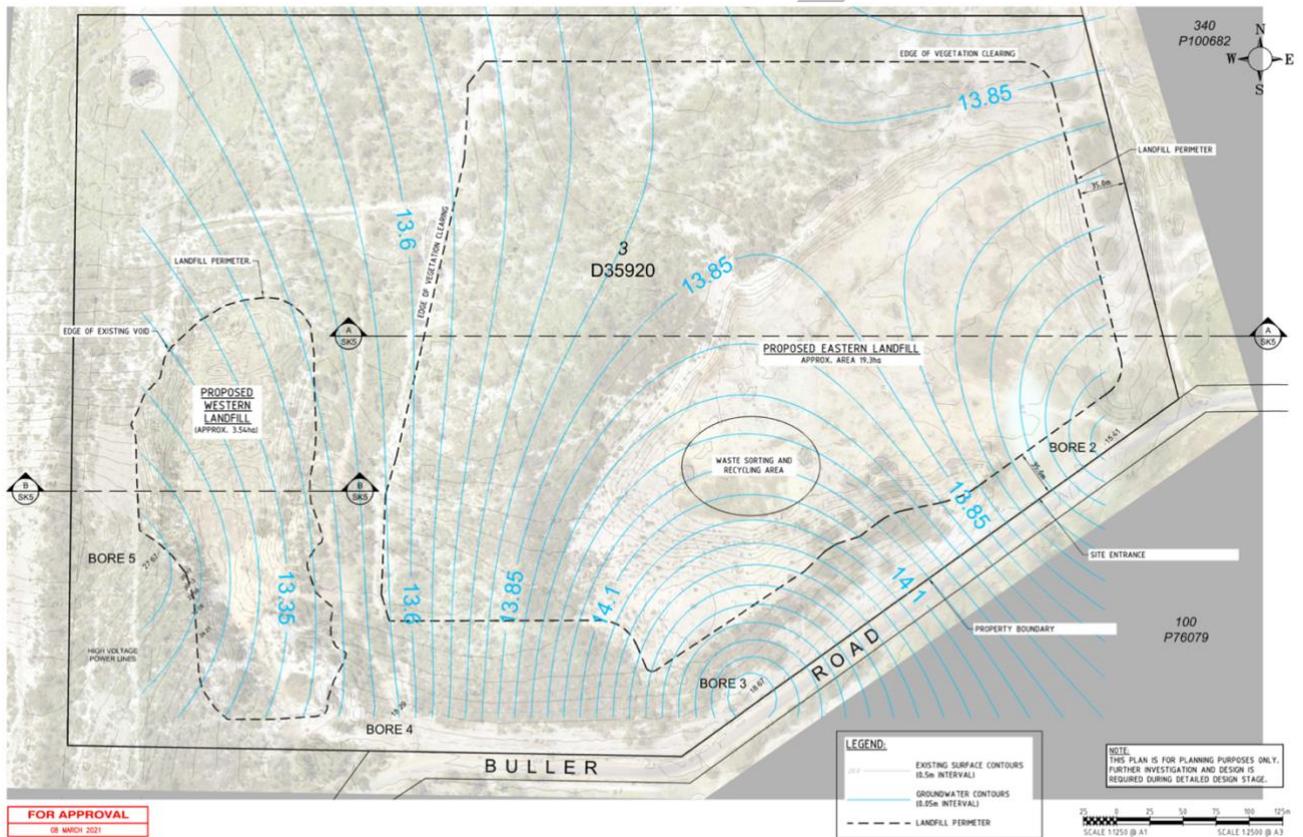


PEEL LANDFILL FACILITY

LOT 3 BULLER ROAD, WAROONA

FACILITY WASTE MANAGEMENT PLAN



Prepared for

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DRAFT

1. Introduction

Note - This draft Facility Management Plan has been developed to provide information on the typical operating methodology for the proposed development. Once the facility has received Planning and Environmental Approvals, this Plan is to be reviewed and amended to incorporate relevant Regulatory Approval conditions.

This Facility Waste Management Plan has been compiled as a guide to the ongoing development and operation of the waste management activities on site in order to ensure that the facility is operated in a safe and environmentally sustainable manner to maximise the efficiency of the operation as well as minimise the environmental impact on the surrounding area.

These waste management activities on site include a Class I inert landfill facility and a waste sorting and recycling operation. There may be a scenario where only the Class I landfill is operational, without there being a sorting and recycling facility on site.

2. Operating Methodology

AMG WA Pty Ltd (AMG) operates an existing sand quarrying on site. This operation has previously been carried out under existing approvals granted by the Shire of Waroona (Development Approval TP1770 and Extractive Industries Licence EI 34) and the Department of Water and Environmental Regulation (DWER) Clearing Permit (*insert Clearing Permit number once issued*). The Class I landfill will be progressively developed within the void created by the sand quarrying operation and the waste sorting and recycling operation will utilise available space on site for the intended activities and material stockpile.

The sand quarrying operation provides a necessary primary resource to the region and will result in a large void being formed in the landscape. The waste sorting and recycling operation provides an opportunity to recycle substantial quantities of material that would normally be destined to landfill. In addition, the sorting operation enables the receipt of a range of mixed waste to separate inert waste for the on-site landfill with the residue being moved offsite to Class II landfill facilities. The Class I landfill operation supports the recycling operation and provides a valuable resource to the region, whilst backfilling the void formed by the quarrying operation. The intention being to return the site back to its pre-sand quarrying profile.

Following the capping and rehabilitation of the finished waste profile, the landform will be returned back to its original shape with similar native vegetation planted on the landfill cap.

