Hyder Consulting Pty Ltd
Level 5, 141 Walker Street
Locked Bag 6503
North Sydney NSW 2060
Australia
Tel: +61 2 8907 9000
Fax: +61 2 8907 9001
www.hyderconsulting.com

19th March 2015

Dear Miss Nicholson,

Response to Additional Information Request: Integrated Designated Development Application No. 523/2014. Dunmore Resource Recovery Facility Redevelopment – Buckleys Road, Dunmore

This letter provides a response to additional information requests provided by Shellharbour City Council (SCC) – City Projects, dated 17th February 2015 and the NSW Environment Protection Authority (EPA) data 25th February 2015.

The EIS for the Dunmore Resource Recovery Facility Redevelopment was placed on exhibition between 16 January 2015 and 16 February 2015 in accordance with Section 79 (1)(a) of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

During this exhibition period submissions were received from both government agencies and stakeholders. This letter has been provided to satisfy the provisions of Section 79C of the EP&A Act.

Project Background

SCC is proposing to redevelop its existing waste management facilities at Buckleys Road, Dunmore, referred to as the Dunmore Resource Recovery Redevelopment (the Proposal). The Proposal will be located on the eastern side of the DRWDD site. SCC (the Applicant) is seeking approval for the Proposal under Part 4 (Designated Development) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Hyder Consulting has been engaged by SCC to prepare the necessary documentation to support the lodgement of a Development Application (DA) for the Proposal.

The Dunmore Recycling and Waste Disposal Depot (DRWDD) is located on Buckleys Road, Dunmore, within the Shellharbour Local Government Area. The DRWDD is the principle site used by SCC for waste disposal and resource recovery (the Proposal site). The DRWDD, which is owned and operated by SCC, requires an upgrade in order to assist SCC in maximising resource recovery, minimising waste disposal to landfill, improving site safety, and increasing operational efficiency.

An Environmental Impact Statement (EIS) was prepared by Hyder on behalf of SCC, to address the Secretary's Environmental Assessment Requirements (SEARs) (Reference 677 and 691) which were provided for the Proposal. The EIS provided a comprehensive assessment of all issue identified in the SEARs. The EIS also identified a number of mitigation measures to address any identified potential environmental impacts associated with the Proposal.

Project Overview

In summary, the Proposal includes the following works:

- Earthworks including levelling (cut and fill) of the Proposal site

- Upgrade of the internal road network and reconfiguration of entry intersection, including reallocation of traffic routes and upgrades and relocation of weighbridges
- Reorientation of the revolve centre and associated visitor car parking
- Relocation and reorganisation of the Transfer Facility, including the construction of a covered shallow ‘push-pit’ and a front resource recovery area
- Introduction of the tunnel composting Food Organics and Green Organics (FOGO) and associated biofilter
- Relocation of staff and office facilities, car parking and operational equipment and storage repair areas
- Relocation of the existing leachate storage areas (existing ponds) from EPL 12903 to EPL 5984 and inclusion of storm water storage tanks on-site, integrated storm-water management system
- Expansion and reconfiguration of the existing composting facility works, including improved sorting, maturation and pick-up areas
- Relocation of gas flare
- Relocation and extension of existing utilities
- Selected tree removal and boundary screen landscaping.

Overview of Submission Received

A total of 19 submissions were received during the public exhibition period. Including submissions received from government agencies, members of the public, landowners and occupiers and local businesses.

Table 3-1 addresses the submissions received during the exhibition of the EIS, including from community and Government agencies. Table 1 provides a detailed summary of each submission and issues raised, responses and clarifications to each submissions and reference to the EIS and supporting technical specialist reports (where applicable).

Table 1: Response to comments raised during the public exhibition period

Issue	Comment	Clarification / Response	Reference
Additional Information Request from SCC dated 17th February 2015			
Reconfiguration of Buckleys Road	The Traffic and Transport Impact Assessment prepared by Hyder Consulting as part of the DA application states "It is estimated that the proposed expansion would attract an additional 6 heavy vehicles or 12 heavy vehicle movements to the organics facility", and "Additional traffic demand on Dunmore Road as a consequence of the increase in volume of the proposed re-development is considered acceptable and does not increase the level of traffic activity on Dunmore Road to an unacceptable level". In this regard, please provide further justification for the proposed reconfigured entry intersection on Buckleys Road.	Shelharbour City Council identified the need for the Proposal due to observations that the DRWDD site required significant improvements in order to maximise the resource recovery effectiveness of the site. SCC commissioned the preparation of a detailed master plan to accompany the Proposal, which aimed to meet a number of objectives (refer Volume 1 Appendix B of the EIS). As part of the master plan various preliminary site layout options were appraised in order to select the optimum site configuration. No data was available regarding the operations of the neighbouring DRR site at this preliminary stage, particularly having regard to traffic volumes. The master planning activity identified the need to reconfigure the site access as a result of a number of key existing operational and safety issues having been identified. These are described below, as follows: ▪ The entry sign to the facility on Buckleys Road is quite small in scale and competes with other informational signage. Additionally, when a new patron enters the site they are confronted with a wide variety of wayfinding signage. The patron is required to read, comprehend and act (turn immediately to the left) all within a very short distance and timeframe. ▪ During site visits, it was observed that many visiting patrons missed the entry to the DRWDD, and/or missed the immediate left turn despite (or because of) four different wayfinding signs indicating that all vehicles must turn left. Further confusing the patrons wayfinding is the direct visual and physical connection to a weighstation which is typically the first port of call when arriving at the landfill. ▪ Patrons, on their first visit (who are more likely the case with regard to the retail patron as most people do not require frequent regular trips to the site) are confronted with too much information requiring	Section 5 and 8.4 of the EIS Volume 1, Section 8.4 Appendix B and Volume 2 Appendix E of the EIS Appendix A of this Letter
	The proposed re-configuration of the Buckleys Road intersection directs the flow of traffic into the site of the proposed development as the public road is re-aligned into the subject site. Currently the flow of traffic to a similar (competitive) developments at the end of Buckleys Road is unobstructed with a straight road to the existing development (thereafter referred to as DRR). The proposed changes to the road will affect all vehicles entering and leaving the DRR site, as described in the following excerpt from submission:		

Issue	Comment	Clarification / Response	Reference
	"*They are concerned that vehicles wishing to enter their property will have to first negotiate the proposed blister in the road alignment. Our client's operation attract heavy vehicles including trucks with "dogs". They are concerned that the re-configuration of the road alignment intended under this proposal will result in trucks wishing to enter their site leaving the left hand side of the road to negotiate these changes to the road alignment and then crossing onto the right hand (i.e. wrong) side of the road leading to traffic safety concerns and conflicts with on-coming vehicle leaving their site.* *Furthermore, heavy vehicles leaving our clients property will also be required to stop at the proposed entrance to the subject site to allow vehicles entering the subject site to pass. Apart from the nuisance for a possibly heavy laden heavy vehicle to have to negotiate a stop on an incline, such a traffic manoeuvre seems to be contrary to normal traffic movements where traffic traveling along a public road has to give way to traffic entering a "private" property. Such circumstances may also raise traffic safety issues with driver uncertainty at such an intersection.*	immediate action with too little distance/time to comprehend and act. To rectify this issue the entry sequence must be a logical, free-flowing series of intuitive events that puts the patron at the desired destination with minimal wayfinding signage and decision making actions. The proposed layout of the resource recovery facilities has been arranged to separate the heavy vehicle (commercial) from the light vehicle (retail) traffic while minimising the number of potential points of conflict (two potential points of conflict as opposed to seven points of conflict under the existing layout). It is acknowledged that the proposed reconfiguration would re-direct traffic from a public road into the facility. The Proposal will operate as a public facility for use by the surrounding community. Given the nature of the Facility, and the high proportion of the traffic travelling on Buckleys Road that are associated with the Proposal, a reconfiguration is considered appropriate to maximise safety and traffic flows on Buckleys Road and within the site. The DRWDD site is accessed by approximately 162 light vehicles and 74 heavy vehicles per day - a total of 236 trips (472 movements). In comparison the neighbouring DRR site generates approximately 13 heavy vehicle trips (26 movements) per day. As over 94% of traffic accessing the southern portion of Buckleys Road are associated with the DRWDD site, the reconfiguration of the entrance was determined to provide the greatest safety and traffic flow outcome. Notwithstanding the above comments, to address safety concerns and issues identified by for the DRR site, alternate configurations for the site access have been developed. The Hyder traffic team, as part of this response identified three options for the reconfiguration of the site access, and the advantages and disadvantages associated with each options were considered in collaboration with SCC. The preferred proposed site access layout is provided in Appendix A of this letter.	

