HWL EBSWORTH
LAWYERS

Our Ref: PNL:ACS:944815

6 April 2020

Mr Stephen Barry
Director of Planning
Independent Planning Commission
Level 3, 201 Elizabeth Street
Sydney NSW 2000

By Email

Dear Sir

Genesis Waste Management Facility - Modification 6 (MP 06_0139)
Jacfin Submission to Independent Planning and Assessment Commission
Site: Honeycomb Drive, Eastern Creek

We act for Jacfin Pty Ltd (***Jacfin***).

Jacfin is the owner of adjacent land directly to the south of the Site.

We refer to the Modification Assessment Report dated February 2020 (***Report***) prepared by the Department of Planning, Industry and Environment (***Department***), in relation to the application to modify Development Approval 06_0139 in relation the Genesis Waste Management Facility (***Facility***) (MP 06_0139 MOD 6) (***Modification Application***).

Jacfin has made the following submissions in relation to the Modification Application:

1. Jacfin Submission dated 24 October 2018 (***First Submission***);

2. Jacfin Submission dated 2 August 2019 (***Second Submission***);

3. Jacfin Submission dated 20 January 2020 (***Third Submission***); and

4. Jacfin Submission dated 6 February 2020 (***Pit Fire Submission***).

The Third Submission and the Pit Fire Submission have not been given consideration by the Department in the Report. Accordingly, we **enclose** the Third Submission and Pit Fire Submission for the consideration of the IPC.

Executive Summary

1. The Third Submission raises a number of issues which have not been subject of assessment by the Department, including:

   (a) technical issues relating to the inadequacy of the air quality and odour modelling undertaken by the proponent;

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(b) the Modification Application's reliance on a number of flawed or unsupported assumptions which overstate the need for the Facility; and

(c) the Modification Application's failure to provide adequate information to enable a proper understanding if the human health risks associated with the Facility.

2. The issues raised in the Third Submission are determinative of the Modification Application.

3. The Pit Fire Submission demonstrates that upset conditions at the Facility have not been fully considered or properly assessed in Modification Application.

4. The Department has not considered the Third Submission or Pit Fire Submission in the preparation of the Report.

5. Jacfin is undertaking a review of the draft conditions of approval published with the Report and will make a further submission commenting on the conditions and proposing additional conditions as appropriate.

Third Submission and Expert Analysis

As stated above, notwithstanding the single reference to the Third Submission in the Report, the Department has not given the Third Submission or Pit Submission proper consideration in the assessment of the Modification Application.

We summarise below the impacts of the proposed development considered by the expert reports comprising the Third Submission.

Air Quality and Odour

The Report by Jennifer Barclay of ASG raises the following concerns with the assessment of the air quality and odour impacts contained in the Modification Application.

(a) Failure to account for pit effects.

(b) The use of inadequate modelling methods and assumptions.

(c) Failure to demonstrate adequate air quality and odour management and mitigation strategies.

(d) Failure to correctly account for haulage routes.

The Report has not considered the issues raised in the Third Submission in relation to air quality and odour.

The Pit Fire Submission relates to a fire incident at the Facility in February 2020. The fire incident is directly related to the assessment of upset conditions at the Facility but has not been considered by the Department in the Report. The Report acknowledges that the air quality modelling did not account for upset conditions regarding the transport of residual waste to the pit via haul routes. The Department

accepts this omission based on its review of an annual audit of the chute. As stated in the Pit Fire Submission, the chute caught fire and was placed out of commission by the pit fire.

The Department could not have made such acknowledgement had it considered the Pit Fire Submission.

Waste Management

The Report does not consider any of the waste management issues raised in the Third Submission.

Occupational Hygiene

The Report does not consider any of the occupational hygiene issues raised in the Third Submission.

In Jacfin's submission, this issues in the Third Submission are substantive and determinative of the Modification Application.

Jacfin respectfully requests that the IPC consider the Third Submission and Pit Fire Submission in its consideration and determination of the Modification Application.

Further Submission - Draft Conditions and Approval

Jacfin is undertaking a review of the draft conditions of approval published with the Report and will make a further submission commenting on these conditions and proposing additional conditions as appropriate.

Jacfin would appreciate the opportunity to discuss the matters raised above with the IPC. Jacfin understands that such a meeting will be recorded and transcribed and made publically available.

Yours faithfully

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HWL EBSWORTH
LAWYERS

Our Ref: PNL:ACS:944815

20 January 2020

Department of Planning, Industry and Environment
Level 22, 320 Pitt Street
Sydney NSW 2000

Attention: Bianca Thornton

Dear Ms Thornton

Genesis Waste Management Facility - Modification 6 (MP 06_0139 MOD 6)
Jacfin Submission on Revised Response to Submissions
Site: Honeycomb Drive, Eastern Creek

We act for Jacfin Pty Ltd (***Jacfin***).

We refer to the following submissions:

(a) Jacfin Submission dated 24 October 2018 (***First Submission***); and

(b) Jacfin Submission dated 2 August 2019 (***Second Submission***),

in respect of the application by Dial-A-Dump Industries (EC) Pty Ltd (***Proponent***) to modify Development Approval 06_0139 in relation the Genesis Waste Management Facility (***Facility***) (MP 06_0139 MOD 6) (***Modification Application***).

This further submission is made on the Revised Response to Submissions Report (***Revised RtS***) dated November 2019. Whilst the Department has not exhibited the Revised RtS, this submission is made given the concerns our client holds in relation to the inadequacies in the Modification Application and the failure by the Proponent to remedy such inadequacies by way of either the Response to Submission Report dated May 2019 (***Original RtS***) or the Revised RtS.

Jacfin has commissioned the following independent reports in relation to the Modification Application and Revised RtS.

(a) Review of Revised Response to Submission Report and Air Quality Assessments for Genesis Waste Management Facility Modification 6 (MP 06_0139 MOD 6 prepared by Atmospheric Science Global (***ASG***)) dated January 2020 (***ASG Report***);

(b) Waste Management Review prepared by SLR Consulting dated 20 January 2020 (***Waste Management Review***); and

(c) Occupational Hygiene Review prepared by SLR Consulting dated 20 January 2020 (***Occupational Hygiene Review***).

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A copy of each of the above independent reports is **enclosed**.

1. Executive Summary

Jacfin submits as follows:

(a) The Proponent has failed to account for the effect that the Facility's pit will have on the dispersion of particulate matter, asbestos fibre and odour. The consequence being that the dispersion modelling conducted by the Proponent under states the air quality impacts of the Facility. In the absence of robust and accurate dispersion modelling, air quality impacts cannot be properly understood. The Modification Application must in these circumstances be refused.

(b) The ASG Report highlights the serious deficiencies in the Proponent's air quality modelling which include:

(i) failure to account for all meteorological data;

(ii) failure to evaluate the Air Pollution Model;

(iii) failure to include wind data from relevant observation stations within close proximity to the Facility;

(iv) using a meteorological model that it too coarse;

(v) a weak evaluation of CALMET;

(vi) failure to use a suitable wind field;

(vii) underestimation of the number of calms at the Facility;

(viii) incorrect winds used in the CALMET modelling; and

(ix) incorrect atmospheric stability classes used.

The fundamental deficiencies in the modelling conducted by the Proponent are such that the Modification Application must be refused.

(c) The Proponent has not provided any air quality management plans or odour management strategies for review by the Department, the EPA or the community. Given the risk of community exposure to elevated odour impacts and asbestos, the Proponent should be required, prior to the determination of the Modification Application, to provide the relevant plans and strategies to ensure that such risks will be managed appropriately and that any risk to human health is removed.

(d) The Proponent still has not correctly accounted for the "worst case scenario". This remains so for the following reasons.

(i) The Proponent's rudimentary method of simply multiplying the 'typical day' calculation, fails to take into account the additional operational impacts of the increased through put of waste.

(ii) The rudimentary method of adjustment does not take into account the impact of the Facility on days with poor dispersion.

(iii) By its own admission, the Proponent acknowledges that there may be circumstances that require 100% of the by-product from the Material Processing Centre to be sent to landfill via haulage. The Proponent has failed to account for this when calculating the emissions for a 'Typical Day', 'Peak Day' and 'Theoretical Worst Case Day' at the Facility in the letter from EMM dated 22 October 2019.

(e) The Modification Application relies on a number of flawed or unsupported assertions designed to overstate the need for the expanded Facility.

(f) The Proponent's assertion that the Modification Application creates greater scope for increased recycling is completely false. If approved, the Facility will only recover 35% of waste received, being a significant reduction from the 70% of waste that is currently recovered by the Facility. This equates to a 500,000 tonnes per annum reduction in waste recovery.

(g) The Modification Application should be refused as the proposed Facility is inconsistent with the 'NSW Waste Avoidance and Resource Recovery Strategy 2014-21' as it:

(i) will reduce the capacity of the Facility to receive commercial and industrial waste for recycling, in favour of direct to landfill waste; and

(ii) will increase the amount of waste permitted to landfill, while actively reducing the potential to divert waste from landfill.

(h) The Modification Application does not provide adequate information to understand how the Facility will manage the human health risk inherent with airborne asbestos fibre and particulate matter.

2. Air Quality and Odour

Jacfin maintains that the Modification Application, if approved, will result in the Facility creating unacceptable air quality and odour impacts on the surrounding area. Jacfin's position is detailed in its First Submission and Second Submission. It is not proposed to repeat Jacfin's previous submission here.

Jacfin has engaged air quality and dispersion modelling expert Jennifer Barclay of ASG to review the Air Quality Impact Assessment dated August 2018 prepared by Ramboll (***AQIA***) and any associated documents forming part of the Modification Application, including the Proponent's responses in the Original RtS and Revised RtS.

ASG was also commissioned to review the previous peer reviews undertaken by Katestone dated 24 October 2018 and 2 August 2019. ASG wholly agrees with Katestone's findings.

ASG has identified the following inadequacies in relation to the Proponent's assessment of the air quality and odour impacts of the Modification Application.

(a) Failure to Account for Pit Effects

The dispersion modelling contained in the AQIA does not account for the meteorology within the Facility's Pit (***Pit***) and how this will affect the dispersion of particulate matter, asbestos fibre and odour.

The air flow within the Pit will differ to the flow outside the pit due to topographic, thermal and meteorological factors. Two consequences stem from this.

(i) The topographic effects surrounding the pit and the orientation of the pit itself will channel the dominant southwest and northerly winds. Accordingly, under windy conditions the dispersion of the particulate matter and odour will be affected as a consequence of the wind channelling.

(ii) Under calm conditions the meteorological conditions within the Pit will be significantly affected by the vertical temperature profile. During the night inversion conditions will be persistent and strong. Such inversion conditions are likely to cause an increase in the deposition of particulate matter and, to a lesser degree, asbestos fibres. At daybreak or with an increase in wind speed the deposited material can easily become re-entrained and leave the pit as a concentrated plume. This effect may be higher than the AQIA modelling indicates.

Further, the inversion conditions within the Pit are likely to cause odour accumulation as the gases will become trapped. Such conditions mean that the air within the Pit will warm faster than the external environment, causing the accumulated odour plume to rise and escape the Pit. Accumulation of odour is likely to be greatly increased due the 24 activities proposed by the Modification Application.

(b) Inadequate Modelling Methods and Assumptions

As detailed in the ASG Report, the air quality and odour modelling conducted by the Proponent is considered poor and non-representative of the air quality and odour impacts that will be caused by the Facility should the Modification Application be approved.

The ASG Report further identifies that the Proponent has failed to account for the likelihood of airborne asbestos fibres that the Facility may cause. The Proponent states that the Facility will increase its receipt of asbestos waste should the Modification Application be approved.

The importance of managing and mitigating against airborne asbestos fibres cannot be overstated. Asbestos fibres do not behave in the same manner as particulate matter, as once the fibres become airborne, they can remain airborne for an extended period of time and be easily re-suspended and re-entrained if they deposit. The ultimate effect of this behaviour is that airborne the asbestos fibres can easily escape the Pit and become a public health risk.

In addition to the technical deficiencies with the modelling conducted by the Proponent, the Proponent has not provided the model control files. Until such time as the model files have been provided and the results of the Proponent's modelling verified, the modelling outcomes are mere assertions and cannot be considered adequate to assess the Modification Application.

(c) Failure to Demonstrate Adequate Air Quality and Odour Management and Mitigation Strategies

As detailed in the ASG Report the odour modelling carried out by the Proponent is inadequate. Given this, it is imperative that the air quality and odour management and mitigation strategies are made known prior to the determination of the Modification Application.

Ordinarily, the most effective management and mitigation strategy in the circumstances is separation. However, given the close proximity of residential dwellings, schools and places of employment, the Facility cannot achieve adequate separation and rely on this type of management.

The human health risk created by asbestos exposure makes it imperative that the Department, EPA and the community be able to understand the methods that will be in place to manage asbestos fibres. Such need is increased given the Proponent anticipates an increase in the amount asbestos containing material received at the Facility will increase should the Modification Application be approved.

In the Revised RtS, the Proponent stated in response to concerns raised regarding asbestos:

> *[t]he storage, disposal and transport of asbestos waste is regulated by the NSW EPA or the local council under the Protection of the Environment Operations Act 1997 and the Protection of the Environment Operations (Waste) Regulation 2014.*

This is a completely inadequate response. Compliance with the regulator and the law is to be expected at a minimum. As mentioned above, the behaviour of airborne asbestos fibres means that such fibres are more likely to remain airborne and escape the Pit. Given the proximity to the residences, schools and places of employment the community has a right to understand how this human health risk will be nullified. In this regard, it should be remembered that many of the surrounding places of employment nearby are warehouse based and do not have the benefit of a sealed, air conditioned work environment.

With respect to the odour management, it is the Proponent's positon that as its modelling indicates that odour will not exceed the odour goals, no mitigation is required. However, given the multiple inadequacies identified with the Proponent's modelling this position is not defensible.

There are also a number of complaints regarding odour that have arisen in relation to the current operation of the Facility. As detailed in the ASG Report, the odour impacts generated by the expanded operations will likely increase the odour emitted from the Facility. On this basis, the Proponent must be required to provide its odour mitigation strategy as part of the Modification Application, to allow the Department, EPA and the community to understand how such impacts will be managed.

Failure to Correctly Account for Haulage from the MPC

In addition to the above, by its letter dated 16 October 2019, the NSW Environment Protection Authority (***EPA***) recommended:

> *… the Proponent undertake an assessment accounting for potential peak daily throughput to landfill. If the Proponent does not undertake this assessment, the EPA recommends a condition of the consent as follows:*

A maximum of 2,740 tonnes of material is permitted to be transported to the landfill by truck per day.

It is acknowledged that the daily limit quoted in the condition of consent proposed by the EPA is a *pro rata* amount based on the 1,000,000 tonnes per annum (***tpa***) cap proposed by the Modification Application.

The letter prepared by EMM dated 22 October 2019 (***EMM Letter***), states that a condition of consent as proposed by the EPA is not appropriate as the amount of waste received may fluctuate depending on the supply of waste.

The EMM Letter states that, based on historical operations, 2,700 tonnes per day (***tpd***) is a typical day at the Facility. The Facility must have therefore been operating in excess 700,000 tpa in breach of its current approval and Environment Protection Licence or have had a number of days on which it received very little landfill waste.

Despite this, EMM goes on to model the particulate matter generated by the Facility as follows:

(a) **Typical Day** - 2,740 tpd;

(b) **Peak Day** - 4,110 tpd, being a multiplier of 1.5 of a Typical Day; and

(c) **Worst Day** - 5,400 tpd, being a multiplier of 2.0 of a Typical Day.

In order to upscale the predicted concentrations of particulate matter, EMM applied the above multipliers to the Typical Day data set as detailed in the AQIA.

As detailed in the ASG Report, the dispersion modelling in the AQIA is flawed and a corollary of this is that the EMM Letter is subsequently flawed. In addition, the calculation of the daily tonnages used by the AQIA and EMM Letter is also incorrect.

The assessment of emissions as a result of the MPC does not include an assessment of emissions as a result of any by-product being sent to the landfill other than via the chute.

This omission by the Proponent is significant, as demonstrated by the following statement by Bingo Industries Limited (***Bingo***) in Attachment A to its letter to the Department dated 26 September 2019 (***Bingo Letter***):

> *[i]n the event of a shutdown of the MPC, for example during an extended period of unplanned maintenance or equipment failure, there would be a requirement to transport 100% of the residual material from the MPC directly to the landfill via haul trucks.*

Further, Bingo go on to state:

> *[t]he imposition of a condition that requires all material from the MPC to be transferred to the landfill via the chute is not practical, as there are non-recyclable materials received at the MPC in the mixed waste streams (such as tyres, mattresses etc) which cannot be processed by the existing MPC recycling plant and require direct transport from the MPC to the landfill.*

This statement confirms that at least a portion of the MPC by-product will be transferred to the landfill by haulage.

As acknowledged in the EMM Letter, '*haulage emissions to landfill are a key contributing source at neighbouring receptors*'.

The Bingo Letter goes on to state that such operating conditions would be rare and that should trigger action levels be reached mitigation measures would be implemented. However, this does not deviate the Proponent's obligation to accurately model the air quality impacts of the Facility.

The Proponent will likely claim that assessing the emissions in this manner is 'double counting' as the MPC by-product waste has already been assessed in the recycling stream of waste. Such a response is plainly in error once it is realised that emissions must be calculated as a consequence of the operations carried out at the Facility and not solely as a function of the type of waste received. The calculation of emissions as distinct streams of waste is only appropriate in circumstances where there is no MPC by-product or where the by-product is sent to landfill via the chute.

Further, the 'scaling up' of the predicted emissions compounds this error as a number of the MPC emissions generating activities have been calculated in the AQIA on the basis of 30% of 800,000 tpa (rather than 30% of 1,000,000 tpa). Jacfin has raised this issue in its previous Submissions and is yet to receive a satisfactory response from the Proponent.

As the Modification Application proposes that 1,000,000 tpa be received at the Facility for recycling purposes, it must be assumed that 300,000 tpa or 30% will be sent to landfill.