3. Landfill Siting

Lot 3 Buller Road is within the Shire of Waroona, approximately 140 km south of Perth and 8 km west of the town site of Waroona. The property is approximately 218 ha in size. Approximately 9 ha has previously been cleared of natural vegetation for sand extraction, an additional 10 ha is approved for clearing for further sand extraction and the remainder of the site (approximately 190 ha) is either good quality natural bush or being rehabilitated into natural bush.

The landfill is located in the existing sand extraction pit. The sandpit is located on the eastern edge of a dune ridge with low-lying agricultural land to the north, south and east. There is no stormwater catchment upstream of the landfill location.

The nearest residential dwellings are located approximately 1.1 km to the north and 1.2 km to the south and north east.

Based on the fact that the landfill is located within an existing extractive industries site, landfilling will effectively backfill and rehabilitate the site and there are no neighbours within close proximity of the landfill site. Consequently, the landfill is well sited.

Within the site, there are two landfill areas, one being the smaller western landfill area and the other being the main landfill, the location of these being a function of past and future sand extraction.

4. Site Access

Access to the site is gained from the south east corner, directly off Buller Road.

5. Separation Distances

In accordance with the Draft Guidance Statement – Separation Distances (*Department of Environment Regulation - August 2015*) Class I landfill developments (Category 63 facilities) require a 300 m separation distance between the landfill and the nearest residential property. Noise and dust being the emissions for considerations.

For the waste sorting and recycling operation (Category 62 Solid Waste Depot), there is a 200 m separation distance, with noise, dust and odour being possible environmental emissions to consider.

As part of the waste sorting and recycling operation, the crushing of inert building material falls into a Category 13 prescribed activity, which requires a 1 km separation distance, with noise and dust being the possible environmental emissions to consider.

The nearest residential property is a farmhouse 1.1 km north of the proposed edge of the landfill. There are also two properties south and north east that are 1.2 km from the landfill. Consequently, there is sufficient separation distance from all waste management activities.

The landfill layout also incorporates a 35 m internal buffer zone from the edge of the landfill to the property boundary. This buffer zone enables the maintenance of a visual screen, vehicle access around the edge of the landfill and a minor buffer for dust and noise environmental emissions.

6. Landfill Design

Although there is no regulated landfill design standard with Western Australia, where applicable, the landfill design has been based on the Victorian EPA design guidelines (*Siting, Design, Operation and Rehabilitation of Landfills (August 2016)*). Accordingly, this design typically includes the following aspects:

- Landfill base a minimum of 2 m above the highest groundwater level;
- Adequate internal buffer zone and external separation distance; and,
- Site perimeter fencing.

The base of the landfill will follow 2 m above the local groundwater level, which will be regularly monitored to ensure that the minimum 2 m attenuation zone is maintained.

The landfill side slopes will typically be at a slope of 1 vertical in 2 horizontal; however, this side slope will be varied in accordance with natural angle of repose of the soil and site safety considerations.

The Top of Waste Design levels typically follow the pre-sand excavation levels.

7. Site Layout

7.1. Landfill

The shape of the landfill is determined by the shape of the existing and future proposed sand excavation. The sandpit shape is governed by the footprint of bush clearing allowed within the site clearing permit.

The site layout also includes the following landfill related infrastructure:

- Site access roads;
- Site office and staff amenities are located with the site entrance;
- Groundwater monitoring bores; and,
- Site fencing.

Appendix No. 1 – Site Layout Plan and **Appendix No. 2 – Sections** provide detail on the design of the landfill facility.

7.2. Waste Sorting and Recycling

The waste sorting and recycling activity will be carried out within the landfill design footprint, utilising areas of the site where sand extraction has been completed and there is a raised perimeter bund between the operation and the site boundary to act as a visual and environmental screen.

As the sand extraction and landfill develop around the site, the waste sorting and recycling activity will be relocated to other areas to not negatively impact the other site activities. The relocation of this activity will be minimised to reduce unnecessary effort on site.

Appendix No. 1 – Site Layout Plan provides an indicative location of the waste sorting and recycling activity. With this operation occasionally being relocated around the site, it will move beyond the indicative location identified.

8. Landfill Available Airspace

The available airspace achieved on site will be as a direct result of the extent of sand quarrying undertaken in advance of the landfill operation and the need to remain a minimum of 2 m above the highest groundwater level.

Based on past and future available sand resource on site it is estimated that there is approximately 1.22M m³ of available landfill airspace on site. This airspace is achieved in two landfill areas, one being the smaller western landfill area (250,000 m³) and the other being the main landfill (970,000 m³).

The calculation of the available landfill airspace is based on side slopes of 1 (V) in 2 (H).

9. Sand Extraction and Waste Management Interaction

The sand quarry activity has been ongoing for many years, with the sand extraction creating the void into which the landfill is progressively developed.

The sand extraction is programmed to continue from the eastern side of the existing pit in an anti-clockwise direction around the site. Based on this progression plan, the landfill will be initially developed to the east of the site entrance and will follow behind the sand extraction operation.

There will always need to be sufficient space between the two operations to allow for the sand removal and waste delivery vehicle to gain easy access to the relevant parts of the site. The responsibility for adequate available landfill airspace is the responsibility of the sand quarrying operation.

The need for landfill airspace will be dependent on the incoming waste quantity. The sand operation needs to be aware of the future anticipated landfill airspace requirements and focus the sand extraction accordingly.

There are significant synergies between the two operations, which make them highly compatible. Due to the sporadic nature of the sand removal, the sand operation personnel are able to assist on the landfill during periods of downtime. There is also the sharing of mobile equipment and other site infrastructure.