Issue	Comment	Clarification / Response	Reference
	…… *Such a re-configuration of a public road to re-direct traffic from a public road into a "private" property is inconsistent with normal traffic engineering practice. Normally in circumstances such as this, a developer would be required to upgrade the public road intersection to ensure the flow of traffic along the public road was not interfered with, by requiring the channelization of right turn movements into the site within a separate designated right hand turn lane, while retaining a specific lane for traffic movements along the public road to be left uninterrupted."*	The reconfigured site access will allow vehicles accessing the DRR site to continue unimpeded along Buckleys Road from the north-west. Vehicles heading north and south will be separated by a traffic island, which will act as a traffic control measure on vehicles exiting the private facility, and encourage drivers to reduce speed on approach to the intersection. This will reduce the risk of head on collisions and provide separation to vehicles entering and leaving the DRR site at the location of the intersection. Vehicles travelling on the main road would still have priority over vehicle egressing from the DRR site. Adequate lines of site are available for vehicles exiting this facility. The swept paths of both entry and exit vehicles are unhindered and both movements can operate simultaneously.	
Potential to encounter groundwater	The NSW Office of Water advise that an initial review of the material provided indicates that additional information relevant to the proposed excavation for the removal of the leachate ponds is needed in order to complete the assessment. Please confirm if the excavation works will involve the dewatering of groundwater and if so, what is the expected annual volume of extraction.	The EIS notes under Section 6.2.3 and 8.7 that an Acquifer Interference License may be required und the *Water Management Act* 2000. Further investigations summarised below suggest that this will be unlikely as the Proposal works will not involve dewatering of groundwater. Environmental Earth Sciences consider it unlikely that groundwater would be encountered during the removal of the leachate pond HDPE liner on the Proposal site. This is because the clay liner will not be removed, restricting any potential groundwater inflow. Furthermore as outlined in Section 8.7 of the EIS the groundwater strike, identified during drilling at the closest bores (in metres below ground level) is: • BH6b – 6 mbgl; • BH17 – 6.7 mbgl Water levels in these bores varied up to 2.8 m, as indicated by	Section 8.7.3 of the EIS

Issue	Comment	Clarification / Response	Reference
		groundwater monitoring data since 2010. Adding an additional 1 metre as a safety measure, groundwater may be expected to be encountered below approximately 2.2 m depth. The depth to the base of the pond is approximately 1.6 m. Consequently with a 0.5 m thick clay liner, the maximum depth would be just over 2 m. Therefore, as the clay line would not be removed, it is considered unlikely that excavation works will require dewatering of groundwater. As outlined in section 6.2.3 and 8.7.3 of the EIS a Construction Environmental Management Plan would be prepared prior to commencement of works which would include suitable to controls to manage any potential impacts to groundwater.	
Lack of consultation with adjoining property prior to preparing the development application	Lack of consultation with owners and occupiers of surrounding lands as required by the Secretary of the Department of Planning & Environment's Environmental Assessment Requirements for preparation of the EIS. Section 4.3 of the EIS refers to the mail out to surrounding residents to attend a meeting with the Council and the project consultants. The adjoining property did not receive any notification of the initial consultation meeting.	SCC has addressed consultation requirements outlined in the Secretary's Environmental Assessment Requirements for the Dunmore Resource Recovery Redevelopment Project (Ref: SEAR 677) re-issued by the Department of Planning and Environment on the 16th December 2014. This includes requirements for consulting with surrounding landowners and occupiers that may be impacted by the Proposal. A summary of consultation activities is provided in Section 4 of the EIS. SCC distributed an invitation to surrounding property owners on 25 March 2014 inviting them to attend an information session regarding the Proposal on the 2nd April 2014. This letter of invitation was also sent to the adjoining Dunmore Resources and Recovery facility. In addition to the above, surrounding residents, including the DRR site were also consulted (in the form of a letter) by SCC on 12 December 2014 to notify them that the EIS was to be lodged in the near future, providing further opportunity to provide comment during the public exhibition period. On the 13th February 2015 a representative from the DRR site met with an SCC planner to discuss issues of concern associated with the Proposal. SCC advised DRR to formally lodge a submission providing further context and background around issues of concern. The	Section 4 of the EIS

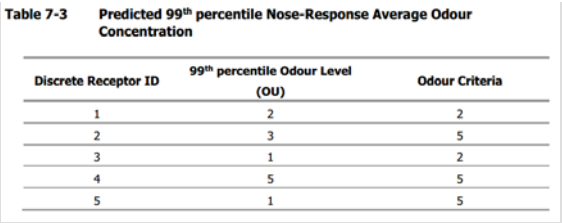
Issue	Comment	Clarification / Response	Reference
		representative from DRR was advised by SCC that it is a statutory requirement that all submissions are taken into consideration in the assessment of a DA. SCC would be happy to meet with a DRR site representative to discuss any outstanding issues of concern with the Proposal and the contents of this response.	
Air quality impacts	The adjoining DRR site has not been considered as a sensitive receptor for the purposes of the air quality assessment in the EIS. The EIS has nominated sensitive receptors to residential and recreational users, however (excerpt from submission) "The NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales defines a “sensitive receptor” as: A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area. An air quality impact assessment should also consider the location of known or likely future sensitive receptors". The DRR operations include an office and staff employed on the site and the site "should also be considered a sensitive receptor for the purposes of the air quality assessment for this EIS." "Figure 8.13 of the EIS shows the entirety of the DRR site as being located within the 7 OU concentration. The EIS however does not	The NSW odour goals are based on the risk of odour impact within the general population of a given area (EPA Technical Framework Assessment and management of odour from stationary sources in NSW, 2006). In practice the character of a particular odour can be judged by the receiver’s reaction to it. The level at which an odour is perceived to be of nuisance can range from 2 OU to 10 OU (NSW DEC, 2005) depending on a combination of many factors including: odour quality; odour intensity; odour frequency, timing and duration; population sensitivity; background odour level, public expectation; source characteristics; etc. For residential areas in sparsely populated areas the criteria assume there is lower risk that some individuals within the community would find the odour unacceptable, hence higher criteria apply. The typical residential odour criteria range from 2 to 7 OU. The 2 OU criterion applies to receivers in an urban environment while the 7 OU criterion applies to rural residential areas. There are no specific criteria for commercial/industrial receivers. For commercial/industrial receivers it can therefore be expected meeting the residential criteria would be an indicator that there is very little likelihood of odour nuisance, however in practice commercial/industrial receivers would typically have a higher tolerance for odour especially as many commercial/industrial receivers have some self-generated odours.	Volume 2 Appendix C of the EIS Section 10 of the EIS

Issue	Comment	Clarification / Response	Reference
	provide any discussion or assessment of the impacts that this level of odour concentration will have on staff employed on our clients land. It is noted that one of the recommendations of Section 8.2.3 of the EIS is that there be monitoring and a review of the odour control systems to ensure that they are operating within specifications. It is our view that a more structured approach should be adopted to ensure that odour controls are operating so that the amenity of local land owners and employees is not adversely affected. The EIS for instance should include or at least make provision for an Environmental Management Plan for the site and which would include measures to control, monitor and respond to odour issues and which would address: ▪ What constitutes appropriate action? ▪ What methods will be used to identify causes of odour issues? ▪ What methods will be used to determine success of actions? ▪ What reporting systems will be used to identify outcomes? ▪ What recourse exists for unresolved ongoing odour issues to the general public, and employees & customers at DRR? ▪ How can DRR be assured that their activities will not be adversely affected by	The very conservative odour predictions indicate that the public areas within 57 Buckleys Rd, Dunmore (DRR) would have odours of 8OU. This is below the acceptable threshold of 10 OU for an industrial premise. As such the Proposal is unlikely to create an odour nuisance for the DRR site. Odour levels up to 25 OU are predicted within the stockpile area of the Proposal site. It is important to note that these levels of odour would not be inconsistent with levels of odour that are self-generated from mulch, chicken manure and other organic garden mixes located on the DRR site. The DRWDD site has a Site Management Plan which includes appropriate air quality management controls. It is anticipated that this would include suitable odour management strategies and good housekeeping practices to ensure the potential for any odour impacts are reduced as presented in the Air Quality Assessment (Section 7.3). The odour management strategies, summarised in Section 10 of the EIS, would include: ▪ Keeping putrescible and non-putrescible waste stream(s) separate at the transfer station; ▪ Ensuring the floor area of the transfer station is cleaned daily; ▪ Minimising the amount of putrescible waste left on-site at the transfer station and ensuring no waste is kept overnight; ▪ Keeping the FOGO facility doors closed when not receiving material to limit the escape of fugitive odour from the building; ▪ Recycling of odorous air in the tunnel composting system to minimise air volume into the deodorisation process; ▪ Transferring material to the windrows during periods of good atmospheric dispersion; ▪ Turning material in the windrows during periods of good atmospheric dispersion; ▪ Maintaining aerobic conditions through regular turning of the	

Issue	Comment	Clarification / Response	Reference
	odour impacts for our customers?"	windrows; ▪ Balancing the Carbon to Nitrogen ratio within the windrows; ▪ Ensure moisture levels are optimum within the windrows; ▪ Ensure windrow heights are manageable; ▪ Immediate covering of all newly formed and turned windrows. ▪ Conducting odour monitoring for the bio-filter within the first six month of operation to ensure they are operating within the assumed operating specification; and ▪ maintaining an odour complaint logbook. When odour complaints are received, a site investigation would be conducted to identify any unusual odour sources within the site boundary and take appropriate action as required	
Stormwater	Stormwater is shown to discharge onto and over adjoining land or into a water storage pond located on adjoining land. Excerpt from submission discusses this further, as follows: "Figure 8.10 within the EIS shows the existing drainage network within the subject site however shows an “existing” drainage line extending from within the subject site and appears to show flowing along the western boundary of the DRR site and directing stormwater from the existing operations of the subject land into the water storage pond located on the DRR site. Figure 8.11 shows the proposed stormwater management for the proposed development. This figure proposes extending a culvert within	**Stormwater Discharge – Adjoining Lots** A summary of the existing sub-catchments and their respective flow paths are shown in Figure 8-10 of the EIS. This figure identifies two existing drainage channels within the adjoining DRR property to the east of the Proposal site. The drainage channel in the north-western corner of this figure intercepts runoff generated within the adjoining property from entering the Proposal site. No runoff generated within the Proposal site is currently or will be discharged into this existing north western drainage channel following completion of the proposed works. There is expected to be no change to quality or quantity of runoff flowing in this channel as a result. Therefore no proposed drainage works are required and none have been included on the Stormwater Concept plan (provided in Appendix J of the EIS). During the existing current conditions, the easternmost drainage channel as shown in Figure 8-10 does receive runoff generated from within the Proposal site, particularly with regard to the Revolve Centre	Appendix B of this Letter