As stated in the Bingo Letter, there will be times where 100% of the MPC by-product is sent to landfill. On this basis, the dispersion modelling must be based on the following appropriately adjusted scenarios:

(a) **Typical Day** - 3,562 tpd, being 1,300,000 tpa / 365 days;

(b) **Peak Day** - 5,343 tpd, being a multiplier of 1.5 of a Typical Day; and

(c) **Worst Day** - 7,124 tpd, being a multiplier of 2.0 of a Typical Day.

On the figures, it is immediately apparent that the analysis in the EMM Letter has underestimated the air quality impacts.

The EMM Letter attempts to circumvent this issue by stating that as the multipliers are applied to the total predicted impacts and assumed that the processing rate at the MPC also increased. This is incorrect as the MPC has not accounted for MPC by-product being transferred to landfill via haulage as outlined above.

Jacfin submits that until such time as Proponent has remedied the fundamental deficiencies with its air quality and odour assessment, the Department cannot properly assess the impacts of the Modification Application. Should the Department approve the Modification Application, in the absence of a proper assessment of such impacts, it will fall into legal error.

3. Waste Management

Jacfin submits that the Modification Application should be refused as key assessments comprising the Modification Application are based on flawed or unsupported assumptions, designed to overstate the need for the expanded Facility.

The Waste Management Review identifies a number of aspects of the Modification Application which have been put forward by the Proponent in support of the expanded facility, which are either false or unsupported. By way of summary, the key false or unsupported assumptions are set out below.

(a) The Environmental Assessment dated 30 August 2018 (***EA***) cites efficient transport and disposal of waste from major projects as a reason in support of the expansion of operating hours. The Proponent has provided no evidence that current landfill operations require round the clock access to landfill to accommodate construction.

(b) The EA states that:

[i]f local landfills are unable to accommodate demand, then impacts are displaced. For example, the unavailability of local disposal points can force transporters to either stockpile on-site or to force trucks to travel greater distances, bringing congestion and traffic impacts to a broader road network.

The Proponent has provided no evidence that:

(i) waste transporters are stockpiling materials;

(ii) greater distances are being, or are required to be, travelled by trucks; or

(iii) there is an increase in traffic impacts.

(c) In support of the of the proposed increase in the landfill cap, the Proponent states *'that greater scope for increased recycling effort by setting a higher limit for volumes of waste disposed to landfill*.'

As detailed at section 2.4 of the Waste Management Review, based on the MPC recovering 70% of processed waste the Facility will recover 700,000 tpa. This equates to the Facility recovering 35% of the total waste received.

As it currently operates, the Facility purports to achieve a recycling recovery rate of 60%. As the total gate limit is to remain the same, this equates to 1,200,000 tpa of recycled waste.

The Proponent now proposes to recycle **500,000 tpa less** than current operations.

Given the above, the Proponent's position stated in the Attachment A to the Bingo Letter that the principles of recycle and reuse are preferable and '*should not be constrained by a landfill limit which is meant to promote*' such ends, is difficult to maintain. Particularly as the expanded Facility will significantly reduce the amount of waste that is recycled and reused.

(d) The Proponent has misunderstood the purpose of the current landfill cap. The Proponent claims that the current landfill cap hinders the recycling effort as the:

> *[t]he existing limit of 700,000 tpa on the annual landfilling rate has the effect (perhaps unintentional) of limiting the amount of recycling that can occur at the facility. This is because landfill waste is generated as a by-product of the processing and sorting of co-mingled waste via the MPC.*

The landfill cap is set for environmental purposes and is designed to support the Proponent's recycling efforts. It is not appropriate for the landfill cap to be altered to facilitate the financial ends of the Proponent, to the detriment of the environment, particularly in circumstances where the recycling effort will be materially reduced, as demonstrated above.

(e) The Proponent, throughout the Modification Application, attempts to make the point that there is a need for the expanded Facility to accommodate the increasing demand for waste disposal in Sydney. In this regard the Proponent states that expansion of the Facility is required to '*accommodate the growing demand for waste management in Sydney*.'

Contrary to the Proponent's assertion, the *Western Sydney Regional Waste and Recycling Infrastructure Needs Assessment*, anticipates that there will be an excess on non-putrescible landfill capacity in 2021, for both Western Sydney and the broader Sydney Metropolitan Area.

Accordingly, the Proponents claim that the Facility will be remedying a lack in landfill capacity is doubtful and misleading.

In addition to the number of false and unsupported assertions put forward by the Proponent in the Modification Application, the Waste Management Report identifies a number of further investigations are required to properly assess the Modification Application.

The Proponent in Attachment A to the Bingo Letter responded to the Second Submission in relation to the 'Increased Landfill and Reduced Recycling' section of that submission that:

> *the Proposal will play a critical role in meeting the intention of the State's Resource Recovery Targets and Circular Economy objectives through promotion of recycling and reuse of waste material accepted at the site.*

This response is entirely inadequate as the expanded Facility will not promote additional recycling as it will increase the amount direct to landfill waste received at the Facility, actively reducing the amount of recyclable waste received. Further, as detailed below, the Proposed Facility is incompatible with the State's resource recovery objectives.

Jacfin submits that the Department risks falling into error should is determine to approve the Modification Application based on the false and unsupported assertions above and without having the opportunity to review the further information identified in the Waste Management Report.

4. Inconsistent with the NSW Waste Policy

Jacfin maintains its position that the Modification Application is contrary to the 'NSW Waste Avoidance and Resource Recovery Strategy 2014-21' (***NSW WARRS***).

The objective of the NSW WARRS is to set a strategy to allow all to the NSW community to reduce the environmental impact of waste and use resources more efficiently. In doing this the NSW WARRS sets out a number of key result areas, of particular relevance to the Modification Application are the following key result areas.

(a) Key Result Area 2: Increase Recycling

The NSW WARRS identifies that Commercial and Industrial (***C&I***) recycling as a significant challenge to the ongoing reduction in waste. As a large receiver of C&I waste, the Facility is playing an important role in ensuring that such waste is recycled and reused.

As stated above, the Modification Application proposes to significantly reduce the capacity of the Facility to receive such C&I waste for recycling, in favour of direct to landfill waste.

(b) Key Result Area 4: Divert More Waste from Landfill

The NSW WARRS states that:

> *… the impact of landfills on the environment and reduces the need to construct new sites. 'Waste diversion' refers to the alternative pathways for materials entering the system that avoid disposal to landfill, such as recycling and energy recovery.*

As currently operating the Facility acts as a significant diversion from landfill, as the landfill component of the operation servers to support the recycling element of the Facility. The Modification Application proposes to diametrically oppose the object of this Key Result Area by increasing the amount of waste permitted to landfill, while actively reducing the potential to divert waste from landfill.

Moreover, the offence to the NSW WARRS and this Key Result Area is exacerbated as the proposed additional capacity for landfill is not required to meet the projected need in Western Sydney or the broader Sydney Metropolitan Area.

Given the above, the Modification Application if approved will be directly inconsistent with the NSW WARRS. Accordingly, Jacfin submits that the Modification Application should be refused.

5. Occupational Hygiene

Jacfin submits that the Modification Application should be refused as the Proponent has not demonstrated how it proposes to manage the human health impacts generated by the expanded Facility for staff and the community.

Given the nature of the operations undertaken at the Facility and its proximity to residential and employment areas, the Proponent must demonstrate that its operations will be managed to remove the risk to human health.

Airborne Asbestos Fibre

The Proponent has indicated that the Facility will increase its intake of ACM. As detailed in the Occupational Hygiene Review, exposure to asbestos fibres is associated with the following medical conditions:

(a) asbestosis;

(b) lung cancer; and

(c) mesothelioma.

Exposure to high levels of asbestos fibre is associated with asbestosis and lung cancer. However, mesothelioma is associated with lower exposure to asbestos fibre.

Given the known health impacts of asbestos, the Proponent must demonstrate, prior to approval, that it can mitigate the risk of exposure of asbestos fibre from all stakeholders.

Airborne Particulate Matter

Airborne particulate matter are potentially harmful to the human respiratory system when inhaled. In particular, particulate matter such as PM_{10} and $PM_{2.5}$ present a greater health risk as particles of this size are able to deeply penetrate the respiratory system. Such particulate may also transport chemical substances into the respiratory system as the substances may be bonded to the particulate matter.

The consequence of inhalation of particulate matter is that it may lead to irritation, inflammation and may lead to serious respiratory condition such as Chronic Obstructive Lung Disease.

Occupational Hygiene Measures

The Modification Application assumes that airborne hazards from the Facility are well managed based on the current mitigation measures employed and the PM_{10} at the Facility boundary. However, there is no evidence from occupational hygiene perspective that supports this conclusion.

Should hazards not be well controlled, employees at the Facility as well as those members of the community in the adjacent residential and employment areas may be placed at an unacceptable risk of harm.

Accordingly, the Department must not determine to approve the Modification Application, until such time as the Proponent has provided its proposed plans of management which detail how the risk to human health from exposure to particulate matter and asbestos fibre emanating from the Facility will be managed.

6. Conclusion

The Modification Application contains a number of omissions, deficiencies and unsupported assumptions.

In addition to the fundamental deficiencies outlined in the AQIA Report, the EMM Letter has not provided a satisfactory response to the Second Submission in relation to the calculation of the worst case scenario. The basis on which the EMM Letter founds its calculations does not reflect an accurate worst case scenario. Further, the method used to calculate the worst case scenario is not an adequate alternative to modelling the actual impacts of the Facility.

The Modification Application, if approved, will actively reduce the capacity for C&I waste in favour of recycling and increase the waste permitted to landfill. Additional landfill area is not required in Western Sydney or the Sydney Metropolitan Area. Accordingly, the Modification Application is contrary to State interests and inconsistent with NSW recycling policy.

On the basis of the above, Jacfin submits that the Modification Application ought be refused.

Please contact the undersigned if you have any questions in relation to this submission.

Yours faithfully

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Review of Revised Response to Submission Report and Air Quality Assessments for Genesis Waste Management Facility Modification 6 (MP 06_0139 MOD 6)

Attention:

HWL Ebsworth
Level 14, Australia Square
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Sydney, NSW, 2000

Report By:
Jennifer Barclay
Atmospheric Science Global Ltd

January 2020

ASG has been engaged by HWL Ebsworth Lawyers on behalf of Jacfin Pty Ltd (Jacfin) to conduct a review of the Revised Response to Submission Report (Revised RTS) and the air quality assessment in relation to the application by Dial a Dump Industries (EC) Pty Limited (Proponent) to modify the hours of operation and landfill cap applicable to the Genesis Waste Management Facility (Facility) (MP 06_0139 MOD6) (Modification).

Executive Summary

The Revised RtS confirms that the Modification Application seeks to increase the volume of material to the landfill from 700,000 tonnes per annum (tpa) to 1,000,000 tpa. The proposed increase in volume excludes waste generated by recycling processes within the Material Processing Centre (MPC) and the Pre-Sort building. **The impact of the Modification, if approved, is that 1,000,000 tpa plus by-product from recycling will be deposited to the landfill.** Further, the Facility is proposing to extend its operating hours.

In a response to the Proponent's Response to Submission Report dated May 2019 (Original RtS), on 2 August 2019 (Second Submission), Jacfin Pty Ltd from an air quality perspective submitted that:

- the proposal to increase the landfill cap will result in unacceptable air quality and odour impacts;
- the majority of the deficiencies in the assessments undertaken by the Proponent and key concerns previously raised in the independent expert reports commissioned by Jacfin and included in the Jacfin Submission dated 24 October 2018 (First Submission) have not been adequately addressed by Original RtS; and
- the deficiencies in the assessments undertaken by the Proponent mean that the Department of Planning, Industry and Environment (Department) cannot properly assess the air quality, odour and noise impacts of the Modification Application.

The Second Submission also raised concerns in relation to noise impacts, and that the Facility is out of character with the nature of the existing surroundings and the type of development that is envisaged for the Eastern Creek Business Hub. ASG agrees entirely with the Second Submission and with the views of Jacfin's peer review reports from Katestone Pty Ltd.

ASG has been engaged to consider whether the Revised RtS adequately addresses the air quality issues raised by the EPA, the Department, Jacfin, Katestone as well as the other local councils and the community. Further, ASG has also considered whether there are any other issues that have not already been raised in the submissions. In particular:

- the appropriateness of the modelling carried out in support of the Modification;
- the EPA and Department's position in relation to the Modification; and
- any other issues outstanding in relation to the air quality and odour impact assessment of the Modification.

ASG identifies the following **concerns** with the Proposal as outlined in the Revised RtS.

1) The proposed 1,000,000 tpa of direct to landfill waste represents a 300,000 tpa increase from the currently approved 700,000 tpa cap. The consequence of this is:
    a. that the Facility will receive more direct to landfill waste than current operations;
    b. the Facility will have less control on what waste it receives;
    c. the Facility will likely end up taking lower quality loads to fulfil its new limit; and
    d. 24-hour operations means odours can accumulate at night-time.
2) The amount of waste to landfill from the MPC and Pre-Sort building will likely be higher than the 30% of 700,000 tpa processed by the MPC for landfill and allowed for in the 'worst case model scenario'.
3) The tip face will be active all night at a time when the atmosphere is stable, leading to a build-up of pollutants within the pit.
4) The meteorological conditions within the pit are entirely different than outside the pit. The Proponent has not considered the impact of the strong temperature inversion in the pit, nor the channelling of the wind flow caused by the orientation of the pit to the wind, and how this might impact dispersion of pollution from the pit.
5) The impact of the current and predicted increase in the intake of Asbestos Containing Material (ACM) has not been adequately assessed. Much of the recent growth to landfill at the Facility is ACM, accounting for more than 60% of landfill inputs in 2017-2018. This is anticipated to grow. There are genuine concerns for airborne asbestos which does not behave like Particulate Matter (PM) in the atmosphere. There is also concern for workers in the pit who will be exposed to high levels of asbestos in an unfavourable meteorological environment in an enclosed area.
6) There are genuine concerns that the Facility does not have the technical-know-how to mitigate against fugitive odours or upset conditions. Currently, the Facility does not take compost waste, therefore it has no experience in handling the complex scientific side of composting.
7) There is very little separation distance between the Facility and the nearest sensitive receivers.
8) There are already odour complaints under current operations, such complaints are raised by the EPA and acknowledged on the Proponents web page. There are concerns that offensive odours will be worse on hot summer days, early in the mornings and when the atmosphere is calm.

ASG's review of the Air Quality Impact Assessment prepared by Ramboll dated August 2018 (AQIA), has raised a number of **additional concerns.**

1) The Proponent has neglected to consider the 'pit effects' on the dispersion of:
    a. PM;
    b. asbestos fibres; and
    c. odour.

    The failure of the Proponent to adequately model for these circumstances has the following consequences.
    a. Under windy conditions the orientation and shape of the pit will steer the main exit routes of PM.
    b. PM deposition may be high within the pit, but equally is susceptive to re-suspension and entrainment under windy conditions.

   c. Airborne asbestos fibres behave differently to PM. There is a concern that fibres will be trapped within the pit through activity on the asbestos containing materials which could be very hazardous to workers.
   d. Due to the strong night time temperature inversion, odours will accumulate and escape after sunrise when the pit switches to become very unstable.
2) There are many modelling concerns, especially the meteorological model. In general the meteorological model is of a poor standard, and the evaluation is poor. The meteorological model could have been significantly improved than what has been used in the AQIA.
3) The fundamental issue with PM modelling was the lack of information provided in the AQIA, mostly pertaining to the source characteristics of the PM sources. Further, the information provided in the AQIA cannot be verified as no model files have been provided. Since the effects of the pit were not taken into consideration (deposition, re-suspension and entrainment) the modelling is but a guide.
4) Airborne asbestos from ACM has not been considered in either the AQIA, the Original RtS, or the Revised RtS. As the volume of ACM is expected to increase significantly should the Modification Application be approved, it is imperative that the AQIA consider asbestos deposition and pit effects on asbestos dispersion, as well as the potential effects on employees handling asbestos waste in a confined space.
5) The odour modelling has multiple issues:
   a. it does not consider 'worst case emissions' as complaints could come from upset or fugitive emissions which the modelling has not taken into account. Further, there is potential that the amount of waste to landfill from the MPC will be higher than the 30% allowed.
   b. The derived average emission rates from 4 landfills is a 'hit and miss' exercise.
      i. Not only do the emissions range by 2 orders of magnitude between similar sources at the 4 referenced landfills, but are unrepresentative of the waste expected to go to the landfill at the Facility.
      ii. To date, there is no description of the intensity and characteristics of the waste to the landfill, there are also no measurements of the main sources.
   c. The odour emission rates are either incorrect or misleading, they are much higher than what appears to have been modelled.
   d. No model files are provided in the AQIA to permit an appropriate review of the AQIA.
6) Cumulative odours and PM from the proposed Next Generation energy to waste facility have not been included. This renders the modelling done to date invalid.
7) There is no comprehensive management plan for odour, nor mitigation strategies in the event a significant odour event occurred. There are currently complaints and there is very little separation distance between the Facility and sensitive receivers. The AQIA needs to provide surety and confidence to the community that it can manage adverse odour.
8) Responses from the EPA and DPIE are considered not to adequately consider the above issues, are largely aimed at particulate matter, and, appear to have not asked key questions pertaining to:
   a. the lack of fundamental information in the AQIA which has prevented a proper review, especially with respect to modelling;
   b. airborne asbestos fibres within the pit; and
   c. fugitive odours and upset conditions.

9) The EPA have also specifically requested that the Proponent:
    a. demonstrate effective control;
    b. explain how odour will be managed during increased hours; and
    c. prepare an assessment of impacts.

    The Proponent has not supplied any of the requested information and the EPA has not persisted with its request.

There are multiple occurrences in the Revised RtS where **the responses are inadequate** including for example:

1) There were more than 16 community submissions on asbestos concerns. The Proponent's response was that the 'most appropriate method for mitigating the hazard is to allow authorised facilities to treat and dispose of the waste'. This does not address the community concerns of airborne asbestos fibres, particularly given the anticipated increase in the ACM accepted by the Facility.
2) There were 21 community submissions to odour aimed at composting, general odour complaints, hot mornings and hot summer months, and inadequate modelling. The Proponent's response was to point to the 'worst case scenario' modelling and the fact the 2 ou curve was not exceeded. Given the poor modelling, lack of pit effects and poor emission rates these concerns have not been adequately addressed.