The waste sorting and recycling activity is a flexible operation and can be relocated to any flat area on site. This operation simply has a space requirement and can accommodate the needs of both the sand operation and landfill operations. Ideally, this activity remains in the initial setup location, as this area has been cleared of sand reserve and is intended to also be the last area for landfilling; hence, the waste sorting and recycling activity could remain in this location right up until the area is finally landfilled.

Due to all of the operations being owned and operated by the same entity, there is not anticipated to be any conflict between these two operations.

10. Bush Clearing

All bush clearing on site will be as a consequence of the sand quarrying operation and covered by the appropriate Clearing Permit issued by the DWER.

There is no requirement for any additional bush clearing as a result of the waste management activities.

11. Landfill Progression

The landfill will be progressively developed in the void created by the sand extraction operation. There will be no specific landfill cells developed, as there is no cell-related construction requirement.

The landfill will simply be progressively expanded in an anti-clockwise direction, with the expansion area being determined to minimise the exposed area of active landfill, while providing adequate operational space on the landfill surface.

The landfill airspace will be progressively developed as the sand quarrying operation progresses well ahead of the waste placement activities. The sand will be excavation down to a minimum of 2 m above the highest natural groundwater table occurring on site. Consequently, there will be no specific excavation related to the landfill base development.

12. Site Infrastructure

12.1. Site Office, Crib Room and Ablutions

The site office, crib room and ablutions are accommodated at the site entrance for the convenience and use of both the sand quarrying and waste management operations. The number of personnel working on site will determine the extent of the available facilities. Over the life of the two operations, it is likely that the number of site personnel will fluctuate according to the level of activity on site. It may be that the site amenities will need to be increased or improved to handle the increased usage.

12.2. Vehicle Parking and Bin Storage

Vehicle parking is provided around the site entrance infrastructure. This parking is available for employees, contractors and customers.

The only vehicles that are allowed to park on site overnight are the mobile plant associated with the sand quarrying and waste management operations. No customer vehicles are allowed to park on site overnight.

As part of the waste management operations, there is a need to store customer's waste collection bins on site. Space is to be allocated for this purpose, based on demand. The bin storage area will be moved around to suit space availability and other activities on site. The preference is that the bin storage area is behind a visual screen such that the bins are not easily visible from the site boundary.

This dedicated area is to be specifically demarcated for the intended use of bin storage. Only empty waste bins will be allowed to be stored on site.

Any customers that leave empty bins on site are to be advised in writing that AMG does not accept any liability for any damage or loss to the customer's property.

12.3. Fencing

It is a requirement of the landfill operation that the active landfill site have adequate perimeter fencing to restrict access and prevent livestock from entering the site.

13. Occupational Health and Safety

All site activities are to be carried out in a safe and structured manner to ensure that occupational health and safety is the primary consideration on site and the well-being of all users of the site including operators and customers is ensured.

The sand quarrying activity is governed by Mine Safety Regulations, while Occupational Health and Safety Regulations govern the waste management activities. Both sets of regulations need to be considered when undertaking activities on site.

14. Staffing and Hours of Operation

The landfill site is to be permanently staffed during all open hours. The site is not to be left unattended while the entrance gate remains unlocked.

The facility may be operated over the following times (maximum opening hours):

- Monday to Friday – 7.00 to 17.00
- Saturday – 7.00 to 13.00
- Sunday and Public Holidays – Closed

The level of activity on site will determine the actual hours that the facility will be open for sand extraction and waste management activities. There may be circumstances where the facility is not open during the above available operating hours.

Appropriate signage will be maintained at the main entrance to the site providing details of the facility operating hours and contact information for after hour's incidents.

15. Incoming Waste Stream

15.1. Landfill

The landfill is a Class I facility, with the incoming waste type being determined in accordance with the DWER *Landfill Waste Classification and Waste Definitions 1996 Amended December 2019*. This typically includes:

- Clean fill.
- Building rubble.
- Vehicle tyres.
- Plastics.
- Asphalt.
- Casting and blasting sand.
- Asbestos.

Market forces will determine the quantity of incoming waste. Over time, it is anticipated that the annual waste quantity will gradually increase, as the existence of the facility becomes more widely known, other Class 1 landfills reach maximum capacity and close down and there is increased development south of the Perth metropolitan area.

15.2. Waste Sorting and Recycling Facility

The waste sorting and recycling facility will receive a wide range of Commercial and Industrial (C&I) and Construction and Demolition (C&D) waste. It is unlikely that the facility will receive municipal waste.

Again, market forces will determine the quantity of incoming waste. Over time, it is anticipated that the annual waste quantity will gradually increase, as the existence of the facility becomes more widely known and there is increased development south of the Perth metropolitan area.

16. Waste Acceptance

16.1. Waste Source

The vast majority of customers will be commercial waste collection companies, demolition companies and construction companies. It is anticipated that there will be only small quantities of “general public” waste delivered to the site. The general public typically generates Class II waste, which will be delivered to the nearby Shire of Waroona landfill site.

Due to the relatively low Class I tipping fees, it is not economical to drive a load of Class I waste from the Perth metropolitan area. It is anticipated that the maximum economic haul distance will include the Shire of Waroona and possibly the neighbouring shires.

There is the potential to attract Perth Metropolitan waste for the sorting and recycling facility, which in turn, could produce a Class I residue to the landfill.

16.2. Waste Quantity

Due to the somewhat remote location of the site, it is not anticipated that there will be significant inert waste quantities available for landfilling in the area. However, in time, as the Shire of Waroona expands and the Mandurah area develops further south it is anticipated that waste quantities will increase proportionally.

Initial estimates are that the landfill will receive approximately 100,000 m³ of Class I waste material per year for the first few years. Thereafter it is anticipated that the annual landfill volume will gradually increase to 200,000 m³ per year.

