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Organics Recycling Facility – Peer Review (DA2020 – 0138)



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Abbreviations

| | |
|---------------|--|
| ASD | Approach Sight Distance |
| BCA | Building Code of Australia |
| C:N | Carbon:Nitrogen Ratio |
| CEMP | Construction Environmental Management Plan |
| EMP | Environmental Management Plan |
| EPA | Environment Protection Authority |
| EPL | Environment Protection Licence |
| FOGO | Food Organics and Garden Organics |
| GO | Garden Organics |
| GTA | General Terms of Approval |
| ML | Megalitre |
| NSW | New South Wales |
| OEMP | Operational Environmental Management Plan |
| POEO | Protection of the Environment Operations |
| tpa | Tonnes per annum |
| WHS | Work Health & Safety |
| WM Act | Water Management Act 2000 |



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1 Introduction

1.1 Background

Tamworth Regional Council (Council) has lodged a Development Application for the construction of an organics processing facility, PPSNTH – 11 – Tamworth Regional Council – DA 2020-0138 at Gidley Appleby Road, Gidley – Organic Recycling Facility (the Proposal), which has been referred to the Northern Regional Planning Panel (the Panel) for determination. This referral is pursuant to Schedule 7 of the *State Environmental Planning Policy (State and Regional Development) 2011* as the proposed development has a 'capital investment value' of more than \$5 million and Council is both the applicant and landowner.

The facility will utilise a tunnel composting technology to process up to 35,000 tonnes per annum (tpa) of Category 1, 2 and 3 organics, which are detailed in **Table 1-1**. The material will be processed into a soil product for use in landscaping and agricultural production. It is also Council's intent to roll-out a kerbside Food Organics Garden Organics (FOGO) service in parallel to the commencement of operations at the processing facility. The introduction of this service proposes to divert organics from landfill which are currently collected in the red-lidded residual waste kerbside bin.

Table 1-1: Categorisation of Organics

| Organics Category | Type | Example of Organics |
|-------------------|--|---|
| Category 1 | Garden and landscaping organics | Grass, leaves, plants, loppings, branches, tree trunks and stumps. |
| | Untreated timber | Sawdust, shavings, timber offcuts, crates, pallets, wood packaging. |
| | Natural organic fibrous organics | Peat, seed hulls/husks, straw, bagasse and other natural organic fibrous organics. |
| | Processed fibrous organics | Paper, cardboard, paper-processing sludge, non-synthetic textiles. |
| Category 2 | Other natural or processed vegetable organics | Vegetables, fruit and seeds and processing sludges and wastes, winery, brewery and distillery wastes, food organics excluding organics in Category 3. |
| | Biosolids and manures | Sewage biosolids, animal manure and mixtures of manure and biodegradable animal bedding organics. |
| Category 3 | Meat, fish and fatty foods | Carcasses and parts of carcasses, blood, bone, fish, fatty processing or food. |
| | Fatty and oily sludges and organics from animal and vegetable origin | Dewatered grease trap, fatty and oily sludges of animal and vegetable origin. |
| | Mixed residual waste containing putrescible organics | Wastes containing putrescible organics, including household domestic waste that is set aside for kerbside collection or delivered by the householder directly to a processing facility, and waste from commerce and industry. |

On 19 February 2020, the Panel met at Ray Walsh House, Peel Street Tamworth, to make a determination on the Proposal.

It was determined by the Panel that the matter be deferred. The basis for the deferral is detailed below, which is an extract from the Record of Deferral.

The Panel made four initial findings as set out below.



Firstly, the Panel sees in principle benefit in a facility of the type proposed as it would remove a significant volume of materials from the waste stream and process them into useful products.

Secondly, the Panel believes the proposal is a permissible development in the subject zone (RU1 – Primary Production) and that the proposed use has been properly characterised as a ‘Resource Recovery Facility’.

Thirdly, the Panel believes that the site of the proposed development is capable of satisfactorily accommodating a resource recovery facility provided that it is carefully designed and effectively managed and regulated.

Fourthly, the Panel believes that following inclusion of the stronger regulatory measures and conditions identified below, and prior to submission of an updated assessment report, it would be prudent for Council to commission an independent external review of the development proposal. The review would comment on the adequacy of the assessment process and report including its recommendations and the proposed conditions of development consent considering the submissions received on the proposal. The review would be undertaken by either a suitably qualified consulting firm or a council of similar size and population to Tamworth Regional Council. The review report would be made public.

Notwithstanding the preceding points, the Panel has concerns about the adequacy of the current application in certain key respects, being:

- The effects and acceptability of leachate discharges on neighbouring land uses and receiving water bodies;*
- Certainty about water sources to meet the operational needs of the proposal and evidence that the proposed sources would be acceptable to Water NSW;*
- The effectiveness of contaminant identification and handling procedures, including Work, Health and Safety aspects;*
- Safety issues on those roads that function as both school bus and truck routes for the proposal;*
- The need, if any, for intersection upgrades to ensure safe and efficient traffic flows when traffic from the proposal is added to base traffic;*
- Clarification as to whether management according to AS4454 is appropriate for liquid wastes and, if not, what alternative system is proposed;*
- Clarification of the implications of the NSW Environment Protection Authority’s proposed prohibition of heat in processing operations, particularly whether pasteurising could occur; and*
- Provision of adequate specifications for the contents of the required management plans, including the environmental, construction and operational plans.*

The Panel also believed that stronger regulatory measures would be needed meaning additional conditions are required, including;

- A pre-commissioning environmental and compliance audit to ensure all relevant measures are in place before operations commence;*
- Environmental and compliance audits of the facility undertaken after one year of operations and then every three years thereafter;*
- The abovementioned audits to be undertaken by a suitably qualified and experienced person or company to be approved before appointment by Council’s Director of Planning. The auditor(s) must be independent of the application and operator of the facility. The audit reports are to be completed within three months of the nominated dates, are to be made public and are to include any recommendations needed to achieve compliance with all consent conditions and conditions in associated approvals; and*
- The Council is to report on actions it has taken to address the auditor’s recommendations. Such reports are to be completed and made public within three months of the dates of receipt of audit reports.*



Considering the above, the Panel agreed to defer determination of the matter until all of the aforementioned information is provide in an updated assessment report. After the assessment report is received a public meeting will be held to enable consideration and determination of the application.

1.2 Objectives

The purpose of this report is to detail the findings of the independent review undertaken by Talis Consultants (Talis) as requested by the Panel, including an assessment of the key aspects and potential stronger regulatory measures noted by the Panel in their Record of Deferral.

1.3 Methodology

In order to meet the requirement of the Panel's Record of Deferral, the following activities were undertaken as part of the independent review.

1.3.1 Desktop Review

Talis undertook a desktop review of all documentation submitted as part of the Proposal's application, which consisted of the following:

- Planning Secretary's Environmental Assessment Requirements (SEAR – 1340);
- Annexure 1 – Development Plans_V1;
- Annexure 2 – Supporting Documentation;
- Annexure 3 - Submissions
- Annexure 4 – Recommended Conditions of Consent_V1;
- Annexure 5 – NSW Environment Protection Authority_V1 (General Terms of Approval);
- Annexure 6 – External Referral Agency Responses;
- Concept Design;
- Council Planning Report;
- Council letter on groundwater;
- Frequently Asked Questions – July 2019;
- Community Information Session Report - 18 July 2019;
- Consultation Meeting_RevB2; and
- Record of Deferral.

1.3.2 Technical Analysis

Following the Desktop Review, a technical analysis was undertaken on the following:

- Review of the application in relation to the key concerns raised by the Panel;
- Consideration of the practicality of the stronger regulatory measures identified by the Panel and how these could be incorporated into the Conditions of Consent;
- Review of external agency referral responses to ensure concerns are adequately addressed in the application and/or Conditions of Consent; and
- Review of the application in its entirety and identification of any gaps.

Where possible, benchmarking against relevant guidelines was undertaken throughout the technical analysis. In the absence of specific guidelines, Talis utilised its knowledge of best practice and standards within the industry and its experience in resource recovery and organics processing technologies.

It should be noted that the assessment has been undertaken utilising the information available in the documents listed under Section 1.3.1. Data that was utilised for specific studies has not been made available to Talis, therefore the assessment is based on the findings of the studies and not on the inputs into those studies.

Section 2 and Section 3 outline Talis' findings of the Technical Analysis.

1.3.3 Project Status

It is understood that Council is seeking approval on the basis of a concept design. Whilst in-vessel composting has been proposed as the method for composting the material accepted at the site, the actual technology that will drive this process is currently unknown. This will not be determined until Council appoints a processing contractor who will advance the Proposal to detailed design. During the process of detailed design, some elements of the Proposal may change which may result in the submission of a modification to the development consent, if the Proposal is approved.

1.3.4 Community Concerns

Annexure 3 of the Proposal documentation provides a summary of submissions received by the community and key concerns raised. The Annexure also includes a Submission Response document which addresses the concerns raised by the community and details any further action, if deemed necessary. Talis has reviewed these documents and notes that many of these concerns have also been raised by the Panel and have been addressed specifically in this document.



2 Concerns Raised by the Panel and External Agencies

The following section details the specific concerns raised by the Panel in its Record of Deferral and its request to consider stronger regulatory measures for certain aspects of the Proposal. Concerns raised by other external agencies are also assessed in the following section. Talis undertook an assessment of each of the concerns raised and where applicable provided a recommendation for consideration by Council.

2.1 Leachate Discharge

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to *“...the effects and acceptability of leachate discharges on neighbouring land uses and receiving water bodies...”*

L1.2 of the General Terms of Approval (GTA) issued by the NSW Environment Protection Authority (EPA) on 13 November 2019 states *“Discharges from the leachate system must not occur except as a direct result of rainfall greater than the 1 in 10 year, 24-hour storm event”*.

The inclusion of this requirement in the GTA indicates that the NSW EPA acknowledges there are certain circumstances in which the discharge of leachate is acceptable. However, outside of those circumstances, the discharge of leachate is not acceptable.

Section 3.3.10 - Leachate Management of Annexure 2 states *“...The leachate dam has been sized to accommodate 16ML as determined in the Water Balance (Appendix N). The leachate dam has been designed with a freeboard and spillway and levels will be monitored regularly alongside weather forecasts to ensure the dam does not overflow during rain events. Currently the design includes freeboard that can accept a 1-in-10 year 24-hr rainfall event for additional storage and reuse. It is unlikely that the leachate dam would reach capacity, however, should monitoring identify the need, excess leachate would be pumped to a storage tank on-site to ensure dam levels remain suitable for Site operations and forecasted weather events...”*

As stated in Annexure 2 (Section 6.10.3, page 127), the minimum capacity required by the NSW EPA is to enable the capture of runoff from a 1 in 10-year, 24 hours event (approximately 99mm rain depth) from all processing areas. This equates to 3.1 megalitres (ML) of storage. An additional storage capacity of 13ML has been included in the design to manage operational water needs and minimise the risk of leachate overflow.