ASG supports Jacfin's conclusions that the proposed increase of 'landfill only' waste and night time operations will result in unacceptable increases in the Facility's impacts on air quality and odour emissions, and that the Original RtS and Revised RtS do not adequately engage with or respond to the concerns raised in relation to air quality and odour impacts.

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1. Introduction

ASG has been engaged by HWL Ebsworth Lawyers on behalf of Jacfin Pty Ltd to conduct a review of the Revised RtS and air quality assessments in relation to the Modification Application by Dial a Dump Industries (EC) Pty Limited (MP 06_0139 MOD6). The Proponent operates a materials recovery and landfill facility at Honeycomb Drive, Eastern Creek. The Facility is operated under Major Project Approval 06_139. The Modification seeks consent to:

- increase the direct to landfill waste volumes;
- extend the hours of operation; and
- revise the noise criteria.

The Facility is currently licensed to receive up to 2,000,000 tpa of waste and has a cap on landfill waste of 700,000 tpa. The Modification seeks to increase the direct to landfill cap to 1,000,000 tpa. The proposed increase in direct to landfill tonnage will exclude waste generated by recycling processes from the MPC and the Pre Sort Building.

In response to the Original RtS, from an air quality and odour perspective, the Second Submission stated that the:

- proposed increase to the landfill cap will result in unacceptable increases in air quality and odour impacts;
- majority of deficiencies in the AQIA and key concerns previously raised in the independent expert reports commissioned by Jacfin and included in the First and Second Submissions had not been adequately addressed;
- the deficiencies in the assessments undertaken by the Proponent make it impossible for the Department to properly assess the air quality and odour that will be generated by the changes proposed by the Modification Application.

It is unclear why the Proponent has based its 'worst case scenario' on 800,000 tpa when the Modification will permit 1,000,000 tpa of waste be processed by the MPC. Katestone undertook an independent review of the Original RtS on behalf of Jacfin, and concluded that the fundamental concern remains that the Proponent has not demonstrated that a realistic ‘worst case scenario’ was used for the assessment of odour and air quality impacts for the expansion of landfill. The 'worst case scenario' considered in the AQIA is based on an assumption that 30% (240,000 tpa) of the of 800,000 tpa that is processed by the MPC will go to landfill.

Further, as stated in the First and Second Submissions, there is no guarantee that only 30% of the waste processed by the MPC will end up in the landfill. Theoretically, a 'worst case' scenario' could be any figure up to 1,000,000 tpa, depending on the composition of the waste being processed in the MPC.

The Katestone review of the Original RtS raises the following additional issues.

(a) The Original RtS does not consider all reasonably foreseeable development in the vicinity of the Facility. The Original RtS considers the Hanson facility to be speculative, rather

than a reasonably foreseeable development. The Hanson facility has been granted development approval by Blacktown City Council and should be considered in any assessment of cumulative impacts of the expansion of the landfill.

(b) The potential impacts of the Modification have not been properly assessed as the receptor locations selected in the AQIA do not reflect the most affected locations. The Original RtS confirms that the points of reference for commercial and industrial receptors were selected based on where the Proponent considers exposure to dust may occur, rather than the points of greatest potential impact nearest to the Facility. As a result, the AQIA has likely underestimated potential impacts. A 25m – 30m receptor network should define the region from the facility boundaries for at least 1-2 km.

(c) The Original RtS does not confirm that best practice measures will be implemented to minimise emissions of $PM_{2.5}$ as far as practicable. Although background annual average concentrations of $PM_{2.5}$ exceed the air quality criterion, the Proponent must ensure that best management practice is implemented to minimise its emissions.

(d) No additional information has been provided in the Original RtS to support the assumptions made in the AQIA relating to haul road lengths. It is not possible to assess whether dust impacts from haulage have been properly identified and therefore whether dust impacts have been underestimated. This matter is still unresolved.

(e) Insufficient information has been provided in the AQIA and Original RtS to enable the adequacy of the air quality and odour assessment undertaken by the Proponent to be assessed. The minimum information requirements specified by the Approved Methods for Modelling have not been met. The odour assessment is therefore inadequate. This matter is still unresolved.

(f) No site specific measurements for odour have been provided. Such measurements are critical to ensure an accurate indication of the likely overall odour impacts from the Modification Application. The adoption of odour emission rates from non-site specific sources is an arbitrary decision which could result in an underestimation of odour impacts.

ASG agrees with the First and Second Submissions, and with the findings of Katestone in relation to the Original RtS and its review of the AQIA.

1.1 Scope of Work

ASG has considered all relevant Modification documents, including the First and Second Submissions. ASG's main role is to consider whether the Revised RtS adequately addresses the air quality issues raised by the EPA, the Department and Jacfin, as well as the other local councils and the community. Further, ASG has also considered whether there are any other issues that have not already been raised in the submissions. On this basis, ASC has considered:

- the appropriateness of the modelling carried out in support of Modification Application;
- the methodology and inputs used in the dispersion modelling;
- the EPA's and Department's positions in relation to the Modification ; and
- any other issues outstanding in relation to the air quality and odour impact assessment for the Modification.

This report details the following inadequacies in the Odour and Air Quality Assessment provided in support of the Modification.

1. failure to consider the effect of the open pit on dispersion.
2. Modelling; and
3. lack of comprehensive management plan or mitigating strategies.

2. Key Concern – No Consideration of the Effect of the Open Pit on Dispersion

2.1 Overview

The modelling contained in the AQIA does not account for the complex meteorology within the pit and how this might affect the dispersion of PM, asbestos fibre, and odour.

The open cut elliptical void of the Facility is approximately 430m x 700m and up to 150m deep. The surface area is approximately 288,000m^2 at ground surface and 12,000m^2 at the base. Table 2-1 provides the estimated Landfill Areas.

Table 2-1. Estimated landfill Areas (Table 1, Mod 6 - Leachate generation Model prepared by Consulting Earth Scientists dated 14 August 2017)

Table 1: Estimated Landfill Areas

Dimension	Estimated area (m^2)
Total Landfill Catchment Area	472,000
Operating area of landfill (as at September 2016)	73,000
Area of 8 ML stormwater pond	5,525

The air flow within the Genesis pit will differ to the flow outside the pit due to topographic, thermal and meteorological factors.

Due to this difference in internal and external atmospheric conditions, the United States Environment Protection Authority (US EPA) included an Open Pit model in its Industrial Source Complex Model (ISCST3). The use of the Open Pit model permits realistic modelling of pollutant dispersion and disruption both internally and externally of the pit.

Open pits are characterised by differential air flow entering the pit, inside the pit and exiting the pit. PM settling may be greater within the pit, and can be significant outside the pit in certain locations depending on the wind regime.

Based on observations and measurements in wind tunnel studies (Petersen and Perry 1996),[1] pit emissions show a tendency to be emitted from an upwind sub-area of the pit opening. The shape, size, depth and orientation of the pit are important as the wind direction will vary according to the pit orientation. In the case of the Facility, the orientation of the pit is southwest to northeast, and the dominant wind flow is from the southwest, so potential main exit routes for particulate matter within the pit will be directly toward the northeast and southwest.

The effect of the topography, meteorology and insolation are briefly discussed below.

[1] Petersen W.B., Perry S.G. (1996) Improved Algorithms for Estimating the Effects of Pollution Impacts from Area and Open Pit Sources. In: Gryning SE., Schiermeier F.A. (eds) Air Pollution Modeling and Its Application XI. NATO · Challenges of Modern Society, vol 21. Springer, Boston, MA

2.1.1 Classification of the Genesis open pit and the effect of topography on pit flow

Pit cavities are generally classified according to length to depth and length to width ratios. The Facility pit it is considered shallow (L/D > 1), and three-dimensional (L/W > 1). Further the pit is classified as open (L/D < 10) (Chowdharry 1977[2] in Chinthala and Khare 2011).[3]

The pit is also subject to topographic factors. The effect of the pit is to channel and confine the plume dispersion, and cause flow re-circulations within the pit[4]. This effect is achieved as the pit slopes:

1. facilitate easy penetration of the wind as the shape of the slopes guide the wind flow.
2. affect the ambient wind speed; and
3. increase/decrease the size of the eddies within the pit.

The pit facilitate easy penetration of the wind because the shape of the pit guides the wind flow and affects the ambient wind speed. The pit can act to increase\reduce the size of the eddies. In addition, 'benches\faces' within the pit can cause local deflection of the plume, and the presence of corners enables pollutants to get confined to particular regions of the pit, until they reach a height where the effect of the topography gets diminished and plume expansion is observed. As the Facility's pit has an aspect ratio of L/D > 4, the air outside the pit will intrude into the pit, forming a secondary vortex.

2.1.2 Effect of overburden in the pit

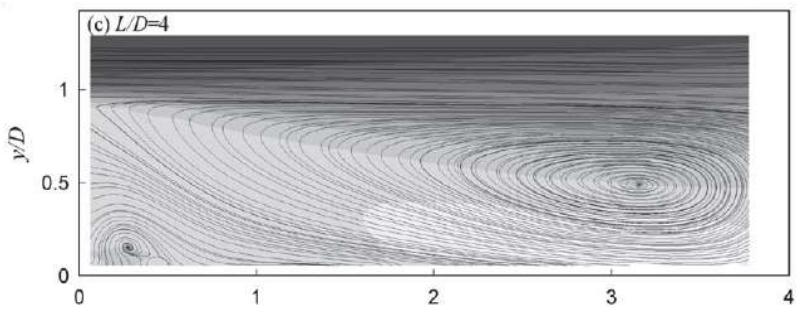
Typically, overburden occurs when activities within the pit create a pile of material for temporary storage. Overburden within the pit can affect dispersion, especially if the overburden is on the upwind long-oriented side of the pit (for Facility's pit this would be in the southwest and northeast corners). The overburden can alter the wind flow and turbulence characteristics and enhance pollutant mixing. The retention of overburden particulates within the pit is dependent on the volume and the location of the overburden in the pit.

[2] Chowdhary, K.K. (1977). An experimental and theoretical investigation of turbulent separated reattached and redeveloped flows with transverse rectangular cavities. Phd thesis, Indian Institute of Technology Delhi, New Delhi.

[3] Sumanth Chinthala and Mukesh Khare (2011). Particle Dispersion Within a Deep Open Cast Coal Mine, Air Quality-Models and Applications, Prof. Dragana Popovic (Ed.), ISBN: 978-953-307-307-1, InTech, Available from: http://www.intechopen.com/books/air-quality-models-and-applications/particle-dispersion-within-a-deepopen-cast-coal-mine.

[4] Appleton, T., Kingman, S., Lowndes, I., and Silvester, S. (2006). The development of a strategy for the simulation of fugitive dust emissions from in-pit quarrying activities: a UK case study, *International Journal of Mining, Reclamation and Environment,* Vol., 20 (1), pp. 57–82.

Figure 2-1. Effect of aspect ratio on the flow from Kang and Sung (2009)[5], applicable to the Genesis pit, where outside air will penetrate the pit and cause a secondary vortex within the pit.



2.1.3 Meteorological effects

According to the US EPA, the wind speed will mostly be reduced when entering the pit, and the wind direction in the pit and outside the pit will not correlate due to the vortices effects inside the pit.[6]

However, the most important meteorological effect within the pit will be the development of a stable temperature profile, which under light winds will suppress the vertical motion of pollutants resulting in an increased deposition of PM and an accumulation of odour gases. At night-time under the effect of stratification, the flow in the pit will be similar to night-time flow in mountainous regions due to the accumulation of cold air and cooling. The depth of the inversion and its strength is expected to be much stronger in the pit than outside the pit, and will be persistent, occurring almost every night for the whole night, as long as calm conditions prevail[7]. This is a very different meteorological pattern to outside the pit, where inversions will happen much less often, be less severe and only occur for a few hours a night. Pollutants being released within the pit will be trapped within the pit until conditions become more unstable, or the wind increases. Instability will occur around sunrise when accumulated odour could escape. For PM, the stable stratification in the pit at night may allow for a higher deposition than the modelling in the AQIA indicates. As the air in the pit becomes more unstable after sunrise, heavier PM will remain deposited, but lighter PM may become airborne. The greater concern for PM in the pit is an increase in wind speed which could cause significant deposits of material to become re-entrained.

2.1.4 Insolation effects

The sun combined with the mechanical shear effects of the flow outside the pit will control the physical processes within the pit. The pit will tend to warm rapidly when the insolation is intense with respect to outside the pit. The opposite is also true. On a hot summer day, or hot early morning, the air temperature can quickly increase with depth, generating unstable conditions within the pit and will cause the plume to be lifted quickly out of the pit.

[5] Kang, W and Sung, H.J. (2009). Large scale structures of turbulent flows over an open cavity, *Journal of Fluids and Structures*, Vol., 25, pp.1318-1333.
[6] USEPA (1985). Dispersion of Airborne particulates in surface mines, 450/4-85-001.
[7] Grainger, C. and Meroney, R.N. (1993). Dispersion in an open-cut coal mine in stably stratified flow. *Boundary-Layer Meteorology*, Vol., 63, pp.117-140.

As mentioned above at section 2.1.3, it is likely that the meteorological conditions within the pit will cause PM and odour to accumulate for the during night period. Given this, it is likely that such accumulated PM and odour will be expelled from the Facility's pit shortly after sunrise, particularly in the warmer months, causing increased negative odour and air quality impacts, these have not been considered by the Proponent.

2.1.5 Modelling the flow in open pits

Simulating the dispersion in an open pit is complicated but is an effective tool to understand the potential emission problems, and provide the basis for future planning.

The ISCST3 open pit source model treats the pit as a single large area source orientated to its major long axis. The model accounts for the partial retention of emissions within the pit by calculating an escape fraction for each PM size category. Because of the orientation of the Facility's pit to the dominant wind flow, the locations of highest exposure will be the north eastern corner and southwestern corner. The consequence of this is that the particulate matter, PM_{10}, $PM_{2.5}$ and Total Suspended Particles (TSP) effects are not known unless the pit is correctly modelled. The same is true for asbestos fibres and odour, contained within the pit.

2.1.6 Pit Model limitations

The ISCST3 Open Pit module is the only model that has been used in Australia (Holmes and Morawska, 2006).[8] The model is not linked to CALMET and must be used as a stand-alone module, but the meteorology can be extracted from CALMET. Further the model has no provision for considering the settling effects of particles, nor does it consider the stability (temperature effect) or the buoyancy effects that govern the dispersion of pollutants within the Facility area. Therefore, the model can only provide a simplistic view of what is otherwise a very complex situation. A fundamental understanding of the micro climate within the pit is necessary and how it may influence pollutant dispersion outside the pit is important.

2.2 Summary

The AQIA has failed to consider the affect that the pit will have on the dispersion of PM, asbestos and odour. The flow in the pit will differ to the flow outside the pit due to topographic, thermal and meteorological factors. The topographic effects surrounding the pit and the pit itself will channel the dominant southwest and northerly winds. Under windy conditions PM and odour dispersing from the pit will be affected by this channelling effect.

Under calm and light wind conditions the meteorological conditions in the pit will be significantly affected by the vertical temperature profile. At night time inversion conditions will be persistent and strong, and are likely to cause an increase in the deposition of PM within the pit (higher than what the

[8] Holmes, N.S. and Morawska, L. (2006). A review of dispersion and its application to the dispersion of particles: An overview of different dispersion models available, *Atmospheric Environment*, Vol., 40, pp.5902–5928.

modelling has shown). Under windy conditions the deposited particles will be available for re-suspension and entrainment and have the potential to leave the pit as a more concentrated plume than modelled.
The situation is slightly different for asbestos fibres. Airborne asbestos fibres are extremely light despite their fairly large size and do not deposit in the same manner as PM which for particles > 10 um is through gravitational effects. But it is expected airborne asbestos will also be affected by the same thermal and wind effects as PM.

For odours the night time inversion conditions within the pit are likely to cause odour accumulation as the gases are trapped within the pit. The accumulation of odour is likely to be much higher due to night time activities at the tip face than if the cap were sealed and no activity. At sunrise the inside of the pit will heat up faster than outside the pit causing the accumulated odour plume to escape the pit. Worst case odour conditions are expected to occur in the early mornings, after sunrise and equally on hot sunny days, or in the evenings with light winds.

As demonstrated above, the presence of the pit has a significant impact on the dispersion of PM, asbestos and odours. Given the size of the Facility's pit, it is likely that the failure to take the pit effects into account has meant that the AQIA has under predicted the dispersion of PM and odour. The AQIA does not address the dispersion of asbestos particles.

Until the pit effects are appropriately modelled and properly understood, the air quality and odour impacts of the proposal have not been adequately assessed by the Proponent.

3. Key Concern - Modelling Methods and Assumptions

3.1 Overview

There are three aspects to air quality in the AQIA, PM (comprising of PM_{10}, $PM_{2.5}$ and TSP), odour and asbestos. The key pollutants of concern during the operation of the facility are:

- fugitive dust and odour generated from waste receipt, handling, processing and product dispatch;
- odour from green waste processing, landfilling, leachate management and composting; and
- asbestos waste receiving, handling, storage and disposal

Modelling was conducted using the CALPUFF suite of models. The Proponent has not supplied the control input files and there are few figures and diagrams in the AQIA report to provide sufficient information.

ASG has a number of concerns with the way the modelling has been conducted. This is detailed below for meteorology, PM, asbestos and odours.

3.2 Meteorological Modelling Concerns

The AQIA fails to take into account all relevant meteorological data.
The AQIA has not included data from:

1. Prospect meteorological station; and
2. Badgery Creek meteorological station;

into the modelling carried out in support of the Modification, resulting in an inadequate wind field.

The AQIA modelling has underestimated the number of calms at the Facility. The evaluation of the CALMET model is incomplete and weak. The AQIA uses a very coarse model resolution of 500m instead of 150m-200m. (A terrain map with all the relevant weather stations has been overlaid at Figure 3-1).

The following comments have been made in light of the development of the meteorological data that was used in the modelling.