Issue	Comment	Clarification / Response	Reference
	the subject site and retaining the alleged drainage channel on the DRR and retaining the discharge of stormwater into the water storage pond located on the DRR site. Our clients advise that whilst there is a drainage channel that runs along the eastern boundary of the subject site shared with their land, this drainage channel is not located on their land as shown on these figures but is located on the subject site. Furthermore this drainage channel does not drain into the water storage pond that is located on the DRR land. Rather this drainage channel discharges stormwater flow from the subject site directly into Rocklow Creek further to the south." Method of stormwater disposal for Revolve Centre	sub-catchment (also referred to as sub-catchment No. 6). The runoff from this area of the Proposal site is transported into the existing drainage channel via an existing culvert which flows into an existing dam on the DRR site. This subcatchment includes a 400m long section of Buckleys Road and thoroughfares serving the depot buildings. These road surfaces, which represent approximately 25% of the subcatchment area, currently generate pollutants and pollutant loads typical of heavy vehicle traffic. The proposed works within subcatchment no. 6 (principally the northern part of the Proposal site associated with the Revolve Centre works) include: 1) modification of the existing roads to improve traffic movements within the site; 2) removal of existing buildings and construction of an awning over the Revolve Centre building. These works are not expected to significantly change the quantity and quality of runoff leaving the proposed site from the existing current conditions. The design intent of the stormwater concept plan in this area was to maintain the existing flow regime. This is achieved by extending the existing culvert to suit the proposed roadworks. All runoff generated within the southern half of the Proposal site, comprising the Organics Facility and Transfer Station areas of the development, will be drained internally and conveyed via a pit-and-pipe system to an existing sedimentat pond located to the south, is expanded to accommodate the increased volume of runoff. When the capacity of the pond is exceeded, overflows are conveyed by a new drainage channel that discharges into Rocklow Creek in accordance with EPL requirements. The design intent of the concept stormwater plan in this area is that will be no discharge from the southern section of the proposed site into the adjoining property. The stormwater concept plan provided in Volume 2 of the EIS – Appendix J has been updated to ensure this is clearly presented (refer Appendix B of this Letter).	

Issue	Comment	Clarification / Response	Reference
		<u>Stormwater Disposal – Revolve Centre</u> As mentioned above, runoff from the Revolve Centre sub-catchment is collected by existing drainage channels. An existing culvert underneath the perimeter road conveys stormwater flows to the existing downstream drainage channel, located along the eastern boundary of the Proposal site and the existing dam within Lot 2 Buckley Road. This catchment and its attendant drainage system will be maintained as part of the Proposal, except to modify and extend the existing culvert to suit new roadworks. A clean water roof drainage system for the Revolve Centre was omitted from Volume 2 of the EIS – Appendix J: Stormwater Concept Plan. This has been updated to incorporate a 40KL tank adjacent to the Revolve Centre. This will assist in promoting water re-use and reducing overall operational water demands for the site as well as reducing stormwater runoff. This is reflected in the updated stormwater concept plan provided in Appendix B.	
Additional Information Request from EPA dated 25th February 2015			
Air Impact Assessment The air impact assessment was generally conducted in accordance with	1. Mapping of the approved expansion of Shell Cove (1500 dwellings) as a future sensitive receptor, and assessment of odour impacts on it.	As presented in the Air Quality Assessment the edge of Shell Cove is described as discrete Receptor R3 (Refer to Table 2-1). The Air Quality Impact Assessment report is presented in Volume 2, Appendix C of the EIS. Table 7-3 of the odour assessment presents the Predicted 99th percentile Nose-Response Average Odour Concentration. The Table is replicated below.	Volume 2 Appendix C of the EIS

Issue	Comment	Clarification / Response	Reference
the “Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales”. However, there are some issues with the assessment that need to be addressed before the EPA can issue GTAs.		Table 7-3 Predicted 99th percentile Nose-Response Average Odour Concentration 	
	2. Assessment of the potential for impact on Minnamurra township as a cumulative impact with the Minnamurra waste facility.	Kiama Municipal Council operates Council’s Minnamurra Waste and Recycling Disposal Depot (MWRDD). The waste facility has a current EPA License No 5958 issued under the Protection of the Environment Operations Act 1999 for composting, waste storage, transfer, separating or processing. It is understood that Kiama Municipal Council is proposing to prepare and lodge development applications for the construction of waste and other facilities for an upgraded facility. The DRWDD has a potential odour impact at the township of Minnamurra of 1 OU. As such any cumulative impacts associated with the Proposal site are likely to be negligible. There would appear to be a low risk of cumulative odour impacts from the DRWDD and the MWRDD at the township of Minnamurra as the two facilities are at least 900 m apart and the township of Minnamurra is located directly south and south east, respectively. Therefore, odour from the MWRDD site is also unlikely to impact the township of Minnamurra at the same time as the DRWDD.	
	3. Inclusion of Dunmore Resources and Recycling at 57 Buckleys Road, Dunmore as a sensitive receptor and assessment of odour impacts on it.	Refer to responses to submission from 57 Buckleys Road, above (see EPA Response 1 above).	
	4. Basis for the emissions used to characterise the bio-filter. The estimates need to be traced to test data.	The bio-filter odour emissions were provided from the contractor who installed the bio-filters for the Grafton (Clarence Valley Council) and Orange 3R Facilities which were the best reference projects available. A comprehensive assessment was undertaken at the Orange	

Discrete Receptor ID	99th percentile Odour Level (OU)	Odour Criteria
1	2	2
2	3	5
3	1	2
4	5	5
5	1	5

Issue	Comment	Clarification / Response	Reference
		composting facility in 2013 with composted/screened green waste as filter medium. The tests confirmed compliance with the performance specification for net odour concentrations (<125 OU.m3) respectively net MOER (<520 OU/m3/s). Contact: Andres Pichler from APBTC andreas.pichler@apbtech.com.au http://www.apbtc.com.au/ The odour emission data is considered commercial in confidence.	
	5. Estimate of odour from the leachate pond, including emissions during transition from its current location to the proposed location. Odour modelling needs to include this source.	The proposal does not include any leachate ponds. For the decommissioning of the existing leachate pond best practise management strategies and good housekeeping practices would be used and as such no odour impacts are expected. It is anticipated that the ponds will be pumped of all liquid into a suitable vehicle and disposed of at a suitably licenced facility. The new leachate collection system will include enclosed tanks, which is a considerable improvement to the current system in relation to the management of odour.	
	6. Quantitative assessment of particle impacts from the proposed operation, including wheel generated dust, wind-blown dust and any other significant source.	There is limited potential for dust impacts from the operation of the Proposal site. The major sources of operational dust would be: - Trucks and cars driving on the internal roads; - Turning of the windrows; and/or - Wind erosion. The estimated dust emissions from the site activities are summarised below and the corresponding emission factors from the US EPA AP42 Emission Factors document (USEPA, 1985 and updates) and the State pollution Control Commission document (SPCC, 1983) that were applied to estimate the potential dust emission are outlined below.	

Issue	Comment	Clarification / Response	Reference
		The estimated annual TSP emission rate (kg/year) is: - Trucks travelling unsealed roads 10,915 - Loading / emplacing material 1687 - Wind erosion from exposed areas (Windrows) 1,331 **Total**(kg/year) **13,933** **Hauling on unsealed surfaces** $EF = \frac{0.4536}{1.6093} \times \left(\left(\frac{s}{12}\right)^{0.7} \times 4.9\right) \times \left(M \times \frac{1.1023}{3}\right)^{0.45}$ kg /VKT Where: s = silt content (%) and M = moisture content (%) **Loading / Emplacing material** $EF = k \times 0.0016 \times \left(\left(\frac{U}{2.2}\right)^{1.3} / \left(\frac{M}{2}\right)^{1.4}\right)$ kg /tonne Where: k = 0.74, U =wind speed (m/s) and M = moisture content (%) Wind erosion $EF_{TSP} = 0.4 \frac{kg/ha}{hour}$ The total amount of dust generated from the site is low and therefore unlikely to be significant given the nature of the activities. It should be noted that the roads are typically sealed apart from the area around the windrows (See Figure 5-1 site plan). It was assumed that unsealed roads are watered (See below).	
	7. Greater detail specifying emission controls to be used, particularly the operational definition of “adverse weather conditions” and the regime to be used for watering unsealed	Hot dry windy conditions. Typically when winds are above 10m/s. Level 1 watering (2 litres/m^2/hr) would be conducted for any unsealed roads.	