Based on the proposed size of the leachate dam and use of storage tanks, in the event that the amount of freeboard is compromised, the likelihood of an overflow event occurring is low. Through the design of the facility, Council has met, and exceeded the requirements of L1.2 of the GTA.

In regards to leachate effects, Section 2 – Overview of Environmental Issues and their Management from the Department of Environment and Conservation (NSW) Environmental Guidelines: Composting and Related Organics Processing Facilities states that *“...Under aerobic conditions alkaline leachates can be formed from organics with low carbon/high nitrogen ratios, such as food and animal organics. Leachates from composting and related organics-processing facilities have the potential to pollute groundwater and surface water bodies (such as rivers, creeks and dams). They can be high in nutrients; this makes them favourable host media for bacteria and other microorganisms and gives them a high biological oxygen demand (BOD) (Tchobanoglous et al. 1993)...”*

The exact composition of leachate generated via the process of composting is determined by the nature and source of the feedstock, the stage of the composting process in which the leachate is generated and the composition of the liquid that infiltrates the compost. In general, leachate generated from composting contains



dissolved and particulate organic matter. Depending on the feedstock and location of origin of that feedstock, it may contain inorganic contaminants such as pesticides, surfactants, halogenated hydrocarbons and metals.

Proper characterisation of the nature of the leachate is necessary to predict potential impacts it may have on the environment. Without analysing the composition of leachate generated from the facility and the sites soil chemistry, it is difficult to determine the exact effect the discharge of leachate would have on surrounding land uses and water bodies. There is evidence that in instances where concentrations of certain constituents of leachate are low, for example oxidised nitrogen (nitrite+nitrate) and orthophosphate, the likelihood of environmental harm in surface water is low. However, if the concentration of other constituents is high, such as ammonium, it may lead to eutrophication in surface water¹.

It should be noted that mitigation measure GW4 within Annexure 2 states *a groundwater monitoring program will be developed to include regular monitoring downslope of the leachate dam to detect potential contamination, with comparison to a reference bore over time*. The inclusion of this mitigation measure will assist in monitoring any migration of leachate off site and any potential impacts this migration may have on neighbouring land.

Recommendation

R1. Inclusion of a condition of consent that requires monthly leachate testing for a period of twelve months following the commencement of operations to determine the composition of leachate generated from the facility. Based on the actual leachate laboratory analysis the Hazard and Risk Assessment (Appendix L of Annexure 2) should be updated to provide guidance on the potential impacts on surrounding land uses and receiving water bodies.

R2. Inclusion of a condition of consent that requires the undertaking of an assessment to determine suitable locations for the installation of a series of groundwater bores and the testing parameters to monitor groundwater conditions. Bores are to be installed prior to site works commencing to enable the collection of baseline data with routine monitoring undertaken on a quarterly basis whilst the facility is in operation.

2.2 Water

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to *“...the certainty about water sources to meet the operational needs of the proposal and evidence that the proposed sources would be acceptable to Water NSW...”*

Talis’ consideration of the above concern raised by the Panel will be addressed in two parts. Firstly, certainty about water sources will be addressed followed by Water NSW’s acceptance of the proposed water sources.

2.2.1 Water Sources

To determine the water requirements for a composting facility a water balance is undertaken, which assesses the generation and demand for water usage at a facility and determines how dependant the facility is on natural resources. The water balance for the Proposal is contained in Appendix N of Annexure 2.

¹ Cabrera, M.L, J.A. Rema, D.E. Radcliffe, and L.T West. 1998. *Monitoring water quality at a foodwaste composting site*, Pp. 163 – 167.



For the purpose of this desktop assessment, the mean rainfall for the area is 611mm, with the minimum and maximum being 284mm and 1,121mm respectively. The mean evaporation potential is 1,475mm. These parameters reflect the parameters used in the site water balance assessment prepared for the Proposal.

Appendix N – Site Water Balance of Annexure 2 detailed the following water inputs and water demands for the site:

Water inputs:

- Rainfall:
 - Roof runoff (directed to rainwater tanks);
 - General runoff (directed to stormwater or leachate dam);
 - Dam surface direct rainfall;
- Moisture component of incoming waste/feedstock; and
- Bore water (make-up water for operations).

Water demands and losses (outputs) during operation of the site:

- Portable water (low use, amenities, drinking etc);
- Operational water for:
 - Dust management;
 - General cleaning;
 - Wheel wash system;
- Tunnel composting moisture control (sprinklers) and biofilter loop demands;
- Process water for moisture control during maturing processes;
- Dam surface evaporation; and
- Compost evaporation.

The site includes process and non-process water systems, which are discussed in further detail below.

Non-Process Water System

Non-process water relates to water that has not been in contact with a processing area that is captured and directed to one of the two stormwater dams on the site, as well as water collected off the roofs of buildings within the site and directed to rainwater tanks.

Appendix N of Annexure 2 states that the stormwater dams have an estimated storage volume of 2,400m³ and a maximum combined surface area of 1,600m². It also states that they are not sized or managed to provide water quality control or detention function, therefore sizing the dams is relevant only for consideration of storage capacity and water security. It is intended that the stormwater dams would provide water for the watering of the maturation pad when rainwater tank supply is inefficient and that additional exploration of beneficial use of this water should be undertaken and incorporated into the water balance during detailed design.

Table 3 of Appendix N provides roof areas and total volume of storage tanks, which has been replicated in **Table 2-1** below.

Table 2-1: Location, runoff area ns volume of site rainfall tanks (extract from Appendix N)

| Location (building roof) | Total Area (m ²) | Total Tank Volume (m ³) |
|--------------------------------|------------------------------|-------------------------------------|
| Process building and biofilter | 4,715 | 300 |
| Equipment shed | 840 | 300 |
| Office | 160 | 20 |

On examining drawings DA201 and DA204, which are drawn to scale, the size of the water tanks adjacent to the Process Building are 6.67m in diameter by 4.25m high. Each tank therefore has a gross volume of 150m³ ($\pi \times 6.67^2 \times 4.2$). Undeniably there would be some volumetric loss due to the structure of the tank, but as a broad figure the total storage of these four tanks is 600m³ and not 300m³ as quote in **Table 2-1** above.

The two water tanks next to the Equipment Shed appear to be the same size as those next to the Process Building, so the assumed total volume of storage in these is 300m³, which is the same as what is specified in **Table 2-1**. The water tank storage next to the office is stated as being 20m³. Yet there are two tanks shown on the drawing, so the total capacity is assumed to be 40m³ and not 20m³ as stated in **Table 2-1**.

Process Water

The Proposal states that water from the Process Building water tanks and the stormwater dams will be used solely for watering the compost on the maturation pads. The Proposal has assumed that 5,000m³ of clean water will be needed each year for this purpose. The Proposal further assumes that only 4,500m³ of clean water will be needed each year because the natural rainfall on those days when the intensity is more than 5mm/day will be sufficient to maintain moisture in the windrows.

When rainfall is below this rate, the compost needs moistening. On those days watering will be done so in accordance with Table 4 from Appendix N, which is replicated in **Table 2-2**. It is assumed that the figures in the table below are based on what is assumed to be a mean year (i.e. equivalent to 611mm of rainfall).

Table 2-2: Average annual supply of maturation pad moistening demands (extract from Appendix N)

| Source | Average Annual Supply (m ³) |
|--|---|
| Process Buildings & Biofilter Rainwater Tank | 2,330 |
| Stormwater Dams | 1,820 |
| Bore | 590 |
| Total | 4,740 |

Table 2-2 shows that an average of 4,740m³ of clean water will be required annually for operational purposes, which is slightly more than the 4,500m³ quoted within the Proposal.

However, what happens when the rainfall in any year is less than the mean. In extremely dry conditions, rainfall is only 284mm and assuming a retrieval rate of 80% (which is the retrieval rate utilised in **Table 2-2**) then the total amount of water to be extracted from the bore(s) will be in the vicinity of 2,571m³ during those years.

Section 3.3.2 Water Balance of this report discusses the mean annual inflow and outflow to the leachate pond, which raises doubts about the validity of the water balance and recommends a more comprehensive hydrological review be undertaken.

Recommendation

R3. It is recommended that the water balance be reviewed to ensure that extreme dry conditions have been adequately considered so that a more accurate estimate of bore water use can be provided as part of the Proposal.

R4. Council should also consider reducing reliance on the groundwater bore(s) through the technology procurement and detailed design stages.



2.2.2 NSW Water

Section 4.2.4 Water Management Act 2000 of Annexure 2 states *“...The objectives of the Water Management Act 2000 (WM Act) are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.*

Under this Act, the Site is within the area applicable to the Water Sharing Plan for the Peel Valley Regulated, Unregulated, Alluvium and Fractured Rock Water Sources. The plan includes rules for protecting the environment, extractions, managing licence holders' water accounts, and water trading in the plan area.

It is expected that a new or upgraded groundwater bore would be established on-site to provide a secure source of production water for operational use including for use in the composting process and dust suppression. Whether a new bore or an upgraded bore, these groundwater works would be subject to licensing and other approvals under the WM Act which would be sought post development consent...”

The use of the groundwater bore(s) is subject to licensing and other approvals under the WM Act. An application will be made once the detailed design of the facility is finalised. As detailed in R4, Council should endeavour to achieve a net water balance to reduce reliance on the groundwater bore(s).

It should be noted that in an email received from WaterNSW dated 10 January 2020, Council was advised that there was no objection to the water sources proposed as part of the Proposal. The email also stated that any application will most likely be referred to the Department of Planning, Industry and Environment (DPIE) for a groundwater assessment to determine an extraction limit.

2.3 Contamination Identification and Handling Procedures

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to *“...the effectiveness of contaminant identification and handling procedures, including Work, Health and Safety aspects...”*

Section 3.3.4 - Receipts Shed of Annexure 2 states *“...the initial decontamination process would involve the segregation of each delivered load within the Receipt Shed, followed by a manual screening process and physical removal of contaminants into separate bins (i.e landfill items or recyclable items)...”*

Section 1.3.1 - Waste Reception and De-Contamination of Appendix D, Annexure 2 states *“...The initial treatment step therefore involves segregation of each load on the floor by means of the FE-loader followed by manual screening and the removal of physical contaminants into separate bins for either landfill disposal or recycling...”*

There are over 40 council's across NSW that offer a kerbside FOGO service, therefore the types and volumes of contaminants found in these services are well understood and can be applied to this project. The Operational Environmental Management Plan (OEMP) that would be developed by the operator should include contamination procedures that detail identification processes and handling procedures for the typical waste types that appear in this waste stream. Handling procedures will be specific to the plant that is constructed in relation to what materials are placed in which receptacles. However, handling procedures for certain materials such as asbestos, would be in accordance with relevant guidelines.