The Air Pollution Model (TAPM)[9] model was used but not evaluated.
Hourly gridded, 3-dimensional data from TAPM was used to provide CALMET upper air data. Whilst the grids and options chosen for TAPM are appropriate, the following issues arise with the use of TAPM in the AQIA.

1. The AQIA used several observational stations in TAPM to force the wind field toward the observations. This is not recommended practice. It also does not allow assessment by reason of the following.

[9] CSIRO Division of Atmospheric Research. Melbourne, Australia.

a) The TAPM model source code is blocked, and apart from the developers no-one can 'see' inside the model. Therefore, it is impossible to understand how TAPM smoothes the wind field to force the numerical solution to fit to the observations. It also does not allow assessment of how TAPM handles conflict.

b) Further TAPM is a numerical weather model and should not be forced to comply with an observation. CALMET on the other hand is a diagnostic meteorological model and is capable of handling all observations from the surface weather stations and weighting them accordingly.

2. The AQIA does not supply the weighting scales that were used to force TAPM to 'read' the observations (weighting scale is the user-determined maximum radius of influence expressed in kilometres of the surface station both horizontally and vertically).

3. The output of TAPM was not evaluated. It is usual for a reports such as the AQIA to include time series, wind roses and scatter plots of meteorological variables. Sydney International Airport is located approximately 40 km due east of the facility which records 6 hourly radiosonde profiles. Such wind and temperature vertical profiles from Sydney Airport should have been used to evaluate the performance of TAPM at 20m, 30m and 50m above the surface over the whole modelling year. Alternatively, Sydney Airport radiosonde data should have been used to develop the upper air winds. Use of observed/measured data from Sydney Airport or, well evaluated TAPM data would have provided some confidence in the modelling that was conducted.

Observations were used a second time in CALMET.
The AQIA used the observations a second time in CALMET (after using them in TAPM), to force the model to a wind solution. This is very unusual practice. Ideally CALMET should have provided the observations, not TAPM. Similarly to TAPM above, the user determined maximum radius of influence of the surface stations has not been provided. As a result the reviewer is not able to understand whether appropriate parameters have been used.

Two important observation stations, Prospect (~10km due east), and Badgerys Creek (~10km due southwest), were not included in the CALMET modelling as they were used for evaluation purposes.
This is unusual and not recommended practice to exclude important meteorological stations from the model for the sole purpose of evaluating the model against them at their specific locations. The CALMET wind at the facility would have been more accurate at the Facility had these two stations been included. The result of excluding key observation stations is to render the three dimensional winds at the Genesis site untrustworthy.

CALMET evaluation is weak and incomplete.
The only evaluation of CALMET was a comparison of an annual surface wind rose between CALMET and Badgerys Creek, and CALMET and Prospect. The results were average to poor in both cases. Statistical analysis was provided in the Revised RtS in Table A.1 at the request of the EPA in its November 2018 letter. The AQIA did this by comparing the CALMET winds and

temperature at the site of Prospect. Again, this is very unusual practice. Statistics of the type that were used in the AQIA are traditionally used for comparing many co-located points from numerical weather models with surface observations and are not suited for one on one comparisons. The results showed that the wind speed is roughly similar as expected over such a short distance, but the wind direction bias and gross error were unsuitable.

At a minimum, evaluation of CALMET should have included spatial wind field plots, time of day wind roses, and time series and scatter plots of wind speed, wind direction, temperature, RH, pressure, solar radiation, Monin Obukhov length scale, stability, friction velocity, mixing height. This information is necessary, especially from a reviewer's perspective as it provides key information on whether the meteorological model has been appropriately developed or not. Further, it also provides a degree of confidence that the work in the AQIA is robust. ASG has no such confidence in this AQIA.

Meteorological model resolution is far too coarse.

Figure 3-1 shows the terrain used in the model in the AQIA model with a resolution at 500m compared to the recommended model resolution of 150m.

The wind regime around the Facility is controlled and directed by the local topography. This is especially the case as can be seen by the Horsley and St Marys wind roses. The Facility's wind rose should look more similar to St Marys than Horsley station as the Facility shares the same valley as the St Marys' weather station, and both experience northerly and south-westerly wind channelling caused by the mountains 18km to the west, as well as the minor valley in which the Facility is located. Figure 3-2 shows the 2016 annual St Marys wind rose compared to the CALMET wind rose at the Facility. The wind roses are quite different and the CALMET wind rose should look more similar to the St Marys wind rose.

Therefore the result of the coarse terrain resolution used in the AQIA will have a couple of effects. The first is that the model will not respond to any topography that has not been resolved. This includes the subtle variations in topography around the site. Further, the topography that the model can 'see' is now much coarser than reality, i.e., it is not well resolved, such that the main valley is much less well defined. As a result the model is unable to determine either the large scale valley effects on the wind field at the Facility or the small scale local terrain effects. The net result of these effects is a wind rose at the Facility that has winds from all directions which means a less concentrated plume and better 'all round' dispersion than what is really happening.

Figure 3-1. Terrain resolution as per AQIA at 500m interval (left), compared to recommended 150m resolution (right). Both the large scale valley features are not properly resolved, nor are the fine scale local affects around the facility.

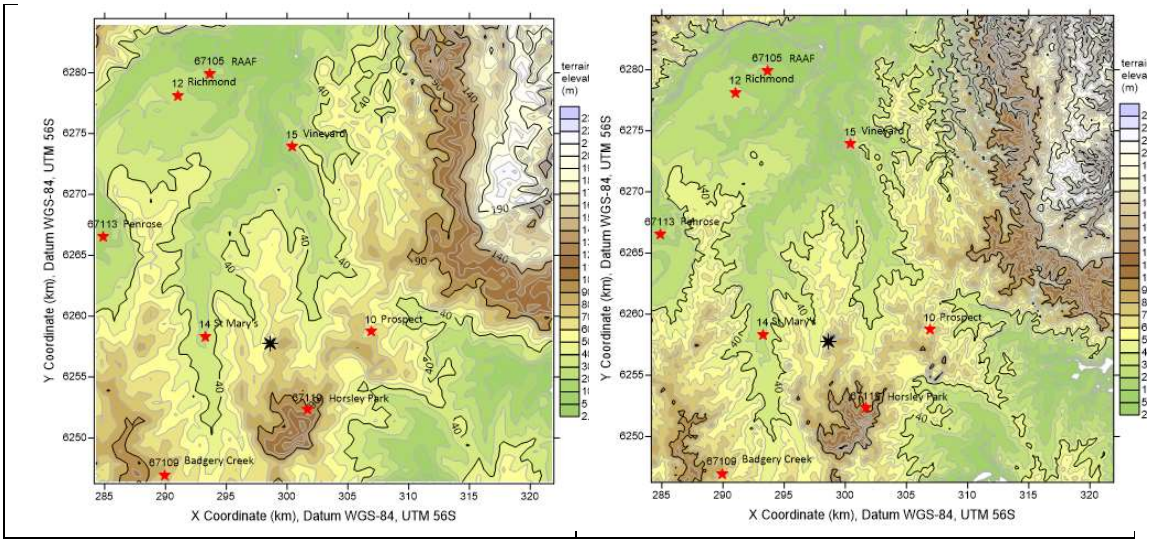
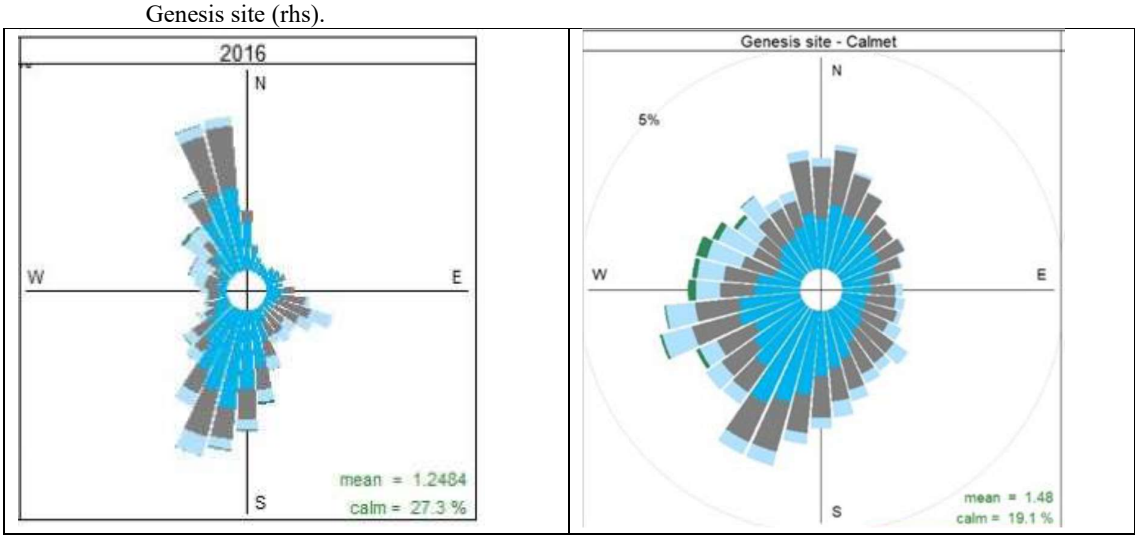


Figure 3-2. ST Mary's OEH annual 2016 wind rose (left) compared to the AQIA CALMET wind rose at the Genesis site (rhs).



Future modelling must create a more suitable wind field at the facility.

The more uniform wind rose of the AQIA wind model at the facility will create better all round dispersion than is otherwise occurring, and it will also lessen the pit effects than would otherwise occur with a more realistic terrain channelled wind model.

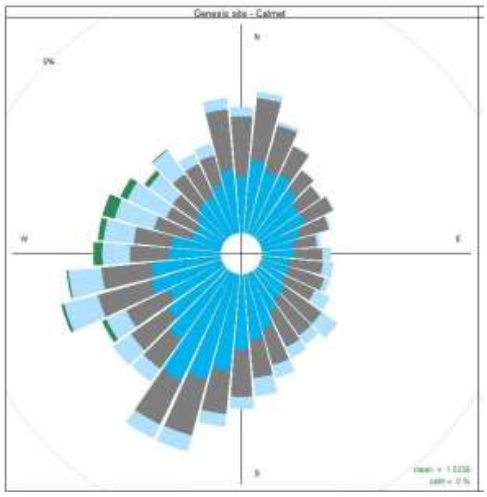
Accordingly, the Proponent's poor calculation of the wind field must be corrected to permit an accurate assessment of the air quality and odour impacts of the Modification.

The AQIA underestimates the number of calms (<0.5 m/s) at the site by more than 7-10%.

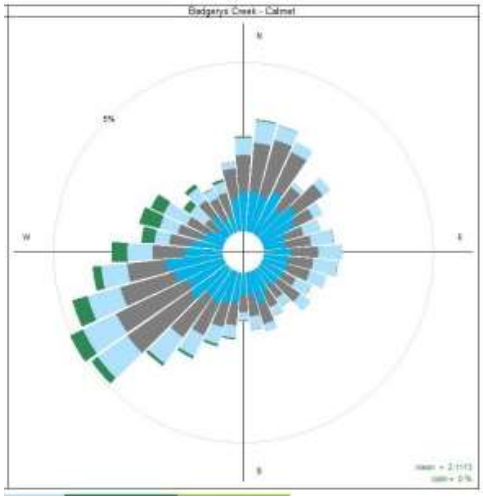
CALMET predicted 0% calms at the Badgerys Creek site (AQIA), but the Badgerys Creek BOM site recorded 7.4% calms. ASG has confirmed that the BOM site has 7% calms for the period of 2013-2015.

Further CALMET predicted 0% calms at the Facility (AQIA). In this same figure the AQIA reported 0.1% calm for Prospect which is incorrect. ASG has confirmed that the BOM Prospect site has 10% calms for the period 2013-2015. To under predict the actual number of calms is to underestimate the predicted ground level concentrations.

Figure 3-3. Annual wind roses. Predicted at Genesis site and Badgery Creek, from RtS report. The number of calms is shown on the bottom right hand side of each plot, where 'calm = 0%' this value is directly printed from the software plotting program, and therefore is a reflection of the data provided to it.



Genesis Site – CALMET, 0% calm (Figure 4-6, AQIA)

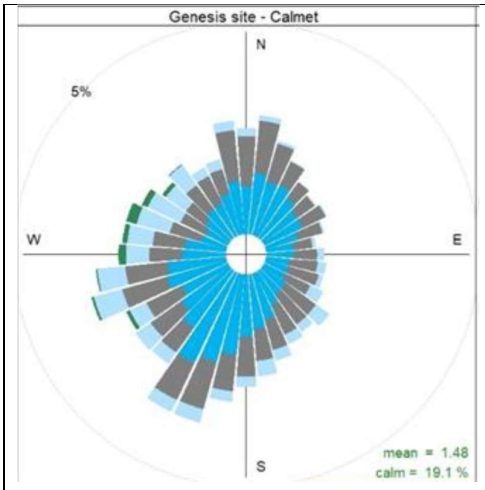


Badgery Creek – CALMET, 0% calm (Figure 4-5, AQIA)

CALMET winds are incorrect. RtS Report has conflicting results about the number of calms.
In Figure A.1 of the Revised RtS shows the predicted wind rose for the Facility has 19.1% calms compared to 0% in Figure 4-6. It is unclear why this is the case, and raises the question, whether the AQIA contains a significant error with respect to calm and light wind conditions? The note on the percent of calm conditions at the bottom right hand side of the wind plots are automatically produced by the plotting program and are a reflection of the data being plotted.

It was also noted that the wind rose wind speed scales are the same, such that the wind rose plot for 19% calms are identical to that for the 0% calms. CALMET should have predicted some calms, but the AQIA must reflect the model predictions correctly. Unfortunately, whether this is an error or not, does not provide any confidence in the surface meteorological data set. If the AQIA has under predicted the number of hours of calm conditions then they will have under predicted the ground level concentrations.

Figure 3-4. Annual predicted wind roses at the Genesis site as documented in the RtS. One wind rose (left) shows 19% calm and the other shows 0% calm. The roses are otherwise identical.



Revised RtS Figure A.1 (19.1% calm)

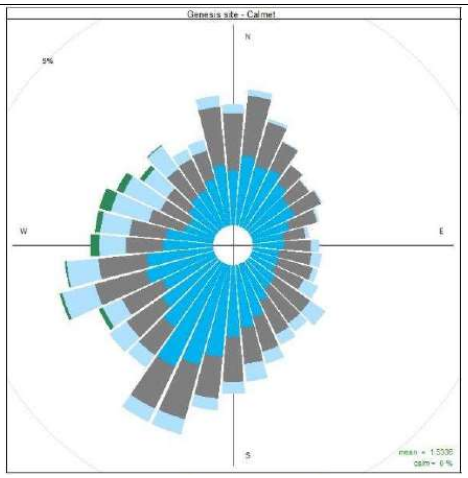


Figure 4-6 AQIA (0% calm)

Atmospheric stability appears incorrect.

Figure 4-8 of the AQIA shows the atmospheric stability classes per day. The curve shows a normal diurnal pattern of unstable conditions during the day and stable conditions during the day. The plot shows almost no neutral conditions and an unusually high amount of very stable (F) conditions. These findings are a consequence of using the TAPM model to derive the cloud cover which is then used to calculate the sensible heat flux. Cloud parameters should have been derived from observation stations. There are at least three regional airports in the area that record hourly cloud cover and would have provided greater accuracy for the stability categories over the facility.

In summary, the meteorological model is of a poor standard, and the evaluation is also poor. The meteorological model can be significantly improved from what has been provided in the AQIA. The meteorological data is the most important input into the model and will have a direct result on the model predictions.

3.3 Particulate Matter - PM_{10}, $PM_{2.5}$ and TSP Modelling

Dust emission factors developed by the US EPA were applied in the AQIA to estimate the amount of dust produced by each activity. The modelling developed emission estimates for TSP, PM_{10} and $PM_{2.5}$. The emission estimates for TSP were also used to estimate dust deposition rates.

The emissions were estimated on a 50/50 split between the MPC and the landfill. A number of existing dust controls are currently in place and these have been listed in the AQIA. They include; enclosure of material handling, misting sprays, sealed travel routes, water sprays on the mobile crusher and shredder and product storage areas. A water truck also operates on unsealed haul roads in the pit, and a reduced speed limit of 40 km/hr also applies. Some of the dust controls have been incorporated into the emissions inventory for each activity, based on control efficiencies. For example, all activities occurring within the shed are assigned a control efficiency of 40%. To be conservative the lower of the reported control efficiencies was incorporated into the model.

In general, the particulate matter emissions appear reasonable. Monitoring of PM is in place both at the facility and at nearby OEH sites. PM is relatively easy to monitor, and is more straight forward to manage than odour. The facility currently has dust controls in place and also has a clear mitigation strategy in the event the emissions become too large. Water damping, enclosed sheds and sealed roads will greatly reduce PM from the facility. The effect of the pit, which has not been considered by the Proponent may lead to a higher deposition of PM than has been modelled.

The following concerns with the PM modelling should be addressed to allow a proper assessment of the impact of the Modification.

- As no model files have been provided, the source characteristics or actual emission rates cannot be verified against the report.
- Insufficient information has been provided. The AQIA has allowed dust deposition from TSP, but appears not to have accounted for deposition from either PM_{10} or $PM_{2.5.}$
- The particle size diameters and standard deviation are not reported.
- The effects of the pit on PM and TSP dispersion have not been considered. These effects are likely to be important especially when there is wind which could cause re-entrainment and re-suspension of already deposited particles and direct them toward specific pit exit locations depending on the wind direction.
- Airborne asbestos fibres have not been considered. This is a significant omission, particularly in circumstance where the Proponent proposes to increase the amount of asbestos going to landfill, and the proximity of the Facility to residential and employment areas. Particularly, given the human health ramifications of asbestos fibres being released into the atmosphere.
- Cumulative effects of PM with the proposed Next Generation Energy to Waste facility have not been considered.
- The PM modelling to date has only considered the daily material limit of 2,740 tpd, which is equivalent to an annual tonnage of 1 million tpa, which is the proposed annual limit of material disposed to the landfill. It is understood in a letter to the EPA (Revised RtS - Appendix M, October 2019) that the actual daily disposal rate which varies in response to market demand could therefore exceed the proposed EPA limit of 2,740 tpd, and that a peak daily landfill disposal rate is 4,110 tpd and a theoretical worst case day would be 5,400 tpd. In response the Revised RtS up scaled the predicted concentrations by 1.5 to represent a peak daily landfill disposal rate and 2.0 to represent a worst case daily rate. This is inadequate and does not take into account the practical operations involved in storage, stockpiling, transferring and handling of this additional waste on a day to day basis which could entail lengthy storage and stockpiling not accounted for, and the additional effects of this on poor dispersion days. There needs to be a clear management strategy about how the Facility plans to manage peak loads and how it will mitigate against additional discharges to air. This might entail additional modelling.