Issue	Comment	Clarification / Response	Reference
	roads.		
	8. Additional measures to reduce odour should odour from the facility cause off-site impacts.	Section 10 of the EIS provided a compilation of the mitigation measures that will be employed as part of the Proposal. In addition to these, the current site has a Site Management Plan that will be updated for the Proposal Site. This Plan includes air quality treatment controls. It is anticipated that this would include suitable odour management strategies and good housekeeping practices to ensure the potential for any odour impacts are reduced as presented in the Air Quality Assessment (Section 7.3). The odour management strategies would include: ▪ Maintaining an odour complaint logbook. When odour complaints are received, a Site investigation would be conducted to identify any unusual odour sources within the Site boundary and take appropriate action as required; ▪ Keeping putrescible and non-putrescible waste stream(s) separate at the transfer station; ▪ Ensuring the floor area of the transfer station is cleaned daily; ▪ Minimising the amount of putrescible waste left on-site at the transfer station and ensuring no waste is kept overnight; ▪ Keeping the FOGO facility doors closed when not receiving material to limit the escape of fugitive odour from the building; ▪ Recycling of odorous air in the tunnel composting system to minimise air volume into the deodorisation process; ▪ Transferring material to the windrows during periods of good atmospheric dispersion; ▪ Turing material in the windrows during periods of good atmospheric dispersion; ▪ Maintaining aerobic conditions through regular turning of the windrows;	

Issue	Comment	Clarification / Response	Reference
		▪ Balancing the Carbon to Nitrogen ratio within the windrows; ▪ Ensure moisture levels are optimum within the windrows; ▪ Ensure windrow heights are manageable; ▪ Immediate covering of all newly formed and turned windrows. ▪ Conducting odour monitoring for the bio-filter within the first six month of operation to ensure they are operating within the assumed operating specification; and ▪ Maintaining an odour complaint logbook. When odour complaints are received, a site investigation would be conducted to identify any unusual odour sources within the site boundary and take appropriate action as required	
Water Impact Assessment	It appears the project may have potential flood and estuary related impacts. As such, it is recommended that the proposal be referred to the Office of Environment and Heritage for assessment.	As documented in Section 8.6 of the EIS the Proposal will not trigger any significant potential flood and estuary related impacts. The implementation of the revised stormwater management plan and drainage system will ensure that there are no unacceptable adverse impacts on drainage, flooding or water quality within the Proposal site, the greater DRWDD site and surrounds. Water balance modelling has been undertaken to confirm the appropriateness of the proposed stormwater management strategy and size the proposed structures. Proposed stormwater drainage measures including separation of clean, dirty and leachate flows, rainwater harvesting and expansion of an existing sediment basin in the southern portion of the Proposal site will result in a significant improvement to the existing on-site surface water management practices and is likely to result in either a neutral or positive impact on water quality in the surrounding area. SCC have consulted with OEH at several stages throughout the preparation of the Proposal, including as part of the request for the original DGRs for the Proposal. Correspondence received by OEH on the 9th October 2012 indicated that “they had no further interest in the proposal”.	Appendix C of this Letter

Issue	Comment	Clarification / Response	Reference
		Notwithstanding the above additional efforts to consult with OEH have been made as identified in Section 4.2.2 of the EIS. Additionally, OEH were invited to provide further comment prior to lodgement of the EIS in January 2015 although no comments were received.	

Summary of Mitigation Measures

Minor amendments have been made to the mitigation measures for the Proposal after the exhibition of the EIS to address comments provided by submissions.

Additional mitigation measures provide the final mitigation measures to be incorporated into the conditions for the consent for the DA, as required by Schedule 2, Part 3, cl 7(1)(E) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regs).

The final mitigation measures are presented in Appendix D. Additional measures have been underlined.

Conclusion

Shellharbour City Council (SCC) proposes to redevelop its existing waste management facilities at Buckleys Road, Dunmore (the Proposal).

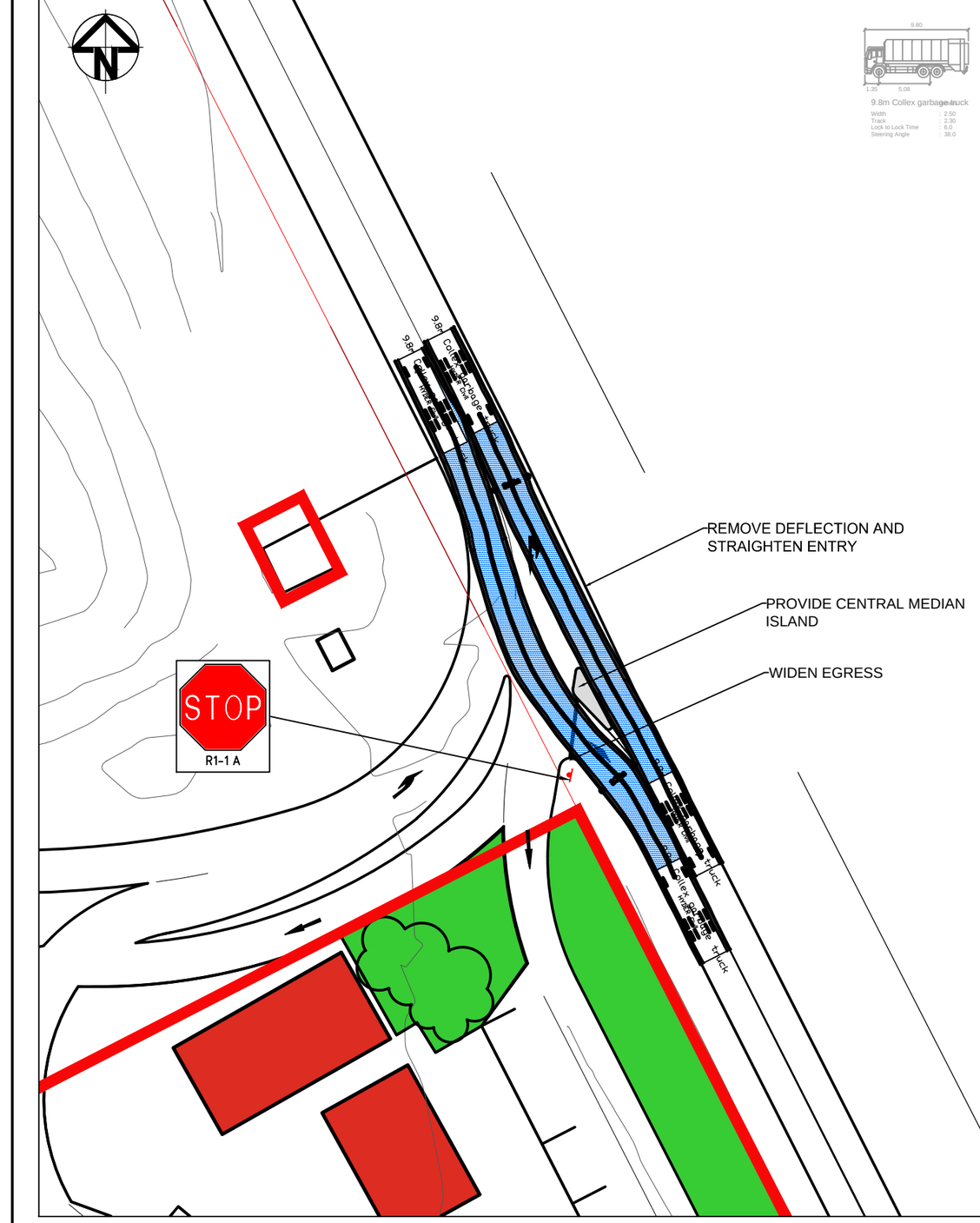
The EIS was publicly exhibited by SCC between 16 January 2015 and 16 February 1015. During this period submissions were invited from anyone with an interest in the Proposal including members of the community and government. Council received a total of 19 submissions. This letter has been prepared to respond to submissions raised by both community and government.