It is unclear from the Proposal what the forecast number of total vehicle movements entering the site per day is. However, page 83 of Annexure 2 states *“...the proposed maximum daily truck movements associated with garbage trucks (incoming) and B-Doubles (outgoing) is estimated that 20 trucks in a peak hour may visit the Proposed Facility.*



If it is assumed that only half of the vehicles entering the site in the peak hour will access the receival shed, it results in one truck every six minutes disposing of material in the receival hall during the peak hour. Manual sorting of loads and decontaminating loads on the floor is not an acceptable practice due to WHS concerns and the level of proposed vehicles movements.

A workstation that enables decontamination to occur off the receival hall floor, such as an enclosed elevated picking-station, should be constructed. In the case of an elevated picking-station the material is loaded onto a variable speed conveyor system that passes through the elevated picking-station. Sorters are positioned either side of the conveyor to manually remove the contamination, adjusting the speed or stopping the conveyor to remove contamination if needed. Contamination will be dropped through a chute positioned beside the sorters for disposal. The material should then pass through a screen that includes a magnet which removes metal items from the material.

It should be noted that Condition O3.8 of the GTA issued by the NSW EPA, contained within Annexure 5, states, *“Unacceptable waste material found in the waste stream (after receival of that waste) at the premises must be stored inside the receivals and processing shed and must only be stored for a maximum of two days prior to disposal at a lawful waste facility”*.

Recommendation

R5. Annexure 2 be amended to include the preparation of a Contamination Management Plan as part of the Operational Environmental Management Plan (OEMP), which includes the requirements of Condition O3.8 of the General Terms of Approval issued by the NSW EPA and relevant WHS requirements.

R6. Annexure 2 be amended to require decontamination of material delivered to the receival hall floor to be undertaken in a manner and location with the aim of eliminating the interaction of sorting staff from delivery and operational vehicles.

2.4 Road Safety

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to *“...the safety issues on those roads that function as both school bus and truck routes for the proposal...”*

Section 2.7 - Public Transport and Pedestrian and Cycling Facilities of the Traffic and Transport Impact Assessment (Appendix G of Annexure 2 states:

There are no public transport or pedestrian and cycling facilities along Gidley Siding Road, Gidley Appleby Road and Appleby Lane.

While there are no pedestrian and cycling facilities along Oxley Highway and Manilla Road, regional bus services do operate on these routes.

During the site visit, no pedestrians or cyclists were observed in the vicinity of the site.

It is unclear which, if any, roads function as both school bus and truck routes. This should be investigated, and if required, appropriate management measures should be adopted in accordance with relevant standards such as school bus signage. If possible, school buses should be clearly identifiable so that other road users are aware it is a frequently stopping vehicle.



Recommendation

R7. Review the Traffic and Transport Impact Assessment giving due consideration to the surrounding roads that may function as a school bus route.

2.5 Intersection Upgrades

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to *“...the need, if any, for intersection upgrades to ensure safe and efficient traffic flows when traffic from the proposal is added to base traffic...”*

Following a review of the Traffic and Transport Impact Assessment (Appendix G of Annexure 2) it is noted that minimal intersection upgrades have been recommended, which are limited to give-way signage and linemarking. Due to concerns relating to Safe Intersection Sight Distances (SISD), which are discussed further in Section 3.2.1 Traffic Study of this report, and the current alignment of some of the intersections further consideration of intersection upgrades is warranted.

It should be noted that the review of the Traffic and Transport Impact Assessment has been undertaken as a desktop study. All recommendations should be investigated further with a site inspection.

Recommendation

R8. Review the Traffic and Transport Impact Assessment to assess if any surrounding intersections require upgrades.

2.6 Management of Liquid Waste – AS4454

In the Record of Deferral, the Panel sought *“...clarification as to whether management according to AS4454 is appropriate for liquid wastes and, if not, what alternative system is proposed...”*

Clause 3.2.1 Pasteurisation of AS4454 – Composts, soil conditioners and mulches states:

“Any product supplied or described as ‘pasteurised’ shall have had the whole of its mass subjected to either of the following:

- a) Appropriate turning of outer material to the inside of the windrow so the whole mass is subjected to a minimum of three turns with the internal temperature reaching a minimum of 55°C for three consecutive days before each turn. Pasteurisation occurs as a result of a time/temperature relationship. Where higher risk materials including manure, animal waste, food or grease trap wastes are used as feedstock, a longer time at 55°C or higher and more turns may be necessary in order to counter reinfection by the outside of the pile when turned. For these higher risk materials the core temperature of the compost mass shall be maintained at 55°C or higher for 15 days or longer, during this period the windrow shall be turned a minimum of five times (consistent with: Standards for the use or disposal of sewerage sludge, Regulation 503, US EPA)...”*

Clause 3.2.2 Composting of AS4454 – Composts, soil conditioners and mulches states:

“Any product supplied or described as ‘compost’ shall:

- a) Comply with Clause 3.2.1...”*

Therefore, the management of liquid wastes, such as the grease trap waste proposed to be accepted at the facility, in accordance with AS4454 is appropriate, as long as the abovementioned criteria is achieved.

The proposed process includes a pasteurisation cycle of 14 days, with temperatures reaching 55-65°C. Following the initial 14 days cycle, the tunnel batch will be loaded into another tunnel for a second 14-day cycle, with temperatures reaching 50-55°C.

2.7 EPA Prohibition of Heat

In the Record of Deferral, the Panel sought “...clarification of the implications of the NSW Environment Protection Authority’s proposed prohibition of heat in processing operations, particularly whether pasteurising could occur...”

O3.7 of the GTA issued by the EPA on 13 November 2019 states “Processing must not involve heat (thermal) or chemical processing”.

In accordance with Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act), thermal treatment means the processing of waste by burning, incineration, thermal oxidation, gasification, pyrolysis, plasma or other thermal treatment processes.

The processing of organic material via in-vessel composting does not constitute thermal processing based on the definition of thermal treatment in Schedule 1 of the POEO Act. The process of in-vessel composting utilises the heat generated from the decomposition process to achieve pasteurisation.

2.8 Management Plans

In the Record of Deferral, the Panel raised concerns about the adequacy of the current application in relation to the ‘...provision of adequate specifications for the contents of the required management plans, including the environmental, construction and operational plans...’

Table 2-3 lists the management plans detailed in Annexure 2 that are to be prepared in relation to the Proposal and the phase of the Proposal the management plans are required.

Table 2-3: Proposal management plans

| Management Plan | Construction Phase | Operational Phase |
|---|--------------------|-------------------|
| Construction Environmental Management Plan (CEMP) | | |
| Operational Environmental Management Plan (OEMP) | | |
| Waste Management Plan | | |
| Noise Management Plan | | |
| Complaints Management Plan | | |
| Weed and Pest Management Plan | | |
| Soil and Water Management Plan | | |
| Traffic Management Plan | | |
| Operational Water Management Plan | | |
| Wastewater Management Plan | | |



| Management Plan | Construction Phase | Operational Phase |
|---------------------------|--------------------|-------------------|
| Bushfire Management Plan* | | |

2.8.1 Construction Environmental Management Plan (CEMP)

A CEMP is prepared for the construction phase of a Proposal and is based on the mitigation and management measures detailed in the Environmental Impact Statement and the conditions of approval. It provides the framework for the management of all potential environmental impacts resulting from the construction activities and as a minimum should address the management of the following:

- Noise;
- Air (odour, dust) emissions;
- Construction traffic and interaction with operational traffic;
- Groundwater (including leachate capture and containment if applicable);
- Erosion and surface water;
- Contamination;
- Flora and fauna preservation and protection;
- Hazard and risk management;
- Bushfire management;
- Heritage (including unexpected finds during excavation); and
- Waste management and integration with current procedures.

All relevant mitigation measures detailed within the Proposal application documentation must be included in the CEMP.

Throughout Annexure 2 reference is made to the inclusion of certain mitigation measures and other considerations in the CEMP. However, there is no specific reference to the development of the CEMP and the principles guiding its development.

2.8.2 Operational Environmental Management Plan (OEMP)

An OEMP is prepared for the operational phase of a Proposal and is based on the mitigation and management measures detailed in the Environmental Impact Statement and conditions of approval and other regulatory requirements including Environment Protection Licences (EPLs).

Throughout Annexure 2 reference is made to the inclusion of certain mitigation measures and other considerations in the OEMP. However, there is no specific reference to the development of the OEMP and the principles guiding its development.

Whilst an OEMP is specific to the facility constructed and the technology implemented, certain criteria should be included in the development of an OEMP, including:

- Reference to environmental regulatory requirements relating to the operation of the facility;
- The operator's assessment of all environmental risks arising from the operation of the facility;
- Environmental policy and objectives;
- Environmental instruction, training and induction procedures;
- Environmental auditing and inspection procedures;
- Environmental incident reporting procedures;



- Environmental control measures and management programs; and
- Environmental monitoring programs and reporting procedures.

All relevant mitigation measures detailed within the Proposal application documentation must be included in the OEMP.

Section 3.6.14 - Operational Environmental Management Plan of Annexure 2 states that “...*The operational environmental management for the Site will be addressed by the operational contractor and will be managed through an OEMP...*”

2.8.3 Benchmark

The Department of Infrastructure, Planning and Natural Resources’ Guideline for the Preparation of Environmental Management Plans (2004) provides guidance on the structure of CEMPs and OEMPs. The structure of an Environmental Management Plan (EMP) should include:

- Background
 - Introduction;
 - Project description;
 - EMP context;
 - EMP objectives; and
 - Environmental Policy
- Environmental Management
 - Environmental management structure and responsibility;
 - Approval and licencing requirements;
 - Reporting;
 - Environmental training; and
 - Emergency contacts and response
- Implementation
 - Risk assessment;
 - Environmental management activities and controls;
 - Environmental management plans or maps; and
 - Environmental schedules
- Monitor and Review
 - Environmental monitoring;
 - Environmental auditing;
 - Corrective action; and
 - EMP review

Recommendation

R9. An all-encompassing statement regarding the need for the development and purpose of a CEMP and OEMP to be included in Annexure 2, with reference to the Department of Infrastructure, Planning and Natural Resources’ Guideline for the Preparation of Environmental Management Plans (2004) as the minimum standard for the structure of the CEMP and OEMP.

