure 3: Traffic information for Chiltern-Howlong Road

The two way annual average traffic (AADT) volume in 2017 is 1,900 vehicles and the growth rate is **0.5%**.

Wahgunyah-Wangaratta Road between Victoria Street and the NSW-Victorian border

Wahgunyah-Wangaratta Road (also known as Federation Way and All Saints Road) is an undivided two-way two-lane sealed highway approximately 20 km south-west of the Project site. Historical traffic volume data has been sourced from the VicRoads Open Data portal and is presented in Figure 4.

Traffic_Volume: 14965	
LOCATION_ID	14965
MIDPNT_LAT	146.41
MIDPNT_LON	-36.02
HMGNS_FLOW_ID	14,965
HMGNS_LNK_ID	2,208
HMGNS_LNK_DESC	WAHGUNYAH-WANGARATTA ROAD btwn VICTORIA STREET & the Border
FLOW	NORTH BOUND
ALLVEHS_MMW	1,900
ALLVEH_CALC	E
ALLVEHS_AADT	2,100
TRUCKS_AADT	249
TRUCK_CALC	E
PER_TRUCKS	0.15
TWO_WAY_AADT	4200
ALLVEH_AMPEAK	
ALLVEH_PMPEAK	
GROWTH_RATE	0.016
CI	0.003
YR	2,017
LABEL	2,100* (12% 249*) NORTH BOUND

Figure 4: Traffic information for Wahgunyah-Wangaratta Road

The two way AADT volume in 2017 is 4,200 vehicles and the growth rate is **1.6%**.

The growth factor figures of 2% and 3% which have been utilised in the TIA are considered to be conservative when compared to other roads within the region. Additionally, with the possible exception of the “Cool Off” development on Jude Road, Howlong, there has been no significant traffic generating developments or changes in land use in the vicinity of the subject roads since 2005 that would lead to a significant change in traffic volumes.

Based on the above, and with reference to other roads in the region, it is concluded that the use of the 2005 traffic volume figures combined with the application of a 2% per annum growth rate with a 3% sensitivity test is justified, and provides a conservative estimate of traffic volumes and traffic impact.

4 Confirmation that roads have been constructed to an acceptable standard to accommodate heavy vehicles associated with the development

GHD has undertaken a review of the adequacy of the existing road network to accommodate project traffic in a road safety and operational context. This review has been undertaken consistent with the *Guide to Road Safety Part 6* (Austroads, 2009) guidelines, but does not constitute a formal road safety audit.

As part of the review, detailed site inspections were completed on 28 June, 2017. Weather conditions during the site inspection were dry and overcast and inspections occurred on a gazetted school day. As such, the observations and traffic conditions on site are considered to be representative of normal traffic conditions for the site.

This review should be considered in conjunction with previous analysis presented in the TIA, particularly in Section 2.5 (review of crash history), Section 2.7 (consideration of adverse weather conditions) and Sections 2.9 to 2.12 (sight distance analysis).

4.1 Summary of road attributes

A summary of the key attributes of each road are provided below, with additional detail presented in Table 1 (at the end of this document) and the TIA.

- Minor variability was noted in relation to physical geometry associated with road widths, shoulders and formations. Common issues identified for the three roads assessed related to road furniture. Guide posts are inconsistently located and at times absent from drainage structures near driveways and property entrances; and
- Road cross drainage and property access drainage has a variable approach to headwalls with some being trafficable, some being non trafficable and some without end walls.

4.1.1 Howlong-Goombargana Road (including Sturt Street)

Road attributes were re-assessed and documented along the Howlong-Goombargana Road between Drew Lane and the Riverina Highway intersections.

The physical road attributes are as follows:

- Undivided, two way, sealed road with north-south alignment;
- Seal width 5.5 to 5.6 m;
- Gravel shoulder width varies typically 0.5 to 1 m, widened to 3.3 m opposite Howlong landfill entrance; and
- Line-marking – none.

4.1.2 Drew Lane

Road attributes were re-assessed and documented along Drew Lane between Howlong Goombargana Road and Kywong-Howlong Road.

The physical road attributes are as follows:

- Undivided, two way, sealed road with east-west alignment
- Seal width 6.2 – 6.4 m
- Gravel shoulder width varies typically 0.5 – 1.5 m
- Line-marking – none

4.1.3 Kywong-Howlong Road

Road attributes were re-assessed and documented along Kywong-Howlong Road between Drew Lane and the Riverina Highway.