The quantity of waste received at the sorting and recycling facility will be highly dependent on the ability to attract Perth Municipal waste streams. Again, it is anticipated that the facility throughput quantity will start off being relatively low and progressively increasing over time. Initially, it is anticipated that 75,000 m³ per year of waste will be received, with the potential to grow to 150,000 m³ per year.

16.3. Waste Inspection

On arrival at the site, the following activities are to be undertaken in dealing with each waste load:

- Each load is to be visually inspected prior to acceptance by landfill operations personnel. Inspections will be carried out in order to identify:
 - Waste type.
 - Waste quantity.
 - Waste origin.
 - Unacceptable waste types.
 - Asbestos (to confirm appropriate handling procedures).

It is noted that this is not a comprehensive inspection of the bin contents, as the vast majority of the load will be obscured by the waste bin.

- Waste deemed acceptable will be allowed to progress to the sorting and recycling facility or the landfill waste tipping area.
- Waste deemed unacceptable will not be allowed to progress onto the site. Depending on the type of unacceptable waste, the material would either be directed to the Shire of Waroona Class II landfill facility or another appropriate waste disposal location.
- For acceptable loads that are instructed to progress to either the sorting and recycling facility or the landfill tipping area, there is a further opportunity to inspect the load once it has been unloaded (improved inspection opportunity).

On unloading, the facility operator is to inspect the load while it is being tipped. This is the most comprehensive inspection method as this provides the maximum opportunity to identify any non-conforming waste. Should any non-conforming waste be identified, it will be reloaded back into the customer's bin/vehicle and immediately removed from site.

With the vast majority of incoming loads being from regular customers and from known sources, there is a large degree of control over what is being delivered to the site.

There may be the odd "casual customer" utilising the site. In these instances, the loads are typically small loads that are easier to inspect. In addition, added care is to be taken to ensure that any unacceptable waste is identified during the tipping operation so that the customer can be reloaded while still on site. Once a "casual customer" leaves the site, it is extremely difficult to track them down (as opposed to regular customers) and there is minimal recourse that can be taken.

16.4. Landfill Levy

If any waste is received from the metropolitan area and is landfilled on site, there will be a need to account for the waste volume, as there will be a liability associated with the payment of the landfill levy. The DWER will require some mechanism for clearly identifying the metropolitan waste quantity. This may be able to be determined by waste quantity surveys and utilising the ratio of metropolitan waste to non-metropolitan waste to determine the volume of metropolitan waste landfilled. Another option being to account for the volume of waste being delivered by estimating the quantity in each load. This is, however, subjective and potentially relatively inaccurate.

If waste is received from the metropolitan area, an agreed methodology of determining the quantity of waste will need to be worked out with the DWER.

16.5. Record Keeping

A register of waste acceptance will be maintained. This register will record the following details of each load entering the site:

- Date and time of entry.
- Customer name.
- Vehicle registration number.
- Source Sector (Municipal; Commercial and Industrial; or Construction and Demolition).
- Type of waste delivered.
- Quantity of waste delivered – bin/vehicle volume.
- Disposal location (asbestos waste only)
- Rate charged.
- Total charge for the load.
- Load destination – sorting and recycling facility or landfill.

Should unacceptable/non-conforming material be delivered to site, the load will be rejected and sent off site. This event will be recorded in the register of waste acceptance, including the material type that was rejected.

If the invoicing system utilised on site is able to include all of the above information, then there is no need to keep a separate register, the invoicing system will suffice as ample records of landfill activity. In this case, the occurrence of unacceptable/non-conforming waste can be recorded in the site diary or on a cancelled docket.

17. Non-conforming Waste Types

Non-conforming waste could be the following:

- Landfill Facility
 - A load of waste where the significant portion is above Class I waste classification.
 - A load of waste where the minor portion is above Class I waste classification, but the non-conforming portion is unable to easily be sorted/picked out of the load.
 - Any load with hazardous waste in it (irrespective of the portion of hazardous waste).
 - Liquid waste (all types).
- Sorting and Recycling Facility:
 - A load that has minimal recyclable material content.
 - A load containing asbestos.
 - Any load with hazardous waste in it (irrespective of the portion of hazardous waste).
 - Liquid waste (all types).

Waste entering the site that is identified as non-conforming is not to be allowed to progress beyond the gatehouse and will be rejected. Depending on the type of non-conforming waste material, the material is to either be directed to the nearby Shire of Waroona Class II landfill facility or another appropriate waste disposal location. Under no circumstances is the non-conforming waste to be allowed to progress to the sorting and recycling facility, the landfill tipping area or be stored on site.

If during the sorting and recycling process or landfill waste placement exercise non-conforming waste is identified and the customer has departed the site, the non-conforming waste is to be separated and appropriately stored (typically stockpiled or placed in a waste bin). If the customer can be identified, then the customer is to be instructed to collect the waste and remove it from site. If the customer cannot be identified, then the facility supervisor will make arrangements with a commercial waste collection company and pay for the load to be sent to the appropriate class landfill for ultimate disposal. Arrangements are to be made as soon as possible, but within 48 hours of the waste being discovered.

With regards to hazardous waste, it is highly unlikely that hazardous waste will be delivered to site, but in the event that hazardous waste was discovered, and the customer was unknown, then, if necessary, a specialist waste removal contractor is to be immediately called in to remove the waste and any contaminated soil on which the hazardous waste was laid. If the hazardous waste has been spread out, it is still to be scooped up by the loader and managed as described above.

