



PATTLE DELAMORE PARTNERS LTD

Huntly Managed Fill – Asbestos Fill Management Plan

Gleeson Managed Fill Limited



Huntly Managed Fill – Asbestos Fill Management Plan

✦ Prepared for

Gleeson Managed Fill Limited

✦ January 2020



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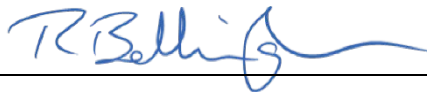
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List of Abbreviations

ACM	Asbestos Containing Material/s
ACOP	Approved Code of Practice <i>Refers to: Approved Code of Practice for the Management and Removal of Asbestos, WorkSafe NZ 2016.</i>
AF/FA	Asbestos Fines / Fibrous Asbestos
AFMP	Asbestos Fill Management Plan
AMR	Annual Monitoring Report
ARCP	Asbestos Removal Control Plan
<i>Asbestos Regs</i>	<i>Health and Safety at Work (Asbestos) Regulations 2016.</i>
BRANZ	Building Research Association New Zealand <i>Refers to: Guidelines for Assessing and Managing Asbestos in Soil, BRANZ 2017.</i>
CLMG	Contaminated Land Management Guidelines <i>Refers to: Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis of Soils, Ministry for the Environment 2011</i>
DSI	Detailed Site Investigation
HSWA	Health and Safety at Work Act
HEPA	High-Efficiency Particulate Air
GMFL	Gleeson Managed Fill Limited
LAA	Licensed Asbestos Assessor
LAS	Licensed Asbestos Supervisor
NOSHC	National Occupational Health and Safety Commission <i>Refers to: 3003 [2005] - Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres</i>
P2/P3	Particulate Filter of P2 or P3 level
PCBU	Person Conducting a Business or Undertaking
PPE	Personal Protection Equipment
RPE	Respiratory Protection Equipment
SQEP	Suitably Qualified and Experienced Practitioner (Contaminated Land)
SWMS	Safe Work Method Statement

TEM	Transmission Electron Microscopy
WDC	Waikato District Council
WorkSafe	WorkSafe New Zealand
WRC	Waikato Regional Council

1.0 Introduction

Pattle Delamore Partners Ltd (PDP) has been engaged by Gleeson Managed Fill Limited (GMFL) to develop an Asbestos Fill Management Plan (AFMP) for the proposed Managed Fill facility at Huntly Quarry, located on Riverview Road, Huntly (the site). The AFMP has been prepared in support of a resource consent application to permit the construction of a Managed Fill facility (Managed Fill) at the site. It is proposed that this Managed Fill also accepts asbestos and Asbestos Containing Material (ACM) waste, and asbestos-in-soil, including from Class A asbestos removal activities, as part of its waste acceptance to provide support for land development within the local Waikato region in which it will operate. This AFMP provides flexibility through tiered site management controls commensurate with the category and concentration of asbestos wastes being accepted to the site and disposed of at the time.

This AFMP has been prepared to guide GMFL in compliance with the Health and Safety at Work (Asbestos) Regulations 2016 (the 'Asbestos Regulations'), and the anticipated conditions of the proposed resource consent during the acceptance and disposal of these asbestos wastes onsite. The management procedures included in this AFMP endeavour to eliminate or minimise exposure of workers and neighbouring site users to asbestos fibres during the disposal of asbestos/ACM waste and asbestos-in-soil.

To achieve compliance with the Asbestos Regulations and appropriate management of asbestos, the AFMP draws on supporting information from the Building Research Association New Zealand (BRANZ) New Zealand Guidelines for Assessing and Managing Asbestos in Soils (BRANZ, 2017), and the WorkSafe NZ Approved Code of Practice (ACOP) for the Management and Removal of Asbestos (WorkSafe NZ, 2016).

This AFMP discusses and sets processes relevant to the acceptance and disposal of asbestos/ACM waste and asbestos-in-soil only. As such, this AFMP should be read in conjunction with the Fill Management Plan (Gleeson Managed Fill Ltd - Fill Management Plan), and other related site documentation (including resource consent(s) once issued), to ensure comprehensive and complete management of site activities.

2.0 Objectives and Scope

2.1 Objectives

The objectives of the AFMP are to:

- ∴ Provide guidance to GMFL in order to maintain compliance with their duties under the Asbestos Regulations, and the expected resource consent conditions;

- ∴ Set operational processes to achieve this compliance, and to minimise asbestos exposure risk to site workers and neighbouring site users (to be measured using assessments against trace level (0.01 asbestos fibres/mL of air)); and,
- ∴ Provide a framework for any monitoring and reporting required to demonstrate compliance with the Asbestos Regulations and operational procedures at the Managed Fill.

2.2 Scope

This AFMP includes operational processes and frameworks to maintain concentrations of asbestos fibres in air at the site boundary, or within the breathing zone of any worker not wearing Personal Protection Equipment (PPE)/ Respiratory Protective Equipment (RPE), at levels below 'trace level' under the Asbestos Regulations.

These processes will include:

- ∴ pre-approval of waste material acceptance and material identification and record keeping;
- ∴ signage and demarcation of active work zones, decontamination chambers;
- ∴ site inductions, training and awareness for workers involved in asbestos operations;
- ∴ required PPE/RPE for specific tasks, personal decontamination, and health monitoring;
- ∴ load placement and daily cover requirements;
- ∴ vehicle decontamination;
- ∴ dust suppression;
- ∴ airborne asbestos air monitoring (i.e. at site boundaries and/or activity-based sampling) and regular reporting (i.e. annual); and,
- ∴ emergency processes and control actions.

This AFMP does not include asbestos management for any buildings at the site and/or operational procedures outside of the areas of disposal/management of asbestos/ACM waste and asbestos-in-soil. The scope of this AFMP is limited to the extent of Fill Areas 2, 3 and 4 (as indicated on appended figure: Fill Site Assessments (prepared by Terra Mining Consultants Limited)), and the assumed truck/wheel wash facilities associated with the Managed Fill areas where asbestos/ACM waste and asbestos-in-soil is to be disposed.

3.0 Site Description

The site is located on the properties adjacent to and north of the Huntly Quarry which is located at 300 Riverview Road, Huntly, and currently operates as an aggregate quarry owned and operated by Gleeson Quarries Huntly Limited. The site currently only extracts and sells aggregate materials and does not accept waste materials for disposal.