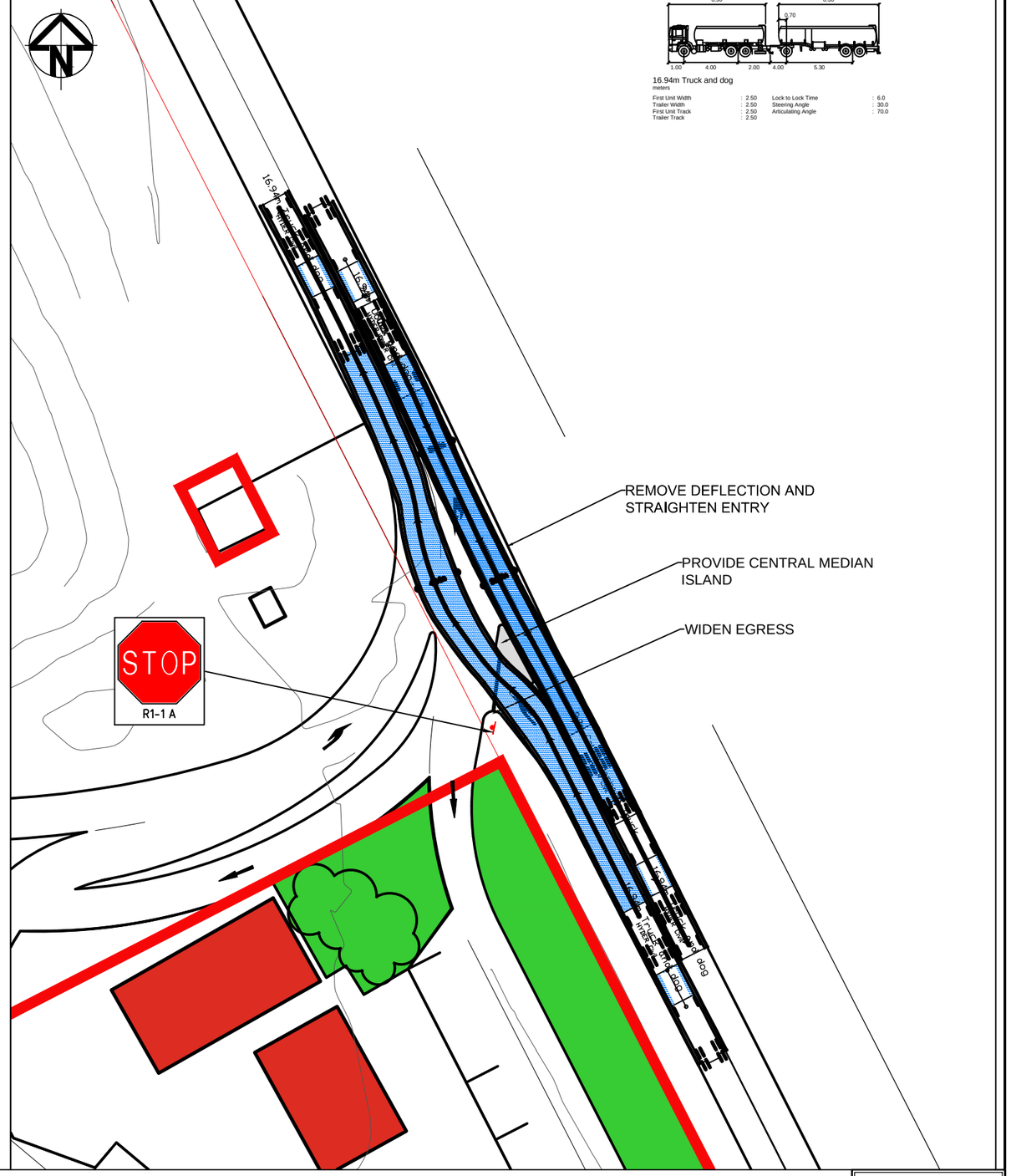
The Proposal will provide significant benefit by reducing the amount of waste requiring landfill disposal and improve resource recovery rates; providing sustainable waste management services for the SCC LGA. Based on the updates provided in this letter, as well as the findings of the EIS, it is recommended that the Proposal be approved subject to suitable conditions of consent.

Brad Searle
Associate Technical Director - Environment
+61 (0) 2 8907 9059

APPENDIX A

PROPOSED INTERSECTION REALIGNMENT





SKETCH

Issue	Description	Date
P1	FOR INFORMATION	12/03/15

50mm on Original

Client: SHELLHARBOUR CITY COUNCIL

Status: PRELIMINARY ONLY
NOT TO BE USED FOR CONSTRUCTION

Scales	1:500	Current Issue Signatures	
		Drawn JPH	
Original Size	A3	Designed JPH	
Height Datum	AHD	Checked -	
Grid	MGA	Approved GI	

Filename: Sk0006-aa005925-nsk-00.dwg

Project: DUNMORE RECYCLING & WASTE DISPOSAL DEPOT
PROPOSED SAND MINE SITE
SHELLHARBOUR CITY COUNCIL

Title: PROPOSED INTERSECTION REALIGNMENT OPTION - B

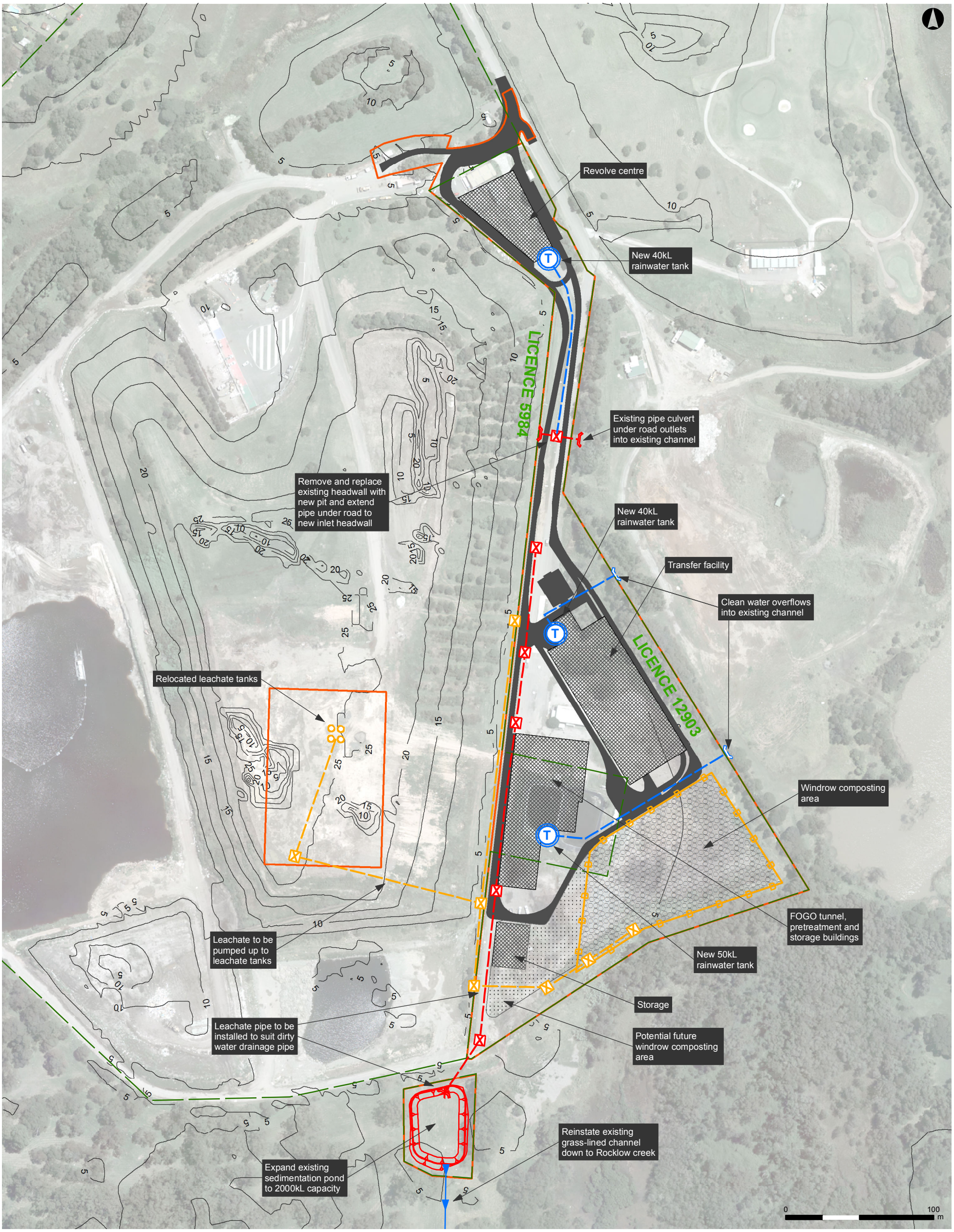
HYDER CONSULTING PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia
Tel: +61 (0)2 8907 9000
Fax: +61 (0)2 8907 9001
www.hyderconsulting.com

Drawing No.	Project No.	Issue
SK0006	AA005925	P1

Date Plotted: 19 Mar 2015 - 08:26AM File Name: F:\AA005925\E-CAD\C-Civil\B-Sketches\sk0006-aa005925-nsk-00.dwg V1

APPENDIX B

STORMWATER CONCEPT MANAGEMENT PLAN



LEGEND

- Project Site
- Licence boundaries
- Contours (5 m interval)
- North arrow
- Buildings
- Road

DRAINAGE

- Dirty water
- Leachate
- Clean water

DRAINAGE SYMBOLS

- New pipe
- New pit
- New headwall
- New rainwater tank
- New bund
- Upgraded channel

HYDER CONSULTING PTY LTD
ABN 76 104 485 289
Level 5, 141 Walker St
North Sydney NSW 2060
Australia
P: +61 (0) 2 8907 9000
F: +61 (0) 2 8907 9001

Scale 1:2500 @ A3

Concept Stormwater Management Plan

Date: 4/03/2015 Path: F:\AA005925\L-GIS\B_Workshop\150302_Concept Stormwater Plan rev1\MAPS\w_AA005925_Stormwater_concept_management_plan_150304_r1v1.mxd
Created by : DD
QA by : AW

APPENDIX C

LETTER FROM NSW OFFICE OF ENVIRONMENT AND HERITAGE

NSW GOVERNMENT | Office of Environment & Heritage

PCU038711

Your reference DGR677
Our reference: DOC1241498

Mr Andrew Hartcher
Environmental Planner - Industry
Major Development Assessment
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001.