18. Waste Handing

18.1. Tipping Location

There is a dedicated waste tipping area for the sorting and recycling facility. Depending on the material type being received, there may be a number of locations where different material types are unloaded.

The waste tipping location within the active landfill area will be determined by the following:

- Progress of the landfill either horizontally or vertically.
- Final waste profile.
- Seasonal weather:
 - Wet weather – landfill on higher ground.
 - Dry weather - landfill anywhere.
- Wind direction (to reduce litter generation).
- Vehicle access:
 - Tipping area.
 - Turning circle.

There may be a situation where a specific load of waste is tipped in a different location and not in the area of the active tip face:

- Waste material with high clay content is to be placed away from the landfill area and potentially used in the final capping of the waste mass.
- Used car tyres are to be spread out throughout the waste mass; hence a large load of tyres will need to be spread out on the landfill floor in areas of future waste placement so that the landfill will eventually pass over the top and cover them.
- Asbestos is to be placed in specific areas within the landfill.

All other waste will be placed and compacted within the landfill active tipping area in order to achieve the final design profile of the waste mass.

The placement of waste is to take into account the physical and chemical properties of the waste. Sandy waste should be placed on top of course waste in order to fill voids around the course material. Acidic waste is not to be placed with alkaline waste (and vice versa). Flammable waste (plastic and vehicle tyres) should be evenly distributed throughout the waste mass to reduce the chance of a large, uncontrolled fire within the landfill.

The landfill will undergo progressive closure; hence, all waste will be placed in specific areas to complete the final design waste profile as soon as possible in order to allow the capping and closure of portions of the landfill to occur as soon as possible.

18.2. Waste Inspection

Prior to the waste arriving at the sorting and recycling facility or the landfill tipping face, it would have been inspected on entry to site; however, this is not a comprehensive inspection as the vast majority of the waste material is hidden by the bin. Consequently, it is important that each load be inspected as it is being tipped onto the tipping area. This is the ideal situation to identify any non-conforming waste types.

18.3. Waste Sorting

18.3.1. Landfill Facility

Due to the stringent requirements of Class I waste acceptability, the majority of incoming waste loads will contain some degree of Class II (and potentially above) waste. These loads are to be spread on the active tipping face and the non-conforming waste picked out of the load and placed in a dedicated waste bin for subsequent removal to the appropriate disposal location.

Waste sorting is to constitute minimal picking of larger objects out of the load. It is not to include screening or processing of the waste. If a load is not able to be easily cleaned up to the appropriate Class I standard, the complete load is to be rejected and sent offsite.

18.3.2. Sorting and Recycling Facility

Should a comprehensive waste sorting and recycling process be developed on site, then all non-Class I waste loads will be processed through the waste sorting and recycling facility, with the output residual Class I material being sent to the on-site landfill. All residual Class II output will be sent offsite to an appropriate landfill facility.

18.4. Landfill Operations

18.4.1. Waste Placement and Compaction

18.4.1.1. General Waste

On arrival at the active tipping area, the waste load is to be tipped as close to the active landfill face as possible (to minimise the pushing distance). Following inspection and confirmation of acceptability for landfilling, the load is to be pushed into the landfill. The new waste is to be spread in layers of approximately 500 mm thick and tracked over a number of times (minimum three passes) to compact the layer. Care is to be taken to ensure that the complete surface area of the new waste layer is compacted. Subsequent layers are then placed on top of this compacted layer.

18.4.1.2. Course Waste

If the incoming waste consists predominantly of course material, then the load should be spread in a single 500 mm layer and compacted. Where possible, subsequent sandy loads should be placed on top of the course load so that the finer material can fill the voids in the coarse layer below. The sandy load is also compacted by a minimum of three passes of the compaction machine. This process will ensure optimisation of the landfill waste density as well as minimise airspace consumption and future waste settlement.

18.4.1.3. Large Waste

If a load of large items is received (eg. concrete blocks), it is preferential that the large items simply be placed in the active tipping area and spread out to allow space between the large pieces. Subsequent loads of general waste are to be placed between and around the large items to fill the area. Due to the shape of the large items, it is unlikely that the area immediately surrounding the large items will be able to be compacted. Ideally, this area is filled with sandy waste as this type of waste attains a higher density with minimal compaction.

18.4.1.4. Tyres

Loads with the odd used vehicle tyre can be treated in the same manner as "General Waste" above.

Loads that contain significant numbers of vehicle tyres are to be spread in a single thin layer ahead of the active tipping face. It is not necessary to compact the layer of tyres as little to no compaction is achieved in tracking over tyres. The landfill progression will ultimately cover over the layer of tyres. Large, concentrated volumes of used vehicle tyres are to be avoided in the landfill as these are potential fire hazards and also form a zone of instability within the waste mass.

18.4.1.5. Asbestos

As per the requirements of the landfill operating licence, all asbestos loads are to be placed in a specific area within the landfill. The coordinates of this area are to be determined and kept as part of the facility operating records.

The handling of asbestos material is to be as per the **Asbestos Management Procedure**.

18.4.2. Waste Covering

Cover is applied to the landfill surface to achieve the following:

- Surface stability.
- Surface trafficability.
- Fire control (minor issue).
- Litter control (minor issue).
- Vermin control (minor issue).

Being an inert landfill, the vast majority of material received is effectively inert "cover material". Hence the landfill will effectively be continuously covered simply by the landfilling of general waste. It is not anticipated to specifically import cover material, as the incoming waste stream will serve this purpose.

18.4.3. Airspace Consumption

It is important to monitor airspace consumption in order to assess the waste density and rate of consumption. This information is used to compare with initial assumptions on landfill site life span and to forecast the future life span of the landfill.