R10. The additional management plans listed for development within Annexure 2 to be incorporated into either the CEMP or OEMP depending on which phase of the Proposal the management plan is required.



R11. A Noise Management Plan and Complaints Management Plan be prepared for the construction phase of the project

2.9 Stronger Regulatory Measures

In the Record of Deferral, the Panel indicated a belief that stronger regulatory measures were needed in relation to pre-commissioning and ongoing auditing of the facility in relation to its conditions of approval. The following sections outline these measures.

2.9.1 Pre-commissioning Environmental and Compliance Audit

The Panel has specified the inclusion of additional approval conditions in relation to “...a pre-commissioning environmental and compliance audit to ensure all relevant measures are in place before operations commence...” and that ‘...audits be undertaken by a suitably qualified and experienced person or company to be approved before appointment by Council’s Director of Planning. The auditor(s) must be independent of the applicant and operator of the facility. The audit reports are to be completed within three months of the nominated dates, are to be made public and are to include any recommendations needed to achieve compliance with all consent conditions in associated approvals...’

Condition 20 of Annexure 4 – Recommended Conditions of Consent states:

“All proposed building, site works or property improvement indicated on the submitted plans or otherwise required under the terms of this consent shall be completed prior to occupation of the premise to ensure compliance with the provision of the Environmental Planning and Assessment Act, 1979”.

Conditions 57 – 63 within the Annexure 4 – Recommended Conditions of Consent, relate to works required to be completed prior to the issue of an Occupation Certificate.

A specific condition relating to a pre-commissioning environmental and compliance audit that verifies the implementation of all relevant mitigation measure should be included with those conditions that are required to be completed prior to the issue of an Occupation Certificate. The need for the audit reports to be made public is not necessary, as occupation will not be granted unless the pre-commissioning audit condition is met, which ultimately means operations will not commence until the condition has been satisfied.

To create a greater level of transparency, it may be preferable for a private certifier to be appointed as the Principal Certifying Authority as opposed to Council.

Following the issue of an Occupation Certificate a commissioning assessment should be undertaken on the installation and performance of the plant and tunnel composting system, including the tunnels and system control units, under commissioning conditions. This assessment would be undertaken by a suitably qualified and experienced independent person or company, which may differ from the person or company undertaking the environmental and compliance audit, with evidence of the assessment provided through a Commissioning Certificate.

The specifics relating to such an assessment would be included in the agreement between Council and the facility operator as opposed to the conditions of consent. This is because the actual technology to be implemented will not be known until a contract is awarded. However, as a minimum it would include an assessment of the commissioning process against a commissioning protocol, which has been prepared by the operator and is specific to the technology implemented. It would also require evidence to be provided that pasteurisation has been achieved in all tunnels, which demonstrates that the material has been processed in accordance with the relevant Australian Standard, such as AS4454 Composts, Soil Conditions and Mulches and relevant NSW EPA



Resource Recovery Orders, such as Compost. Resource Recovery Orders include conditions which generators and processors of waste must meet to supply the waste material for the purpose described. These conditions may include material specification processing specification, record-keeping, reporting and other requirements.

Recommendation

R12. Inclusion of a consent condition with those required prior to the issue of an Occupation Certificate that requires a pre-commissioning environmental and compliance audit be undertaken by an independent auditor that verifies the implementation of all relevant mitigation measures.

R13. Inclusion of a consent condition that requires an independent commissioning assessment be undertaken which verifies the commissioning of the processing facility and its performance in accordance with relevant Australian Standards and NSW EPA Resource Recovery Orders in relation to pasteurisation. Operation would not be permitted to commence until this condition has been satisfied.

2.9.2 Subsequent Environmental and Compliance Audits

The Panel has specified the inclusion of additional approval conditions in relation to “...*environmental and compliance audits of the facility undertaken after one year of operations and then every three years thereafter...*”.

Ongoing management of environmental performance will be managed through the EPL issued by the NSW EPA for the facility and the performance-based contract agreement between Council and the facility operator.

As discussed in Section 2.9.1, the requirement to publish the outcomes of an assessment of environmental performance is not necessary as pollution monitoring data that is required to be collected by a licence condition of an EPL must be published by the licensee in accordance with section 66(6) of the POEO Act and with the written requirements issued by the NSW EPA. In summary, the legislative provision requires that:

- Licensees who undertake monitoring as a result of a licence condition must publish or make available pollution monitoring data within 14 days of obtaining data and/or receiving a specific request for a copy of the data;
- Licensees who maintain a website must make the monitoring data related to pollution available in a prominent position on their website;
- Licensees who do not maintain a website must provide a free of charge copy of the pollution monitoring data on reasonable written request from any person;
- The data must be published in accordance with requirements issued in writing by the NSW EPA; and
- There is a penalty for not publishing or making available the results of the monitoring in accordance with section 66(6).²

Ongoing management of compliance with the approval will be undertaken through the audit and review process associated with the OEMP and through the performance-based contract established between Council and the facility operator. The audit and review process of the OEMP could be undertaken by Council or by a suitably qualified independent person or company. The way in which, and even if the outcomes of these processes are published, will be determined by the allocation of responsibility within the contract. Consideration must be given to the public disclosure of contractor performance and the appropriateness of this approach.

² NSW EPA, Requirements for publishing pollution monitoring data (2013)



As an alternative to publishing the outcomes of the audit and review processes, including contractor performance, Council officers could report on the overall performance of the facility and its ongoing compliance with approval conditions via Council's Community Strategic Plan.

2.10 External Agency Submissions

The following Section outlines concerns and/or requirements specified by those agencies that were consulted as part of the exhibition period that have not been adequately addressed through the mitigation measures within Annexure 2 or the Conditions of Consent.

2.10.1 Air Services Australia

In their correspondence dated 5 December 2019, Air Services Australia requested that ongoing consultation occur between the airport, the proponent(s) and Air Services in relation to any plant or crane operations planned for the construction of proposed development, prior to construction commencing, to ensure there will be no impacts to Air Services facilities or operations.

Recommendation

R14. That an additional condition of consent be included under the 'During Construction' section to ensure that consultation occurs between the airport, the proponent(s), and Air Services Australia in relation to any plant or crane operations planned during construction.

In their correspondence dated 16 October 2019, Air Services Australia specified that bird monitoring and management should not only apply during operation, but also during construction. They also indicated that monitoring requirements could be included in a Bird Management Plan, which also includes requirements about land use, such as avoiding standing water, storage of waste in closed containers and landscaping that avoids the use of trees and shrubs that attract birds and bats.

Recommendation

R15. That mitigation measure HR10 of Annexure 2 be modified to clearly state that monitoring of bird numbers should be undertaken during construction and operation.

R16. That the OEMP and CEMP include a Bird Management Plan that addresses the requirements detailed in Air Services Australia's email dated 16 October 2019.

2.10.2 Essential Energy

In their email dated 24 October 2019, Essential Energy made a number of general comments, one of which was in relation to working in the vicinity of electrical infrastructure. Neither the Proposal documentation nor the Conditions of Consent have addressed this.

Recommendation

R17. That the following be added as a condition of consent:

Activities within electrical easements and infrastructure must meet the requirements of ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure and be carried out in accordance with the Work near Overhead Power Lines and Work near Underground Assets Codes of Practice



2.10.3 RailCorp

In the email dated 18 December 2019 from John Holland Rail (on behalf of RailCorp), the legitimacy of Wallamore Road being in the rail corridor was raised. Whilst it may or may not impact on the development, Wallamore Road has been specified in Section 6.2.3 of Annexure 2 as the predominant inbound travel route for the Site.

It is Talis' understanding that this issue is being reviewed by the relevant section in Council and that the Wallamore Road will not be used as an access road for the site. Therefore, no further action is required on this matter in relation to the Proposal.

3 Additional Commentary

The following Section details and discusses issues and concerns identified by Talis as part of the overall review of the Proposal documentation.

3.1 Feedstock

In-vessel composting is a proven technology for transforming food organics and garden organics into compost with numerous facilities constructed and operating not only in Australia, but throughout the world. One of the most important factors in an efficient and effective composting operation is a consistent and proven waste stream. Section 3.5 – Material Sources and Quantities of Annexure 2 summaries the quantities of material to be received at the facility, which has been replicated in **Table 3-1**.

Table 3-1: Proposed feedstock

| Input | Quantity (tonnes per year) |
|--------------|----------------------------|
| FOGO | 12,750 |
| Green Waste | 9,000 |
| Paunch | 3,800 |
| Liquid Waste | 2,250 |
| Offal | 3,450 |
| Timber | 1,600 |
| DAF Sludge | 2,400 |
| Total | 35,000 |

Whilst there is no concern over the initial capacity of 35,000 tpa with a potential expansion to 50,000tpa, there is concern in relation to the variance in proposed feedstock. The vast majority of in-vessel systems focus solely on food organics and garden organics. This is primarily due to the fact that the biochemical process that takes place relies on a consistent and cohesive feedstock. The greater the variance in feedstock, the greater the difficulties in maintaining an efficient composting process.

Optimum conditions for the composting process depend on a number of factors, principle amongst which is the proportion of carbon and nitrogen content of the feedstock, known as the carbon:nitrogen ratio (C:N). The optimal range for C:N in the compositing process is 25 to 35. Operating in C:N ranges below 15 and above 40 may have significant consequences including longer processing times and odour issues. Utilising the C:N ratios detailed in **Table 3-2**, the average C:N ratio of the overall feedstock will be 46, which is well above the normally accepted range and where operational issues could arise.

Table 3-2: C:N ratio of proposed feedstock

| Material | Available Feedstock | Scenario 1 (50:50) | Scenario 2 (30:70) | C:N | C:N Mass* (50:50) | C:N Mass* (30:70) |
|--------------|---------------------|--------------------|--------------------|-----|-------------------|-------------------|
| FOGO | 12,750 | | | | | |
| 50:50 FO | 6,375 | 6,375 | | 20 | 127,500 | |
| 50:50 GO | 6,375 | 6,375 | | 25 | 159,375 | |
| 30:70 FO | 3,825 | | 3,825 | 20 | | 76,500 |
| 30:70 GO | 8,925 | | 8,925 | 25 | | 223,125 |
| Green Waste | 9,000 | 9,000 | 9,000 | 35 | 315,000 | 315,000 |
| Paunch | 3,800 | 3,800 | 3,800 | 25 | 95,000 | 95,000 |
| Liquid Waste | 2,250 | | | 0 | 0 | 0 |
| Offal | 3,450 | 3,450 | 3,450 | 6 | 20,700 | 20,700 |
| Timber | 1,600 | 1,600 | 1,600 | 500 | 800,000 | 800,000 |
| DAF Sludge | 2,400 | 2,400 | 2,400 | 5 | 12,000 | 12,000 |
| | | 33,000 | 33,000 | | 1,529,575 | 1,542,325 |
| Average C:N | | | | | 46.35 | 46.74 |

Note: *calculated by multiplying tonnage by C:N ratio.