3.4 Asbestos

Of the pollutants investigated in the AQIA, soil containing asbestos, and asbestos in construction material accounted for 60% of landfill waste in 2017-2018, the Proponent anticipates that this figure will increase in the future.

3.4.1 Overview

NSW dominates asbestos waste generation on an absolute and per capita measure. In all but one of the years for which NSW data is available, it records more asbestos waste than all the other jurisdictions combined. Although it is understood that in NSW, waste with even the smallest proportion of asbestos contamination must all be classified as asbestos waste, so asbestos waste may include significant proportions of other demolition materials.

ACM cannot be recycled and disposal to a licensed landfill facility is the method required by regulation. This waste stream is expected to continue growing as the NSW construction and redevelopment boom continues and the number of alternative disposal sites reduces.

The potential for materials containing asbestos to generate airborne asbestos fibres (at which point asbestos may become a human health risk) varies significantly depending upon the form of the asbestos material. Non-friable asbestos is asbestos bound in a matrix such as cement or resin. Non-friable asbestos-containing material is the most common form, usually found as cement sheeting (either flat or corrugated), vinyl floor tiles, water or flue pipes, or other asbestos-bonded products produced before 1980. It is acknowledged that when in a sound condition, the potential for these materials to release fibres is relatively low.

Friable asbestos is usually in the form of loose asbestos that is not bound together. The most common forms of friable asbestos are thermal lagging used on steam pipes, boilers, as fire protection, ceiling insulation and the like, and raw asbestos waste from asbestos products manufacturing. Friable asbestos can usually be broken up or crumbled using hand pressure to generate free fibres. If disturbed, friable asbestos has the potential to generate significant quantities of airborne fibres, and because of this requires a high level of control.

There were 16 submissions from the community as listed in Table 6.2 in the Revised RtS related to asbestos concerns. The Proponent's response is that asbestos waste is regulated by the NSW EPA, and that the issue of illegal dumping of asbestos waste should be more of a concern for regulators and the community. This is not an adequate response.

The Revised RtS is largely silent in relation to asbestos. The Proponent provides no detail of:

- how much friable and non-friable asbestos waste will be received;
- how friable waste will be managed;
- how asbestos will be managed in the pit which is proposing 24 hour operations at the tip face;
- how the potential for asbestos fibres to be released into the atmosphere will be managed;
- how the Facility will mitigate against 'double handling' of asbestos waste at the transfer station which can cause exposure risks; or
- how the Facility will manage workers exposed to airborne fibres within the enclosed environment of the pit.

Airborne asbestos fibres are long and relatively large compared to particles. Unlike PM airborne asbestos fibres are not subject to gravitational deposition and can remain aloft for extended periods of time. Any airborne asbestos fibres will be subject to the same wind and thermal effects caused by the pit effects as odour and PM, but with the exception that deposition of asbestos fibres will be a lot less

efficient than PM. This may mean that once asbestos fibres are airborne they will remain airborne for long periods of time and therefore will be in a position to easily escape the pit when the thermal conditions or wind speeds are conducive. It is not straightforward to model airborne asbestos due to the nature of the fibres, unique atmospheric behaviour, and unique deposition velocities compared to spherical particles which forms the basis of all deposition algorithms in dispersion models. **The AQIA needs to provide a comprehensive management plan to allow the Department, EPA and community that the risk of airborne asbestos will be appropriately managed, and that employee and public safety within the pit is a priority.**

3.5 Odour Modelling

3.5.1 Emission Concerns

Odour emissions are discussed at Section 6.2 of the AQIA, the key points are briefly summarised below.

The Facility operates a general solid waste landfill, so odours will be less than a land fill which accepts putrescible waste. An odour audit in 2015 and 2017 found no significant odour beyond the boundary. Further, monitoring concluded in 2013 on the active tip face and the leachate sump riser. The AQIA has not enclosed either of these documents.

The proportion of waste that is organic is expected to be wood waste, garden waste, paper and cardboard. The AQIA modelled a 'worst case scenario' of 1 tpa directed to landfill. Composting is not currently undertaken on site, but the site is licenced for this and therefore composting is included for a worst case odour assessment. Odour modelling conducted at the site in 2008 used historical odour data from another landfill. The AQIA used these emissions and adjusted them pro rata based on the reduced tonnage of organic waste landfilled at the Facility. According to the AQIA, because most of the organic waste is recovered in organic landfills, the decomposition and emissions will be much lower than for the historical monitoring data which was used.

The AQIA stated that they used the '*average specific OUER from 4 putrescible landfills'*. According to the AQIA, '*this provides a higher SOER than measurements taken at the existing facility and is generally higher than the emission rates used in the original EIS. To provide an additional level of conservatism, the source areas, across which these SOERs are applied, are scaled from the existing site layout according to the production increase'*

The key concerns pertaining to odour emissions are detailed below.

<u>Deficiency orders of magnitude</u>

Table 6.2 of the AQIA presented here at Table 3-1 provides the emission rates per source from 4 Australian landfills, the average of the four landfills, and the emissions used in the original EIS in 2008. Notably the emission rates from the referenced landfills is that they differ by 2 to 3 orders of magnitude. For example the final cap varies from 0.00051 ou.$m^3/m^2/s$ to 0.03 ou.$m^3/m^2/s$.

The discrepancy is concerning for the following reasons.

1) The significant variation between emissions shows how different individual landfill sources behave. It is not appropriate to substitute emission rates between sites as each site has a unique odour profile. This renders the application of the four referred facilities irrelevant to the subject Facility. This is further impacted as the waste stream accepted at the facility is largely unknown.

2) The AQIA does not provide the source characteristics, being:
   a. the size of the sources;
   b. the source locations; or
   c. the model parameters.

   The emission rates at Table 4-1 are tied to the size of the area sources making the emission rate data meaningless without such information. For example, the original EIS final cap emission rate of 0.00051 ou.$m^3/m^2/s$ appears to be over an equivalent area of 220,000m^2, whereas the much higher AQIA emission rate of 0.03 ou. $m^3/m^2/s$ may be over a significantly smaller area, making the overall effect considerably smaller.

3) The AQIA states that in order to 'provide additional conservatism', the source areas were scaled from the existing layout to account for the increased production. This is doubtful, if this were the case the emission rates for each source would be even bigger than those listed in Table 3-1.

The Proponent's failure to provide:

a. source characteristics;
b. coordinates; and
c. model switch parameters,

to permit a complete assessment of the modelling means the modelling provided cannot be adequately assessed.

In addition, the AQIA does not provide the model input files. Accordingly, until the input files have been reviewed, it is ASG's strong view that the modelling disclosed in the AQIA is invalid and cannot be accepted.

Table 3-1. Odour emission rates used in the AQIA.

Table 6-2: Review of odour emissions data and odour emission rates for modelling

Source	Specific Odour Emission Rate (OU.m³/m²/s)						
	Whytes Gully[1]	Spring Farm[2]	Woodlawn[3]	Lucas Heights[4]	SOER Average	Genesis site monitoring	Used in original EIS
Active tip face	1.115	0.424	0.7	*26-40 OU.m³/s	**0.7**	0.4	
Daily cover	1.023	0.069		0.03	**0.4**		3.83
Intermediate cover	0.035	0.019	0.3	0.05	**0.1**		
Final cap		0.026			**0.03**		0.00051
Leachate storage	0.153	0.108	3.6	1.8	**1.4**	0.2	0.069
Greenwaste storage		1.279	*2.37 OU.m³/s	4	**2.6**		
Compost windrow (fresh)		2.654	5.65	1.95	**3.3**		0.105
Compost windrow (aged/product)		0.18	0.83	0.34	**0.4**		

Note: * expressed as an OER (OU.m³/s) and not included in the SOER average
[1] PAEHolmes, 2012
[2] Heggies, 2010
[3] GHD, 2015
[4] Pacific Environment, 2013

Table 3-1 provides odour emissions information from the original 2008 EIS for the facility, (final column). Table 11 of the original 2008 EIS also provided the area (m^2) for each of the sources which the AQIA detailed in the last column of Table 3-1.

In an attempt to understand what the AQIA odour emission rates mean, ASG used the original EIS area source sizes and the emission rates from the original EIS to work out the total odour unit emission rate (T OUER) for each of the sources. This additional information is included in the last three columns of Table 3-2 and matches exactly with Table 11 of the original EIS. As nothing is known about the AQIA area sources (size, location, initial vertical dilution, height of release) ASG has assumed the AQIA used the same area source sizes as the original EIS then the T OUER for each of those sources is presented in the 2nd and 3rd columns and included the Peak to Mean Ratios (PtMRs) of 2.5 for neutral conditions and 2.3 for stable conditions.

Table 3-2 shows that the AQIA Total OUERs are two orders of magnitude higher at 122,180 ou.m^3/s than the original EIS of 5,907 ou.m^3/s, that is, if you assume the same area source sizes for the final cap, the daily cover, the leachate storage, and the compost windows. All of which according to the 2008 EIS are justifiable area source sizes.

A comparison of the original EIS odour footprint with the AQIA is shown in Figure 3-5. Note that the 2 ou curve is slightly larger in the AQIA than the original EIS and is circular rather than elongated in a north-south direction as in the original EIS. Clearly, the AQIA did not use these same area source sizes, otherwise the 2 ou odour footprint would be easily exceeded at all the sensitive receptors, due to the two orders of magnitude greater OUERs.

Again, this highlights the failure by Proponent to provide adequate information to assess the proposed Modification. From ASG's review of the AQIA, it is unclear how the Proponent carried out its assessment of the odour impacts at the proposed expansions. Again, the AQIA has little information on methodology used to calculate the odour impact.

Failure to confirm Peak to Mean Ratios

Further, it is concerning that the AQIA does not refer to Peak to Mean Ratios (PtMRs) in its assessment of odour impacts. Particularly as the use of PtMR are the usual method to assess odour dispersement. The AQIA modelling raises more questions than it answers, for instance; did the AQIA use PtMRs? and if so, what values did they use, and why aren't they provided in the AQIA. In the event of no information at all on PtMRs in the AQIA, ASG can only assume they were not applied. The effect of excluding PtMRs is to under estimate the predicted model concentrations.

This lack of detailed information within the AQIA and the lack of control files means that the results cannot be verified. Complaints from the facility currently exist, suggesting that the original EIS modelling was not sufficiently conservative and that the 2 ou curve under current operations actually extends beyond what is currently shown in Figure 3-5. With the additional proposed increase in volume of material to the landfill excluding waste generated by recycling processes in the MPC, plus the odour impacts from the proposed Next Generation Energy to Waste facility that has not been included in the modelling, the 2 ou curve will be greater.

Unexplained change in 2 ou Curve

As demonstrate in Figure 3-5, the shape of the 2 ou curve in the original EIS, which is elongated in a north south direction is more accurate of the meteorology expected at the site compared to the circular 2 ou of the AQIA. It is therefore possible that given the increased in waste to landfill, the 2 ou curve in the original EIS will now be pushed into the residential area.

Table 3-2. Potential AQIA total emission rates based on known and published area source sizes.

Source	ou.m^3/m^2/s AQIA	Total OER w PtMR AQIA Ou.m^3/s	Total OER w PtMR AQIA Ou.m^3/s	Area (m^2)	ou.m^3/m^2/s Orig EIS 2008	Total OER w PtMR Orig.EIS 2008 Ou.m^3/s	Total OER w PtMR Orig. EIS 2008 Ou.m^3/s
		Neutral (2.5)	Stable (2.3)			Neutral (2.5)	Stable (2.3)
Active tip face	0.7	63,875	58,765	36,500[a]			
Daily cover	0.4	450	414	450[b]	3.83	4,309[c]	3,964
Intermediate cover	0.1			?			
Final cap	0.03	16,500	15,180	220,000 [b,d]	0.00051	280	258
Leachate storage	1.4	105	96.6	30 [b]	0.069	5	5
Greenwaste storage	2.6			?			
Compost windrow fresh	3.3	41,250	37,950	5,000 [b]	0.105	1,313	1,208
Compost windrow aged	0.4	5,000	4,600	5,000 [b]			
Total		122,180				5,907	

[a] This figure of 36,500 m^2 is from the RtS report, Table 1 and is ½ the operating area of the landfill as at 2016.
[b] These figures of the area source sizes are from the original Holmes EIS, 2008
[c] (3.83 ou.m^3/m^2/s x 450 m^2) x 2.5 = 4309 ou.m^3/m^2/s
[d] The 2008 original EIS may have assumed this value included the active tip face and the intermediate cover.

Figure 3-5. AQIA, 1-hour 2 ou, 99.5% odour concentration footprint (left) v.s.original EIS, 1-hour 2 ou 99.5% odour concentration footprint (right).

Monitoring is inadequate.

Only two odour measurements of the site have been made, once in 2015 and a second time in 2017. Both were measurements downwind of the Facility. In order for the odour modelling to be considered adequate odour modelling needs to be undertaken to understand the impact of the Modification.

3.6 Summary

In summary:

a. The odour emission rates in the AQIA are either incorrect, or, the emission rates are substantially higher than modelled (as determined from original 2008 EIS).
b. It is unclear whether PtMRs have been used or not.
c. The odour emission rates have no bearing on the waste the Facility will receive.
d. The odour footprint in the RtS Report does not represent the wind direction expected at the site.
e. A full review of the odour assessment is not possible without the model control files. The emissions are misleading as they do not provide the source characteristics such as coordinates, or the size of each area source.
f. Pit effects on odour accumulation at night time have not been considered
g. The meteorological model is of a poor quality

The lack of detailed information within the AQIA, and the inability to review the model control files means that the odour model results cannot be verified. Complaints from the facility currently exist, suggesting that the original EIS modelling was not sufficiently conservative. **With the additional tonnage direct to landfill, and the fact that more than 30% of material from the MPC to landfill could occur than modelled suggests that the 2 ou curve actually extends significantly further beyond what is currently shown in the AQIA and Revised RtS.**

4. Key Concern – Lack of Management Plan, No Mitigation Strategy

There are three main concerns related to odours and asbestos that are addressed in this section,

a. Lack of comprehensive management plan
b. Lack of any mitigation strategies
c. Responses of EPA and DPIE

4.1 Lack of a Comprehensive Management Plan

4.1.1 Particulate Matter

It is understood that the existing facility operates under an Operational Environmental Management Plan (OEMP) which outlines the roles, responsibilities and the tasks to be performed to ensure environmental impacts are minimised. The Revised RtS says that the OEMP will be reviewed and updated, where required, to accommodate the proposed expansion.

ASG acknowledges in this report that PM is generally well managed at the facility, and that effective controls are currently in place and mostly appear to be working well. Particulate matter is relatively straightforward to control and monitor. ASG has listed a number of concerns in section 3.3, which details how the effects of the pit on PM dispersion was not considered as well as a general lack of information on source characteristics for the model and, the inappropriate scaling to account for peak emission days.

Only after the pit effects are understood which may require additional modelling, is it appropriate to consider how the PM is to be managed.

4.1.2 Odour

Unlike PM, the situation is not that clear for odour and a comprehensive odour management plan which specifically addresses 'odour prevention' has not been included in the Modification. As the best method for managing odour is distance from sensitive receivers, the lack of an odour management plan is significant given the Facility does not have adequate separation distances from sensitive receivers.

Given the complexity of the generation and behaviour of odours from landfills means that a detailed comprehensive management plan in the AQIA is necessary. Landfill and composting odours are extremely difficult to measure. Odour emission rates are dependent on temperature, wind speed, turbulence, season, age of waste, location and can be caused by any one of:

- the receipt and handling of refuse;
- fugitive emissions from landfill gas, leachate, tipping face, etc;
- the active tipping face and capped areas of the landfill;
- the leachate dam/trench; and
- windrows associated with composting of green waste on site.

In addition, the physical and biological processes within a landfill and compost windrows, and the weather conditions, which influence the generation and dispersion of odour are constantly changing. In addition to this, odours from the decomposition of biodegradable material will accumulate.

As no adequate separation exists between the Facility and the sensitive receivers, good practices dictates that the Proponent must provide a draft Odour Management Plan for the Department's consideration as part of the determination process. The need for the Department and EPA to understand how the Proponent proposes to deal with odour emissions is exacerbated given the number of odour complains in relation to the current operation and the community concerns submitted during the public consultation phase of the approval process.

4.1.3 Asbestos fibres

Airborne asbestos fibres are not discussed or included in the AQIA or Revised RTS in any way. A comprehensive management plan which details how the Facility will manage asbestos waste and prevent airborne asbestos fibres has not been included in the Modification. Although there are detailed plans on how to manage asbestos in NSW[10],[11] the Facility needs to put these into perspective for its site.

4.2 No Mitigation Plan for Offensive Odour

The mitigation measures contained in the AQIA represent controls for dust but not for odour or asbestos fibres.

In a specific request by the Department to provide 'further detail on mitigation measures for odour impacts'. The Revised RtS stated at page 38;

'Conservative emissions and modelling scenario for odour presented in the AQIA (Appendix C to the Environmental Assessment) predicted no exceedance of the odour goals. Additional mitigation measures are therefore not considered necessary'.

The Proponent must be able to show that it can actively reduce the severity or seriousness of an odour event occurring. The Proponent's response above is wholly inadequate, especially in light of the following

a. no comprehensive odour management plan;
b. odour complaints currently occur under current operating conditions, and, that at least 21 members of the community wrote submissions on odour, including land owners Jacfin and the AQIA peer review assessments;
c. no discussion on waste receivable controls; and
d. that the tip face is now going to be active 24-hour per day as opposed to a night time cap which could prevent odour accumulation
e pit effects on odour accumulation exacerbated by night time operations at the tip face

[10] Asbestos Waste in Australia. 2015. Australian Government. Asbestos Safety and Eradication Agency.
[11] Managing Asbestos in or on soil. 2014. New South Wales.