As a minimum landfill waste volume surveys should be undertaken biennial (every two years).

18.4.4. Waste Profile

The final design waste profile has been developed to return the site to its pre-sand extraction profile. When the waste placement gets close to the final surface level, survey pegs are to be positioned around the active tipping face to indicate to the plant operator how much fill needs to be placed on the landfill to achieve the desired profile. An allowance is to be made for the inclusion of a landfill cap on top of the final waste profile.

18.4.5. Buffer Distances

No landfilling is to occur within 35 m of the site boundary.

18.5. Sorting and Recycling Operations

The sorting and recycling facility has the potential to incorporate a wide range of materials processing activities. Not all of these will necessarily occur on site simultaneously. The site may be progressively developed in complexity as the quantity of waste material being received increases or as there is a requirement to separate particular material types.

18.5.1. Waste Receival

Typically, there is a single waste receival area; however, should the layout of the various processing activities require, there could be dedicated tipping locations for specific waste types around the facility.

18.5.2. Coarse Sorting

On delivery of the waste material, an excavator with a grab attachment sorts through the material to remove any large items of either waste or recyclable materials. This material is then stockpiled separately.

The excavator is also used to spread out some loads that are required to be inspected in accordance with the **Sorting and Recycling Facility Asbestos Management Procedure**.

Appendix No. 3 - Sorting and Recycling Facility Asbestos Management Procedure provides a copy of the Sorting and Recycling Asbestos Management Procedure.

18.5.3. Screening

Following the removal of the large coarse materials, the excavator then loads the remaining materials into the vibrating screen, which further removes larger items from the incoming waste stream.

The large items are either discarded as waste residue or passed through a further manual sorting process to remove recyclable materials.

The screened materials are then passed through a trommel screen to remove the finer material (predominantly sand), with the sand going to stockpile and the remaining materials passing through the next stage of processing.

18.5.4. Manual Sorting

The coarse material from the screen is then passed through a picking station where selected recyclable materials and waste residue are removed, with only brick and concrete rubble passing through the sorting process to stockpile.

All extracted recyclable materials and residue are placed separately in waste bins in preparation for offsite removal.

18.5.5. Crushing

The bricks and rubble are then crushed to produce a recyclable drainage or graded product.

The crushing activity incorporates that sampling and analysis of the processed materials in accordance with the **Sorting and Recycling Facility Asbestos Management Procedure**.

Appendix No. 3 - Sorting and Recycling Facility Asbestos Management Procedure provides a copy of the Sorting and Recycling Asbestos Management Procedure.

18.5.6. Storage and Stockpile Management

The various sorted materials and waste residues are stored on site pending removal. The lesser volume materials and waste residues are stored in waste bins and bulk materials are stockpiled on site.

Depending on the type of material being stored, there may be a need for dust management and/or asbestos sampling and analysis to occur on the stockpiles.

19. Traffic Management

With the site being a multiple-use site incorporating the landfill, sand operation and potentially a waste sorting and recycling facility it is important that adequate traffic management be undertaken to ensure that the various site users are separated so as not to interfere with other operations.

Road access is to be maintained to all operations at all times. The roads are to be sufficiently wide and turning areas sufficiently large to accommodate pocket road trains and B-Double vehicle configurations.

Speed limits are to be enforced to ensure that there is a safe and functional flow of traffic around the site.

Within the landfill, there is to be sufficient space allocated to allow the waste delivery vehicles to reverse up to the tipping face and tip its load without obstruction other waste delivery vehicles. If semi-trailers are used to deliver waste to the landfill, these should tip in an area well away from other vehicles as there is the possibility that the trailer may fall over during the tipping operation (especially on uneven ground and/or in windy conditions). Adequate space needs to be allowed to accommodate these simultaneous activities.

20. Odour Management

Due to the nature of the waste received, sorted and landfilled not being putrescible, there is not anticipated to be any odour generated on site.

The appropriate application of the DWER waste acceptance criteria will ensure that no odorous waste is accepted on site.

21. Vermin Management

The presence of vermin is typically associated with the presence of putrescible waste. With the facility not accepting putrescible waste, vermin are not anticipated to be present on site.

22. Asbestos Management

22.1. Landfill Facility

The landfill facility is permitted to receive asbestos containing materials.

The control of materials containing asbestos products is a critical management aspect within the landfill facility; consequently, a separate Asbestos Management Procedure has been developed.

For details of asbestos management refer to the **Landfill Facility Asbestos Management Procedure**.

Appendix No. 4 - Landfill Facility Asbestos Management Procedure provides a copy of the Landfill Asbestos Management Procedure.

22.2. Sorting and Recycling Facility

Asbestos containing materials are not to be accepted at the sorting and recycling facility.

Due to the nature of the waste being processed, there is the possibility that asbestos containing materials could be present within the incoming waste materials. Consequently, a separate Asbestos Management Plan has been developed for the sorting and recycling facility.

For details of asbestos management refer to the **Sorting and Recycling Facility Asbestos Management Procedure**.

Appendix No. 3 - Sorting and Recycling Asbestos Facility Management Procedure provides a copy of the Sorting and Recycling Asbestos Management Procedure.

23. Fire Management

Under no circumstances will waste be burnt on site. Burning of waste does not form part of the site waste management activities.

Fire management is a critical activity on site.

The sorting and recycling facility receives some materials that are combustible, and the sorting process separates these and concentrates them in stockpiles. The separation of stockpiles and minimising the quantity of stockpiled materials are the main fire management techniques.

Class I landfills are able to accept limited quantities of plastic and in some cases significant quantities of vehicle tyres. Both of these materials posed significant fire risks. However, within Class I landfills there are significantly fewer ignition sources within the waste in comparison to other classes of landfill (Class II and Class III). Consequently, the risk of fire within Class I landfills is relatively low.