It is important to note that actual C:N ratios will vary for each material and C:N ratios listed in **Table 3-2** are a guide only, as different references quote different values for ostensibly the same material.

The greatest influence on the C:N ratio is offal, timber and sludge, which are materials that are not included in typical in-vessel composting systems. By removing all the timber, the C:N ratio reduces to just below normal operating range. However, by also removing the offal and sludge material, the C:N ratio increase to within the normal operating range, as detailed in **Table 3-3**.

Table 3-3: C:N ratio of modified feedstock

| Material | Available Feedstock | Scenario 1 (50:50) | Scenario 2 (30:70) | C:N | Without Timber | | Without Timber, Offal & Sludge | |
|-------------|---------------------|--------------------|--------------------|-----|-------------------|-------------------|--------------------------------|-------------------|
| | | | | | C:N Mass* (50:50) | C:N Mass* (30:70) | C:N Mass* (50:50) | C:N Mass* (30:70) |
| FOGO | 12,750 | | | | | | | |
| 50:50 FO | 6,375 | 6,375 | | 20 | 127,500 | | 127,500 | |
| 50:50 GO | 6,375 | 6,375 | | 25 | 159,375 | | 159,375 | |
| 30:70 FO | 3,825 | | 3,825 | 20 | | 76,500 | | 76,500 |
| 30:70 GO | 8,925 | | 8,925 | 25 | | 223,125 | | 223,125 |
| Green Waste | 9,000 | 9,000 | 9,000 | 35 | 315,000 | 315,000 | 315,000 | 315,000 |
| Paunch | 3,800 | 3,800 | 3,800 | 25 | 95,000 | 95,000 | 95,000 | 95,000 |

| Material | Available Feedstock | Scenario 1 (50:50) | Scenario 2 (30:70) | C:N | Without Timber | | Without Timber, Offal & Sludge | |
|--------------|---------------------|-----------------------|-----------------------|-----|----------------------|----------------------|--------------------------------|----------------------|
| | | | | | C:N Mass* (50:50) | C:N Mass* (30:70) | C:N Mass* (50:50) | C:N Mass* (30:70) |
| Liquid Waste | 2,250 | | | 0 | 0 | 0 | 0 | 0 |
| Offal | 3,450 | 3,450 | 3,450 | 6 | 20,700 | 20,700 | | |
| Timber | 1,600 | 1,600 | 1,600 | 500 | | | | |
| DAF Sludge | 2,400 | 2,400 | 2,400 | 5 | 12,000 | 12,000 | | |
| Total | | 33,000 | 33,000 | | 729,575 | 742,325 | 696,875 | 709,625 |
| Average C:N | | | | | 23.23 | 23.64 | 27.27 | 27.77 |

Note: *calculated by multiplying tonnage by C:N ratio.

Theoretically the facility can accept the proposed waste streams, however, the combination of feedstock will make it a unique operation and potentially lead to difficulties in maintaining an effective operation. It should be noted that Talis contacted the Australian Organics Recycling Association Limited, to determine whether any facilities operating in Australia accept a similar feedstock, in particular paunch and offal, to that proposed by Tamworth Regional Council. Based on discussions with relevant industry contacts, including AORA and Meat and Livestock Australia, there is no known in-vessel composting facility in Australia that accepts paunch and offal.

An inability to obtain optimal C:N ratios will result in the composting process taking longer than the proposed 28 days to achieve stability. Longer residence time in the tunnels and on the maturation pad could mean capacity could be lower than predicted. Another impact could arise where the improper mixing and C:N balance could result in anaerobic conditions which will promote excessive odour, possibly beyond the capacity of the proposed biofilter.

Modifying the feedstock by removing materials with extreme individual C:N ratios, such as timber, offal and sludge dramatically impacts the mass C:N ratio. However, this removes approximately 7,500tpa of feedstock and would result in flow on effects in relation to the number of tunnels and hence overall cost of the facility.

It should be noted that it is unclear as to whether those industries that produce paunch, offal or sludge have made a commitment to Council to bring this material to the proposed facility. If no formal commitment has been made it would be considered a risk to include those tonnages in the overall feedstock and construct a facility that is capable of accepting this type of material, particularly if it is not common practice to process this material via in-vessel composting. The only material that Council has true control over in relation to its point of disposal or reprocessing is material collected at the kerbside and material accepted at its waste management facilities. Therefore, the facility proposal should focus on those materials. It should be noted that there is also a level of variability in the type and quantity of materials delivered by customers to Council's waste management facility, as price can often be a driver for seeking alternative disposal or reprocessing options.

Based on the above assessment it is recommended that Council reconsider the feedstock proposed to be accepted and processed at the facility. Council should also consider a phased implementation of other feedstock sources once the facility is fully operational and functioning in accordance with relevant standards.



Recommendation

R18. Council reconsider the feedstock proposed to be accepted and processed at the facility and modify its application to reflect any changes and flow on effects to other aspects of the application, such as design requirements. Council should also consider future expansion options for the facility from the outset.

R19. Once the facility is operational, consider options to expand feedstock received and processed at the facility

3.2 Specialist Studies

3.2.1 Traffic Study

Vehicle Movements

As mentioned in Section 2.3 of this report, the number of forecast vehicles entering the site on a daily basis once the facility is operational is unclear. A maximum figure of 60 vehicles was used in the noise assessment, however only a reference to 20 vehicles in a peak hour was mentioned in the traffic study. The basis of the numbers quoted is unidentified within the document and is consider high for a site accepting and processing 35,000tpa.

Vehicles accessing the site will be limited to kerbside collection vehicles delivering kerbside collected Food Organics Garden Organics (FOGO) material, commercial operators delivering paunch, offal, Dissolved Air Flotation (DAF) unit sludge and liquid waste, Council trucks bulk hauling garden organics (GO) and timber from the Forest Road Waste Management Facility and trucks transporting finished product offsite.

The only feedstock that Council has control over and can therefore guarantee delivery of is the kerbside FOGO material and bulk hauled garden organics and timber from Forest Road Waste Management Facility. The number of FOGO truck deliveries per day can be estimated based on current kerbside garden organics collections, with adjustments made for the inclusion of food organics and the number of bulk hauled garden organics deliveries per day could be estimated off transaction data from the weighbridge system at Forest Road Waste Management Facility. Council currently accepts abattoir material at Forest Road Waste Management Facility, which will also assist in estimating the total number of vehicles per day.

Recommendation

R20. Clarification be sought in in relation to the basis in which daily vehicle movements were determined. Basis to be included in the Proposal documentation.

Sight Distances

The Traffic and Transport Impact Assessment (Appendix G of Annexure 2) has assessed the intersections for Safe Intersection Sight Distance (SISD) for a design speed of 100km/hr and uses a recommended SISD of 262m. The recognised industry standard requires that design speed be at least 10km/hr greater than the posted speed (speed limit). Therefore, with all roads having a speed limit of 100km/h, the SISD should be assessed with a design speed of 110km/h. This means that the recommended SISD should be 300m, using a reaction time of 2.5 seconds.

The Traffic and Transport Impact Assessment states that the observed sight distance at all intersections is greater than 300m in all directions. However, it appears that the Traffic and Transport Impact Assessment has only



assessed SISID for vehicles travelling along major roads viewing minor roads. The Traffic and Transport Impact Assessment should include an assessment of vehicles viewing from the minor roads.

Talis has observed that some intersections do not have the recommended SISID for vehicles viewing from the minor roads. For vehicles on minor roads, consideration is usually given to maximum observation angles of 110° to the left and 120° to the right. For vehicles on Gidley-Appleby Road, views of Appleby Lane to the left exceeds the maximum observation angle. For vehicles on Evans Lane, there is insufficient SISID for views of Appleby Lane to the left.

Recommendation

R21 Undertake a review of the Traffic and Transport Impact Assessment in relation to Safe Intersection Sight Distance (SISD) industry standards, SISD of vehicles viewing from minor roads and Approach Sight Distance (ASD).

General Comments

Due to the potential safety risks at some intersections, Council should undertake a Road Safety Audit/Inspection of the roads and intersections. The existing road pavement design should also be investigated to ensure it is suitable for the increased loadings as a result of the Proposal.

Recommendation

R22. Undertake a Road Safety Audit/Inspection of the roads and intersections associated with the Proposal.

R23. Determine the suitability of the existing road pavement design to accommodate the increase loadings associated with the Proposal.

3.2.2 Water Balance

The water balance for the Proposal is contained within Appendix N of Annexure 2. In addition to the issues addressed in Section 2.2, the reliability of the water balance in relation to the inflows and outflows to the leachate pond are discussed in the following Section.

Table 6 of Appendix N details the mean inflows and outflows to the leachate pond, which has been replicated in **Table 3-4**.

Table 3-4: Mean annual inflows and outflows to leachate dam (extract from Appendix N)

| | Mean Annual Volume (m ³) |
|------------------------------|--------------------------------------|
| Inflows | |
| Process area runoff | 3,497 |
| Maturation pad runoff | 4,238 |
| Direct rainfall | 7,581 |
| Return leachate | 2,450 |
| Total annual average inflows | 17,767 |
| Outflows | |
| Tunnel/biofilter demands | 5,000 |

| | Mean Annual Volume (m ³) |
|-------------------------------|--------------------------------------|
| Surface evaporation | 13,937 |
| Total annual average outflows | 18,937 |

The total surface area of the process area and maturation pads equal 34,600m², of which the maturation pads account for 21,000m². The process area is calculated as the difference between the total surface area and the known surface area of the maturation pad which equals 13,600m².

The mean annual rainfall of 611mm yields a maximum annual rainfall across the process area of 8,309m³. All runoff from the process area is directed to the leachate dam. Runoff only arises during reasonably heavy periods of rain, therefore assuming only 80% of the maximum runoff reaches the leachate dam the mean volume reaching the leachate dam is 6,647m³ per annum ($0.8 \times 8,309 = 6,647\text{m}^3$).

This is substantially different to the 3,497m³ presented in **Table 3-4**. Whilst it is acknowledged that this assessment is high level and is only based on the information available in the Proposal, it highlights a significant difference in the calculation presented and therefore, requires an explanation of the reason for the difference.