Attention: Andrew Hartcher

Dear Mr Hartcher

I refer to your email received 4th October 2012, requesting input from the Office of Environment and Heritage to the Director Generals Requirements for a composting facility at Dunmore in the Shellharbour LGA (DGR677).

The Office of Environment and Heritage has reviewed the preliminary information and has no comment to make and no further interest in the proposal.

If you have any queries please contact Liz Peterson, on 9995 6841.

Yours sincerely

Lou Ewins 9/10/12

LOU EWINS
Manager Planning & Aboriginal Heritage
Conservation and Regulation, Metropolitan
Office of Environment and Heritage

PO Box 668 Parramatta NSW 2124
Level 7, 79 George St Parramatta NSW 2150
Tel: (02) 9995 5000 Fax: (02) 9995 6900
ABN 30 841 387 271
www.environment.nsw.gov.au

APPENDIX D

COMPILATION OF MITIGATION MEASURES

No.	Mitigation measure	Implementation stage
0.	**General environmental management**	
0A	A Construction Environmental Management Plan (CEMP) would be prepared to manage impacts on the environment during the construction phase. This would address management of the following: ▪ noise ▪ air (odour, dust) emissions ▪ construction traffic and interaction with existing operational traffic ▪ groundwater (including leachate capture and containment) ▪ soil erosion and surface water ▪ contamination and Acid Sulphate Soils ▪ flora and fauna preservation and protection ▪ hazard and risk management ▪ bushfire management ▪ heritage (including unexpected finds during excavations) ▪ waste management and integration with current procedures	Construction
0B	The existing EPLs 12903 and 5984 would be updated to be consistent with the proposed layout, proposal boundary and operations of the Proposal in the context of the greater DRWDD site.	Operation
0C	The existing Site Management Plan (SMP) would be revised to be consistent with the requirements of EPL 12903 and 5984 and the operations of the Proposal in the context of the DRWDD site. In particular the SMP would need to address: ▪ site layout and boundary changes ▪ odour containment and management ▪ dust suppression and erosion management ▪ flora and fauna preservation and protection ▪ management of chemicals and hazardous materials ▪ surface water management	Operation

No.	Mitigation measure	Implementation stage
	▪ weed eradication and monitoring ▪ groundwater and leachate monitoring and management ▪ acid sulphate soil management ▪ waste handling and management ▪ hazards and risk ▪ fire and incident management	
0D	The DRWDD Procedures Manual (2011), WDP14.30 will be reviewed and revised as necessary to ensure that odour vermin, litter, dust and noise complaints are recorded. When odour complaints are received, a site investigation would be conducted to identify the concern and the appropriate action will be undertaken.	Construction and Operation
0E	A detailed Landscape Plan would be provided prior to the construction of the Proposal (at construction certificate stage).	Construction
1.	**Noise**	
1A	All construction works would be undertaken within standard construction hours (between 7:00-6:00pm Monday to Friday, and 8:00am-1:00pm Saturday, with no work on Sundays or public holidays) with the exception of non-intrusive and non-audible activities which can be undertaken outside of these hours.	Construction
1B	Where practicable any considerably noisy works should be staged with consideration to the least sensitive time of day for the closest receivers, providing respite periods as necessary - particularly during works within the northern extent of the Proposal site.	Construction
1C	Where possible, construction would be scheduled to minimise multiple use (within a day) of the noisiest equipment or plant items where practicable.	Construction
1D	Where possible, plant items and work areas would be strategically positioned to reduce the noise emission to noise sensitive receivers.	Construction
1E	Where possible, machinery engine covers would be closed, equipment well maintained and silencers/mufflers used. Routine maintenance of major items of equipment that are significant construction noise contributors would be undertaken.	Construction and Operation

No.	Mitigation measure	Implementation stage
1F	Contractors and staff would be trained accordingly to create awareness and minimise potential noise issues.	Construction and Operation
1G	Community consultation with local residents would be undertaken periodically.	Construction and Operation
1H	A suitable complaints register will be maintained where possible. Should noise complaints be received, they should be immediately investigated and where appropriate, noise monitoring would be undertaken at the locations concerned to determine compliance with the determined construction noise limits. Reasonable and feasible measures would need to be implemented to reduce any noise impacts.	Construction and Operation
1I	A 10 km/hr on site speed limit would be imposed for all vehicles.	Construction and Operation
2.	**Air Quality**	
2A	During adverse weather conditions activities should be assessed and modified if required to suit the weather conditions.	Construction and Operation
2B	Where practical on-site vehicles and plant would be switched off when not in use.	Construction and Operation
2C	Vehicles will be maintained and serviced according to manufacturer's specifications.	
2D	Where practical, sealed roads will be cleaned from dust regularly.	Construction and Operation
2E	Where practical, and drying dry conditions unsealed haul roads will be watered to maximise opportunities for dust suppression.	Construction and Operation
2F	All vehicle loads would be covered when transporting material off-site.	Construction and Operation
2G	Vehicles will be restricted to designated route and will have suitable speed limits imposed.	Construction and Operation
2H	Exposed areas will be minimised, and water suppression will be used on exposed areas and stockpiles where required.	Construction
2I	The following procedures would be undertaken at the Transfer Facility to minimise odour emissions: ▪ Putrescible and non-putrescible waste stream(s) would be kept separate ▪ The internal floor area would be cleaned daily	Operation

No.	Mitigation measure	Implementation stage
	▪ The amount of putrescible waste would be minimised and no waste will be kept overnight at this location	
2J	The following procedures would be undertaken at the Organics Processing Facility and windrows to minimise odour emissions: ▪ The facility doors would be kept closed when not receiving material to limit the escape of fugitive odour from the building ▪ The odorous air in the tunnel composting system would be recycled to minimise air volume into the deodorisation process ▪ Ensure monitoring and review of the odour control system (biofilter) to ensure they are operating within the assumed operating specification ▪ Material would generally only be transferred to the windrows during periods of good atmospheric dispersion ▪ Material in the windrows would only be turned during periods of good atmospheric dispersion.	Operation
2K	A DRWDD site complaint logbook would be maintained. When odour complaints are received, a site investigation would be conducted to identify any unusual odour sources within the site boundary and take appropriate action as required.	Operation
2L	After the commencement of operations odour emission monitoring would be undertaken to confirm the assessment and modelling provided in the EIS. If any non-compliance with the criteria ('Approved Methods for the Modelling and Assessment of Air Pollutants in NSW', DEC 2005) is detected then a review of the operations and management options would be undertaken to ensure that odour emitted reaches acceptable levels.	Operation
2M	The SMP should be updated to include operational dust management measures: ▪ Dust suppression – covering dusty materials or applying a light water spray and regular sweeping of sealed surfaces to minimise dust ▪ If organic material arrives at the site in an excessively dry state, a water spray truck would be used on the material. The shredder would also include a water mist spray that would be activated to minimise dust generation.	Operation
2N	The current Site Management Plan will be updated for the Proposal Site. It is anticipated that this would include suitable odour management strategies and good housekeeping practices to ensure the potential for any odour impacts are reduced. The odour management strategies would include:	Operation

No.	Mitigation measure	Implementation stage
	▪ Maintaining an odour complaint logbook. When odour complaints are received, a Site investigation would be conducted to identify any unusual odour sources within the Site boundary and take appropriate action as required; ▪ Keeping putrescible and non-putrescible waste stream(s) separate at the transfer station; ▪ Ensuring the floor area of the transfer station is cleaned daily; ▪ Minimising the amount of putrescible waste left on-site at the transfer station and ensuring no waste is kept overnight; ▪ Keeping the FOGO facility doors closed when not receiving material to limit the escape of fugitive odour from the building; ▪ Recycling of odorous air in the tunnel composting system to minimise air volume into the deodorisation process; ▪ Transferring material to the windrows during periods of good atmospheric dispersion; ▪ Turing material in the windrows during periods of good atmospheric dispersion; ▪ Maintaining aerobic conditions through regular turning of the windrows; ▪ Balancing the Carbon to Nitrogen ratio within the windrows; ▪ Ensure moisture levels are optimum within the windrows; ▪ Ensure windrow heights are manageable; ▪ Immediate covering of all newly formed and turned windrows. ▪ Conducting odour monitoring for the bio-filter within the first six month of operation to ensure they are operating within the assumed operating specification; and ▪ Maintaining an odour complaint logbook. When odour complaints are received, a site investigation would be conducted to identify any unusual odour sources within the site boundary and take appropriate action as required	

No.	Mitigation measure	Implementation stage
3.	**Greenhouse gas**	
3A	Where practical, all machinery transporting construction materials to and from the site be filled to the maximum amount allowable, to reduce the number of movements required.	Construction and Operation
3B	The contractor is to limit idling time of plant and equipment whilst on-site	Construction and Operation
3C	The contractor will ensure that the only lighting left on overnight around the Proposal site office will be security or emergency/access lighting.	Construction and Operation
3D	Earthmoving equipment and on-site vehicles would be fitted with exhaust controls in accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2010*.	Construction and Operation
3E	Installation of high-efficiency motors would be undertaken where possible (for up to 3 per cent energy savings).	Operation
3F	Optimisation of operational activities and logistics to minimise diesel consumption	Operation
3G	Use of efficient plant and vehicles	Construction and Operation
3H	Continuously aerate FOGO piles using passive ventilation or air forced	Operation
3I	Where practical, optimise the mix porosity and structure and the size of compost piles to allow air circulation and prevent overheating	Operation
3J	Where practical, moisture levels in composting would be maintained at 40-60 per cent.	Operation
3K	Where practical, Prevent waterlogging of the base of composts and underlying hardstand areas.	Operation
4.	**Traffic and Transport**	
4A	Measures to improve the approach sight distance for vehicles approaching the intersection on Buckleys Road with Dunmore Road would be undertaken, including: Installation of signage to designate left turn lane only on the Dunmore Road north approach outer lane Delineate hold (stop) line on Buckleys Road extending inwards towards the intersection.	Construction and Operation