Given the lack of separation between the Facility and sensitive receivers, the Proponent must provide a draft odour mitigation strategy for the Department's and EPA's review prior to determination of the Modification.

4.3 Authority Responses

In November 2018, the EPA provided comments on the AQIA. The EPA states that the AQIA had not adequately addressed several issues relating to validation of the CALMET meteorological data, plus had concerns around the peak emission rates, and that Scenarios 1 and 2 may not be indicative of worst case scenarios. In general the majority of the comments from the Department and EPA related to modelling and assumption relating to PM.

The EPA made a further comment regarding odour in the Table 5.2 of the Revised RtS, where it pointed out that:

> *'it is not clear how composting has been accounted for in calculating odour emissions'*.

The EPA in the same letter pointed out that the AQIA included composting (including fresh waste and aged compost windrows) in the odour assessment and because of this the EPA confirmed that its request had been adequately addressed. ASG is of the view that this has not been satisfactorily addressed. The AQIA provides almost no information on composting.

ASG has not found any further information or discussion on composting in the revised AQIA in the Original RtS or Revised RtS. Therefore, ASG does not understand EPA's acceptance of such a response. Especially in light of the EPA 2017 study objectives and requirements, which are listed in the 2018 AQIA Section 1.2, Table 1-3. The EPA specifically requested the Proponent:

> '*must demonstrate effective control of dust, odour and other potential pollutants from the Premises in particular how it will be managed during the increased hours of operation*'.

Further, EPA pointed out that there have been complaints from the Facility which have been confirmed by the Proponent and that the Proponent:

> *'must prepare an assessment of the impacts of odour from the Premises, in particular the landfill*'

In both instances, the AQIA referred to their 'worst case modelling scenario' based on 1,000,000 tpa to the MPC and 1,000,000 tpa direct to landfill'. Further, in the Response to Community Submissions where 33 members of the community raised concerns about air quality and odour. The Revised RtS once again responded that the:

> 'w*orst case potential odour impact from the landfilling would not result in exceedances of 2 ou'*.

Such a response by the Proponent is wholly inadequate. The AQIA contains unrepresentative emission rates, unknown source characteristics, a poor meteorological model, no monitoring of the

typical waste streams has been conducted, and the incorrect or misleading emission rates in the AQIA. This means that the dispersion modelling results presented cannot possibly represent 'worst case'. As pointed out above, the EPA specifically asked the Proponent in the AQIA to:

a. demonstrate effective control;
b. explain how odour will be managed during increased hours of operation; and
c. prepare an assessment of impacts.

It is ASG's opinion that the Proponent has not adequately responded to the EPA's request.

Other poor responses in the Revised RtS are listed below in Table 4-1.

Table 4-1. Inadequate responses by the Proponent in the Revised RtS Report.

Authority question	Question to Proponent	RtS Report	ASG comments
DPIE, RtS Report, Table 5.3	Provide further detail on mitigation measures for odour impacts arising from green waste and composting.	Refer to conservative modelling which predicted no exceedance of 2 ou, therefore no additional mitigation measures are considered necessary	Wholly inadequate response. Modelling is not representative. Mitigation measures for odour management are essential. DPIE questions have not been answered.
EPA 2017 Study Objectives listed in (2018, AQIA, section 1.2, Table 1-3)	Must demonstrate effective control of dust, odour and other potential pollutants from the premises in particular how it will be managed during the increased hours of operation. Since there are existing complaints therefore AQIA must prepare an assessment of the impacts of odour from the Premises, in particular the landfill	Not addressed Refer to worst case modelling scenario Not addressed	AQIA and RtS and Revised RtS Reports have not addressed these specific requests laid out by the EPA in the original study objectives
EPA	- demonstrate effective control; - explain how odour will be managed during increased hours of operation; and - prepare an assessment of impacts	Not addressed	Specific requests of the EPA in the original objectives of the study. None of these specific question have been addressed
EPA, 2018	It is not clear how composting has been accounted for in calculating odour emissions.	Composting (including fresh waste and aged compost windrows) has been modelled in the odour assessment.	EPA confirmed that this was an adequate response. But, this is an inadequate response. AQIA has no information on

			composting and little confidence that it has technical know-how to manage or, mitigate.
Community, RtS Report, Table 6.2 (Air Quality – 26 submissions)	Very limited information on odour	Refer section 6.2 of AQIA. The 2 ou does not extend over Jacfin property	Through proper meteorological model and appropriate emissions model, and understanding of the 'pit effects' the 2 ou may well extend over residential areas
Community, RtS Report, Table 6.s (Odour – 21 submissions)	Odour concerns due to facility expansion. Smell the tip on most days. Odour worst at night, hot days and early mornings.	No exceedance of the 2 ou curve at any residence	Wholly inadequate response. Genuine concerns from community
	'down time' for odour to disperse	Refer to 'worst case' modelling, no exceedance of the 2 ou curve at any residence	
	Odours could stifle employment	Refer to 'worst case' modelling, no exceedance of the 2 ou curve at any residence	
	Level of information on odour was insufficient	Refer to Section 6.2 of AQIA. Refer to worst case modelling Section 7.4	
EPA letter October 2019	The EPA recommends the Proponent undertake an assessment accounting for potential peak daily throughput to the landfill. If the Proponent does not undertake this assessment, the EPA recommends a condition of the consent as follows: *A maximum of 2,740 tonnes of material is permitted to be transported to the landfill by truck per day*	EMM Advice 22 October 2019 • for peak day operations, predicted concentrations have been increased by a factor of 1.5; and • for theoretical worst case day operations, predicted concentrations have been increased by a factor of 2. (typical 2,740 tpd, peak 4,110 tpd, max 5,400 tpd)	Scaling concentrations only accounts for emissions and does not take into account poor and worst case meteorological conditions. Further scaling emissions does not take into account practical operations of stock piling or handling of additional waste. Further modelling needs to be conducted including cumulative modelling in conjunction with proposed Energy to Waste Facility

5. Conclusions

As detailed above, a fundamental concern with the AQIA in support of the Modification is the failure to account for the 'pit effects' on the dispersion of PM, asbestos fibres and odour both within the pit and outside the pit. It has been discussed that the wind speed, wind direction and temperature profile within the pit will significantly differ to outside the pit. Further the pit is subject to topographic factors where the pit itself, which is oriented northeast to southwest can act to channel and confine the plume thereby directing the exit point of the pollutants from the pit under windy conditions. The most important meteorological effect within the pit will be the development of a stable temperature profile, (mostly at night) which under light winds will suppress the vertical motion of pollutants resulting in an increased deposition of particles, and an accumulation of odour gases. Pollutants released within the pit will be trapped in the pit until conditions destabilise, or the wind increases. Instability will occur around sunrise when accumulated night time odour could escape. The stable stratification in the pit at night will permit a higher deposition of PM than the modelling shows. As the air in the pit becomes unstable following sunrise, heavier particles will remain deposited, but lighter particles including asbestos fibres will become airborne. The greater concern for particles and fibres in the pit is an increase in wind speed which could cause deposited material to become re-suspended and entrained. Insolation effects are also important as the pit will warm rapidly compared to outside the pit generating unstable conditions causing the plume to be lifted quickly out of the pit. In the case of Facility this could be several hours of accumulated odour.

By failing to account for the 'pit effects', the AQIA underestimates the potential worst case odour which could occur at sunrise when the plume can rise from the pit and release the accumulated odour.

For PM, deposition inside the pit will likely be higher than modelled, but re-entrainment and re-suspension could occur with increased wind speed, leading to a more concentrated plume leaving the pit. With respect to asbestos fibres, the 'pit effect' could mean increased concentrations for workers within the pit as asbestos fibres will remain airborne longer than PM. Asbestos fibres are light and because of their structure and unique deposition velocities will behave differently to PM which is largely subject to deposition by gravity. Under windy conditions deposited asbestos fibres are likely to become quickly re-suspended and entrained and could leave the pit as a concentrated mass if conditions were right. Airborne asbestos fibres have not been adequately assessed in the AQIA, especially considering that asbestos containing material accounted for more than 60% of landfill inputs and this is anticipated to grow.

Another fundamental concern is the meteorological model developed for the AQIA. The modelling left out to two key meteorological stations which would have greatly improved model performance. The AQIA used a very coarse model grid resolution of 500m, meaning the model was not given enough information on the terrain to properly develop the main valley flows. The result being the 'round' odour contour plot as opposed to the more north-south elongated odour contour plot of the original EIS. The evaluation of the meteorological models was weak and the predicted CALMET wind roses at the Facility compared to St Marys are poor. There is an error/inconsistency in the number of calms predicted in the AQIA. Further, the AQIA has relied heavily on the TAPM model to determine atmospheric stability instead of relying on observational data.

In general, the PM emissions from the Facility look reasonable. Monitoring of PM is in place both at the Facility and at nearby OEH sites. The Facility currently has dust controls in place and also has a mitigation strategy in the event the emissions exceed permitted levels. Water damping, enclosed sheds and sealed roads will all greatly reduce PM from the Facility. The effect of the pit, which has not been considered by the Proponent may lead to a higher deposition of PM within the pit and, could lead to a more concentrated plume mass leaving the pit under the certain windy conditions that has also not been considered by the Proponent. There are still concerns with the PM modelling, such as there are no model files to verify the values used in the AQIA. Further, no cumulative PM impacts from the proposed Next Generation Energy to Waste facility has been taken into consideration. This is significant since construction, operations, transfer of waste from the Facility to the Energy to Waste Facility are all additional dust generating concerns that have not been considered in the AQIA. Therefore it is recommended that new additional modelling be conducted which takes into account the cumulative impacts of the proposed Energy to Waste facility and this Facility. Further, the upscaling of PM predicted concentrations by 1.5 to account for peak load days of 4,110 tpd above the EPA expected typical day of 2,740 tpd is a crude and very simple way to explain the additional impacts to air on such days whose impacts are highly dependent on operational management of the waste and the meteorological conditions on that day.

A further fundamental concern is that the potential for airborne asbestos fibres have not been discussed in the AQIA, nor have any management plans or mitigation strategies been provided. Asbestos fibres could be a significant air quality concern both to nearby residential areas and to the workers within the pit especially as the Facility is planning to increase the amount of asbestos going direct to landfill, which is an enclosed space.

The odour modelling is inadequate. There are significant concerns on the determination of the emissions rates from other landfills whose emissions vary by orders of magnitude, the lack of monitored data for the site itself, and how the AQIA modelled odours at the site. By computing the OUERs as per the original EIS which is detailed in the AQIA, the emission rates are two orders of magnitude higher than the original EIS. The AQIA did not model using these emission rates else the concentration contour would have been significantly larger. But, there is no way to know what the AQIA did without review of the relevant control files. This is important, as there are a number of complaints in relation to the Facility's current operations suggesting the 2 ou curve is actually much bigger than the original EIS. Further, the Revised RtS has relied almost exclusively on its ‘worst case model results’ in support of not needing any mitigation strategies or, a comprehensive management plan.

The lack of detailed information within the AQIA, and the inability to review the model control files means that the odour model results cannot be verified. With the additional tonnage direct to landfill, and the fact that more than 30% of material from the MPC to landfill could occur than modelled suggests that the 2 ou curve actually extends significantly further beyond what is currently shown in the AQIA.

There is no comprehensive management plan or mitigation strategy for odour. ASG has pointed out in this report that PM is generally acceptably managed at the Facility, and that effective controls are currently in place. However, unlike PM, the situation is not that clear for odour and a comprehensive odour management plan which specifically addresses ‘odour prevention’ is absent from the

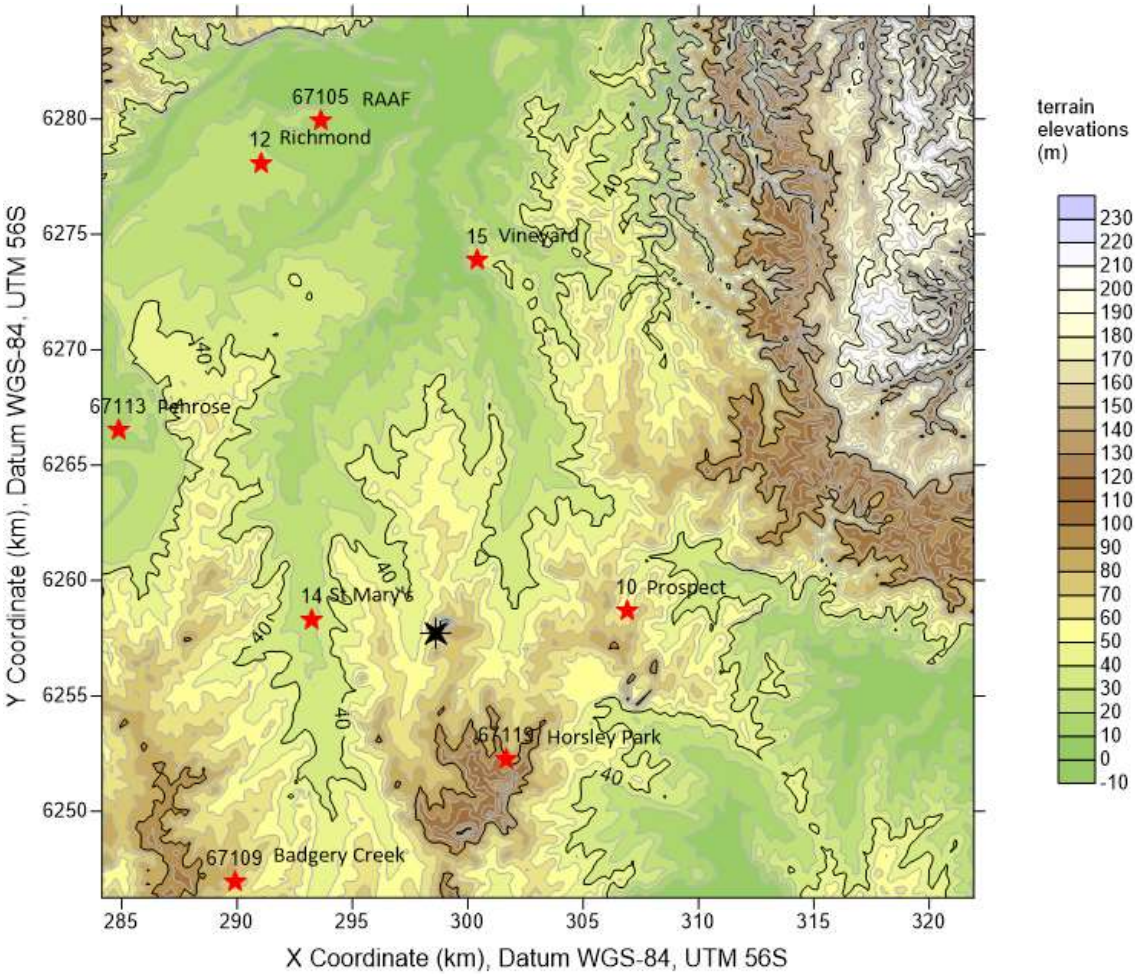
Modification. Given the lack of a significant separation distance between the Facility and sensitive receivers a plan of management and effective mitigation strategy is imperative. The Proponent also needs to be able to show that they can actively reduce the severity or seriousness of an odour event occurring.

The Revised RtS provides a comprehensive list of questions raised in the submissions as well as the Proponent responses. The EPA, Department, community and Jacfin have specifically requested the Proponent to address various concerns they had about management, mitigation, and to address the fundamental lack of information and data. In most instances the responses contained in the Original and Revised RtS are insufficient. Such responses simply restate the AQIA.

ASG is of the view that the majority of the deficiencies in the assessments undertaken by the Proponent and key concerns previously raised in the independent expert reports commissioned by Jacfin, as well as the specific requests of the EPA and the Department as detailed in the study objectives and requirements, have not been met and therefore the Department cannot be in a position to properly assess the air quality and odour of the Modification. ASG also believes that the proposal to allow operations 24 hours a day, combined with an increase of material to the landfill will likely result in unacceptable increases in air quality that are not captured by the Proponent's dispersion model.

6. Appendix A.

Figure 6-1. Terrain map showing the location of the facility and nearby weather stations.



20 January 2020

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HWL Ebsworth
Level 14, Australia Square, 264-278 George Street
Sydney NSW 2000

Attention: Paul Lalich

Dear Paul

Genesis Waste Management Facility
Eastern Creek, Modification 6
Waste Management Review

1 Introduction

I have reviewed the following documents which relate to the approval for this modification which proposes to extend the hours of operation for the facility and the maximum amount of waste that can be landfilled at the site each year:

- Letter to Emma Barnet, Department of Planning and Environment, from Alicia Marix-Evans, Dial-a-Dump, dated 19 August 2016 and headed 'Genesis Xero waste Facility – Proposed Modification to Project Approval 06_0139 (MOD 6) – referred to in this letter as 'SEARS Request'
- Letter to Emma Barnet, Department of Planning and Environment, from Alicia Marix-Evans, Dial-a-Dump, dated 1 March 2017 and headed 'Genesis Xero waste Facility – Proposed Modification to Project Approval 06_0139 (MOD 6) – referred to in this letter as 'Request to modify SEARS'
- Letter to Alicia Marix-Evans, Dial-a-Dump, from Chris Ritchie, NSW Planning and Environment, dated 3 April 2017 and headed 'Genesis Xero Waste Facility (MP 06_0139 MOD 6), Amended Environmental Assessment Requirements (EARs)' – referred to in this letter as 'SEARS'
- Environmental Assessment, Modification to Project Approval, Prepared for Dial A Dump Industries (EC) Pty Limited by EMM Consulting and dated 30 August 2018 – referred to in this letter as 'Environmental Assessment'
- Letter to Chris Ritchie and Bianca Thornton, Department of Planning and Industry, from Bill McCredie and Naomi Bergman, Allens Linklaters, dated 17 October 2018 and headed 'Genesis Waste Management Facility – Modification Application MP 06_0139 MOD 6, Preliminary Submission on behalf of Jacfin Pty Ltd' – referred to in this letter as 'Jacfin Preliminary Submission'
- Letter to Chris Ritchie and Bianca Thornton, Department of Planning and Industry, from Bill McCredie and Naomi Bergman, Allens Linklaters, dated 24 October 2018 and headed 'Genesis Waste Management Facility – Modification Application MP 06_0139 MOD 6, Submission on behalf of Jacfin Pty Ltd – Hours of Operation and Landfill Cap' – referred to in this letter as 'Jacfin Detailed Submission'
- Genesis Waste Management Facility, Eastern Creek, Modification 6 Response to Submissions Prepared for Dial-A-Dump (EC) Pty Ltd by EMM Consulting and dated 28 May 2019 – referred to in this letter as 'Response to Submissions'

- Genesis Waste Management Facility, Eastern Creek, Modification 6 Response to Submissions Prepared for Dial-A-Dump (EC) Pty Ltd by EMM Consulting and dated 20 November 2019 – referred to in this letter as 'Revised Response to Submissions'.

