HUNTLY SITE & FILL MANAGEMENT PLAN (SFMP)

REVISION 08

JUNE 2022

SITE DETAILS

Site name: Gleeson Managed Fill
Owner/ Operator: Gleeson Managed Fill Limited
Location: 310 Riverview Road, Huntly

DOCUMENT CONTROL

REVISION	STATUS	PREPARED/UPDATED BY	COMMENTS	DATE
01	Draft	Paua Planning Ltd & Erosion Management Ltd	Initial draft	07/11/2019
02	Draft	Paua Planning Ltd		03/02/2020
03	Draft	Andrew Rumsby & Paua Planning Ltd	Minor edits	09/03/2020
04	Draft	Andrew Rusmby & Paua Planning Ltd		19/07/2021
05	Draft	Michael Parsonson & Andrew Rumsby	Drainage sampling	20/08/2021
06	Draft	Kate Madsen	Minor amendments	16/09/2021
07	Draft	Paua Planning Ltd	Updated for new notified applications	12/04/2022
08	Draft	Paua Planning Ltd/EHS Ltd/Southern Skies	Updated – s92	27/06/2022

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1. INTRODUCTION

1.1. Purpose & Objective

This Site & Fill Management Plan (SFMP) addresses matters associated with the operation of a clean and managed fill activity at 310 Riverview Road, Huntly. It has been developed to manage operations at the identified fill site known as Fill Areas 2, 3 and 4. It demonstrates how the site and operations will be managed to ensure that any actual or potential adverse effects are avoided, remedied or mitigated. It includes details on the proposed procedures and standards to show how compliance will be achieved with the relevant conditions of resource consents. It has been prepared in general accordance with the MfE and WasteMINZ guidelines[1].

This SFMP relates only to matters associated with the fill activity at the three sites. It will be consistent with quarry activities on the adjacent site but does not include quarry related matters. Nor does it extend to other activities that may occur on the property such as farming activities or to any other land disturbing activities that may occur on the same property but unrelated to the Fill Areas 2, 3 and 4 works.

1.2. Acronyms & Abbreviations

ACM	Asbestos Containing Material
AFMP	Asbestos Fill Management Plan
ASS	Acid Sulphate Soils
ESCP	Erosion and Sediment Control Plan
SAP	Huntly Managed Fill Sampling and Analysis Plan
SFMP	Site & Fill Management Plan
GMFL	Gleeson Managed Fill Limited
GQ	Gleeson Quarry
HAIL	Hazardous Activities and Industries List
PAC	Polyaluminium Chloride
The Site	Managed Fill Area's 2, 3 and 4 located at 310 Riverview Road, Huntly.
WDC	Waikato District Council
WRC	Waikato Regional Council
WRCPS	Waikato Regional Council Policy Statement
NPS-FW	National Policy Statement for Freshwater 2020
NES-FW	National Environmental Statement for Freshwater 2020

1.3. Site & Fill Management Plan Status

[1] Sections 8.1 and 7.2 of the MfE & WasteMINZ guidelines suggest matters to be covered by a site management plan

This SFMP is a draft document that has been prepared to form part of the resource consent applications to WRC and WDC. It will be updated to include any specific conditions and requirements once resource consent for this activity has been granted. The updated SFMP will be submitted to the council before the commencement of filling at the site.

The SFMP is a live document and will require continuous reviews and updates as the regulatory and operational environment changes.

2. RESOURCE CONSENTS & CONDITIONS

The consents and permits listed in the Table below have been granted for the managed fill operations.

Table 1: Consents and permits obtained

WAIKATO REGIONAL COUNCIL			
Date granted	Consent Number	Description	Expiry date
[insert date]	[insert consent number]	[insert description]	[insert date]
[insert date]	[insert consent number]	[insert description]	[insert date]
[insert date]	[insert consent number]	[insert description]	[insert date]
[insert date]	[insert consent number]	[insert description]	[insert date]
[insert date]	[insert consent number]	[insert description]	[insert date]
WAIKATO DISTRICT COUNCIL			
Date granted	Consent Number	Description	Expiry date
[insert date]	[insert consent number]	[insert description]	[insert date]

The consents have a number of conditions. The most relevant of these conditions, the issue(s) they relate to, and the section(s) of this SFMP that address(es) the issue(s) are summarised below in Table 2.