The water balance states that 75% of the maturation area will be exposed and the remaining 25% will be windrows, resulting in an exposed surface area of 15,750m². Based on a mean annual rainfall of 611mm and only 80% of the maximum runoff reaching the leachate dam, the mean volume reaching the leachate dam from the maturation pad is 7,698m³ ($15,750 \times 0.611 \times 0.8 = 7,698\text{m}^3$). Again, this value is significantly different to the value of 4,328m³ in **Table 3-4**.

The Proposal states that the leachate dam has a catchment area of 12,100m³. Utilising the same calculation process as detailed above, the direct rainfall received in the leachate dam is 7,393m³, which is similar to the value stated in **Table 3-4**.

Page 10 of Appendix N states that the rate of return leachate from the maturation pad to the leachate dam is assumed to be half of the moisture loss ((44%-30%)x35ML) per annum which equates to 2,450m³ per year. There is no explanation within the Proposal for this calculation and it appears to be an arbitrary moisture loss calculation from the windrows. That is, it is assuming a reduction in moisture from 44% to 30%. The water balance suggests a 32% moisture content for the compost not 30%. Also, there is no explanation for 35ML, however, it is assumed that this is the capacity of the leachate dam which is stipulated elsewhere in Annexure 2.

The total inflow as detailed in **Table 3-4** is quoted as 17,767m³. However, based on the calculations above, total inflow could be assumed to be 24,188m³ ($6,647 + 7,698 + 7,393 + 2,450$).

The corresponding outflow is deemed to be water that is fed to the tunnels/biofilter and the evaporation from the leachate dam. The 5,000m³ detailed in **Table 3-4** is an assumed number, however, the design document (Appendix D) does not state whether this includes the 2,250m³ of liquid waste which is part of the waste stream, or whether the tunnel system needs 2,250m³ of liquid waste plus the 5,000m³ stated in **Table 3-4**. As there is no explanation for this and as the liquid waste is directly injected into the tunnels (page 7 of Appendix D) the liquid waste is assumed to be part of the 5,000m³. Therefore, the tunnel/biofilter outflow should be 2,750m³ and not 5,000m³.

Based on this high-level assessment, utilising the information available in the Proposal, the average annual inflow can be estimated as 24,188m³ and the average outflow can be estimated as 16,187m³, creating a difference of 8,001m³. So even on an average year the inputs to the leachate dam could be substantially higher than the outputs.

In reality this will not pose an issue as the maximum storage volume of the leachate dam is 16,000m³ (16ML), which is capable of storing the annual difference between inflow and outflow of 8,001m³. However, if there is a collection of successive mean years or greater, then the leachate dam will be full within a two-year period.

In the event that annual rainfall is over 1,000mm, which is possible as there are a number of historical events where there have been two consecutive years of high rainfall, the runoff volumes will increase as detailed in **Table 3-5**.

Table 3-5: Adjusted mean annual inflows and outflows to leachate dam

| | Adjusted Mean Annual Volume (m ³) |
|-------------------------------|---|
| Inflows | |
| Process area runoff | 6,647 * 1000/611 = 10,879 |
| Maturation pad runoff | 7,698 * 1000/611 = 12,599 |
| Direct rainfall | 7,393 * 1000/611 = 12,100 |
| Return leachate | 2,450 |
| Total annual average inflows | 35,578 |
| Outflows | |
| Tunnel/biofilter demands | 5,000* |
| Surface evaporation | 13,937 |
| Total annual average outflows | 18,937 |

Note: *figure has not been adjusted to account for liquid waste contributing to overall requirement.

Based on the above calculations, the mean yearly inflow increases from 24,188m³ to 35,578m³, an increase of 11,390m³. Outflows remain constant at 18,937m³ which results in an annual difference of 16,641m³ between inflow and outflow. This is greater than the 16,000m³ capacity of the leachate pond.

This high-level assessment has cast doubt on the validity of the water balance which merits a more comprehensive hydrological review.

Recommendation

R24. That the water balance be reviewed with particular focus on the inflows and outflows to the leachate pond, and a more comprehensive hydrological review be undertaken.

3.3 Design & Proposed Technology

3.3.1 Waste Reception Area

Based on the drawings included in Appendix D of Annexure 2, the dimensions of the waste reception area are 34.6m x 63.7m x 10.65m in height. These are external dimensions and thus the internal space will be less, particularly the height where the trusses, beams and roof slope will significantly erode the working height. As such, although not stated, the clearance height may be 1.5m less. In most cases, a clearance of approximately 9m will be enough for conventional kerbside collection vehicles and small trucks.

However, according to the vehicle schedule, *Figure 6-25 Vehicle Types Using the Facility* located in Annexure 2, some waste materials will be delivered by articulated open top semi-trailer trucks with a length of 15m. If the



tipper part is approximately 10m then once upended for unloading the vehicle may be close to touching the roof. The Proposal does not make reference to vehicle clearance issues.

Recommendation

R25. It is recommended that the building height and internal clearances be reassessed to ensure it aligns with the vehicles listed in the vehicle schedule.

3.3.2 Composting Tunnels

As detailed in Section 1.2 of Appendix D of Annexure 2, the composting tunnels have an external dimension of 25.75m long x 8m wide x 4.6m high. However, the actual composting volume inside could be significantly less. Taking into consideration the thickness of the concrete walls and the operational space needed below the roof to load the feedstock and collect recirculated air, the effective height could be less than 3.5m. Based on this height reduction, the overall capacity of the facility is in the order of 26,880tpa and not the proposed 35,000tpa. This “under design” in relation to capacity may impact on the number of tunnels required to manage the proposed annual tonnage.

As an aside, throughout the Proposal documentation liquid waste is regarded as an input creating part of the capacity. However, liquid waste is injected as part of the moisture conditioning of the compost and not mixed in the reception area. Therefore, liquid waste has not been included in determining the capacity of the plant.

Recommendation

R26. It is recommended that the capacity of the facility be revisited in light of operational needs to load the tunnels and that Proposal documentation, including design drawings be amended where necessary.

3.3.3 Maturation Pad

The proposed maturation pad is 21,000m² which is considered excessive based on the annual tonnes to be accepted and processed at the facility. Under the Operational Fire heading in Section 6.14.3 of Annexure 2 it states “...The Site will be managed in accordance with the Fire Safety Guideline: Fire Safety in Waste Facilities (Fire and Rescue NSW 2018). The maturation pad has been sized to ensure the fire guidelines can be met...”.

Clause 3 Application of the Fire Safety Guideline states:

“This guideline does not apply to any waste facility, or areas of, that are being used for:

- a) Landfill (but, may apply to a waste facility on the landfill site)*
- b) Composting, including in-vessel, green waste and anaerobic digestion*
- c) Liquid waste treatment*
- d) Hazardous chemicals or special waste treatment (e.g waste tyres), or*
- e) Less than 50m³ of combustible waste material...”*

The Australian Organic Recycling Association (AORA) has confirmed that their position is that the guidelines do not apply to their members facilities. Note, whilst the Fire Safety Guideline does not apply to the Proposal, normal Building Code of Australia (BCA) requirements relating to fire still apply.

Based on the above, the guideline does not apply to the Proposal and therefore the size of the maturation pad should be recalculated. The recalculation of the size of the maturation pad will have a flow on effect to the size of the leachate pond.



However, when completing the calculation, Council should be cognisant of Condition O3.4 of the GTA issued by the NSW EPA, contained within Annexure 5, which states: *“The maturation pad must be designed so as not to preclude the addition of an enclosure or covers should this be required once operational”*. The size and shape of the windrow should also be considered when reviewing the size of the maturation pad that is, the base and height of windrow.

There are contradictions present between the drawings contained within Appendix D of Annexure 2 and throughout the main body of Annexure 2. Section 1.3.6 of Appendix D stipulates that there will be one hectare of maturation, stockpiling and refinement area, whereas the drawings in Appendix D indicate two maturation pads with a combined area of 21,632m². Section 3.3.7 of Annexure 2 stipulates that only one maturation pad with an area of 21,000m² will be constructed.

Recommendation

R27. The size of the maturation pad be recalculated on the basis that the Fire Safety Guideline: Fire Safety in Waste Facilities does not apply to the Proposal, but with consideration given to Condition O3.4 of the NSW EPA General Terms of Approval.

R28. Based on the outcome of R27 all Proposal documentation, including design drawings be amended where necessary.

3.3.4 Leachate Pond

Section 3.3.10 - Leachate Management of Annexure 2 states *“...The leachate pond has been sized to contain 16ML, as determined by the Water Balance (Appendix N)...”*. Based on the findings of Section 3.3.2 Water Balance and Section 3.3.3 Maturation Pad of this report it is recommended that the size of the leachate pond be recalculated.

Recommendation

R29. That the size of the leachate pond be recalculated on the basis that the Fire Safety Guideline: Fire Safety in Waste Facilities do not apply to the Proposal therefore; the size of the maturation pad is reduced, as detailed in Section 3.3.3 of this report

3.3.5 Absence of Garden Organics Set Down Area

Section 1.3.1 of Appendix D contained within Annexure 2 states *“Green waste materials delivered by the public will be stockpiled outside in a designated area as marked on the site plan. 1,500m² will be provided to the public for drop off their green waste in order to avoid public traffic to enter the main building...”*

The above-mentioned designated set down area for public drop off is not shown on any of the drawings provided as part of the Proposal. There also appears to be a contradiction between the Appendix D and Section 3.5 – Material Sources and Quantities of Annexure 2 which summaries the sources and quantities of material to be accepted by the facility. Section 3.5 of Annexure 2 states that both domestic and commercial garden organics will be delivered via Forest Road Waste Management Facility, that is, members of the public will dispose of garden organics at Forest Road Waste Management Facility, which will then be bulk hauled to the processing facility. The of source of materials is discussed further in Section 3.5.2 Material Sources in this report.

In terms of design, if the set down area is required and will be accessed by the public, it is unclear how it will be accessed without compromising traffic flows of other delivery and operational vehicles. It is also unclear how



this material will be transferred from the set down area to the receival hall. Additionally, surface water run off arising from the set down area has not been included in the water balance for the site, which may impact on the sizing of the leachate pond.

Recommendation

R30. Confirmation required on whether the public will be accessing the facility to dispose of garden organics.

R31. Depending on the outcome of R30, all relevant Proposal documentation must be amended to ensure consistency, including amendments due to flow on impacts such as recalculation of the water balance.

3.4 Commissioning

In order to effectively commission the facility under standard operating conditions, material representative of the feedstock to be received once the facility is fully operational will need to be sourced. This may prove difficult considering Council is aiming to commence a kerbside FOGO collection service in parallel with the commencement of operations at the facility and the appetite for commercial operators to dispose of offal and paunch at the facility is unknown.