There are four main gullies within the site boundaries which have been identified as key areas where filling could be undertaken to optimise GMFLs use of the land area – Fill Areas 2, 3, 4 and 5 (refer to appended figure¹) totalling approximately 2 million m³:

- ∴ Fill Area 2 (632,600 m³) is located across two parcels of land with the larger parcel legally described as PT Lot 9 DP 1278 and the smaller parcel legally described as PT Lot 10 DP 1278;
- ∴ Fill Area 3 (576,600 m³) is located on one land parcel legally described as PT Lot 9 DP 1278; and,
- ∴ Fill Area 4 (800,000 m³) is located on one land parcel legally described as PT Lot 1 DP 25272.

Fill areas 2-4 are all proposed to be used to accept combined Managed and Clean Fill, and asbestos/ACM waste and asbestos-in-soil material.

- ∴ Fill Area 5 (182,600 m³) is located on one land parcel legally described as PT Lot 10 DP 1278. This fill area is proposed to be restricted to backfilling with 'overburden' material generated by the quarry only.

The site is located approximately 4.5 km south of the Huntly township on the western side of the Waikato River (which is located approximately 150 m from the nearest Managed Fill area; Fill Area 4). The site is located within a rural residential setting with the nearest site neighbour (a rural residential dwelling) located approximately 300 m to the east of the nearest Managed Fill area; Fill Area 4.

4.0 Regulatory Assessment

4.1 Waikato District Plan and Waikato Regional Plan

There are no specific rules/clauses/schedules within the Waikato District Plan or the Waikato Regional Plan which prevent or expressly prohibit asbestos, ACM or asbestos-in-soil from being disposed of within a Managed Fill type facility within the Waikato district or region. No further assessment of the planning rules within these plans has been undertaken as part of this AFMP.

¹ There is no Fill Area 1 – this was the area due west of the quarry pit which was assessed for use and considered to be unsuitable for fill operations.

4.2 Asbestos Regulations

Duties of care under the HSWA Asbestos Regulations to be fulfilled at the proposed Managed Fill are highlighted below:

- ∴ Duty to prepare and Asbestos Management Plan (Reg 13) and to regularly review the Asbestos Management Plan (Reg 14).
- ∴ Duty to ensure that exposure of a person at the workplace to airborne asbestos is eliminated so far as is reasonably practicable, and if unable to be eliminated, minimised so far as is reasonably practicable (Reg 9); and to carry out air monitoring (if there is uncertainty as to whether the airborne contamination standard is likely to be exceeded; Reg 51).
- ∴ Duty to train workers about asbestos (Reg 17) and to give information about health risks of asbestos related work (Reg 49); and, to provide health monitoring (Reg 15) and that appropriate health monitoring is provided (Reg 16).
- ∴ Duty to ensure asbestos is identified (Reg 10) and the presence and location of asbestos is identified (Reg 12); and a duty to erect signage and barriers (Reg 37) which limits access to these asbestos disposal areas (Reg 38) and ensure asbestos areas are separate from other work areas (Reg 50).
- ∴ Duty to ensure that decontamination facilities available to decontaminate any plant used in the asbestos area and/or workers carrying out the works (Reg 39 and 52).
- ∴ Duty to ensure appropriate disposal of asbestos waste and contaminated PPE (Reg 40).

To complete these duties under the Asbestos Regulations (and to comply with anticipated Waikato District Council (WDC) and Waikato Regional Council (WRC) resource consent conditions), relevant roles and responsibilities, site management requirements, and emergency procedures are detailed below.

Note that the broader requirements and duties of care of the Health and Safety at Work Act (HSWA) 2015, under which the Asbestos Regulations sit, also apply. These have not been assessed in full as part of this AFMP.

5.0 Roles and Responsibilities

This AFMP requires that some specific responsibilities are allocated and fulfilled to achieve compliance with the Asbestos Regulations. Table 1 below indicates the role of the individuals assumed to be accountable for undertaking these responsibilities; specific regulations have been referred to where applicable. (While the person(s) responsible for the item may be changed by GMFL, it is critical that the responsibilities are still achieved to maintain compliance with the Asbestos Regulations.)

Table 1: Roles and Responsibilities	
Role	Responsibilities
Company Directors (PCBU)	<p>Provide the necessary resources to establish, maintain and review the AFMP for the Managed Fill operation (Reg 13), which will in turn provide the frameworks for operational and site-specific regulations to be met, notably the elimination/minimisation of airborne asbestos exposure (Reg 9);</p> <p>Ensure (or delegate authority to ensure) the effectiveness of the AFMP through regular monitoring, updating and review (Reg 14);</p> <p>Ensure (or delegate authority to ensure) health monitoring for relevant staff is undertaken and records are maintained (Regs 15 and 16);</p> <p>Ensure (or delegate authority to ensure) the effectiveness of site operations through air monitoring programmes (Reg 51);</p> <p>Notify (or delegate authority to notify) WorkSafe in the event of a notifiable incident as required by HSWA 2015 and the Asbestos Regulations; and,</p> <p>Provide the necessary resources to establish processes to comply with any specific requirements necessary as a result of the resource consent conditions.</p>
Managed Fill Manager	<p>Prepare and ensure that all relevant requirements of this AFMP are met during any and all site operations to eliminate/minimise of airborne asbestos exposure (Reg 9);</p> <p>Ensure that systems are in place to prevent the disturbance of asbestos/ACM waste and asbestos-in-soil that has already been placed and covered;</p> <p>Ensure that relevant asbestos awareness training/inductions are conducted for any worker working within the asbestos/ACM waste and asbestos-in-soil fill areas (Regs 17 and 49);</p> <p>Ensure asbestos warning signage and barriers are erected in the appropriate areas of the site, and these areas are maintained as separate work areas as required (Regs 37, 38 and 50);</p> <p>Ensure that appropriate PPE/RPE and relevant decontamination facilities are available and appropriately located in each asbestos works area (Reg 39 and 52);</p> <p>Ensure that safe work procedures are developed for works involving asbestos/ACM waste and asbestos-in-soil¹;</p>