The physical road attributes are as follows:

- Undivided, two way, sealed road with north-south alignment
- Seal width 7.0 to 7.5 m
- Shoulder width varies typically 0.5 to 1 m
- Line-marking – dashed centreline and 6.5 m between solid edge lines

Additional details on road attributes are provided in Table 1.

4.2 Observations

The following observations have been made following a detailed review of the above roads and consideration of the assumptions listed in Section 2.1:

- Road surfaces are in generally good condition with some deterioration noted in the section of Kywong-Howlong Road between the Riverina Highway and Jude Road (access to Howlong Industrial Estate). Localised patching identified in minimal other locations. The road formations were generally well constructed with the pavement located above swale drains.
- Visibility and sight distances were observed to be consistent with information detailed in the TIA (refer to Table 8 in TIA). As detailed in Section 6.2.2 in the TIA, appropriate extensions and implementation of 50 km/h speed zones will enable compliance will all relevant sight distance requirements under Austroads. In addition, vegetation will require ongoing maintenance to provide continued sight distance.
- Lane width and shoulders are generally adequate for the passing of heavy vehicles, however the Howlong-Goombargana Road sealed pavement at 5.5 m width does not comply with Austroads (2016b) guidelines (Table 4.5 in Austroads 2016 Guide to Road Design Part 3: Geometric Design).
- There is a general requirement for maintenance and provision of additional guideposts at a number of locations. Drainage headwall structures have been installed over a period of time that has resulted in some structures being trafficable and others non-trafficable. Road culvert access drainage is typically located 4.5 m from the edge of the bitumen.
- Signage generally appears to be in good condition and appropriately located. However, as part of the speed reduction on Drew Lane from 100 km/h to 60 km/h, it is recommended that a general review of warning and regulatory signage within the road reserve be completed to bring signage up to current standards.

- Based on Table 4.1 in the Austroads (2010) Guide to Road Design Part 6, Howlong-Goombargana Road and Kywong-Howlong Road generally do not have road hazards located within the clear zone or at the edge of the clear zone. Drew Lane however has notable hazards within the clear zone (primarily mature trees), despite taking into account the reduced clear zone requirements from the 60 km/h speed zone reduction. It is noted that the management of encroaching vegetation/mature native trees is a broader municipal consideration that needs to be considered in context of the approach adopted throughout Federation Shire (and rural areas more generally).

In summary, in addition to the recommendations made in Section 6.2 in the TIA, the following recommendations are made:

- The widening of Howlong-Goombargana Road to minimum Austroads guidelines. It is noted that Howlong-Goombargana Road does not meet current Austroads guidelines under existing conditions without the proposed development. It is also noted that the road has also been substandard for a number of years, with the road not meeting the then Austroads guidelines in 2005 based on provided traffic volumes (Austroads (2003) Rural Road Design).
- Review of warning and regulatory signage as part of the 60 km/h reduction on Drew Lane.
- Review of road hazards present in the clear zone, particularly on Drew Lane.

5 References

Austroads (2003) *Rural Road Design: A Guide to the Geometric Design of Rural Roads*

Austroads (2009) *Guide to Road Safety Part 6: Road Safety Audit*

Austroads (2010) *Guide to Road Design Part 6: Roadside Design, Safety and Barriers*

Austroads (2016a) *Guide to Traffic Management Part 12: Traffic Impacts of Developments*

Austroads (2016b) *Guide to Road Design Part 3: Geometric Design*

GHD (2016) *Cleanaway Waste Management Organic Waste Processing and Composting Facility Traffic Impact Assessment*. November 2016.

Roads and Maritime Service's Traffic Volume Viewer - http://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/index.html

VicRoads Open Data portal – http://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/