Table 2: Issues, Consent Condition(s) & SFMP reference(s)
Add issue as required

Issue(s)	**Consent condition(s)**	**Relevant section of SFMP**
Site & Fill Management Plan (SFMP)		This document
Surface Water Sampling and Analysis Plan (SAP)		9.3
Relevant application documents		Attachments A-M
Fill Stability		5.5
Erosion & sediment control		5.6
Site access		5.8
Traffic Management		5.9

Hours of operation		5.10
Noise levels		5.11
Dust		5.12
Final landform / rehabilitation		5.14
Fill definition, acceptance and management procedures		6
Complaints		10

To be finalised once the consents have been granted.

3. SITE DESCRIPTION

3.1. Site Location

The fill sites are adjacent to the existing operating Gleeson Quarry (GQ) at 310 Riverview Road, Huntly – see Figure 1. Access will be through the quarry entrance and along existing internal quarry roads before linking to a new/upgraded internal road that will lead to the separate fill sites.

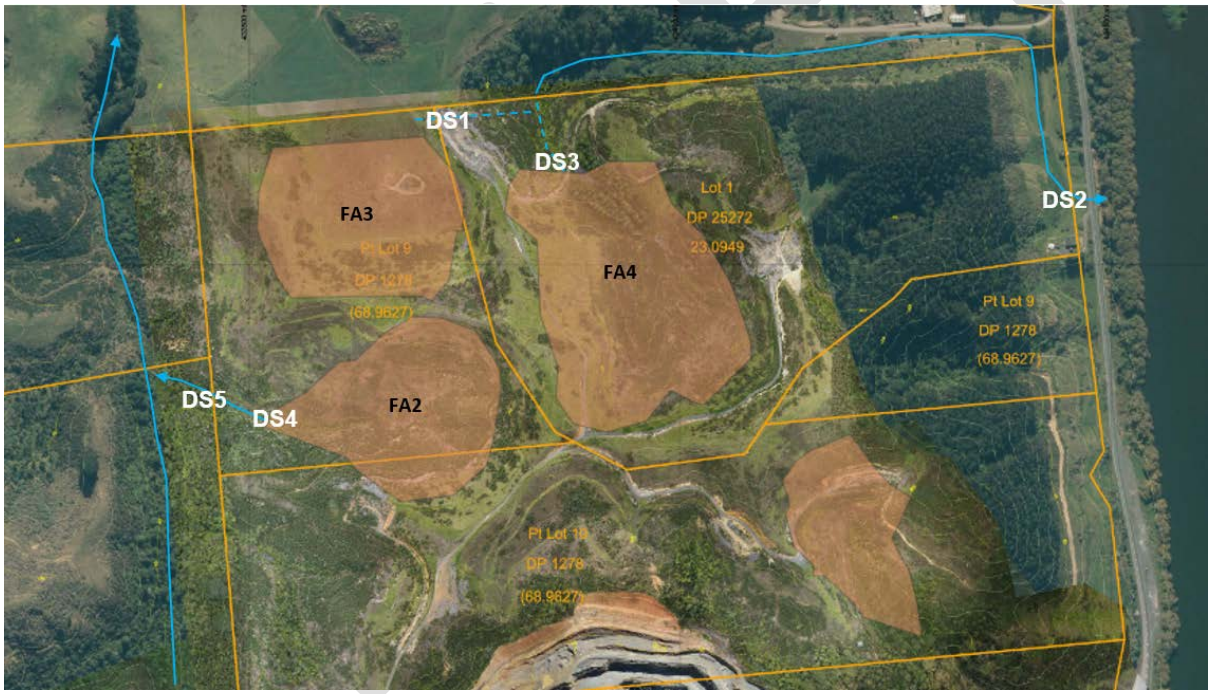

Figure 1: Indicative fill and water sampling locations (refer to Surface Water Sampling & Analysis Plan

Table 3: Legal Property Description

Applicable Fill Area	Included in Certificate of Title	Legal Description
Fill Area 2	SA149/243, SA922/109	Pt Lot 9 DP 1278 & Part Lot 10 DP 1278
Fill Area 3	SA149/243, SA922/109 SA656/223	Pt Lot 9 DP 1278 Lot 1 DP 25272

Fill Area 4	SA656/223	Lot 1 DP 25272

3.2. Topography

Fills 2 and 4 are located in separate gully features while Fill 3 is on flat land created by an historic filling operation. Fill 2 is a westerly orientated steep sided gully and Fill 3 is a flat area with gentle ridges to the west and east and northerly orientated back slopes. Fill 4 is moderately sloping gully that drains northward. High voltage power lines run parallel to the Fill 4 along the eastern ridgeline.