A separate Fire Management Procedure has been developed for the site.

For details of fire management refer to the **Fire Management Procedure**.

Appendix No. 5 - Fire Management Procedure provides a copy of the Fire Management Procedure.

24. Dust Management

The sandy nature of the naturally occurring soils on site is not conducive to the formation of dust. The main potential for dust generation is on the site internal access roads, active tipping face and some sorting and recycling activities. There is a need for active dust suppression during adverse weather conditions. However, the fact that the site has significant buffer zones and is in a rural setting, it is unlikely that dust generation will be a problem.

Dust suppression is to be a reactive operation, implemented when weather conditions are likely to generate excessive dust. Dust suppression activities will occur anywhere on site where dust is identified as being a potential problem.

Should a particular part of the site be identified as being an area of consistent generation dust, this area will be managed more intensely to reduce or ideally eliminate the dust generation problem.

The speed limit on site is to be a function of safety, operational requirements and dust generation. The on-site speed limit is to be limited to 20 km/h.

There is a nearby water supply point for local contractors which provides a reliable, available water source for dust suppressions activities. This is a pressurised piped, valved supply off the local irrigation system and has been used in the past for dust suppressions requirements.

The solutions implemented will depend on the extent of the dust generation problem.

If dust is generated from the site internal access roads, a water cart or Dustex (dust suppression additive) can be used. If dust is generated from the landfill area, again a water cart or Dustex can be used or the landfill program can be adjusted to minimise dust emissions. Within the waste sorting and recycling area, processing equipment (screens and crusher) will be fitted with mounted water sprinklers at critical location on the equipment to minimise dust emissions. Wetting down of input feedstock will also be implemented in more extreme weather conditions. Ultimately, if dust emissions continue after all preventative measures have been undertaken, the dust generating activity will cease until weather conditions improve.

Dust control measures implemented on site include the following:

- Landfill:
 - Traffic control to reduce vehicle speed on site;
 - Limiting the surface area of operational areas (progressive bush clearing);
 - Capping and revegetation immediately after landfilling has been completed;
 - Planting vegetation screens to reduce the impact of the wind-blown dust;
- Waste Sorting and recycling:
 - Sprinklers on processing equipment;
 - Wetting down input feedstock;
 - Sprinklers on inert material stockpiles;
 - Minimise inert material stockpile size; and,
 - Removal of inert material from site as soon as possible.
- In the event of dust becoming a problem on site the following additional activities will be undertaken:
 - Use of a water cart to wet down operational areas;
 - The use of dust suppressant agents (Dustex or similar) to stabilise exposed areas;
 - Sprinklers on waste processing equipment and on material stockpiles;
 - Wetting down input feedstock; or
 - Limit activities during periods of unfavourable wind conditions.

25. Litter Management

25.1. Landfill Operation

Due to the DWER waste acceptance criteria not allowing paper and cardboard to be landfilled at Class I facilities and restrictions on landfilling plastic, typically Class I landfills do not generate significant quantities of litter.

Litter management on site will consist of the following:

- Adherence to the DWER waste acceptance criteria (not accepting litter generating waste).
- Appropriate compaction and covering of waste.
- Regular on-site litter collection.
- Perimeter fencing.
- Vegetated buffer zones around the landfill.

It is not anticipated that the landfill facility will generate any litter beyond the immediate confines of the active tipping face. Should this occur, all litter will be collected on a regular basis.

Litter collection activities beyond the site boundaries are to be recorded in the site diary or register.

25.2. Sorting and Recycling Operation

The extent of litter generation will be highly dependent on the type of materials being processed on site. Generally, the C&I and C&D waste streams do not generate significant litter.

Litter management at the facility will consist of the following:

- Processing of materials as soon as possible.
- Minimising stockpiled materials on site.
- Placing waste residue in bins and not in stockpile.
- Regular on-site litter collection.
- Perimeter fencing.
- Vegetated buffer zones around the landfill.

It is not anticipated that the sorting and recycling facility will generate significant litter beyond the immediate confines of the waste receipt and processing area. Should this occur, all litter will be collected on a regular basis.

Litter collection activities beyond the site boundaries are to be recorded in the site diary or register.

26. Noise Management

26.1. Landfill Operation

With the landfill being developed in a relatively remote rural setting, the limited amount of noise that will emanate from the landfill (and sand quarrying) operation is unlikely to cause concern to neighbouring properties.

Due to the nearest residential property (farmhouse) being approximately 1.1 km to the north of the landfill it is highly unlikely that any noise impact will be heard at that distance. However, should noise be identified as a problem, control measures to be implemented on site can include the following:

- The use of lower frequency reversing beepers.
- Improved waste unloading procedures.
- Measures implemented to deal with specific noise sources (yet to be identified).

26.2. Sorting and Recycling Operation

The mechanical processing of waste materials will generate the most noise on site, with mobile plant and waste delivery vehicles being lesser contributors. The crushing activity being the activity most likely to generate the most noise. With this activity being a campaign process, as opposed to a continuous process, there is significant flexibility to select when the activity occurs.

The nearest residential property is a farmhouse 1.1 km north of the proposed edge of the landfill; however, is 1.5 km from the sorting and recycling facility location. There is also a property 1.2 km to the south of the landfill and 1.3 km from the sorting and recycling facility location. The *DWER Guidance Statement – Separation Distances (Draft August 2015)* requires a 1.0 km separation distance for crushing activities. Under all circumstances, this 1.0 km separation distance can be maintained.