Regards
GHD Pty Ltd

John Ellwood
Principal Engineer

61 2 6043 8715

Wilson Foo
Traffic Engineer

03 8687 8269

Table 1 Detailed description of road attributes

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
6.1	**Road alignment and cross-section**			
6.1.1	Visibility; sight distance	Road alignment is generally straight with no significant crests or sags. Sight distance at proposed Project development access point entrance is >500 m north and south.	Road alignment is generally straight with no significant crests or sags.	Road alignment is generally straight with no significant crests or sags.
6.1.2	Design speed	Current posted speed limit of 100 km/h.	Speed limit not sign posted with default rural speed limit of 100 km/h. (To be reduced to 60 km/h).	Speed limit not sign posted with default rural speed limit of 100 km/h.
6.1.3	Speed limit/speed zoning	100 km/h speed limit sign observed traveling northbound 240 m the from Riverina Highway turnoff. Speed limit sign of 50 km/h observed when travelling southbound 240 m from Riverina Highway turnoff. 50 km/h ahead sign noted 180 m before 50 km/h zone. All signs in good condition and visible.	No speed limit signage observed.	No speed limit signage observed.
6.1.4	Overtaking	Road is generally straight with clear visibility. No specific overtaking infrastructure or lanes are present.	Road is generally straight with clear visibility. No specific overtaking infrastructure or lanes are present.	Road is line marked, straight with clear visibility. No specific overtaking infrastructure or lanes are present.
6.1.5	Readability by drivers	Generally straight and clear alignment and trees follow alignment of road. No pavement markings.	Generally straight and clear alignment. Trees follow alignment and encroach on road	Generally straight and clear alignment. Trees follow alignment of road.

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
		No elements that may cause confusion were noted.	in sections. Pavement is uniform with no pavement markings.	No elements that may cause confusion were noted.
6.1.6	Widths	Seal width varies 5.5 to 5.6 m. Wide road formation with good drainage. Gravel shoulder width varies, typically 0.5 to 1 m. Formation wide enough for vehicle to pull over.	Seal width varies 6.2 to 6.4 m. Shoulders typically 0.5 m to 1.5 m wide. Road reserve measured at 18 m from fence to fence.	Seal width varies 7 to 7.5 m, measuring 6.5 m between edge lines. Shoulders vary 0.5 to 1 m.
6.1.7	Shoulders	Gravel shoulders require maintenance as evident by localised water ponding at shoulders that has developed potholes. Minor drop off to shoulder.	Gravel shoulders and road formation provides space for vehicle to pull over in most locations. Minor edge break/drop off observed 200 m from Howlong–Goombargana Road intersection.	Approximately 300 mm of road shoulder is sealed with the remainder being gravel. Grass has grown in the shoulder and road formation in some sections. There is sufficient room for a vehicle to pull over.
6.1.8	Crossfalls	Approximately 3% crossfall.	Approximately 3% crossfall.	Approximately 3% crossfall.
6.1.9	Batter slope	Batter slope is generally considered to be traversable.	Batter slope is generally considered to be traversable.	Batter slope is generally considered to be traversable.
6.1.10	Drains	Swale drains parallel to roadway are generally considered to be traversable in dry conditions. Culverts at property entrance driveways with mixture of sloped and vertical headwalls located typically 4.5 m from edge of seal.	Swale drains parallel to roadway are generally considered to be traversable in dry conditions. Heavily grassed swale drains. Missing and inconsistent approach to guide posts marking culverts at property entrances.	Swale drains parallel to roadway are generally considered to be traversable in dry conditions. Heavily grassed swale drains.
6.2	**Auxiliary lanes**			
6.2.1	Tapers	N/A	N/A	N/A
6.2.2	Shoulders	N/A	N/A	N/A
6.2.3	Signs and markings	N/A	N/A	N/A
6.2.4	Turning traffic	N/A	N/A	N/A

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
6.3	**Intersections**			
6.3.1	Location	Two intersections: Riverina Highway & Drew Lane	Two intersections: Howlong–Goombargana Road & Kywong-Howlong Road.	Three intersections: Drew Lane, Jude Road (Howlong Industrial Estate entrance) & Riverina Highway.
6.3.2	Visibility; sight distance	Sight distance measures previously measured in Table 9 of TIA. Western leg of the Riverina Highway intersection was found to be non-compliant. Refer to Section 2.10.1 of TIA for further detail. Sight distance at Drew Lane intersection requires ongoing management of vegetation.	Sight distance measures previously measured in Table 9 of TIA. Sight distance on approach to Howlong–Goombargana Road intersection requires ongoing management of vegetation.	Sight distance measures previously measured in Table 9 of TIA. Sight distance on approach to Jude Road >500 m to the north and south.
6.3.3	Controls and delineation	“Intersection ahead” sign observed travelling north towards Drew Lane. “Intersection ahead” sign and “reduce speed” sign observed travelling south towards the Riverina Highway.	Two “intersection ahead” signs and one “give way” sign observed travelling west towards Howlong–Goombargana Road. “Intersection ahead” sign and “give way” sign observed travelling east towards Kywong-Howlong Road.	“Intersection ahead” sign observed travelling south towards Riverina Highway. Information sign and chevron sign also noted. “Intersection ahead” sign observed travelling north towards Drew Lane.
6.3.4	Layout	Western gravel shoulder has been locally widened at entrance to Howlong landfill.		Right turn treatment along Riverina Highway turning into Kywong-Howlong Road. No left turn treatment at Riverina Highway. No right or left turn treatments at the intersection with Jude Road (Howlong Industrial Estate entrance)
6.3.5	Miscellaneous	Loose gravel across Drew Lane Howlong-Goombargana Road intersection.		