3.3. Ecology

Ephemeral and intermittent watercourses are present on the sites along with wetland features. There are no perennial (permanent) stream reaches on any of the sites. The ecology report commissioned for the fill activity concluded that the ecological status of the watercourses was not significant but those of the wetlands were significant under 2 criteria of the WRCPS. Since this assessment, it has been determined that the wetlands do not qualify as 'natural wetland' under the NPS-FW/NES-FW, and are considered to be artificial (**Attached Technical Reports 5 and 6**). A separate area has been identified on the property for wetland and holistic ecological mitigation purposes and details are discussed in section 5.13 Ecology Management.

Vegetation is predominately pasture along with some exotic forest, forestry slash, weeds etc.

Of note:

- WRC have accepted that there are no 'natural wetlands' in Fill Areas 2, 3 and 4 as defined under the NPS-FW/NES-FW and have been classified as artificial.
- During the geotechnical investigations for Fill Area 3, works were undertaken in June 2019 that led to the draining of the pond/wetland.
- Works stopped, due to the decision that the level of works was resulting in non-compliance with regional plan standards.
- Council became aware of those works and required that any adverse effects from these works be remedied.
- All remedial works was completed by August 2020. Additional information on this matter can be requested from WRC (File No:61 76 85A).

3.4. Archaeology

An identified Archaeological site was investigated east of FA3 (by the Waikato River), however is not affected by the proposed fill activities. See Archaeology Report (**Attached as Technical Report 7**).

4. MANAGEMENT

4.1. Owner and Operator

The owner is Gleeson Managed Fill Limited (GMFL).

The overall management of the site will be the responsibility of the Managed Fill Manager (or delegated authority). The duties and responsibilities include:

- Managing daily fill operations – inspection of loads, placement of fill, document control etc.
- Ensuring compliance with the conditions of the resource consents and monitoring requirements pertaining to the site.
- Communicating and training (where required) resource consent requirements to staff, contractors and other relevant parties.
- Documentation of filling operations and inspections are kept up to date and recorded of all material deposited at the site.

The Managed Fill Manager details are:

Site name:	Gleeson Managed Fill Sites (Huntly)
Owner/ Operator:	Gleeson Managed Fill Limited
Managed Fill Manager:	[**insert Managed Fill Manager name]**
Phone:	[**insert contact number]**
Email:	**[insert email]**
Location:	310 Riverview Road, Huntly
Postal Address:	PO Box 97 034 Manukau City Auckland 2241

4.2. Staff requirements

Site staff will generally consist of machinery operators under the direction of the Site Manager. The number of operators on site will depend on site activity.

4.3. Training

The site manager will be familiar with the contents of this SFMP and of the resource consent requirements.

Staff associated with the filling operations will be provided with specific training relevant to their expected duties. All relevant site personnel, such as the site manager and machinery operators, will be trained on how to identify acceptable material (e.g. that identified in Table 5 and 6, Sections 6.1 and 6.2) and non-acceptable material (e.g. as per the concentrations specified in Table 6 and that

identified in Table 7). The assessment will include the type of material, its visual appearance (e.g. visible staining), odour (e.g. hydrocarbons) etc. The site manager will be familiar with the contents of this SFMP and of the resource consent requirements.

Job descriptions and training reviews will be implemented in order to identify ongoing training requirements in all aspects of the fill operation. The training of personnel will mainly be undertaken through site inductions and regular site operation meetings. A detailed and up to date training record will be kept on site.

4.4. Health and Safety

Health and Safety procedures on site will be in accordance with the Gleeson Quarries Huntly Limited health and safety requirements as they operate within close proximity to each other and shall be consistent with relevant health and safety legislation requirements.

5. OPERATIONS

5.1. Site Machinery

The machinery to be utilised on site is expected to be a combination of the following:

- Komatsu D65 Bulldozer,
- Caterpillar 20 Ton excavator,
- Caterpillar 16G grader,
- 10,000 litre Watercart,
- Compactor, and
- Trucks delivering the fill material.

Machinery will be subject to change.

5.2. Site preparation

Preparatory works to prepare for filling will be required before active filling can commence. The preparatory works in each fill area will involve the installation of:

- initial sediment controls (including diversion of cleanwater);
- deep drainage (≤10m) to allow dewatering of existing fill (Fill Area 3 only);
- sediment retention pond, upgrade of access route and tip head; and
- initial site stripping and drainage layers for new fill.