No.	Mitigation measure	Implementation stage
4B	All relevant traffic mitigation measures will be incorporated into traffic management plan that has been developed for the Proposal	Construction and Operation
5.	**Biodiversity**	
5A	All relevant flora and fauna mitigation measures will be incorporated into the Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP).	Construction and Operation
5B	Clearing of vegetation and excavation activities would not be undertaken during overland flow events.	Construction
5C	Stabilisation of disturbed areas adjacent to retained native vegetation, including revegetation where appropriate, would be undertaken as soon as feasible and reasonable after disturbance.	Construction
5D	If potential contaminated soil is to be excavated, including soil around the leachate pond, leachability testing would be undertaken.	Construction
5E	Depth of excavation would be minimised wherever possible.	Construction
5F	Adjacent areas of native vegetation to the south and south-east of the Proposal site will be protected by a planted buffer zone of Swamp Oaks and local native groundcover species. This buffer zone will extend and widen the existing natural and planted areas of Swamp Oaks currently bordering the north-east and part of the south-eastern boundary of the Proposal Site, and will also act as a visual buffer.	Construction
5G	Pre-clearance surveys for Green and Golden Bell Frogs will be undertaken on the site. Should the species be detected during these surveys, a management plan for GGBF populations on and adjoining the site would be developed and strategies for translocation and exclusion of frogs would be prepared in consultation with OEH who would also approve any translocation plan	Construction
5H	Staff working on site would be made aware of the potential presence of GGBF through site inductions. This would include identification guidelines and notification processes should the species be encountered.	Construction
5I	Soil stripped and stockpiled from areas containing known noxious and high priority weed infestations are to be stored separately and are not to be moved to buffer areas.	Construction
5J	Actions for weed management would be developed as part of the CEMP documentation. These actions would include, but not be limited to, the following:	Construction

No.	Mitigation measure	Implementation stage
	▪ Type and location of weeds of concern (including noxious weeds and high priority weeds as identified in the Illawarra Biodiversity Strategy) within the Proposal site. ▪ Identify sensitive receivers (such as native vegetation and waterways) within or adjacent to the Proposal site. ▪ Management and disposal of weeds (including Declared noxious weeds) which would be in accordance to requirements under the *Noxious Weeds Act 1993* ▪ Communication strategies to improve contractor awareness of weeds and weed management.	
5K	Any application of herbicide for weed management would be undertaken in accordance with the requirements of the *Pesticides Act 1999* and an herbicide that is appropriate to the sensitivity of the area would be used.	Construction and Operation
5L	Fauna microhabitat such as logs would be removed from areas to be cleared and relocated to suitable nearby habitat.	Construction
5M	Extent of clearing would be fenced with highly visible temporary fencing to ensure that clearing does not extend beyond the area necessary.	Construction
5N	Site inductions would include a briefing regarding the local fauna of the site and identification of protocols to be undertaken if fauna are encountered. Contact details would be kept on site for the local WIRES group and veterinarian if any fauna are injured on site or require capture and/or relocation.	Construction
5O	Clearance of native vegetation, particularly trees, would be minimised as far as is feasible and reasonable.	Construction
5P	The extent of vegetation clearing would be clearly identified on construction plans.	Construction
5Q	Any additional construction areas, such as site offices, construction stockpile locations and machinery/equipment laydown areas would be located within cleared or disturbed areas.	Construction
5R	Site rehabilitation would commence as soon as feasible and reasonable.	Construction
5S	Emergency response protocols and procedures for implementation in the event of a contaminant spill or leak would be clearly articulated in the Environmental Management Plans.	Construction
5T	Spill kits would be readily available during construction activities to allow for timely response to uncontained spills. Site inductions would include a briefing on the use of spill kits and spill response.	Construction
5U	Refuelling would be undertaken at least 40 metres away from any waterbody.	Construction

No.	Mitigation measure	Implementation stage
5V	Chemicals and fuels would be stored in bunded containers in site buildings.	Construction and Operation
5W	Frequent maintenance of construction machinery and plant would be undertaken to minimise unnecessary noise.	Construction and Operation
5X	Dust suppression activities would be undertaken where appropriate.	Construction and Operation
5Y	If any animal is injured, a local wildlife rescue agency (e.g. WIRES) and/or veterinary surgery would be contacted immediately.	Construction and Operation
5Z	Until the animal can be cared for by a suitably qualified animal handler, if possible minimise stress to the animal and reduce the risk of further injury by: ▪ Handling fauna with care and as little as possible. ▪ Covering larger animals with a towel or blanket and placing in a large cardboard box. ▪ Placing small animals in a cotton bag, tied at the top. ▪ Keeping the animal in a quiet, warm, ventilated and dark place	Construction and Operation
5AA	Site Management Plan documentation will include details relating to the monitoring, management and where necessary eradication of weeds, disposal of garden organics, and vehicle/plant weed wash down protocols if required.	Construction and Operation
5AB	Noxious and high priority weeds (as identified in the Illawarra Biodiversity Strategy) are to be targeted in weed control programs.	Construction and Operation
6.	**Surface water**	
6A	All relevant drainage, flooding and water quality mitigation measures will be incorporated into the Stormwater Management Plan (SWMP)	Construction and Operation
6B	The following structures would be established during site preparation ▪ Runoff will be directed south and west towards the perimeter access road. The new dirty water system will collect and control this runoff. Flows will be discharged by this system into the upgraded sedimentation pond to the south. ▪ Runoff is captured from the roof of the transfer station by the new clean water drainage system. Overflows from this system are collected and controlled by existing drainage channel “A”. A causeway and culverts over the	Construction and Operation

No.	Mitigation measure	Implementation stage
	realigned channel between the new extraction pit and the existing extraction area ▪ Runoff derived from the garden organics stockpile area will be directed south and west towards the perimeter access road. The new leachate water system will collect and control this runoff. Flows will be discharged by this system into the existing leachate collection system. ▪ The existing drainage system currently in place for the Revolve Centre will continue to be utilised under this proposal.	
6C	The CEMP will include suitable controls to minimise dirty water run-off and to reduce the impacts of erosion and sediment movement.	Construction
6D	An upgrade to the SMP must be undertaken, prior to operation, to address the SWMP and proposed drainage system.	Operation
6E	Site operators and contractors will be required to ensure that all surface water management works for both construction and operation are undertaken in accordance with the guidelines set out in Landcom (2004) *Managing Urban Stormwater: Soils and Construction'.* This includes implementation of proposed infrastructure and procedures/management as well as the required inspection, maintenance, staff training, monitoring and reporting.	Construction and Operation
7.	**Groundwater**	
7A	The CEMP would be prepared prior to the commencements of works and would include suitable controls to manage impacted groundwater during re-development works to ensure no impact to human or environmental receptors.	Construction
7B	As a number of the existing monitoring bores on the Proposal site are likely to be decommissioned in order to undertake construction activities, the bore network will be reviewed post-construction and redesigned according to *Australian Guidelines for Water Quality Monitoring and Reporting 2000* (ANZECC, 2000a), which provides a comprehensive framework and guidance for the monitoring and reporting of the quality of groundwater. Water quality onsite will be assessed against the *Australian and New Zealand Guideline for Fresh and Marine Water Quality 2000* (ANZECC, 2000b). The SMP, and EPLs (5984 and 12903) as necessary, would be updated accordingly, to capture these new recording locations.	Construction and Operation
7C	On-going monitoring of groundwater should be undertaken in accordance with the SMP and EPLs (5984 and	Operation

No.	Mitigation measure	Implementation stage
	12903).	
8.	**Soil and contamination**	
8A	Mitigation measures for construction, and potentially remediation would be incorporated into the CEMP. The CEMP prepared would include suitable measures to manage, handle and dispose of any contamination which is found on-site.	Construction
8B	If the area around BH9 is to be excavated and the material disposed of to landfill, further leachability testing would be undertaken.	Construction
8C	In relation to the presence of asbestos containing material in the vicinity of BH1, the following management options would be followed: ▪ If there is no proposed disturbance during the redevelopment, this material would remain undisturbed in situ. The location would be recorded on site management plan for future reference. ▪ If the material is to be disturbed, further testing would be undertaken in this area to confirm the presence of asbestos and delineate the extent prior to construction works commencing. Alternatively, the material within the fill layer from 1.5 to 1.9 metre below ground level can all be treated as asbestos impacted and managed accordingly during the Proposal.	Construction
8D	An acid sulphate soil management plan will be prepared as part of the CEMP for the Proposal.	Construction
8E	Should the acid sulphate soil management plan, prepared as part of the CEMP, identify any concerns that would need to be managed during operation, the SMP would be updated accordingly.	Operation
9.	**Waste management**	
9A	All relevant waste mitigation measures for the management of waste streams associated with the construction and operation phases will be implemented as per the waste management plan developed for the Proposal	Construction and Operation
9B	Measures to mitigate the effect of the construction waste streams should be incorporated into the Proposal's CEMP, including the following information: ▪ Characterisation of construction waste streams ▪ Procedures to manage construction waste streams, including handling, storage, classification and tracking	Construction