Table 1: Roles and Responsibilities	
Role	Responsibilities
	<p>Monitor and review the implementation of this AFMP, including the effectiveness of the controls, asbestos management requirements, correct identification of types of asbestos, and appropriate record keeping (Regs 10 and 12);</p> <p>Initiate health monitoring for relevant staff and ensure records are maintained (Regs 15 and 16);</p> <p>Report any incidents/non-conformances to Company Directors; and,</p> <p>Any specific requirements necessary as a result of the resource consent conditions.</p>
Managed Fill Worker	<p>Follow all safety instructions, including safe work procedures and PPE/RPE requirements;</p> <p>Comply with health monitoring requirements in this AFMP;</p> <p>Report any incidents/non-conformances to Managed Fill Manager; and,</p> <p>Any specific requirements necessary as a result of the resource consent conditions.</p>
Weighbridge Operator	<p>Ensure each load reported to contain asbestos/ACM waste and/or asbestos-in-soils is visually inspected for coordination with expected contents, and for compliance with the AFMP prior to allowing entry to the facility (Regs 10 and 12);</p> <p>Identifying the nature and extent of the asbestos/ACM waste and asbestos-in-soil (Regs 10 and 12), enter records in the tracking register, direct trucks to the operational asbestos zone; and,</p> <p>Any specific requirements necessary as a result of the resource consent conditions.</p>
Licensed Asbestos Supervisor (LAS)	<p>Provide asbestos-specific advice to GMFL during the course of day-to-day operations within the Managed Fill in order for GMFL to fulfil their duties under the Asbestos Regulations; and,</p> <p>Complete visual assessments of decontamination/cleaning of truck and trailer trays for compliance with the Asbestos Regulations and ACOP.</p>

Table 1: Roles and Responsibilities	
Role	Responsibilities
Licensed Asbestos Assessor (LAA)	<p>To provide guidance to GMFL (as required by GMFL) in reviewing and updating the AFMP in compliance with current regulations;</p> <p>To develop and conduct an independent air monitoring assessment programme to provide for Reg 51, and to show compliance with Reg 9; and,</p> <p>Any specific requirements necessary as a result of the resource consent conditions.</p>
<p><i>Notes:</i></p> <p>1. <i>These safe work procedures are recommended to be developed by internally (or in consultation as required) by GCML using appropriate asbestos trained advisors and workers knowledgeable of site operations; these could later be appended to this AFMP to support the ongoing fill works.</i></p>	

6.0 Waste Disposal Categories and Definitions

The types of asbestos proposed to be permitted to be disposed of at the site and covered under this AFMP include:

- ∴ Asbestos/ACM waste from Class A (friable asbestos) and Class B (non-friable asbestos) removal projects; and
- ∴ Asbestos-in-soil material (categorised based on asbestos concentrations as per the BRANZ Guidelines).

For specific asbestos terminology refer to definitions under the Asbestos Regulations, the ACOP and BRANZ (2017).

Management controls required are based on the categories of waste material and/or soil material and their associated asbestos concentrations to be received at the Managed Fill; refer to Section 7 for further information.

Table 2: Waste Material Summary		
Waste Type	Asbestos Category ¹	
Asbestos and ACM waste (i.e. from removal/demolition projects)		
Class A (friable asbestos) and Class B (non-friable ACM) waste	Any volume or concentration of asbestos or ACM (both licensed – i.e. Class A and B, or unlicensed)	
Asbestos-in-soil (concentration)		
Category ²	ACM >10 mm (% w/w) ³	AF/FA (% w/w)
'Class A': friable	NA ⁴	>1
'Class B': non-friable	>1	>0.01-1
'Asbestos Related Works'	>0.01-1	>0.001-0.01
'Unlicensed Asbestos Works'	<0.01	<0.001
<p><i>Notes:</i></p> <ol style="list-style-type: none"> Definitions (i.e. Class A, B and soil categories) and concentrations are based on current (i.e. 2019) published guideline values. Future changes to guideline documentation and/or values as a result of newly published guidelines, reviewed existing guidelines, etc should result in an update of this AFMP with the updated guidelines (rather than reviewing of the associated resource consent document). Soil categories have been sourced from BRANZ Guidelines (BRANZ, 2017). Laboratory analysis procedure assumed (10x10 mm sieve size) for delineation between ACM and AF. Note that for field screening a smaller sieve size (7x7 mm) is defined in BRANZ 2017. Bonded ACM fragments >10 mm in size are not typically considered to be friable and hence Class A removal of bonded ACM in soil (even at high concentrations) is unlikely. Note however that high concentrations of bonded ACM in soil may be co-located with high/significant concentrations of AF/FA, in which case the AF/FA limits would apply. 		

7.0 Management Requirements

This section identifies the operational site processes which are expected to be implemented at the site to achieve compliance with the Asbestos Regulations. Asbestos/ACM waste and asbestos-in-soil imported to the site is required to be kept moist and encapsulated/covered during transport in accordance with the requirements of the ACOP and WorkSafe (different requirements apply depending on the nature of the asbestos/ACM waste and category of asbestos-in-soil).

The condition of asbestos/ACM waste and asbestos-in-soil (moisture and encapsulation/covering) will be checked at the weighbridge against the pre-approval requirements (i.e. a permit to tip recommended to be provided by GMFL as required), prior to acceptance of the load for disposal on site.

As such, the management processes outlined below only relate to the material as it is being disposed, and prior to/during placement of the soil capping layer; and, to any incidents/emergencies relating to these activities that occur at the Managed Fill site.

Ongoing management requirements relate to:

- ∴ Record keeping of type, volume and location of the asbestos/ACM waste and asbestos-in-soil deposited within the fill areas;
- ∴ Dust Suppression and daily cover (including processes for constructing and maintaining the cover layer);
- ∴ Vehicle washdown requirements – separate to standard wheel washes used upon entry/exit to the quarry site (including maintenance of the asbestos-specific wheel and truck wash facility – if present);
- ∴ Worker training, inductions and health monitoring, including the provision of adequate PPE/RPE supplies; and,
- ∴ Air monitoring and regular reporting requirements, and any notification of these results to neighbouring residents/site users (as required).

The principal aim during any of the asbestos/ACM waste and asbestos-in-soil disposal works is that asbestos fibres in air must be eliminated/minimised so far as is reasonably practical (Reg 9). Every effort must be made by GMFL to ensure that asbestos in air will not exceed ‘trace level’ (presently set at 0.01 fibres/mL of air in the Asbestos Regulations); either at the boundary of the operational asbestos work zone, or within the breathing zone of any worker not wearing PPE/RPE (or a vehicle fitted with High-Efficiency Particulate Air (HEPA) filter).

Note: Provisions are made in this AFMP to prepare, in the future, amendments to support the changing processes and infrastructure on the site with respect to asbestos management – for example, a dedicated asbestos truck/wheel wash, disposal tracking registers, waste acceptance pre-approval procedures, etc – should these be required and/or determined to improve efficiencies onsite. These provisions are expected to include the ability to append these items to the AFMP and reviewing the AFMP without reviewing the associated resource consent.