Due to the available separation distance, the sorting and recycling activities are highly unlikely to result in any noise impact to the neighbouring properties

Noise control measures to be implemented at the facility include the following:

- Working behind earth property perimeter screens.
- The use of lower frequency reversing beepers.
- Sound abatement panels on crusher unit.
- Careful waste unloading and loading procedures.
- Measures implemented to deal with specific noise sources (yet to be identified).

27. Hydrocarbon Management

Initially, there will be no fuel storage on site as the vehicle(s) will be refuelled via mini-tanker services. Only once the site has been in operation for some time will consideration be given to the establishment of a permanent fuel storage bay. The fuel infrastructure will be located near the site entrance to facilitate easy access to fuel delivery vehicles. A future Works Approval application will deal with the specific need to establish a refuelling bay on site. This is not part of the current site activities.

28. Dieback Management

As part of the sand quarrying approval process, the site was inspected for the presence of dieback. This study identified areas of dieback across the site, with only a small portion in the central north being uninfected with dieback.

The facility operator is in the process of developing a Dieback Management Plan for the sand quarrying operation in order to adequately manage the threat of dieback on site. Once this plan has been finalised and the proposed site waste management activities will be incorporated into this Dieback Management Plan.

29. Surface Water Management

There is no surface water located within the site boundary or any watercourse flowing into it.

There is an ephemeral watercourse running in a south westerly direction in close proximity to the south eastern edge of the site. This watercourse does not enter the site and has no impact on the proposed site activities. There is also an ephemeral watercourse in the north west corner of the property; however, is approximately 800 m from the edge of the landfill and hence, will not impact any of the proposed activities.

Due to there being no watercourses running in close proximity to the landfill site there is no need for the management of surface water entering the site. All the surface water management is related to the management of stormwater generated within the sand quarry and landfill area.

Under normal rain events, stormwater will simply soak into the sandy soil on site. During heavy rain events, there is the possibility that some surface water flow will be generated on site. During these events care is to be taking to divert all surface water away from the landfill area.

Waste placement within the landfill is to be shaped to ensure that surface water flow generated on top of the waste is diverted off the landfill as rapidly as possible. Surface water should not be allowed to pond on top of the waste.

Due to the absence of surface water within the sand quarry area, there is no opportunity to sample surface water around the landfill area.

30. Groundwater Management

Stass Environmental has undertaken an extensive groundwater assessment in the area surrounding the landfill site, including groundwater depth assessment. This initial data and regular groundwater depth monitoring is to be used to determine the base of the sand quarry floor and hence the depth of the landfill base to groundwater.

For further details on the groundwater assessment refer to the Stass Environmental report (*Stass Environmental: Ground Water Assessment, Peel Landfill Facility Lot 3 Buller Road Waroona, WA March 2021*).

Add comment on the groundwater requirements stipulated in the landfill operating licence.

31. Complaints Management

There is to be a Complaints Register maintained on site. The register is to either be a bound book or electronic file.

All complaints relating to the landfill operation are to be entered into the Complaints Register. The Register is to record, as a minimum, the following information:

- Date and time the complaint was received.
- How the complaint was received (by phone, email, in person, via the Shire, via the DWER etc.)
- The details of the complainant (if available).
- Details of the complaint:
 - What is the complaint about?
 - When did the incident occur?
 - How often did the incident occur?
 - Was anyone else impacted by the incident?
- Local weather conditions at the time of receiving the complaint that may be relevant to identify the cause of the complaint.
- Name of the person receiving the complaint.
- Action taken to investigate the complaint.
- Follow-up dealings with the complainant.
- Outcome of the complaint investigation.

32. Site Closure and Rehabilitation

As part of the standard operations of the landfill facility, the landfill will be progressively closed as the waste achieves the final waste design profile.

It is essential that the landfill be progressively closed and rehabilitated during the life of the landfill. Progressive closure results in the following benefits:

- The vast majority of the closure and rehabilitation of the site occurs during the operating life of the landfill facility. Hence, expenses are incurred whilst the site is economically active.
- Future site closure and rehabilitation liabilities are dramatically minimised.
- Site-specific capping and rehabilitation methodologies can be refined over time as site closure progresses.
- The closure activities are easy to maintain while the landfill and sand excavation activities are occurring on site.
- Potential leachate generation is reduced by capping and rehabilitating the landfill as soon as practical.
- A demonstration to the Shire of Waroona and the DWER that there is a commitment to site rehabilitation.

The sorting and recycling facility will be located within the sand quarry, in an area that is yet to be filled with waste. Once this activity has ceased on site, the area will be landfill, closed and rehabilitated.

Within two years of commencing landfill operations on-site a comprehensive Site Rehabilitation Plan covering all aspects of landfill closure and site rehabilitation is to be compiled.

Attachments

Attachment 1 – Site Layout Plan

Attachment 2 – Sections

Attachment 3 – Sorting and Recycling Facility Asbestos Management Procedure

Attachment 4 – Landfill Facility Asbestos Management Procedure

Attachment 5 – Fire Management Procedure

Appendix No. 1 – Site Layout Plan

The attachment has not been included as it has been provided in the Works Approval Application Supporting Document

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Appendix No. 2 – Sections

The attachment has not been included as it has been provided in the Works Approval Application Supporting Document

Appendix No. 3 – Sorting and Recycling Facility Asbestos Management Procedure

The attachment has not been included as it has been provided in the Works Approval Application Supporting Document

Appendix No. 4 – Landfill Facility Asbestos Management Procedure

The attachment has not been included as it has been provided in the Works Approval Application Supporting Document

Appendix No. 5 – Fire Management Procedure

The attachment has not been included as it has been provided in the Works Approval Application Supporting Document

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