No.	Mitigation measure	Implementation stage
	▪ Mitigation measures for avoidance and minimisation of waste materials ▪ Procedures and targets for reuse and recycling of waste materials ▪ Roles and responsibilities for ensuring compliance with the WMP ▪ Training, monitoring, reporting and reviewing requirements to ensure compliance with the WMP.	
10.	**Hazard and risk**	
10A	Hazards associated with construction of the Proposal will be managed through the Hazard and Operability Study (HAZOP), which will be undertaken as part of the detailed design. Construction will be undertaken in accordance with the *Work Health and Safety (WHS) Act 2011*.	Construction
10B	Demolition of the structures identified in Section 5.4, will be undertaken in accordance with the *National Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2005).	Construction
10C	Prior to commencement of construction, a risk assessment must be undertaken by a competent person of the Proposal site prior to removal of any asbestos material from site. In accordance with the *Model Code of Practice – How to Manage and Control Asbestos in the Workplace* (Safe Work Australia, 2011), the assessment must comprise review and summation of all available information for the Proposal site, including the: ▪ Asbestos risk assessment/risk register ▪ Asbestos management plan ▪ Implementation of the asbestos management plan to date ▪ A confirmation of controls to be implemented where construction works will impact on asbestos materials.	Construction
10D	An asbestos management plan will be developed for the Proposal containing a risk assessment undertaken in accordance with WorkCover NSW *Code of Practice for the Storage and Handling of Dangerous Goods (Code of Practice) 2005*. Where the management plan recommends the removal of asbestos from site all works will be undertaken in accordance with the *Model Code of Practice – How to Manage and Control Asbestos in the Workplace* (Safe Work Australia, 2011), including the development of an asbestos removal control plan and an emergency plan.	Construction and Operation
10E	In the event of an emergency or incident, the general management strategy that will be adopted to minimise the risk to the public and all personnel in the event of an emergency would include:	Operation

No.	Mitigation measure	Implementation stage
	▪ Providing adequate resources including staffing and fire-fighting equipment ▪ Training of staff so that a high level of preparedness is maintained by all people who could be involved in an emergency ▪ Periodic review and update of emergency procedures for the Proposal site.	
10F	Emergency response and incident management protocols for the construction and operation of Proposal site would be developed collaboratively with the construction contractor and site operator and in consultation with the NSW police force, NSW Fire Brigade and the Ambulance Service of NSW. Emergency response and incident management protocols will cover the following types of emergency or incident: ▪ Workplace health and safety ▪ On-site spills or leaks ▪ Off-site discharges ▪ Hazardous materials/dangerous goods ▪ Flooding ▪ Fire and bushfire ▪ Road incidents.	Construction and Operation
10G	In the event that there is a liquid or solid spill in the transport of the waste to the facility, or at the facility itself, the emergency response, outlined in the Emergency Management Plan for the site, would be followed.	Construction and Operation
10H	In the event of contamination being detected a Groundwater or Surface Water Contingency Plan will be developed based on the nature and degree of contamination detected.	Construction
10I	Currently solid spills from overloaded heavy vehicles are managed through the procedure WDP9.04 Overloaded Heavy Vehicles Entering and Leaving the Depot. This will be reviewed and updated for the Proposal site.	Operation
10J	Appropriate fire alarms and firefighting equipment will be provided onsite for an initial emergency response and will include a deluge system, fire extinguishers, hoses and reels. The design and installation of on-site fire hydrants will be in compliance with AS 2419.1-2005 *Fire hydrant installations - System design, installation and commissioning*.	Operation

No.	Mitigation measure	Implementation stage
10K	At the Proposal site, an area will be designated for the management of 'hot loads' and fire contained. A procedure will be developed for the management of hot loads.	Operation
10L	Currently the DRWDD *Procedures Manual* (2011) details the procedure for fire prevention, control and reporting (WDP14.37). This procedure would be reviewed, and updated as necessary, to meet the needs on the Proposal site.	Operation
10M	All operations and activities occurring at the Proposal site will be carried out in a manner that will minimise the emission of dust from the premises. Trucks entering and leaving the site that are carrying loads will be covered at all times, except during loading and unloading. In addition, all the roads on the Proposal site will be sealed, except for a short section between the tunnel composting building and the windrow composting, and adjacent to the self haul storage areas.	Operation
10N	Identification and attention to odorous waste loads will be managed by the transfer facility attendants. The DRWDD *Procedures Manual* (2011), which details the procedure dust control (WDP14.38), will be revised to address the process for the Proposal site.	Operation
10O	The DRWDD *Procedures Manual* (2011), which details the procedure for processing complaints (WDP14.30), will be reviewed and a complaints log will be maintained to address potential community concerns regarding the Proposal site.	Construction and Operation
10P	A number of measures will be implemented to minimise the risk of vehicular incidents on the Proposal site. These include: ▪ Clear signposting and road marking of vehicle movement routes and non-permissible areas ▪ Signposting of slow speed limits ▪ The placement of physical barriers at the loading bays and push pit in the Transfer Facility ▪ Separation of heavy vehicle (truck) movements from private vehicles movements, where possible ▪ Oversight of vehicle movements in the transfer facility by attendants.	Operation
10Q	The DRWDD *Procedures Manual* (2011) which specifies the procedures in relation to small vehicles (WDP9.00) and heavy vehicles (WDP9.02) entering and leaving the depot will be reviewed and updated as necessary.	Operation

No.	Mitigation measure	Implementation stage
10R	Any general solid waste (putrescible) and/or general solid waste (non-putrescible) received for storage or recovery or processing at the premises will be assessed and classified in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (DECC, 2008).	Operation
10S	Waste will be screened in accordance with the reviewed and revised Waste Screening and Tipping Supervision procedures presented in the Operational Procedures Manual of the SMP. Unacceptable waste may be detected and intercepted: ▪ at the weighbridge ▪ during the unloading of waste within the transfer facility by either the attendants or via CCTV.	Operation
10T	The DRWDD Procedures Manual (2011) currently includes a number of procedures to ensure only permissible waste is accepted at the depot, including: ▪ WDP9.03 Acceptance of Commercial Waste ▪ WDP9.07 Acceptance of Construction and Demolition Waste ▪ WDP9.09 Approval of Applications for Disposal of Waste from Industrial Sources ▪ WDP9.10 Acceptance of Waste from Industrial Sources ▪ WDP9.11 Approval of Applications for the Disposal of Asbestos Sheeting ▪ WDP9.12 Acceptance of Asbestos Sheeting ▪ WDP9.15 Acceptance of Pesticides and Chemical Drums ▪ WDP14.45 Orphan Hazardous Waste. All the above procedures will be reviewed and updated for the Proposal site.	Operation
10U	Diesel fuel (C1- Combustible liquid) will be stored away from class 3PGI, II or III flammable materials in a self-bunded diesel tank compliant with *AS 1940-2004 The storage and handling of flammable and combustible liquids*.	Operation
10V	The transportation of hazardous waste to or from the site will be undertaken in compliance with the Protection of the Environment Operations (Waste) Regulation 2005. Accordingly, a consignment number will be obtained, waste data forms completed and copies provided to the waste transporter.	Operation

No.	Mitigation measure	Implementation stage
11.	**Aboriginal heritage**	
11A	If unexpected Aboriginal sites or objects are located during the proposed works, all work in the area must stop immediately and the OEH, Local Aboriginal Land Council, and a qualified archaeologist must be contacted. Further assessment and approvals may be required before works can commence.	Construction
11B	If human remains are found, work should cease, the site should be secured and the NSW Police and the OEH should be notified.	Construction
12.	**Non-Aboriginal heritage**	
12A	Should unexpected relics which are identified as having European heritage significance by the excavation director, be exposed, work would be required to cease and the Heritage Branch (of OEH) would be informed, to determine the appropriate management strategy. The duration of this would depend on the integrity and significance of the relic.	Construction
12B	Should items need to be disturbed (exposed, moved, damaged or destroyed), this would not be undertaken until an excavation permit is received under Section 139 of the Heritage Act.	Construction
12.	**Visual amenity**	
12A	Tree cover would be planted and maintained along the eastern boundary of the Proposal site to visually screen the Proposal from the surrounding area.	Construction
12B	Suitable material and finishes, including those which are no reflective and blend with the surrounding landscape, would be selected for the buildings and structures which are part of the Proposal.	Construction
13.	**Social and economic**	
13A	On-going consultation will be undertaken with the surrounding community and commercial sector during both construction and operation.	Construction and Operation
13B	The existing DRWDD Procedures Manual (2011), in association with the CEMP will be used to record complaints or feedback during the construction period. Prior to operation, this Procedures Manual (2011), WDP14.30 will be reviewed and revised as necessary to ensure that odour vermin, litter, dust and noise complaints are recorded. When odour complaints are received, a site investigation would be conducted to identify the concern and the	Construction and Operation

No.	Mitigation measure	Implementation stage
	appropriate action will be undertaken.	