The required erosion and sediment control measures will include runoff diversion channels and bunds and the construction of a sediment retention pond along with a supplementary chemical

treatment system. A super silt fence will be installed at the bottom end of the work area for sediment control while the pond for the fill site is constructed. Details are described in the attached Erosion and Sediment Control Plan (**Attached as Technical Report 3**).

A site specific geotechnical report has been prepared for the fill areas to demonstrate their overall suitability for the filling operation and site drainage Note: currently FA2 and 3 only. (Attached as Technical Reports 1).

5.3. Fill Placement

Imported fill will be restricted to clean and managed fill transported by the applicant's own trucking business (Gleeson & Cox Ltd) and those of approved subcontractors.

The placement of the fill material will be a combination of trucks arriving and tipping at the fill site. Trucks will either be arriving and dumping directly into the open fill area or within a designated area from where the fill material) will first be managed and then be moved by machinery to the relevant area of the fill, the location of each deposition being recorded by GPS. Placed fill will be compacted by track rolling, the movement of site machinery/trucks etc. or perhaps by compactor. Bare surfaces will be stabilised against erosion (topsoiled and grassed) on an ongoing basis as filling is completed in particular areas. Straw/hay mulch, fabric or similar will be applied for temporary stabilisation as required.

A cleanfill capping layer will be placed in the top 2 m of the final contours of the site.

Acceptance documentation will record the type and source of the fill (see Section 8 Monitoring and Recording).

Any wet (sludge/ sediment) type of materials will be allowed to dry (adjacent to the filling area) prior to placement. It will be incorporated into the fill after the appropriate treatment (see section 6). All works will be within the catchment of the sediment retention pond.

5.4. Staged Filling

The worked areas within each fill site will vary depending on the type of material received, the season and the state of filling on the overall site. The maximum area of land bare at any one time will be 3 hectares. Some areas may be opened and closed several times during the life of the FA, and both temporary and permanent stabilisation measures will therefore be used.

The site will be required to receive fill throughout the year to service land development and infrastructure activities when they occur. The maximum open area of the site will be managed to reduce potential sediment generation and avoid the need for a winter works restriction.

5.5. Fill Stability

The geotechnical design for each fill area will need to be certified by WRC/WDC before the commencement of any works on the fill site and the works will need to be undertaken in accordance with the final design.

The proposed geotechnical works will include:

1. Installation of deep drainage to dewater the existing fill (Fill Area 3 only). This is necessary to provide necessary stability when the new fill is placed at a commercially viable rate.
2. The stripping and removal of vegetation and topsoil along with soft and otherwise unsuitable material to expose subgrade conditions.
3. The installation of drainage. These will include a graded drainage trench, lined with geotextile with a punched drainage coil wrapped in filter sock placed at the invert).
4. The construction of engineered structural containment bunds for fill stability. Drainage blankets (or another drainage system) will be installed at the base of each lift in order to relieve water pressure that may build up within the fills due to stormwater infiltration and water released from managed fill during consolidation.

Specific geotechnical design details for FA2 and FA3 are described in the attached Geotechnical report (Attached as Technical Reports 1).

5.6. Erosion & Sediment Control

The erosion and sediment control approach includes the following:

- Although the rate of filling will vary as it will depend on the supply of appropriate material, the area of exposed land will be no more than 3 hectares at any one time.
- A sediment retention pond will be constructed to treat the runoff. The fill surface and drainage will be shaped and managed to ensure surface runoff and shallow subsurface drainage is always directed to the sediment retention pond.
- The final completed fill will be topsoiled and vegetated (either sown in grass or planted with other species). Temporary stabilisation may include mulch, geotextile or aggregate.
- All erosion and sediment control measures will be constructed and maintained in accordance with the approved erosion and sediment control plan and Waikato Regional Council Technical Report No. 2009/02 *Erosion and Sediment Control Guidelines for Soil Disturbing Activities*, January 2009 (TR2009/02).
- The sediment retention pond will require desilting from time to time. The accumulated sediment will be pumped or excavated (long reach excavator if required) and trucked back into the Fill Area and dried before being blended into the fill.

Details of these measures are contained in the Erosion and Sediment Control Plan and accompanying drawings that have been prepared for the operation (**Attached as Technical Report 3**).

- Each sediment retention pond will have a minimum capacity as per the ESCP.