I also consulted:

- Western Sydney Airport Draft Environmental Impact Statement - Volume 1 Project Background
- Western Sydney Regional Waste Avoidance and Resource Recovery Strategy 2017-2021
- Western Sydney Regional Waste and Recycling Infrastructure Needs Assessment Final Report August 2015
- National Waste Policy - Less Waste, More Resources 2018.

2 Result of Document Review

In reviewing the documents listed above I have discovered some issues of concern which I have detailed below.

2.1 SEARs Request

Section 2.8 'Firstly' states that extending operating hours is required to 'accommodate loss in production time arising from the operator's commitment to ensuring a safe and efficient workplace environment.'

Allowing enough time to ensure equipment is safe should have been taken into account in the planning stages for the facility and there should not be a need to extend operating hours now to accommodate it. Requiring the extension of operating hours now suggests that the amount of time originally allowed for maintenance and ensuring equipment was safe was incorrectly estimated. If this is the case, then Dial-a-Dump is obliged to ensure its operations are safe within the allowed operating hours. If it is not the case, then the reason for extending the operating hours is unrelated to maintenance and safety.

2.2 Environmental Assessment

2.3 Page E2

This section contains a number of unsupported assertions as described below.

The document states that there are a number of consequences for not having landfill disposal capacity for waste from major infrastructure projects. No details or evidence of the consequences are presented. It states only that 'It is *conceivable* (my italics) that operational limits on landfilling and hours of operation can obstruct the efficient transport and disposal of waste from major projects'. In other words, it is only possible, not certain, and no evidence is provided to support this assertion.

The documents states that 'If local landfills are unable to accommodate demand, then impacts are displaced. For example, the unavailability of local disposal points can force transporters to either stockpile on-site or to force trucks to travel greater distances, bringing congestion and traffic impacts to a broader road network.'

No evidence is provided to show that:

- Transporters are stockpiling materials
- Greater distances are being travelled, or are required to be travelled, by trucks

- There are any increases in congestion and traffic impacts related to this work.

The document states that 'It can also incentivise illegal dumping or overnight queuing outside facilities when the facilities are closed.'

No evidence is provided to show that:

- There have been related increases in instances of illegal dumping
- Trucks are queuing overnight outside facilities when the facilities are closed.

2.4 Pages E2, 2 and 20

The documents states that the proposal is to 'increase the landfill cap to 1M tpa (excluding waste generated by recycling processes within the MPC and the Pre-Sort Building…)'. This means that the 1 million tonne cap excludes residual from the MPC. This, in turn, means that the amount of waste landfilled could actually be in excess of 1 million tonnes. If the facility recovers the stated minimum of 60%, as much as 1.48 million tonnes could be landfilled. If the facility recovers less than 60% then more than 1.48 million tonnes would be landfilled.

The maximum amount of material allowed to be accepted into the site each year is 2 million tonnes. If up to 1 million tonnes is sent straight to landfill this means that the amount processed through the MPC and PSB would be no more than 1 million tonnes. Of this, up to 700,000 t is stated to be recovered through processes at the site. This equates to just 35% of the total 2 million tonnes, significantly less than the 60% stated to be currently recycled. This is shown in Figure 1.

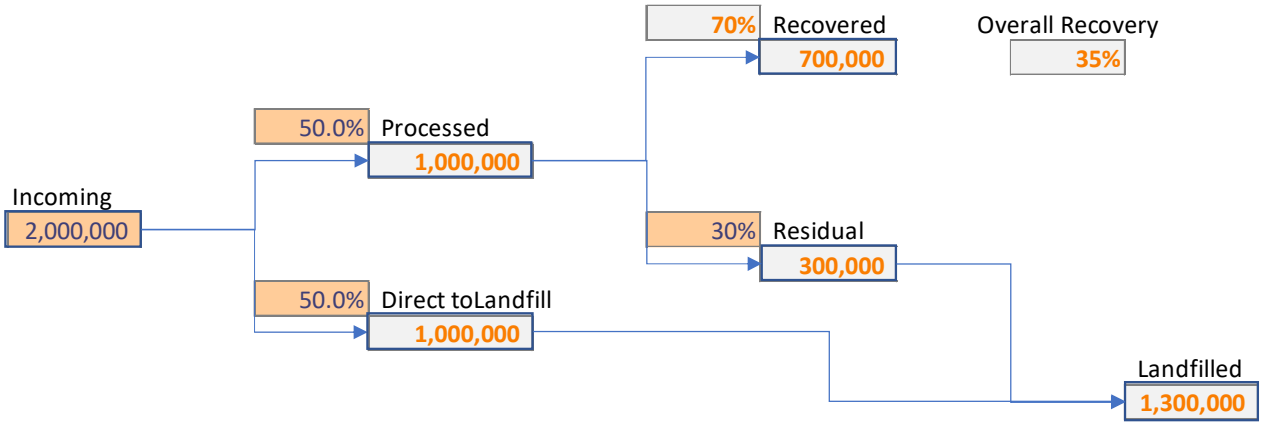

Figure 1 – Overall Recovery if 700,000 t recovered

If less than 700,000 t is recovered, for example 500,000 t, then overall recovery would be as low as 25% and as much as 1.5 million tonnes landfilled at the site. This is shown in Figure 2 below.

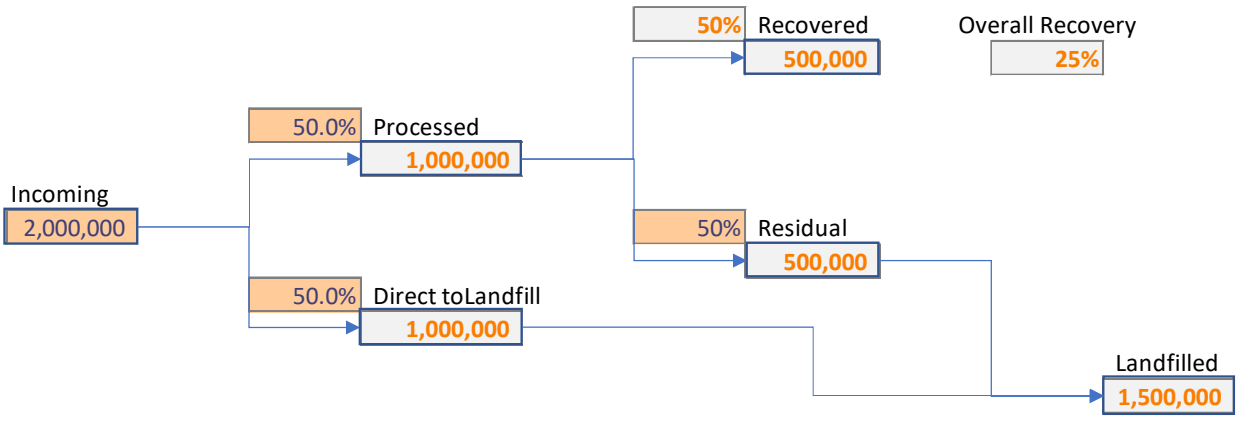

Figure 2 – Overall Recovery of 500,000 t recovered

The documents states that the proposal provides 'greater scope for increased recycling effort by setting a higher limit for volumes of waste disposed to landfill.' This is a meaningless statement. No explanation is provided to verify how increasing landfill capacity could lead to increased recycling. As explained in the paragraph above, it would result in lower recycling rates rather than higher.

2.5 Pages E3 and 2

The documents states that 'The proposed increase in the limit on the quantity of waste allowed to be landfilled will enable the facility to be more responsive to the waste disposal market and developments in government policy.'

Limits or caps on the quantities of waste able to be disposed of at a landfill are set for environmental reasons, to limit the impacts the waste and the facility have on the surrounding environment and on neighbouring communities. Caps are not set with commercial implications in mind. Operators must undertake the commercial activities at their sites within the approvals and licencing limits. The request for the cap increase is being justified on purely commercial grounds, which are not legitimate.

The documents states that:

> *'The existing limit of 700,000 tpa on the annual landfilling rate has the effect (perhaps unintentional) of limiting the amount of recycling that can occur at the facility. This is because landfill waste is generated as a by-product of the processing and sorting of co-mingled waste via the MPC.'*

This is a senseless argument. The 700,000 t landfill cap is not a mandated target that must be met by the operator, but rather an upper limit under which the operator must remain. The reasoning is backwards and assumes that if 700,000 t can be sent to landfill, only 1.3 million tonnes need be recycled. If more waste was recovered and less than 700,000 t was landfilled, then waste could be brought in from outside the site for landfilling under the cap. To say that in order to accept waste from outside and dispose of it direct to landfill the operators have to cut back on what is processed and recycled goes against the principles of resource recovery. The sensible and sustainable solution would be to not accept waste for direct disposal to landfill unless there was capacity under the cap.

2.6 Page 20

The document states that Sydney's major infrastructure projects 'are likely to contain large volumes of material which cannot be recycled such as asbestos containing material.' No evidence is provided of the quantities of this material or that such material contains, or is likely to contain, asbestos.

2.7 Page 21

The document states that 'the facility already provides a high rate of recycling relative to volumes disposed to landfill for all materials which are potentially recyclable.' No evidence, such as weighbridge data, is provided to support this.

2.8 Page 23

The document states that 'much of the recent growth in landfill inputs is asbestos contaminated soils and asbestos containing materials which accounted for more than 60% of landfill inputs in FY2017-18. This stream is expected to continue growing as the NSW construction and redevelopment boom continues and the number of alternative disposal sites reduces.' No evidence is provided to support this assertion.

A list of major infrastructure projects is shown in Table 4.4. as evidence for the potential for asbestos containing materials to be generated. However, some of the infrastructure projects listed are tunnels and won't produce any asbestos containing material.

2.9 Page 24

The document states that the proposed modification will 'service the critical infrastructure projects that are being delivered on a 24-hour basis.' However, only one project is mentioned as operating 24 hours per day. This is Western Sydney Airport and the 24-hour operation is stated to be only be for 'some activities'.

Section 6.2.3 Construction hours of the EIS states that:

> *'The hours of construction would generally be between 6.00 am and 6.00 pm, Monday to Saturday. However, during the site preparation works, heavy and light vehicle movements to and from site are likely to occur outside these work hours. During the aviation infrastructure works some construction materials, such as paving materials, are expected to be delivered to the site 24 hours per day.*
>
> *Other activities that may be undertaken at night during both construction stages include:*
>
> - *works to existing services (if shutdowns are required);*
> - *works on or adjacent to existing roads due to lane closure requirements, specifically on Elizabeth Drive and The Northern Road;*
> - *deliveries of oversized loads;*
> - *catch-up works if works are delayed by unforeseen circumstances;*
> - *responsive activities to protect people, property and the environment in the event of an emergency such as a fire or structural failure; and*
> - *other activities undertaken in accordance with relevant noise guidelines, or which have no material noise or other impacts on residences.'*

Only road works are likely to produce waste that could be accepted at the Genesis facility, but the quantities are not likely to be so much that they would need to be disposed of outside of normal disposal site operating hours.

Construction and demolition (C&D) waste is largely inert and does not produce odour or attract vermin in the way that putrescible waste might. Subject to the law, it can be safely stored overnight or for several days or even weeks. It is not necessary to dispose of this waste to landfill immediately after it is generated. It could be, and often is, stockpiled for reuse on-site, and if there is no on-site use, can be disposed of later without negative impacts.

The expression 'waste returned from Queensland' is used in a number of places through the Environmental Assessment. This is misleading. Waste is not being returned from Queensland. Until recently, waste was being sent to Queensland because it was cheaper to dispose of it there than in NSW, where a levy added significantly to the disposal cost. Since the introduction of a landfill levy in Queensland less waste is now being sent to Queensland from NSW. No waste is being returned from Queensland.

The document states that 'according to the latest published data' there is a 'shortfall in recovery performance' between the targets set for C&D waste and commercial and industrial (C&I) waste in the WARR Strategy and the actual quantities recovered. No data is provided to support this, and no references are provided for the published data.

The document then states that this 'recovery gap is likely to come under pressure' due to the 'the demand for local recovery solutions producing high quality materials for local markets, in response to the effective closure of key export markets for dry recyclables.' The closure of export markets for dry recyclables relates mainly to the export of recyclable containers and mixed paper collected by local government as part of kerbside services. These materials are not accepted or processed at the facility and this issue is completely unrelated to the proposed extension of hours or increase in the landfill cap.

2.10 Page 25

The document states that 'Increasing the capacity for resource recovery is consistent with NSW and regional strategic planning policies.' However, an increase in recovery capacity is not proposed. The document goes to great lengths to emphasises that the 2 million tonne limit on the total amount delivered to the site will be unchanged. As explained in Section 2.5 above, there is likely to be a reduction in recovery, not an increase. This will be clear contravention of the aims of the NSW WARR Strategy, the National Waste Policy 2018[1] and the Western Sydney Regional Waste Avoidance and Resource Recovery Strategy 2017-2021[2].

The documents states that 'most existing facilities that are licensed to accept such wastes will only accept asbestos loads before 4 pm.' No evidence of this is provided and none of the facilities are named.

The document states that 'extended operating hours *may* (my italics) also have a positive effect in the community by decreasing illegal dumping of such substances.' This indicates that it is only a possibility and no evidence is presented to support the assertion.

[1] 'The 2018 National Waste Policy builds on the 2009 policy, focusing on waste avoidance, improved material recovery and use of recovered materials.' Page 7
[2] Themes 2 and 3 are 'increase recycling and divert more waste from landfill', Table 5, page 28.

2.11 Page 26

The documents states that development in Sydney 'would likely involve an increased demand for landfill space for wastes such as asbestos soils' and provides as evidence of this, increasing quantities of asbestos soils being delivered to the Genesis facility. This however, is not reliable evidence of overall increases of amounts of asbestos, just evidence that Genesis is receiving more. This material may be diverted from other sites which are now receiving less. No evidence of overall changes in quantities is provided.

2.12 Page 27

The documents states that 'The 700,000 tpa limit is therefore effectively a cap on the amount of recycling that can be achieved via the MPC and PSB.' This is the same false reasoning that is addressed in Section 2.5. The cap is an incentive to improve efficiency of the MPC. If the MPC can recover more, then less residual will go to landfill allowing more direct-to-landfill material to be accepted.

3 Jacfin Preliminary Submission

This is Allen's letter on behalf of Jacfin dated 17 October 2018.

3.1 Section 1.4

The letter states that the 'Modification Application would effectively allow in excess of 1,000,000 tpa to be disposed of to landfill at the Facility.' This is correct. See Section 2.5 above.

The letter states that 'This decrease in the proportion of materials recycled at the Facility is directly inconsistent with government policy, specifically the objectives and goals of the "NSW Waste Avoidance and Resource Recovery Strategy 2014-21" and is therefore inappropriate.' This is correct. See Section 2.10 above.

The actual amounts of material recovered would fall from as little as 1.3 million tonnes (65% recovery) and as high as 1.6 million tonnes (80% recovery) to just 700,000 tonnes (35% recovery). See Section 2.4 above.

4 Jacfin Detailed Submission

This is Allen's letter on behalf of Jacfin dated 24 October 2018.

4.1 Section 5.

The letter states that 'If the Facility were to increase its "direct-to-landfill" waste to the new proposed 1,000,000 tpa limit, this would leave only 1,000,000 tpa (of the 2,000,000 tpa overall limit) that can be received through the MPC, in contrast to the current scenario whereby the MPC can receive and recycle up to 1,300,000 tpa, and potentially more where part of the 700,000 tpa landfill limit is being used for landfill waste left over from the recycling process.' This is correct. See Sections 2.4 and 3.1 above.

5 Response to Submissions

5.1 Section 1.6

The document refers to three closed and closing sites including Veolia Horsley Park from where waste will be transported to Woodlawn, so this is still an operating waste facility. Nine other sites still operating providing minimum 23 million tonnes of capacity

5.2 Section 2.1

The documents states that 'Without exclusion of the MPC and PSE by-product waste from the landfill limit, the beneficial recycling processes which rely on some disposal of by-product to landfill may need to cease or be constrained.' This would only be the case if additional direct-to-landfill waste is accepted. This material does not have to be accepted.

5.3 Section 2.2

The document states that the modification will 'accommodate the accommodate the growing demand for waste management in Sydney, while addressing the legitimate concerns of the community.'

No details of the community's concerns are provided but further to that, other data indicates that there is not a growing demand for landfilling in Sydney.

Western Sydney Regional Waste and Recycling Infrastructure Needs Assessment prepared for the Western Sydney Regional Organisation of Councils (WSROC), projects a negative non-putrescible waste landfill gap in 2021. That is, there will be an excess of non-putrescible landfill capacity in 2021. Non-putrescible waste consists of waste that has no food or other putrescible waste content and is mostly dry C&I and C&D waste, the type accepted at the Genesis facility.

This is detailed in the tables below which are extracts from the WSROC report[3]. The tables show projected non-putrescible waste generation and landfill capacity in 2021 for Western Sydney (Table 1) and the Sydney Metropolitan Area (Table 2).