7.1 Operational Asbestos Work Zones

The complete Managed Fill operation is proposed to occupy three main areas of the site; Fill Area 2, Fill Area 3 and Fill Area 4 (as shown on appended figure) totalling approximately 2 million m³ of fillable volume. It is expected that these areas will be filled consecutively, and asbestos/ACM waste and asbestos-in-soil disposal works will not be occurring simultaneously across multiple Fill Areas simultaneously. As noted above:

- ∴ Asbestos/ACM waste and asbestos-in-soil (and other managed fill soils not containing asbestos/ACM) are intended to be deposited in Fill Area 2, 3 and 4.
- ∴ No asbestos/ACM waste and asbestos-in-soil to be deposited in Fill Area 5.

Specific controls (described below) within these areas may vary depending on the asbestos category (defined in Table 2 above) of the waste being disposed at the time. It is recommended that GMFL (in consultation as required) prepare individual Safe Work Method Statements (SWMS) and associated training modules for the asbestos-specific controls required with each different category of waste that can be used by the operational team (i.e. including but limited to PPE/RPE, staged decontamination requirements, etc).

The site should also have (at least) one trained person supervising the disposal/disturbance of any asbestos/ACM waste and asbestos-in-soil. This training will be equivalent of necessary qualifications and licenses (as required by the Asbestos Regulations, ACOP and WorkSafe NZ) such as Class A or B Removal Supervisor or competent personnel who has successfully completed unit standards 29765 – Remove non-friable asbestos, 29766 – Remove friable asbestos, 29767 – Supervise Asbestos Removal and 29768 – Conduct Asbestos Assessment. This person will be responsible for advising GMFL on their duties under the Asbestos Regulations during the disposal and covering of asbestos/ACM waste and asbestos-in-soil and responding to any incidents/emergencies of an asbestos/ACM waste and asbestos-in-soil nature within the Managed Fill.

Other areas of the Managed Fill (i.e. outside of the operational asbestos work zones) may be worked on at any time provided that it can be confirmed that no excavation/disturbance will occur in area/at a depth where asbestos/ACM waste and asbestos-in-soil has previously been placed. The Managed Fill Manager is required to ensure that systems are in place to prevent the disturbance of asbestos/ACM waste and asbestos-in-soil that has already been placed (i.e. regular surveying or installation of registered datums for reference of excavation and cover depths).

7.1.1 Dust Suppression Requirements

Dust suppression by means of application of water from sprinklers/mist cannons/variable spray-rate nozzles (or similar approved other) should be undertaken constantly in operational asbestos zones where asbestos/ACM waste and asbestos-in-soil is actively being disposed or disturbed (i.e. the 'tipping area'). Water application rates should be actively controlled to provide enough water to prevent the generation of dust (and potential mobilisation of asbestos fibres into air) from the surfaces of active areas, but to prevent excess run-off from the application of this water.

7.1.2 Cover Requirements

Asbestos-specific controls relating to these fill areas do not apply where material has been capped with (at least) 0.2 m cover (refer Section 7.4), and/or where asbestos is not detected in the waste material (and an appropriate Detailed Site Investigation (DSI) completed in accordance with the Ministry for the

Environment Contaminated Land Management Guideline No. 5 – *Site Investigation and Assessment of Soils* and authored/signed by a Suitably Qualified and Experienced Practitioner (SQEP) or sufficient and verified sampling results exist to confirm this characterisation of waste material²).

Any operational area of the Managed Fill where asbestos/ACM waste and asbestos-in-soil are not being actively deposited is assumed to have previously been covered in accordance with the cover requirements, and therefore would not be subject to the 0.2 m of cover requirement.

7.2 Pre-Approval of Waste and Information Tracking

Asbestos/ACM waste and asbestos-in-soil waste is to only be received from pre-approved contractors; GMFL is to determine the nature and requirements of this pre-approval.

The site is to maintain a tracking database for all materials (including asbestos/ACM waste and asbestos-in-soil) entering the site. Disposal details of each vehicle load are to be recorded and assigned to a specific job number (for example) which connects the disposal to pre-approved contamination investigation and/or demolition/refurbishment survey for the source site. The final part of this record should include the specific fill area, and approximately where within that fill area (location and depth), the material has been disposed of (this will satisfy the requirement of Regs 10 and 12).

The information is to be recorded in register or similar database for regular reporting to WDC/WRC (or as requested by WDC/WRC/WorkSafe) on volume/weight of asbestos/ACM waste and, for asbestos-in-soil, volume/weight and ACM/AF/FA concentrations, imported to site. GMFL will also store any technical reports (i.e. Asbestos Removal Control Plan (ARCP), DSI, sample results and/or asbestos survey reports) for each source site in a manner that can be made easily available to WRC/WDC, WorkSafe or the LAS/LAA as required).

7.3 Receiving Trucks

Prior to entering the Managed Fill each truck approved to bring asbestos/ACM waste and/or asbestos in soil must be weighed and inspected at the weighbridge to ensure that the load is sufficiently covered, lined, and moistened; dependent of the nature and type of asbestos/ACM waste and asbestos-in-soil contained expected from the source site. (It is expected that evidence of source location of the material will have been previously provided (i.e. pre-approval) in the form of ARCP, DSI, consultant or laboratory reports.)

² Guidance can and should be sought by GMFL from an Environmental Consultant/SQEP/LAA/Council Representative regarding the appropriateness of any documentation which is suspected to be incomplete or unable to meet this standard of quality.

As per the above, the truck registration number, date, time received, and description of the content should be recorded.

The following should be confirmed prior to entry of the truck into the site, based on which trucks should be directed to specific fill areas or specific areas within fill areas (as required by the Managed Fill Manager):

Table 3: Receiving Truck Cover/Wrapping Requirements		
Asbestos Waste Category ¹	Wrapping	Truck/Trailer Cover
'Class A / B': Building Materials	Double-wrapped 200 µm polythene	Truck/trailer/skip cover
'Class A / B': Soils	Wrapped 200 µm polythene	
'Asbestos Related Works'	Not required	
'Unlicensed Asbestos Works'		
<p><i>Notes:</i></p> <ol style="list-style-type: none"> <i>If suitable information to determine the category/classification of asbestos/ACM and/or asbestos-in-soils waste stream is not provided then material should be treated as Class A material.</i> <i>Definitions (i.e. Class A, B and soil categories) and concentrations are based on current (i.e. 2019) published guideline values and cover requirements. Future changes to guideline documentation and/or values as a result of newly published guidelines, reviewed existing guidelines, etc should result in an update of this AFMP with the updated guidelines (rather than reviewing of the associated resource consent document).</i> 		

7.3.1 Placarding of Cartage Trucks

There is no current transport authority requirement for asbestos signage on cartage trucks which carry different classes or categories of asbestos/ACM waste and/or asbestos-in-soil. It is recommended that GMFL encourage and follow 'best practise' (and any future regulation change or update) by placarding their own, and their sub-contractors, cartage trucks carrying asbestos/ACM waste and/or asbestos-in-soil materials to notify emergency service first responders (for example) in the event of a vehicular accident involving these cartage trucks.