- Chemical treatment to supplement the sediment retention performance of the sediment retention pond will be implemented in accordance with the Chemical Treatment Management Plan in (**ATTACHMENT B**).
- Cleanwater and dirty water diversion bunds will be sized in accordance with the ESCP and TR2009/02.~~a minimum of 0.75m in height and dirty water diversion channels/bunds will be 1.0m in height (to allow for possible deposition in the channel). These channels will be capable of conveying the 1% AEP storm event~~
- Progressive stabilisation measures – both temporary (e.g. mulch and aggregate) and permanent (e.g. topsoiling and grassing).

5.7. Fill Signage

Clear and visible signage at the site access shall be erected and maintained and shall include the following:

- Name of the site and the managed fill operator;
- Hours of operation;
- Details that the site has restricted access (not open to the general public);
- Details stating that '*No Unauthorised Dumping will be permitted*';
- Name and number for a 24-hour emergency contact.

5.8. Site Access

The existing single entry and exit access point from Riverview Road into the quarry will be used by both the quarry and managed fill trucks. The managed fill operation will not be open to the public, the gate will be locked outside working hours and no unauthorised dumping will be permitted.

The current internal haul roads (associated with quarry activities and previous farm/forestry activities) will be upgraded for heavy vehicles to access the Fill Areas. Upgrades include a minimum width of between 10m in order to accommodate two-way traffic and gradients of 1:10. The internal haul roads will be stabilised by aggregate.

5.9. Traffic Management

All vehicles entering the site will report to the office before proceeding to FA.

The details pertaining to traffic movements will be captured and recorded as part of the information listed in Section 8 of the SFMP - Monitoring & Recording.

5.10. Operating hours

The hours and truck movements for the managed fill can be divided between off-site and on-site activities. These are shown below in Table 4.

Table 4: Operating hours for managed fill areas

Offsite activity	
Truck movements associated with the managed fill operation	12 extra truck movements per day / 24 trips per day (Monday to Saturday)
Summer (1 October – 30 April):	~~7am~~ 5am - 7pm on Monday to Friday; *(No more than 12 truck movements between 5am-6am)* ~~7am~~ 6am - 2pm on Saturday.
Winter (1 May – 30 September):	~~7am~~ 5am - ~~7pm~~ 6pm on Monday to Friday; *(No more than 12 truck movements between 5am-6am)* ~~7am~~ 6am - 2pm on Saturday.
No truck movements on Sundays or public holidays other than special events or emergency works. *The operating hours do not apply to office administration or the maintenance of vehicles, plant or machinery.*	
Onsite activity (utilisation of the internal access routes, the compaction/relocating of the fill material within the Fill Area)	
Hours of operation	~~7am~~ 6am – 7pm Monday to Friday ~~7am~~ 6am - 2pm on Saturday

Works are proposed to continue throughout the year i.e. no winter closures are proposed.

5.11. Noise Management

The fill sites are located in the Rural Zone and the following noise limits apply:

Operative Waikato District Plan, Rule 25.17 Noise -
Any activity is a permitted activity if it is designed and conducted so that noise from the activity measured at any other site does not exceed:

(a) 50dBA (L10), 7am to 7 pm any day, and
(b) 45dBA (L10), 7pm to 10pm any day, and
(c) 40dBA (L10), and 65dBA (Lmax) at all other times.

A noise report determines (**attached as Technical Report 4**) that noise will not exceed 37dBA L_{10} at the most exposed notional boundary on Riverview Road and 34dBA L_{10} on Hillside Heights Road. This is below the existing measured background (LA_{95}) noise environment for the proposed hours of work and below the permitted activity standards specified above. There will not be any adverse noise effects for residents around the site.

In addition to the above, the following noise mitigations will be implemented:

- Machinery and truck operation associated with FA's will be limited to the specified and consented Hours of Operation.
- Noise levels will comply with and will be measured in accordance with NZS6801:1999 Acoustics Measurement of Environmental Sound and assessed in accordance with NZS6802:1991 Assessment of Environmental Sound.
- Haul roads and access ways will be maintained to a good standard to limit noise associated with vibrations and rattles from trucks and mobile plant.
- Operators of noisy machinery will be instructed and trained in noise minimisation techniques.
- A Complaints register (Section 10 of this SFMP) will be kept to record, document and respond to complaints associated with the fill operations. This will include those arising from noise generation.