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
6.4	**Signs and lighting**			
6.4.1	Lighting	None observed.	None observed.	None observed.
6.4.2	General signs issues	No give way sign observed travelling south at Riverina Highway intersection.	No signage issues observed	No give way sign observed on southern approach to Riverina Highway.
6.4.3	Sign legibility	Good condition. "Cover your load" sign in poor condition.	Good condition.	Good condition.
6.4.4	Sign supports	Good condition.	Leaning giveway signage pole at the Kywong-Howlong Road.	Good condition.
6.5	**Markings and delineation**			
6.5.1	General issues	No line marking.	No line marking.	Line marking has faded.
6.5.2	Centrelines, edgelines, lane lines	N/A	N/A	Dashed centreline and solid edge line observed.
6.5.3	Guideposts and reflectors	Guideposts at regular intervals with damaged posts evident. Inconsistent approach to guide posts at culverts and property entrances (some present / some absent).	Guideposts at regular intervals with damaged posts evident. Inconsistent approach to guide posts at culverts and property entrances (some present / some absent).	Guideposts at regular intervals with damaged posts evident.
6.5.4	Curve warning and delineation	Chevron alignment markers (CAMs) are present Riverina Highway intersection for southbound traffic. In generally good condition and visible.	No curves.	No curves.
6.6	**Crash barriers and clear zones**			
6.6.1	Clear zones	Two culvert crossings both have widths of 8.5 m from headwall to headwall. Power lines and poles observed 6.6 m from edge of seal on western side.	Several dead and living trees located within 3 m of edge of seal north and south side. Large tree located 1.2 m from edge of seal on northern road side, located 700 m from	Wide road formation. Power lines 8.1 m from edge of seal, east side. Tree line 5.2 m from edge of seal.

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
		Property entrance headwalls typically 4.5 m from edge of seal on both sides of road.	intersection with Howlong–Goombargana Road. Hazard warning sign in front of tree.	
6.6.2	Crash barriers	None observed.	None observed.	None observed.
6.6.3	End treatments	N/A	N/A	N/A
6.6.4	Fences	Post and wire fences along road reserve to contain livestock.	Post and wire fences along road reserve to contain livestock.	Post and wire fences along road reserve to contain livestock.
6.6.5	Visibility of barriers and fences	Visible	Visible	Visible
6.7	**Traffic signals**			
6.7.1	Operations	N/A	N/A	N/A
6.7.2	Visibility	N/A	N/A	N/A
6.8	**Pedestrians and cyclists**			
6.8.1	General issues	None observed	None observed	None observed
6.8.2	Pedestrians	None observed	None observed	None observed
6.8.3	Cyclists	None observed but noted in TIA	None observed but noted in TIA	None observed but noted in TIA
6.8.4	Public transport	School bus route	None observed	None observed
6.9	**Bridges and culverts**			
6.9.1	Design features	Two culvert crossings observed. Width marker signs and guideposts mark locations. No guard fence observed.	Culvert and headwall located at intersection with Kywong-Howlong Road.	None observed
6.9.2	Crash barriers	None observed	None observed	None observed
6.9.3	Miscellaneous	Road formation width through culvert sections is 8.5 m. Seal width varies 5.5 to 5.6 m. Inconsistent approach to headwalls with some sloped/trafficable and others non trafficable. Marker posts inconsistent and some missing.	Area surrounding headwalls is overgrown. Inconsistent approach to headwalls with some sloped/trafficable and others non trafficable. Marker posts inconsistent and some missing.	Inconsistent approach to headwalls with some sloped/trafficable and others non trafficable. Marker posts inconsistent and some missing.