7.4 Load Placement and Cover

Note: It is recommended that the below process should be formalised into a series of SWMS for the placement, disposal and appropriate covering of asbestos/ACM waste and/or asbestos-in-soil, and provided for reference to each of the workers within the operational asbestos disposal area(s) at the site.

During the course of each day of operation within the Managed Fill, GMFL will:

1. Prepare an operational asbestos/ACM waste and asbestos-in-soil disposal area (the 'tipping area') for the expected volume of waste material to be received on that day, prior to the arrival of any trucks.

- Ensure appropriately trained staff, and suitable equipment – suitably sized excavator(s) fitted with HEPA filters – are available and functional to complete the expected work.
 - No excavation/disturbance is permitted to occur in area/at a depth where asbestos/ACM waste and asbestos-in-soil has previously been placed. The Managed Fill Manager is required to ensure that systems are in place to prevent the disturbance of asbestos/ACM waste and asbestos-in-soil that has already been placed (i.e. regular surveying or installation of registered datums for reference of excavation and cover depths).
 - The weighbridge operator would send relevant trucks containing asbestos/ACM waste and asbestos-in-soil here for disposal. Other trucks containing soil which does not contain asbestos/ACM waste and asbestos-in-soil can freely tip in areas outside of the daily asbestos ‘exclusion zone’.
 - Dispose of the previous days’ consumable asbestos PPE/RPE waste (double-bagged 200 µm polythene goose-necked bags).
2. Construct temporary asbestos signage and moveable barriers (i.e. tape/cones/barrier arms) with at least a 10 m exclusion zone around the operational asbestos zone for each day when asbestos/ACM waste and asbestos-in-soil disposal is occurring (Reg 37), to warn of entry restrictions to non-essential personnel (Regs 38 and 50).
 3. Provide a sufficient water source (or similar approved other) at the operational asbestos zone which must be present during asbestos/ACM waste and asbestos-in-soil disposal activities and used if the load is found to be not sufficiently moistened (i.e. if it has dried out during transport from the source site). Application of water to the material from individual trucks would be applied as indicated in Section 7.1.1.
 4. Utilise appropriately trained, inducted and protected (PPE/RPE -refer below sections) operators to remove truck and trailer covers immediately inside the asbestos exclusion zone (for that day). Material should be tipped from the cartage truck directly into the asbestos disposal area prepared for that day, with the truck guided into an appropriate tipping position by the GMFL operator/supervisor. Once empty, the truck can be decontaminated as required based on its asbestos/ACM waste and asbestos-in-soil content (refer Section 7.5).

Note: the GMFL operator is expected to be notified of the expected asbestos/ACM waste and asbestos-in-soil content by the weighbridge operator, so that the operator can verify the source report is accurate regarding the content of the truck, and ensure that the appropriate levels

of controls and vehicle decontamination are being completed (refer Section 7.5).

Note: Truck operators are not permitted to exit their truck within the operational asbestos zone; doors must remain closed and air conditioning operating while unloading truck and trailer trays and undergoing subsequent decontamination of the truck and trailer trays (as required).

5. Construct a 0.2 m of 'cover layer' over the top of any asbestos/ACM waste and asbestos-in-soil deposited within the operational asbestos zone; comprising of non-asbestos fill material (sourced from quarry overburden and/or non-asbestos sites). This is to be completed by the dedicated excavator within the operational asbestos zone (as noted above). This is to be completed within a maximum of two hours after placement of the asbestos/ACM waste and asbestos-in-soil (to prevent the material from drying out easily), and at least daily.

Note: No blending or mixing of asbestos containing soils is permitted (without further assessment and potential soil sampling to be completed by a LAA).

6. Complete regular checks to confirm 0.2 m cover has been applied are required. It is suggested that this is completed by installation of relevant datums and appropriate site photographs to confirm depths of filling and depths of cover each day. These must be supplemented by regular surveyed heights of the surface of the fill (for example, each week).

Note: Following the placement of the 0.2 m cover, there are no access restrictions for heavy machinery.

Note: Prior to the completion of each Fill Area with the Managed Fill operation, a permeable silt cloth shall be laid (to provide a visual indicator of contaminated material buried below), and a minimum 2 m cap of 'cleanfill' material must be overlaid on top of the shallowest asbestos/ACM waste and asbestos-in-soil. Height surveys pre- and post-finished level shall be completed to prove these levels and should be the responsibility of the Managed Fill Manager to complete.

7.5 Vehicle Washdown/Decontamination

Following disposal of any asbestos/ACM waste and asbestos-in-soil, each truck and tray is required to be washed down by the water source (or similar approved other) at the operational asbestos zone in accordance with the items below; wash-down must also include truck wheels (as they may have come into contact with asbestos/ACM waste and asbestos-in-soil). Alternatively, a dedicated truck wash may be constructed to enable decontamination trucks and trays (and any other equipment) used to transport asbestos/ACM waste and asbestos-in-soil.

Table 4: Waste Categorisation and Vehicle Assessment		
Asbestos Waste Category ¹	Vehicle Assessment	Completed by:
'Class A': friable	Visual (plus swab sampling ²)	LAA / Competent Person
'Class B': non-friable		
'Asbestos Related Works' ³	Visual	Competent Person
'Unlicensed Asbestos Works' ³		
<p><i>Notes:</i></p> <ol style="list-style-type: none"> <i>If suitable information to determine the category/classification of asbestos/ACM and/or asbestos-in-soils waste stream then material should be treated as Class A material and include the assessment requirements of this waste categories.</i> <i>For Class A and Class B products entering the site, double-wrapping with 200 µm polythene is a prerequisite and as such visual assessment of truck and trailer trays/or other equipment is considered sufficient to confirm decontamination.</i> <i>For Asbestos-Related Works and Unlicensed Asbestos Work waste products entering the site, wrapping is not a prerequisite. As such, a more intensive 'clean' (using brushes to remove mud/gravels/etc) of the truck and trailer trays (or other equipment) may be required.</i> 		

The Managed Fill Manager holds the responsibility for ensuring that every truck, trailer and associated equipment used for the transport of asbestos/ACM waste and asbestos-in-soil is decontaminated for soil and waste removed under licensed conditions. The LAS holds the responsibility for ensuring that this decontamination is complete appropriately at the operational asbestos zone before the trucks leave the immediate site and/or are backloaded with products from the quarry.