Ensuring that the facility is capable of processing the intended feedstock and proving its performance prior to being fully operational is key to the success of the facility. Therefore, careful consideration must be given as to how the commissioning of the facility will be achieved.

Consideration also needs to be given as to who is responsible for sourcing the feedstock for commissioning. Responsibilities should be clearly defined in the contract documents between Council and the operator, including any amounts payable for the processing of the commissioning feedstock, if applicable.

Recommendation

R32. That Council give due consideration to commissioning requirements as part of the processing contract

3.5 Processes

3.5.1 Residence Time

The Proposal includes the construction of 7 tunnels (8m wide x 26m long x 5m high) for the processing of 35,000tpa of organics, which will allow for a residence time of 28 days.

The normal residence time for in-vessel composting systems is 14 days, where the two cycles, each 7 days long, will kill off pathogens. However, this residence time is based on typical inputs that are confined to FOGO and other garden organics streams. By accepting the proposed additional elements of feedstock, it is considered a wise precaution to increase the residence time. There is a risk however, of potentially reducing the nutrient value in the final product if the residence time is excessive.

If offal, sludge and timber were removed from the process, as discussed in Section 3.1 of this report, not only would there be an immediate reduction in capacity to 27,800tpa, the shorter residence time will increase the number of batches and hence the capacity of the facility.

Clause 3.2.1 Pasteurisation of AS4454 – Composts, soil conditioners and mulches states:



“Any product supplied or described as ‘pasteurised’ shall have had the whole of its mass subjected to either of the following:

- a) Appropriate turning of outer material to the inside of the windrow so the whole mass is subjected to a minimum of three turns with the internal temperature reaching a minimum of 55°C for three consecutive days before each turn. Pasteurisation occurs as a result of a time/temperature relationship. Where higher risk materials including manure, animal waste, food or grease trap wastes are used as feedstock, a longer time at 55°C or higher and more turns may be necessary in order to counter reinfection by the outside of the pile when turned. For these higher risk materials the core temperature of the compost mass shall be maintained at 55°C or higher for 15 days or longer, during this period the windrow shall be turned a minimum of five times (consistent with: Standards for the use or disposal of sewerage sludge, Regulation 503, US EPA)...”*

Clause 3.2.2 Composting of AS4454 – Composts, soil conditioners and mulches states:

“Any product supplied or described as ‘compost’ shall:

- b) Comply with Clause 3.2.1...”*

Based on the requirements of AS4454, it is unclear as to why a residence time has been specified in Annexure 2 and included in Condition O3.5 of the GTA issued by the NSW EPA, contained within Annexure 5, which states *“The wastes must be processed for a minimum of 28 days using in-tunnel composting”*.

As the specific technology has not been determined, apart from the process being undertaken in-vessel, specifying a minimum residence time may create an additional financial burden on Council as a 28-day residence time requires the construction and operation of additional tunnels. A facility accepting 35,000tpa has the ability to process this volume of material through a series of four tunnels, based on an average residence time of 14 days.

To ensure Council has the opportunity to secure a technology and operator that provides best value for money, the residence time should be outcomes focused as opposed to a specified minimum timeframe. That is, the facility constructed must meet the requirements of Clause 3.2.1 and Clause 3.2.2 of AS4454.

Recommendation

R33. That Council commence discussions with the NSW EPA in relation to modifying Condition 03.5 of the General Terms of Approval to state that the facility must meet the requirements of Clause 3.2.1 and Clause 3.2.2 of AS4454.

3.5.2 Material Sources

Section 3.5 – Material Sources and Quantities of Annexure 2 summaries the sources and quantities of material to be received at the facility, as detailed below.

Table 3-6: Material Sources

| Type | Source | Quantity per annum (at capacity) |
|--|---|-------------------------------------|
| Food Organics Garden Organics (FOGO) | Domestic Kerbside | 12,500 |
| Garden Organics | Domestic/Commercial (via Forest Road Waste Management Facility) | 9,000 |
| Timber | Domestic/Commercial (via Forest Road Waste Management Facility) | 1,600 |
| Paunch | Abattoirs | 3,800 |
| Highly Putrescible (offal) | Intensive meat production | 3,450 |
| Highly Putrescible (Dissolved Air Flotation (DAF) Unit Sludge) | Intensive meat production | 2,400 |
| Liquid Waste | Grease trap, residual septic etc | 2,250 |
| TOTAL | | 35,000 |

Based on the above table, it is assumed that domestic and commercial sources of garden organics and timber will be bulk hauled from Forest Road Waste Management Facility as opposed to these customers delivering material directly to the facility.

Section 1.3.1 of Appendix D contained within Annexure 2 states “Green waste materials delivered by the public will be stockpiled outside in a designated area as marked on the site plan. 1,500m² will be provided to the public for drop off their green waste in order to avoid public traffic to enter the main building...”

Confirmation is required as to whether members of the public will be delivering material to the facility or whether this material will be bulk hauled from Forest Road Waste Management Facility. The outcome of this may impact on traffic numbers that have been modelled as part of the Proposal.

Recommendation

R34. Council undertake a review of the documents to ensure consistency between the processes proposed within the main section of Annexure 2 and Appendix D, contained within Annexure 2.

3.5.3 Maturation

Once material has been pasteurised in the tunnels, it is relocated to the maturation pad for further stabilisation. This is achieved by depositing the compost from the tunnels onto the maturation pad in the form of windrows. These windrows are generally kept moist via a means of watering and are further aerated through the use of a windrow turner, or similar.

There is a conflict between the main body of Annexure 2 and Appendix D of Annexure 2 in relation to further aeration required once the material is placed on the maturation pad. Section 2.2.7 of Appendix D clearly infers that the windrows will not require aeration and that the compost will be fully stabilised in the tunnels prior to placement on the maturation pad. Whereas Section 3.6.4 of the main body of Annexure 2 clearly infers that aeration may be necessary.

Section 2.2.7 of Appendix D also states that because the material has been processed in the tunnels for a period of 28 days, surface odour emissions from the maturation area will be minimal as all easily degradable organics substances will have decomposed and because no turning of the material is required, another potential source of odour has been removed.

The statement regarding minimal odour emissions is considered optimistic with the proposed waste stream. There would be greater confidence in this being achieved if the waste stream was restricted to FOGO, garden organics and paunch. However, with the extreme range of C:N proposed for the feedstock, as detailed in Section 3.1 of this report, it is considered prudent to consider that odour could still be generated from the windrows located on the maturation pad.

As there is no process detailed in the Proposal to control fugitive odour the windrows must be maintained in aerobic state, via the processing of turning. This necessitates the inclusion of a windrow turner, or similar, or an aerated maturation pad.

Recommendation

R35. That the Proposal be amended to include the aeration of material whilst held on the maturation pad, including the use of a windrow turner, or similar, to perform the task of aeration.

R36. Ensure that all Proposal documentation is amended to reflect R35.

3.6 Markets for End Product

Section 3.6.6 - Final Product of Annexure 2 states that the facility will produce various grades of soil conditions and composted mulches, such as:

- <10mm composted soil conditioner;
- 10-20mm composted fin mulch; and
- 20-30mm composted mulch.

It also states that the products produced at the facility will be of a high quality suitable for sale in both agricultural and urban amenity markets such as landscaping.

Table 3-5 in Annexure 2 outlines the estimated market price, projected generation and suggested local market outlets, which has been replicated in **Table 3-7** below.

Table 3-7: Potential recycled organic products from the facility and market outlets (Source: Tamworth Regional Council)

| Recycled Organic Product | Potential Market Price (\$/t) | Projected Generation (tpa) | Local Market Outlets |
|------------------------------------|-------------------------------|----------------------------|--|
| Composted Soil Conditioner (<10mm) | \$35 | 8,550 (45%) | Urban amenity (residents, council, nurseries, landscape suppliers) Intensive agriculture Extensive agriculture |

| Recycled Organic Product | Potential Market Price (\$/t) | Projected Generation (tpa) | Local Market Outlets |
|--------------------------------------|-------------------------------|----------------------------|---|
| Composted Fine Mulch (GRADE 10-20mm) | \$28 | 4,750 (25%) | Urban amenity (residents, council, landscape suppliers) Intensive agriculture (tree farmers) |
| Composted Mulch (GRADE 20-30mm) | \$10 | 2,850 (15%) | Urban amenity (residents, council, landscape suppliers) Intensive agriculture (farmers) |

Based on **Table 3-7**, the facility is expected to produce 16,150 tpa of end product, which is considered achievable for a facility accepting 35,000tpa targeting a 30 – 32% moisture content, with an estimated revenue source of \$341,050 per annum.

Based on the information provided in the Proposal documentation, it is unclear whether a detailed market analysis has been undertaken. A market analysis should include an assessment of current and potential markets economically accessible from the Proposal site, market prioritisation, total existing demand and the identification of market opportunities and barriers to accessing potential markets. It should also discuss economic, social, institutional and environmental factors affecting increased sales and the market image and reputation of the product(s).

Recommendation

R37. If not already completed, undertake a detailed market analysis to determine end markets for the potential end products to be produced as part of the Proposal. If completed, include key details from the analysis in the Proposal documentation.

3.7 Odour Monitoring

Additional measures should be implemented for the monitoring of the performance of the biofilter. An assessment of the performance of the biofilter and odour emissions from the biofilter under normal operating conditions should be undertaken within six months of operations commencing. The assessment must be undertaken by a suitably qualified and experienced person or company and a report detailing the results of the assessment would be submitted to Council.

The medium used within a biofilter has a useful life of approximately two to five years (Section 1.3.3 - Appendix D). After which time the medium is either partially or fully replaced. Based on the approximate useful life of the biofilter, it is recommended that a second assessment of the performance of the biofilter and odour emissions from the biofilter under normal operating conditions be undertaken within six months of the third anniversary of operations commencing and a third assessment within six months of the medium being partially or fully replaced.



Recommendation

R38. Inclusion of a condition of consent that requires monitoring of the performance of the biofilter, under normal operating conditions, within six months of operations commencing. Subsequent monitoring to be undertaken in accordance with the Odour Monitoring Plan prepared by the operator, which will be reflective of the feedstock accepted and processed at the facility. As a minimum, the performance of the biofilter should be assessed within six months of the biofilter medium being partially or fully replaced.

3.8 Inconsistencies throughout Documentation

Throughout Annexure 2 there are numerous inconsistencies and contradictions between the main body of the document and the Appendices. These inconsistencies and contradictions are primarily related to the main body of Annexure 2 and Appendix D and the process details, such as members of the public accessing the set down area for self-hauled garden organics and public access to a product sales areas. There are also inconsistencies between the information provided in Appendix D and the drawings included as part of Appendix D, including the lack of a set down area for self-hauled garden organics and a product sales area.