Part 6 Road Safety Audit Guideline		Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
6.10	**Pavement**			
6.10.1	Pavement defects	One large patch approximately 20 m long observed 600 m south from Drew Lane intersection. Minor edge break and patching. Generally good quality pavement and well drained.	Pavement is in good condition with little deformation, evidence of recent reseal. Minor edge break and drop off observed 200 m from intersection with Howlong–Goombargana Road.	Between Riverina Highway and Jude Road heavy patching located in first 1 km from Riverina Highway turnoff. Elsewhere, good quality pavement and well drained with no evidence of deformation.
6.10.2	Skid resistance	Bitumen seal. No skid issues identified.	Bitumen seal with a localised slurry overlay approximately 750 m in length observed. No skid issues identified.	Bitumen seal. No skid issues identified.
6.10.3	Ponding	Localised potholes in road of shoulders as stated previously.	No obvious ponding.	No obvious ponding.
6.11	**Parking**			
6.11.1	General issues	N/A	N/A	N/A
6.12	**Provision for heavy vehicles**			
6.12.1	Design issues	Design issues relate to rural context speed signage and traffic volumes as referenced in the TIA.	Design issues relate to rural context speed signage and traffic volumes as referenced in the TIA.	Design issues relate to rural context speed signage and traffic volumes as referenced in the TIA.
6.12.2	Pavement/shoulder quality	Pavement is generally in good condition. Shoulders require maintenance.	Pavement is uniform and of good quality. Gravel shoulder and of good quality, width varies.	Pavement is uniform and of good quality, with exception of patched area mentioned above.
6.13	**Floodways and causeways**			
6.13.1	Ponding, flooding	Swale drains parallel to roadway are traversable in dry conditions either side. Grass is relatively short.	Swale drains parallel to roadway are traversable in dry conditions either side.	Swale drains parallel to roadway are traversable in dry conditions either side.

Part 6 Road Safety Audit Guideline	Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
	Road swale drains can typically pond water in flatter areas surrounding Howlong.	No obvious ponding. Swale drain is heavily grassed. Road swale drains can typically pond water in flatter areas surrounding Howlong.	No obvious ponding. Swale drain is heavily grassed. Road swale drains can typically pond water in flatter areas surrounding Howlong.
6.13.2 Safety of devices	Drainage structures and road access typically located 4.5 m from edge of bitumen. Two road culverts within clear zone but marked with guide posts and signage.	Drainage structures and road access typically located 4.5 m from edge of bitumen.	Drainage structures and road access typically located 4.5 m from edge of bitumen.
6.14 Miscellaneous			
6.14.1 Landscaping	Tree planting limited to fence lines away from clear zone.	Mature vegetation encroaches on clear zone, constituting a hazard.	Tree planting limited to fence lines away from clear zone.
6.14.2 Temporary works	N/A	N/A	N/A
6.14.3 Headlight glare	N/A	N/A	N/A
6.14.4 Roadside activities	None	None	Numerous vehicles located at Howlong Industrial Estate. Not directly on Kywong-Howlong Road.
6.14.5 Errant vehicles	Evidence of damaged guide posts.	Evidence of damaged guide posts.	Evidence of damaged guide posts.
6.14.6 Other safety issues	Bitumen roads with intersecting gravel roads have potential for loose gravel and clay on the bitumen road.	North south orientation with potential sun impacts. Bitumen roads with intersecting gravel roads have potential for loose gravel and clay on the bitumen road.	Bitumen roads with intersecting gravel roads have potential for loose gravel and clay on the bitumen road.
6.14.7 Rest areas	N/A	N/A	N/A
6.14.8 Animals	Livestock contained by post and wire fencing. No animals observed within road reserve.	Livestock contained by post and wire fencing. No animals observed within road reserve.	Livestock contained by post and wire fencing. No animals observed within road reserve.

Part 6 Road Safety Audit Guideline	Howlong–Goombargana Road (between Drew Lane and Riverina Highway)	Drew Lane	Kywong-Howlong Road (between Drew Lane and Riverina Highway)
6.14.9 Safety aspects for heavy vehicles not already covered	Movement of oversized agricultural machinery.	Movement of oversized agricultural machinery.	Movement of oversized agricultural machinery.