Note: It has been assumed that only the truck and trailer trays (or other equipment), and the wheels/tyres have come into contact with asbestos/ACM waste and asbestos-in-soil. If other surfaces are suspected of coming into contact with asbestos/ACM waste and asbestos-in-soil then GMFL is also responsible for ensuring that it is removed from the truck before it leaves the operational asbestos zone, potentially resulting in asbestos contamination of 'clean' areas of the site. (GMFL is also to ensure that appropriate controls are in place to avoid tracking of potentially contaminated sediment onto clean areas (i.e. public roads, etc)).

7.5.1 Dedicated Asbestos Truck Wash

It is not known whether a dedicated truck/truck wheel wash for asbestos/ACM waste and asbestos-in-soil areas is to be installed at the site. If this installation is pursued, then a specific section/appendix describing the appropriate use and maintenance of an asbestos/ACM waste and asbestos-in-soil truck/truck wheel wash should be added to this AFMP as an appendix as per Footnote 1.

7.6 Worker Health and Wellbeing

7.6.1 Worker Training and Health and Safety

All personnel required to work within the operational asbestos work zones/operational asbestos zones of the Managed Fill operation are required to undertake a site-specific induction (prepared and administrated by GMFL) which would include an asbestos awareness training component (as per Reg 17 and 49).

This induction is expected to cover (but not be limited to):

- ∴ Background information on types of asbestos/ACM products and waste, and asbestos-in-soil, which are commonplace in New Zealand (i.e. industries and applications);
- ∴ Asbestos related health-effects and risks;
- ∴ Overview of the duties of an employer and employee under the HSWA 2015 and the Asbestos Regulations including required: PPE/RPE provision and use, decontamination facilities and processes, asbestos licensing and fines;
- ∴ Overview of the GMFL health-monitoring programme (Reg 15 and 16) and RPE programme; and,
- ∴ Overview of resource consent conditions and requirements specific to the disposal, placement and working with asbestos/ACM waste and asbestos-in-soil.

7.6.2 PPE/RPE Use and Decontamination

Asbestos-specific PPE/RPE requirements are to be set within the operational asbestos work zones/operational asbestos zones, within the clearly demarcated and temporarily fenced area while in operation.

Dependant on the confirmed materials to be disposed within the operational asbestos zone, the following PPE/RPE (and associated decontamination facilities would be required):

Table 5: Waste Categorisation, Required PPE/RPE and Decontamination

Asbestos Waste Category ¹	PPE	RPE	Decontamination
'Class A': friable	Disposable coveralls (type 5, category 3), nitrile gloves, safety gumboots or safety footwear with disposable overshoes	Full face P3 respirator with particulate filter.	Wet decontamination tent or trailer (5 stage)
'Class B': non-friable		Half-face P3 respirator with particulate filter.	Decontamination tent and foot wash (3 stage)
'Asbestos Related Works'		Disposable P2 dust mask.	
'Unlicensed Asbestos Works'	No asbestos-specific PPE if air monitoring confirms asbestos below 0.01 fibres/mL	No asbestos-specific RPE if air monitoring confirms asbestos below 0.01 fibres/mL	Foot wash and PPE collection area.

Notes:

- If suitable information to determine the category/classification of asbestos/ACM and/or asbestos-in-soils waste stream then material should be treated as Class A material and include the PPE and RPE requirements of these waste categories.*

Additional requirements necessary to achieve compliance with the Asbestos Regulations include:

- ✦ HEPA filters to be fitted to all machinery operating within the work zone for disposal of Class A or Class B asbestos/ACM waste and asbestos-in-soil;
- ✦ Appropriate waste 200 µm asbestos labelled waste bags, tape for goose-necking waste bags (provided within the decontamination area for each fill area); and,
- ✦ Respirators and associated users to be regularly tested for appropriate fit under a detailed RPE programme (to be prepared and maintained by GMFL).

A full set of asbestos-specific PPE/RPE must be available in each occupied vehicle under the control of GMFL within the work zone of the Managed Fill. This includes trucks that are owned and occupied by other contractors. All personnel required to access the work zone outside of an air-conditioned/HEPA cab must wear the above asbestos specific PPE/RPE. As noted above, cartage truck contractors are expressly prohibited from exiting their vehicles within the operational asbestos work zones/operational asbestos zones; it is the

responsibility of the LAS to ensure that these personnel remain in their cabs with the windows closed and the air conditioning operational whilst in the operational asbestos work zones/operational asbestos zones. (Refer Emergency Procedures section.)

Individuals wearing the PPE/RPE to be inducted in awareness/training on donning/doffing and decontamination processes. Records are to be kept and maintained by the Managed Fill Manager.

7.6.3 Disposal of PPE/RPE

Used PPE/RPE must be managed upon leaving the operational asbestos zones. This is expected to be done during the exiting of the operational asbestos zones via the decontamination area (refer to Table 5), following the appropriate process of removing potentially contaminated coveralls, gloves and respirators and preparing them for disposal (decontaminating any necessary items).

Disposal of consumable PPE/RPE must be via double-bagged, labelled, 200 µm plastic bags. These bags of potentially asbestos-impacted waste can be disposed of within the subsequent days asbestos waste area, once prepared as per Item 7.4 (1).

7.7 Air Monitoring

In order to validate the effectiveness of the implementation of the recommended control measures to the operational asbestos zones of the site, a performance-based asbestos air monitoring programme is to be undertaken. This programme will be structured to more intensively monitor the asbestos/ACM waste and asbestos-in-soil disposal operation and associated activities during the early stages of the filling operation (i.e. up to 10 days monitoring over the first 3 months of filling, supplemented by swap sampling on the inside of machine cabs, where relevant) to confirm that controls are appropriate and are working effectively. With favourable results (and WDC/WRC approval), this air monitoring programme will reduce to monitoring on a quarterly basis for the remainder of the first year of operation³.

The monitoring will comprise a number of monitoring points during each monitoring round which could include locations:

- ∴ At/near the property boundaries closest to the neighbouring sites (i.e. to the north and east of the site);
- ∴ Within the cab of at least one machine operating in the nearest vicinity of an operational asbestos zone; and/or,

³ The frequency of the air monitoring programme may be further reduced in time under the direction of a competent person/licensed asbestos assessor, and possible WDC/WRC and WorkSafe NZ approval, if quarterly results are consistently at or below trace level (i.e. 0.01 fibres/mL of air) across all monitoring points.