Table 1 Non-putrescible landfill capacity in Western Sydney 2021

Generation and Capacity	Tonnes per Year
Projected waste generation	454,000
Capacity of facilities located in Western Sydney	1,621,000
Capacity Gap	- 1,167,000

[3] Table 5, page 21

The table shows that there will be 1.167 million tonnes of excess landfill capacity in Western Sydney in 2021.

Table 2 Non-putrescible landfill capacity in Sydney Metropolitan Area 2021

Generation and Capacity	Tonnes per Year
Projected waste generation	1,229,000
Capacity of facilities	2,040,000
Capacity Gap	- 811,000

The table shows that there will be 811,000 tonnes of excess landfill capacity in the whole of Sydney in 2021.

As a result, the premise for increasing the landfill cap, that additional landfill capacity is required, must be called into serious question.

6 Further Action

To check, verify or reject some of the assertions and conclusions made in the reviewed documents, further actions would need to be made. These include:

Reviewing documentary evidence of waste types and quantities accepted at the site. This could be done by obtaining weighbridge reports to establish how many tonnes of what materials are processed and landfilled and therefore what the recovery rates are for the facility.

- Investigating what landfills operate 24 hours per day.
- Reviewing the facility's Environmental Waste Management Plan (EWMP) and Landfill Environmental Management Plan (LEMP) under which the facility operates.
- Attempting to calculate the landfill capacity for ACM in NSW and Queensland.
- Attempting to calculate how much ACM being disposed of and whether this is rising.
- Establish what landfills have closed or are planned to close
- Investigating how much night work is planned for the infrastructure projects listed referred to on page 23 of the Environmental Assessment.
- Investigate to establish rates of illegal dumping and whether these are increasing and, if increasing, whether this is due to the inability of transporters to find 24-hour disposal facilities.

I trust you find the above information satisfactory, however if you have any questions please do not hesitate to contact me at any time.

Yours sincerely

ANDREW QUINN
Technical Director - Waste and Resources Management

20 January 2020

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HWL Ebsworth
Level 14, Australia Square, 264-278 George Street
Sydney NSW 2000

Attention: **Paul Lalich**

Dear Paul

Genesis Waste Management Facility
Eastern Creek, Modification 6
Occupational Hygiene Review

1 Introduction

I have reviewed the following documents which relate to the approval for this modification which proposes to extend the hours of operation for the facility and the maximum amount of waste that can be landfilled at the site each year:

Table 1 Documents

Document No.	
1	Environment Protection Licence, Licence – 13426, Licence version date: 7-Jun-2019
2	Environment Protection Licence, Licence – 20121 Licence version date: 12-Apr-2018
3	Genesis Xero Waste, Environmental Assessment| Modification to Project Approval. EMM, dated 30 August 2018
4	Genesis Xero Waste, Environmental Assessment| Modification to Project Approval, Appendix G, Air Quality Impact Assessment, Genesis Xero Waste Facility Modification 6. Rambol Australia Pty Ltd, dated August 2018
5	Genesis Waste Management Facility, Eastern Creek, Modification 6 Response to Submissions Prepared for Dial-A-Dump (EC) Pty Ltd by EMM Consulting and dated 20 November 2019
6	Review of Response to Submission Report and Air Quality Assessments for Genesis Waste Management Facility Modification 6 (MP 06_0139 MOD 6). Atmospheric Science Global, dated January 2020

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The opinions set out below are based on review of the above documents provided by HWL Ebsworth Lawyers to SLR.

1.1 Review of Documents

I have reviewed the documents from an Occupational Hygiene perspective. Occupational Hygiene covers the investigation and control of environmental hazards in, or arising from, the workplace that can result in injury, illness, impairment, or affect the well-being of workers and members of the community.

The main hazards to workers and potentially members of the community identified from the report were the following:

- Airborne asbestos fibres
- Airborne particulates in the PM_{10} size class (Airborne particulates (PM_{10}))
- Airborne particulates as respirable dusts (Respirable Dusts)
- Volatile organic compounds (VOCs) – gases given off from the waste

The health hazards associated with each of the above hazards have been set out below.

1.1.1 Airborne Asbestos Fibres

Inhalation of asbestos fibres is a potential health risk, leading to a number of lung disorders, including lung cancer and mesothelioma. The likelihood of disease arising from exposure to asbestos is generally associated with cumulative exposure over a lifetime. Factors that add up to the lifetime exposure include frequency of exposure, concentration of airborne asbestos during each exposure and length of exposure.

Asbestos related disease can occur as a result of either high exposure to airborne asbestos fibres for a short time or lower exposure over longer periods of time.

There are three primary disease associated with the inhalation of asbestos fibres. These are:

- Asbestosis
- Lung Cancer
- Mesothelioma

Asbestosis and lung cancer are associated primarily with high level occupational exposures. Mesothelioma has been associated with exposures below those causing asbestosis and increased risk of lung cancer.

All asbestos-related diseases are dose-related: the higher the concentration and duration of exposure, the higher the prevalence of the disease and mortality. However, the form of the dose-response curve at low doses, typical for the exposure of general population, is not known.

1.1.2 Airborne Particulate Matter

Airborne particulates refer to any particles likely to be potentially airborne. In terms of human health risk, the issues may arise from physical damage to the respiratory system from inhaled particles. Total Suspended Particulates (TSP) includes particles with an approximate aerodynamic diameter of 50µm and less. Particles at the larger end of this size range may be inhaled but do not as a rule penetrate far into the respiratory system. Accordingly the larger particulates may have little role in health impacts associated with inhaled particulates. The smaller particles such as PM_{10} and $PM_{2.5}$ are more of a health hazard as their size allows the particle to penetrate deeply into the respiratory system. Aside from physical damage, the particulates may also act as carriers of chemical contaminants, bound to the particulates, transporting the chemical into the lungs where absorption of the chemical into the body is more likely or into the gut if contaminated particulates are ingested. Therefore the smaller particles (PM_{10} and $PM_{2.5}$) that can potentially penetrate deep in to the lungs have the greatest potential for adverse health impacts.

Respirable dust is the portion of airborne particulate matter that is able to penetrate the deepest reserves of the lungs (the alveolar region). Particles between 0.1µm and 10µm in diameter are considered 'respirable'. Within the respirable dust cloud, many other compounds often exist. Respirable dust not otherwise classified is dust of respirable size that is otherwise free of toxic impurities. Respirable dust, when lodged in lung tissue can cause irritation, inflammation and lead to more serious lung problems such as Chronic Obstructive Lung Disease (COPD).

1.1.3 VOCs

Volatile organic compounds or VOCs are organic chemical compounds, that is, compounds (that contain carbon) whose composition makes it possible for them to evaporate under normal indoor atmospheric conditions of temperature and pressure. Common examples include fuels, alcohols, solvents, etc. VOCs thus comprise a broad grouping of compounds with varying reactivity with other atmospheric components and varying impacts on human health.

1.2 Review of Documents

Regarding the potential for community exposures outside the Facility, it appeared that the Genesis Waste Management Facility (the Facility) has a monitoring programme for Airborne particulates (PM_{10}) with monitoring occurring at one location on the site boundary. In contrast, regarding airborne asbestos fibres, there was no indication the Facility had a monitoring programme on the site boundary for airborne asbestos fibres.

Regarding occupational exposure monitoring for workers onsite, no indication was made as to whether an occupational exposure monitoring programme was in place at the Facility for the above mentioned hazards (airborne asbestos fibres, airborne particulates (PM_{10}), Respirable Dusts & VOCs).

The Facility should have an occupational exposure monitoring programme, given the hazards identified. If the Facility does not have an occupational exposure monitoring programme, then this may indicate the Facility is not being run as well as it could be. Furthermore the lack of monitoring data will then make it not possible to determine if workers or visitors to the Facility may be at risk from exposures to the hazards identified above.

If the Facility does have an adequate occupational exposure monitoring programme, then the information collected regarding airborne hazards can be used to determine if these hazards are well controlled in the Facility. The reviewed documents assume that the hazards are well controlled based on dust suppression activities and monitoring of airborne particulates in the PM_{10} size class from one site on the boundary. There is no data from occupational hygiene measurements as evidence to support this claim. It should be noted that if these hazards are not well controlled on site this may lead to unacceptable exposures of workers to hazards such as asbestos, respirable dusts, etc and also heighten the potential for these hazards to migrate off site to the broader community outside the Facility.

I trust you find the above information satisfactory, however if you have any questions please do not hesitate to contact me at any time.

Yours sincerely

DR CRAIG SIMPSON *BAppSc MSc PhD MAIOH*
Certified Occupational Hygienist (COH)®

Associate - Occupational Hygiene & Hazardous Materials

HWL EBSWORTH
LAWYERS

Our Ref: PNL:ACS:944815

6 February 2020

Department of Planning, Industry and Environment
Level 22, 320 Pitt Street
Sydney NSW 2000

Attention: Bianca Thornton
By Email

Dear Ms Thornton

Genesis Waste Management Facility - Modification 6 (MO 06_0139 MOD 6)
Site: Honeycomb Drive, Eastern Creek
Submission: Fire Incident 1 February 2020

We refer to the submission dated 20 January 2020 (***Submission***) by Jacfin Pty Ltd (***Jacfin***), in respect of the application by Dial-A-Dump Industries (EC) Pty Ltd (***Proponent***) to modify Development Approval 06_0139 in relation the Genesis Waste Management Facility (***Facility***) (MP 06_0139 MOD 6) (***Modification Application***).

We understand that the Proponent is no longer the owner or operator of the Facility as it was acquired in 2019 by Bingo Industries Limited (***Operator***).

Fire Incident 1 February 2020

On Saturday, 1 February 2020, there was a significant waste fire at the Facility.

The following media reports are **enclosed,** for your convenience.

1. '*Tonnes of rubbish alight in tip blaze in Sydney's west*' by Ava Benny-Morrison dated 1 February 2020; and

2. '*Eastern Creek tip fire: 'Toxic' smell prompts health fears*' by Kate Lockley dated 4 February 2020.

The media reports indicate that by the time NSW Fire and Rescue and the NSW Rural Fire Service attended the Site, large volumes of waste was ablaze.

The fire also engulfed the waste chute from the Materials Processing Centre (***MPC***) to the pit, traveling up the chute toward the MPC.

We understand that 20 fire crews were required to attended the Site to control the blaze which was finally extinguished on Tuesday, 4 February 2020.

Facility and Management Practices

As you are aware, the Modification Application proposes to increase the amount of waste permitted to be transferred to landfill, bringing the total amount of waste being sent to landfill at the Facility to 1,300,000 tonnes per annum (***tpa***) (including MPC by-product).

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This incident demonstrates that the Operator does not have adequate procedures and management practices in place to address upset conditions in relation to the current landfill tonnage cap, let alone the significant increase that the Modification Application proposes.

The Facility is not prepared to deal with such circumstances as the chute is not equipped or was not constructed with adequate fire protection measures, as the conveyor within in the chute caught fire. This created a fire conveyance path from the pit directly to the MPC and the potentially the remainder of the Facility and neighbouring premises.

The unique practice at the Facility of delivering waste to the tip face via haulage and the chute compromises the ability of the Operator to maintain a small active tip face. Use of a small active tip face is considered good industry practice. The use of the chute depositing MFC by-product at its bottom, to be then pushed to the active tip face means that waste is spread out between the chute and tip face and that the waste is aerated, increasing the risk of fire. Ultimately, this practice makes it easier for fire to spread and harder for fire to be managed.

The images contained within the enclosed articles clearly show the fire engulfed a large area of the pit.

Air Quality

Under the heading *'Failure to Correctly Account for Haulage from the MPC*' in part 2 of the Submission, Jacfin states that the Propoent's Air Quality Assessment Report (***AQIA***) fails to take into account circumstances where all by-product from the MPC is transported to the tip face via haulage.

The fire incident highlights the flawed modelling assumption contained in the AQIA, as the fire damage to the chute now necessitates that all MPC by-product be transported to the tip face via haulage, as apprehended in the Submission.

Accordingly, the Department ought refuse the Modification Application as is not reasonable to approve a proposal in circumstances where the impacts are unknown. This is particularly the case given the proximity of the Facility to homes, schools and recreational and employment areas.

Human Health Risk

Fires at landfill facilities present a genuine risk to human health. Uncontrolled waste fires, like at the Facility, present increased risk to those in the vicinity of the fire, including those who live in the adjacent residential area and those people employed in the adjoining industrial area.

Given our understanding of the type of waste contained within the pit, it is likely that the following toxic and noxious substances were emitted from the Facility throughout the four days during which the fire was burning.

1. Dioxins

Waste fires can release large amounts of dioxins into the atmosphere. Short term exposures to high concentrations of dioxins have been associated with irritation of

the eyes, skin and respiratory tract; loss of energy; vision impairment; nausea; headaches; and sleep disturbances. Long term exposures to dioxins may increase the risk of developing various cancers.

2. Heavy Metals

Heavy metals include such substances as chromium and arsenic, from CCA treated timber. Consideration of these effects is imperative as such timber is a by-product of the MPC as it is not able to be recycled or reused.

Inhalation in high concentrations of arsenic over brief exposures can result in sore throat and irritated lungs. Long term exposures to arsenic are known to be associated with development of certain types of skin and lung cancers, and can also lead to circulatory and peripheral nervous disorders.

The Operator must have management strategies in place to prevent the outbreak of fire at the Facility. Particularly given the unacceptable risk of the exposure to toxic and noxious substances to the people in the residential and industrial area.

Leachate Management

The Proponent has not considered the effect of such upset conditions on the leachate management system. The Genesis Xero Waste Environmental Assessment dated 30 August 2018 prepared by EMM Consulting, states that the current leachate management system will not be required to be updated should the Modification be approved.

Based on our review, the modelling conducted by the Proponent has not taken into account upset conditions such as those experienced during the fire incident. Over 72 hours of continuous concentrated water flow was applied to the fire. The Proponent must demonstrate that the leachate management system will not be overrun in similar conditions taking into account the additional waste proposed by the Modification Application.

In the absence of such information the Modification Application should be refused.

Yours faithfully

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NSW

Tonnes of rubbish alight in tip blaze in Sydney's west

One of Sydney's biggest rubbish tips caught fire this afternoon, with the blaze fuelled by tonnes of recycled waste. WATCH THE VIDEO

Ava Benny-Morrison, The Sunday Telegraph

Subscriber only | February 1, 2020 9:36pm

One of Sydney's biggest rubbish tips caught fire this afternoon, with the blaze fuelled by tonnes of recycled waste.

The grass fire started inside a huge pit at the Bingo Industries waste management centre at Eastern Creek about 5.30pm.

The huge fire at Bingo waste management tip. Picture: TNV

When firefighters arrived they discovered the flames had spread and there were large volumes of rubbish ablaze.

NSW Fire and Rescue Superintendent Adam Dewberry said a conveyor belt was also alight.

The blaze started as a grass fire and spread to rubbish. Picture: TNV

“The fire has been able to extend up onto a conveyor belt into a structure and it’s producing lot of smoke,” he said.

“They are going to work to try and cut that fire off before it does too much damage to the structure.”

NSW Fire and Rescue said the blaze had spread to a conveyor belt. Picture: TNV

It was not clear how the fire started yet, he added.

The sprawling landfill centre is one of the city’s largest and accepts domestic and commercial waste six days a week.

The Bingo waste management facility is one of the largest in Sydney. Picture: TNV

Temperatures topped 45 degrees in the western suburbs today and dangerous fire conditions were fanned by gusting northerly winds.

The Daily Telegraph

BLACKTOWN

Eastern Creek tip fire: 'Toxic' smell prompts health fears

Residents fear fumes from a landfill fire in Eastern Creek may pose a risk to their health as the EPA investigates.

Kate Lockley, Blacktown Advocate

Subscriber only | February 4, 2020 4:26pm

A fire burns at Bingo Industries' landfill site in Eastern Creek. Picture: Fire and Rescue NSW

Western Sydney residents say they are being choked by potentially "toxic fumes" from a fire at one of Sydney's biggest landfill sites.

Fire crews on Tuesday afternoon have extinguished the blaze, which broke out at Bingo Industries' waste management centre off Kangaroo Ave in Eastern Creek on Saturday afternoon.

A Fire and Rescue NSW spokesperson said the fire began in surrounding grassland before spreading to the rubbish dumping area, however the cause of the blaze is yet to be determined.

Fire crews work to douse the blaze in Eastern Creek on February 1. Picture: Supplied

Residents in surrounding suburbs, including Minchinbury and Rooty Hill, have voiced their concerns about a "toxic, chemical smell" in the atmosphere, believed to be linked to the blaze.

Fears have been raised about the potential health impacts of the fumes, with residents taking to social media to complain about breathing difficulties and asthma attacks.

One resident, who did not wish to be named, said the smell lingering around the area was "alarming".

“I attended the tip on Saturday night and it definitely wasn’t a bushfire-type smell,” he said.

“People are saying it is an electric-type smell. Whatever it is, it absolutely reeks. It is some type of toxic, plastic smell.”

Another resident said the smell was so strong, she had to keep windows and doors closed to prevent the fumes from entering her home.

The fire is understood to have started in nearby grassland before it spread to waste material. Picture: Fire and Rescue NSW

Several residents told the *Advocate* they had lodged complaints with the EPA.

On Monday, an EPA spokesperson said they were investigating the blaze.

In a statement, Bingo Industries said investigations into the cause of the fire were ongoing.

“Fire and Rescue NSW were quickly on site and managed to contain the fire to the base of the landfill,” the statement read.

“Bingo staff were quickly removed from the affected area and no-one was injured in the incident.

“Bingo is working with the relevant authorities to determine the cause of the fire.”

About 20 fire crews were called in to get the blaze under control. Picture: Fire and Rescue NSW

A Fire and Rescue NSW spokesperson said the fire had burnt a large amount of waste material at the base of a quarry, including concrete, timber and waste from skip bins.

He said waste materials on a rubber conveyor belt used to transfer materials from the quarry, has also caught alight.

About 20 fire crews worked until Tuesday morning to douse the blaze, which was extinguished by burying the material with heavy machinery.

Waste materials smoulder at the Eastern Creek site on Monday afternoon. Picture: NSW EPA