Recommendation

R39. Prior to the review of the Proposal documentation as detailed in previous recommendations, Council undertake a comprehensive review of all Proposal documentation to ensure consistency. This will ensure that all subsequent assessments and amendments to the Proposal documentation will align with Council's intent for how the facility will operate.

4 Summary of Recommendations

| Section | Number | Recommendation |
|--|--------|--|
| 2.1 Leachate Discharge | R1 | Inclusion of a condition of consent that requires monthly leachate testing for a period of twelve months following the commencement of operations to determine the composition of leachate generated from the facility. Based on the actual leachate laboratory analysis the Hazard and Risk Assessment (Appendix L of Annexure 2) should be updated to provide guidance on the potential impacts on surrounding land uses and receiving water bodies. |
| | R2 | Inclusion of a condition of consent that requires the undertaking of an assessment to determine suitable locations for the installation of a series of groundwater bores and the testing parameters to monitor groundwater conditions. Bores are to be installed prior to site works commencing to enable the collection of baseline data with routine monitoring undertaken on a quarterly basis whilst the facility is in operation. |
| 2.2.1 Water Sources | R3 | It is recommended that the water balance be reviewed to ensure that extreme dry conditions have been adequately considered so that a more accurate estimate of bore water use can be provided as part of the Proposal. |
| | R4 | Council should also consider reducing reliance on the groundwater bore(s) through the technology procurement and detailed design stages. |
| 2.3 Contamination Identification and Handling Procedures | R5 | Annexure 2 be amended to include the preparation of a Contamination Management Plan as part of the Operational Environmental Management Plan (OEMP), which includes the requirements of Condition O3.8 of the General Terms of Approval issued by the NSW EPA and relevant WHS requirements. |
| | R6 | Annexure 2 be amended to require decontamination of material delivered to the receival hall floor to be undertaken in a manner and location with the aim of eliminating the interaction of sorting staff from delivery and operational vehicles. |
| 2.4 Road Safety | R7 | Review the Traffic and Transport Impact Assessment giving due consideration to the surrounding roads that may function as a school bus route |
| 2.5 Intersection Upgrades | R8 | Review the Traffic and Transport Impact Assessment to assess if any surrounding intersections require upgrades. |

| Section | Number | Recommendation |
|---|--------|---|
| 2.8 Management Plans | R9 | An all-encompassing statement regarding the need for the development and purpose of a CEMP and OEMP to be included, with reference to the Department of Infrastructure, Planning and Natural Resources' Guideline for the Preparation of Environmental Management Plans (2004) as the minimum standard for the structure of the CEMP and OEMP. |
| | R10 | The additional management plans listed for development within Annexure 2 to be incorporated into either the CEMP or OEMP depending on which phase of the Proposal the management plan is required. |
| | R11 | A Noise Management Plan and Complaints Management Plan be prepared for the construction phase of the project |
| 2.9.1 Pre- commissioning Environmental & Compliance Audit | R12 | Inclusion of a consent condition with those required prior to the issue of an Occupation Certificate that requires a pre-commissioning environmental and compliance audit be undertaken by an independent auditor that verifies the implementation of all relevant mitigation measures. |
| | R13 | Inclusion of a consent condition that requires an independent commissioning assessment be undertaken which verifies the commissioning of the processing facility and its performance in accordance with relevant Australian Standards and NSW EPA Recovery Orders in relation to pasteurisation. Operation would not be permitted to commence until this condition has been satisfied. |
| 2.10.1 Air Services Australia | R14 | That an additional condition of consent be included under the 'During Construction' section to ensure that consultation occurs between the airport, the proponent(s), and Air Services Australia in relation to any plant or crane operations planned during construction. |
| | R15 | That mitigation measure HR10 of Annexure 2 be modified to clearly state that monitoring of bird numbers should be undertaken during construction and operation. |
| | R16 | That the OEMP and CEMP include a Bird Management Plan that addresses the requirements detailed in Air Services Australia's email dated 16 October 2019. |
| 2.10.2 Essential Energy | R17 | That the following be added as a condition of consent: Activities within electrical easements and infrastructure must meet the requirements of ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure and be carried out in accordance with the Work near Overhead Power Lines and Work near Underground Assets Codes of Practice |

| Section | Number | Recommendation |
|-------------------------------|--------|--|
| 3.1 Feedstock | R18 | Council reconsider the feedstock proposed to be accepted and processed at the facility and modify its application to reflect any changes and flow on effects to other aspects of the application, such as design requirements. Council should also consider future expansion options for the facility from the outset. |
| | R19 | Once the facility is operational, consider options to expand feedstock received and processed at the facility |
| 3.2.1 Traffic Study | R20 | Clarification be sought in relation to the basis in which daily vehicle movements were determined. Basis to be included in the Proposal documentation. |
| | R21 | Undertake a review of the Traffic and Transport Impact Assessment in relation to Safe Intersection Sight Distance (SISD) industry standards, SISD of vehicles viewing from minor roads and Approach Sight Distance (ASD). |
| | R22 | Undertake a Road Safety Audit/Inspection of the roads and intersections associated with the Proposal. |
| | R23 | Determine the suitability of the existing road pavement design to accommodate the increase loadings associated with the Proposal. |
| 3.2.2 Water Balance | R24 | That the water balance be reviewed with particular focus on the inflows and outflows to the leachate pond, and a more comprehensive hydrological review be undertaken. |
| 3.3.1 Waste Reception Area | R25 | It is recommended that the building height and internal clearances be reassessed to ensure it aligns with the vehicles listed in the vehicle schedule. |
| 3.3.2 Composting Tunnels | R26 | It is recommended that the capacity of the facility be revisited in light of operational needs to load the tunnels and that Proposal documentation, including design drawings be amended where necessary. |
| 3.3.3 Maturation Pad | R27 | The size of the maturation pad be recalculated on the basis that the Fire Safety Guideline: Fire Safety in Waste Facilities does not apply to the Proposal, but with consideration given to Condition O3.4 of the NSW EPA General Terms of Approval. |
| | R28 | Based on the outcome of R27 all Proposal documentation, including design drawings be amended where necessary. |
| 3.3.4 Leachate Pond | R29 | That the size of the leachate pond be recalculated on the basis that the Fire Safety Guideline: Fire Safety in Waste Facilities do not apply to the Proposal therefore; the size of the maturation pad is reduced, as detailed in Section 3.3.3 of this report |
| 3.3.5 | R30 | Confirmation required on whether the public will be accessing the facility to dispose of garden organics. |

| Section | Number | Recommendation |
|--|--------|---|
| Absence of Garden Organics Set Down Area | R31 | Depending on the outcome of R30, all relevant Proposal documentation must be amended to ensure consistency, including amendments due to flow on impacts such as recalculation of the water balance. |
| 3.4 Commissioning | R32 | That Council give due consideration to commissioning requirements as part of the processing contract |
| 3.5.1 Residence Time | R33 | That Council commence discussions with the NSW EPA in relation to modifying Condition 03.5 of the General Terms of Approval to state that the facility must meet the requirements of Clause 3.2.1 and Clause 3.2.2 of AS4454. |
| 3.5.2 Material Sources | R34 | Council undertake a review of the documents to ensure consistency between the processes proposed within the main section of Annexure 2 and Appendix D, contained within Annexure 2. |
| 3.5.3 Maturation | R35 | That the Proposal be amended to include the aeration of material whilst held on the maturation pad, including the use of a windrow turner, or similar, to perform the task of aeration. |
| | R36 | Ensure that all Proposal documentation is amended to reflect R35. |
| 3.6 Markets for End Products | R37 | If not already completed, undertake a detailed market analysis to determine end markets for the potential end products to be produced as part of the Proposal. If completed, include key details from the analysis in the Proposal documentation. |
| 3.7 Odour Monitoring | R38 | Inclusion of a condition of consent that requires monitoring of the performance of the biofilter, under normal operating conditions, within six months of operations commencing. Subsequent monitoring to be undertaken in accordance with the Odour Monitoring Plan prepared by the operator, which will be reflective of the feedstock accepted and processed at the facility. As a minimum, the performance of the biofilter should be assessment within six months of the biofilter medium being partially or fully replaced. |
| 3.8 Inconsistencies throughout Documentation | R39 | Prior to the review of the Proposal documentation as detailed in previous recommendations, Council undertake a comprehensive review of all Proposal documentation to ensure consistency. This will ensure that all subsequent assessments and amendments to the Proposal documentation will align with Council's intent for how the facility will operate. |



5 Conclusion

Talis has undertaken a desktop review of the Proposal documents as part of the independent review requested by the Panel in their Record of Deferral. Whilst this report has identified gaps in the documentation, additional conditions of consent and more stringent approval conditions, Talis is of the belief that if Tamworth Regional Council is able to address the recommendations of this report, the Proposal should be approved by the Panel. By addressing the recommendations of this report, Council will not only satisfy the concerns raised by the Panel but will also satisfy the concerns raised by the community.

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12 June 2020

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Tamworth Organics Recycling Facility: Peer Review - Addendum 1

The following amendments are made to document TW20041 – ORF Peer Review.1a

1. Removal of the word “inorganic” from the following sentence at the top of page 6:

“...dissolved and particulate organic matter. Depending on the feedstock and location of origin of that feedstock, it may contain ~~inorganic~~ contaminants such as pesticides, surfactants, halogenated hydrocarbons and metals.”

Date: 12 June 2020

On behalf of Talis Consultants:



Alex Upitis
Senior Waste Management Consultant
Waste Lead NSW & VIC

Addendum No. 1 has been received and incorporated into document TW20041 – ORF Peer Review.1a.

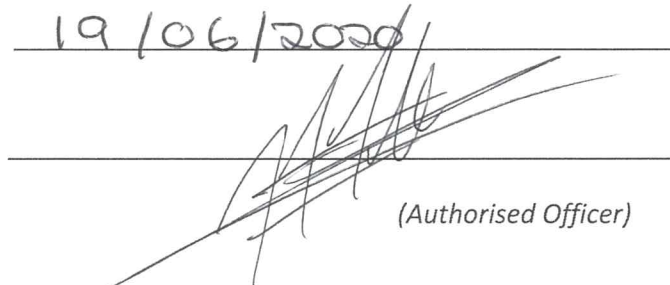
On behalf of Tamworth
Regional Council
(in block letters):

MORNÉ HATTINGH

Date:

19/06/2020

Signed on behalf of Tamworth
Regional Council:



(Authorised Officer)