- ∴ Adjacent to any simultaneous work that may be occurring within the Managed Fill area.

Asbestos air monitoring programme should be implemented and overseen by a Competent Person/LAA who is independent of the Managed Fill operation. Air monitoring analysis is to be completed by an IANZ laboratory in accordance with the NOHSC:3003 (2005) method⁴.

7.7.1 Reporting of Results

Air monitoring results are to be reported to GMFL and stakeholders by the Competent Person/LAA within 24 hours. If required, follow-up actions are to be advised by the Competent Person/LAA if control levels exceed the indicative fibres/mL triggers set in Table 3.

Typical ranges of results (of airborne asbestos fibres per mL of air) and the required actions regarding site control measures during the soil disturbance works are provided below for reference.

⁴ A key limitation of this method is that it records total respirable fibres, which could be a combination of asbestos, synthetic and organic fibres collected onto the filter during the monitoring period. As such, any exceedance of trigger level will be confirmed for positive asbestos fibres using subsequent electron microscopy assessment (i.e. TEM testing).

Table 6: Asbestos in Air Concentrations and Associated Actions	
Concentration (Asbestos fibres/mL of air)	Actions
≤ 0.01	<p>Current control measures working effectively to keep airborne asbestos fibres < trace level.</p> <p>Continue with control measures.</p>
> 0.01	<p>Current control measures are not working effectively to keep airborne asbestos fibres < trace level.</p> <p>Notify WDC/WRC (as required) of the possible exceedance.</p> <p>Analyse sample using Transmission Electron Microscopy (TEM) method to confirm concentration of asbestos fibres.</p> <p>Confirm actual result with WDC/WRC.</p> <p>Investigate the cause of the respirable asbestos fibre level, implement controls to minimise exposure to asbestos, and minimise the further release of respirable asbestos fibres (Reg 44).</p>
> 0.02	<p>Current control measures are not working effectively to keep airborne asbestos fibres below trace level.</p> <p>Stop work; notify WorkSafe (and WDC/WRC) of the exceedance.</p> <p>Investigate the cause of the respirable asbestos fibre level, agree and implement controls to minimise exposure to asbestos, and minimise the further release of respirable asbestos fibres (Reg 45).</p> <p>Only resume work when air monitoring results show that the recorded respirable asbestos fibre level is at or below trace level (i.e. <0.01 fibres/mL).</p>

Summary reporting of quarterly monitoring results, along with any exceedances, corrective actions taken and further investigation findings and results will be prepared by GMFL as part of the Annual Monitoring Report expected to be provided to WDC/WRC each year of the Managed Fill operation.

7.8 Health Monitoring and RPE Programme

7.8.1 Health Monitoring

Health monitoring is required to be undertaken by PCBUs under the Asbestos Regulations where employees are undertaking asbestos-related works and are therefore at risk of exposure to asbestos. GMFL must prepare a programme for health monitoring for any GMFL staff and contractors who work within the operational asbestos zones with the site. Personnel such as truck drivers (who occasionally visit the site) are not considered to require health monitoring (unless a risk of exposure is identified).

Any staff concerned that they may have been exposed to elevated asbestos fibres due to activities within the Managed Fill operation at the site may be given the opportunity to undertake health monitoring by GMFL.

7.8.2 RPE Programme

As part of the health monitoring undertaken by GMFL, a RPE programme should also be implemented to manage and record the training and awareness, fit-testing, maintenance and regular cartridge replacement of in-use RPE for anyone who regularly works within the operational asbestos zones of the Managed Fill.

7.9 Record Keeping

Each PCBU is required to hold and maintain training records for asbestos workers. All internal asbestos training must be kept on accessible electronic files by GMFL. Induction details of all site attendees should also be maintained.

Section 16 of the ACOP describes the requirements for health monitoring for workers potentially exposed to asbestos. The frequency and nature of the monitoring is to be reported by the medical practitioner involved in the physical examination. GMFL is responsible for maintaining confidentiality of the results. The results are required to be kept for at least 40 years. Section 16.10 of the ACOP provides specific requirements of the information needed from health monitoring reports.

7.10 Review

This AFMP must be reviewed every 5 years at a minimum to ensure that the documentation reflects changes in the regulations, site controls or operational changes to the facility. Consideration should be given to updating the AFMP prior to commencing filling of a new fill area of the Managed Fill in order to ensure that current controls and procedures remain relevant and feasible for the site. The AFMP should also be reviewed and updated as required during processing of or following granting of resource consents to ensure consistency with consent conditions.

8.0 Emergency Procedures

The following processes are to be followed in any situation where asbestos related works may constitute an 'emergency'. This would include any situation where an event or incident has occurred during the normal course of operations at the Managed Fill which results in the potential for airborne asbestos fibres to exceed the airborne contamination standard.

8.1 Emergency Works

Emergency or urgent works involving asbestos may be required as a result of an incident such as a storm-related 'wash-out' of placed soils, or a traffic incident involving asbestos/ACM waste and/or asbestos-in-soil, etc. If emergency works are required with work involving asbestos, then GMFL must ensure that appropriate regulations are followed to ensure that exposure to airborne asbestos fibres is eliminated or minimised. First and foremost, the immediate health and wellbeing of the personnel involved must be protected. Prior to undertaking any remedial works required, a methodology must be developed to ensure the risk of workers and persons in the vicinity of the work site being exposed to asbestos in concentrations that exceed the airborne contamination standard for asbestos is minimised as far as reasonably practicable (Reg 23).

This may include, but not be limited to, adequate isolation of the area(s), WorkSafe notification, and appropriate LAS and LAAs for the type of emergency works required are appointed (Regs 55-57).

8.2 Incident Reporting

All health and safety incidents involving asbestos must be reported to the Managed Fill Manager in the first instance. It is the Managed Fill Manager's responsibility to maintain a register of these incidents under the system developed and implemented by GMFL. Incidents should be fully investigated, with investigation findings to be fed back into the changes related to the AFMP and/or other procedural documentation maintained by GMFL.

Note: WorkSafe may require additional notifications of certain incidents (i.e. such as spills of hazardous substances, etc).

8.3 Emergency Procedures

GMFL is expected to plan for any emergency situation which occur as a result of the day-to-day operation of a Managed Fill facility which accepts asbestos/ACM waste and/or asbestos-in-soil. Emergency procedures for the immediate isolation and management of asbestos/ACM waste and/or asbestos-in-soil related incidents must be prepared, discussed and provided in the induction process for any individual working with asbestos/ACM waste and/or asbestos-in-soil.

9.0 Annual Monitoring Reporting

It is expected that WDC/WRC will require an Annual Monitoring Report (AMR) to be provided to them at a regular time each year which summarises (with respect to asbestos/ACM waste and asbestos-in-soil):

- ∴ The nature of the filling activities which have occurred – i.e. the volume of asbestos/ACM waste and asbestos-in-soil imported to the site and deposited into each of the active fill areas;
- ∴ The broad categorisation of the waste accepted into these areas – i.e. Class A asbestos and/or Class B ACM, Class A soils, Class B soils, Asbestos Related Work Soils, Unlicensed Asbestos Work Soils, etc;
- ∴ Summary air monitoring results including any corrective actions taken for results above the trigger levels indicated in Section 7.7.1;
- ∴ Summary information for any complaints/breaches to the AFMP and/or any incidents which occurred within the Managed Fill facility (related to asbestos/ACM waste and asbestos-in-soil) during the monitoring period.

It is anticipated that additional AMR requirements will be placed on the Managed Fill operation (i.e. discharge assessments, chemical assessments, etc), and as such the AMR requirement for the asbestos-specific parts of the operation could be included within this larger document as an appendix.

10.0 References

Health and Safety at Work Act 2015.

Health and Safety at Work (Asbestos) Regulations 2016.

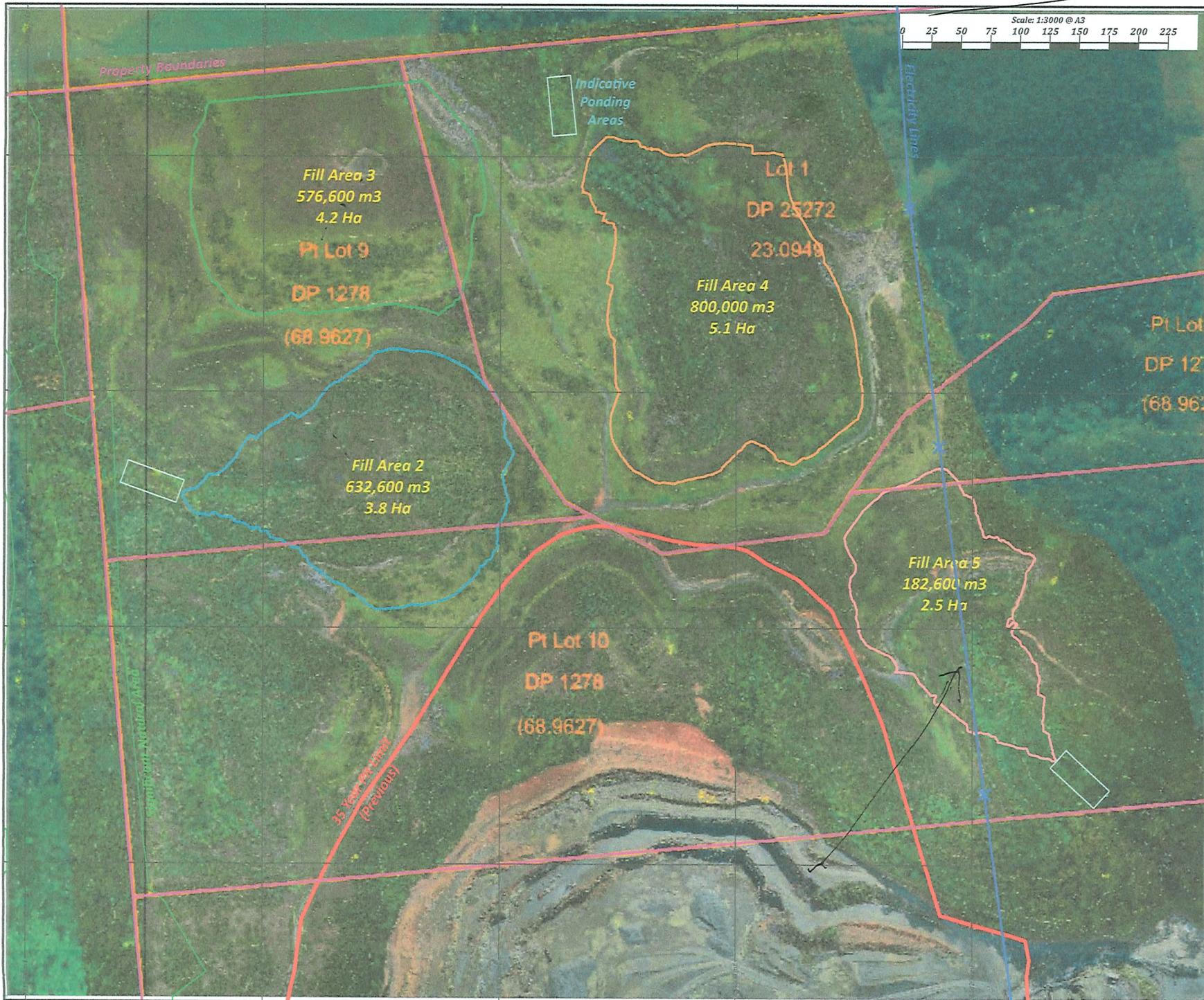
BRANZ 2017. Guidelines for Assessing and Managing Asbestos in Soil.

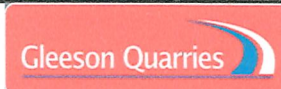

WorkSafe New Zealand, 2016. Code of Practice for the Management and Removal of Asbestos.

Appendix A

Terra Mining Consultants Figure –
Site Fill Assessment

Terra Mining Consultants
Site Fill Assessment



Project:	
Huntly Quarry	
Title:	
Fill Site Assessments Fill Areas on Aerial (Excl. Design)	
Projection:	
Plan View	
Location:	
Huntly Quarry, Huntly, Waikato	
DRAWING REFERENCE	
Issue Date:	June 2019
Drawing No:	GCH-001
Revision No:	01
Requested By:	MJH
Drawn By:	GWF
SURVEY/TOPOGRAPHIC INFORMATION	
Survey/Photogrammetry:	Pilbrow Survey
Survey Date:	April 2019
Survey Reference:	190410
Coord Circuit:	Mt Eden Circuit
Datum:	Geodetic 2000
GENERAL	
Date:	06 June 2019
	
	
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