5.12. Dust Management

The main emission to air from the fill activities will be that of dust. The following mitigation measures are proposed to limit dust emissions from the managed fill operations (That from asbestos is addressed in Section 6.5):

- Suppression of dust through the application of water by means of a water cart(s) in order to ensure that the where necessary the working areas, haul roads and stockpiles are kept damp.
- Restricting vehicle movements to strictly necessary and speeds at the Site to 20 km per hour during dry and windy conditions.
- Rehabilitation and replanting with suitable grass species of completed full areas as soon practicable.
- Use of wheel wash stations at the site exit to minimise track-out of dust.
- Monitoring of dust emissions on this site will be undertaken on a visual basis. Dust suppression devices will be manually turned on or implemented once dust starts being generated. The Dust Monitoring shall be recorded and kept on site as detailed in Section 8 Monitoring & Recording of this SFMP.

5.13. Ecology Management

The mitigation associated with the management of ecological features are described in the **ATTACHMENT D** Ecological Management Plan. This includes specific mitigations associated with loss of wetland (artificial) and stream habitat. A Fish Management Plan is included as Attachment H, to relocate fish before works commence.

5.14. High Voltage Power Lines

Site preparation and filling activities undertaken will meet the safe distances within the New Zealand Electrical Code of Practice for Electrical Safe Distances 2001 (NZECP 34:2001) or any subsequent revision of the code.

The high voltage power lines (the HAM-MER-B 110kV line) are only in proximity to FA4; written approval has been provided by Transpower with no special conditions.

5.15. Final Landform and Cover requirements

The top 2m of the fill will consist of cleanfill only.

The final landform will have a cross slope across to one side where an overland flow path will be constructed. The completed fill will be progressively top soiled, grassed and returned to a permanent pastoral land use.

Displacement monitoring will be established at the finished fill. Successive monitoring points will be established at each bench level with additional monitoring points installed on the finished surface.

At the end of their operational life, the SRPs will be drained, cleared of settled sediment deposits with the material disposed of within the fill and capped before the final site top soiling and grassing occurs (or forestry planting). The remaining pond can then be either filled or rehabilitated.

6. FILL CRITERIA

GMFL will accept cleanfill to managed fill which will enable the site to accept a range of materials up to a maximum assessed quality and based on market demand. The consents **[reference]** granted on **[insert date]** allows for the placement of both cleanfill and managed fill material at the FA's. The two fill materials are further discussed below.

6.1. Cleanfill Acceptable Wastes

The following material will be accepted at the Gleeson Huntly Fill site as Cleanfill if it meets the following definitions:

a. Overburden sourced from the Quarry site; or
b. Comply with the definition and table of 'cleanfill' material in the MfE guideline (Table 5); and
c. Be solid material of an inert nature; and
d. Not contain hazardous substances or contaminants above recorded natural background levels of volcanic soils of the site.

Table 5: Cleanfill – acceptable materials[2]

Cleanfill Material Definition
Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

[2] A Guide to the Management of Cleanfills, Ministry for the Environment, January 2002.

• combustible, putrescible, degradable or leachable components • hazardous substances • products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices • materials that may present a risk to human or animal health such as medical and veterinary waste, asbestos or radioactive substances • liquid waste.

Material	Discussion
Asphalt (cured)	Weathered (cured) asphalt. After asphalt has been exposed to the elements for some time, the initial oily surface will have gone, and the asphalt is considered inert.
Bricks & Masonry Blocks	Inert – will undergo no degradation.
Ceramics	Inert.
Concrete – un-reinforced	Inert material.
Concrete –reinforced	Including exposed reinforcing rods of less than 1 meter in length
Fibre cement building products	Inert material comprising cellulose fibre, Portland cement and sand. Care will be taken to ensure that the product does not contain asbestos, which is unacceptable.
Glass	Inert, and poses little threat to the environment. May pose a safety risk if placed near the surface in public areas, or if later excavated. The safety risk on excavation should become immediately apparent, so glass is considered acceptable provided it is not placed immediately adjacent to the finished surface.
Road sub-base	Inert.
Soils, rock, gravel, sand, clay, etc.	Acceptable if free of contamination. Vetting procedures will be implemented through the site management plan.
Tiles (clay, concrete or ceramic)	Inert.
Soils identified as being Acid Sulphate Soils	See Acid Sulphate Soils Management Plan (See **Attachment L**)
Marine Sediments	For marine sediments to be disposed into the Huntly Managed Fill they shall: • Have a solids content of at least 20% and liberate no free liquids when transported; • Meet the waste acceptance criteria outlined in Table 5; and • Have undergone ASS testing and be limed neutralised.

Note: Cleanfill may include incidental tree or vegetative matter less than 2 per cent by volume by load.

6.2. Managed Fill Acceptable Wastes

All imported managed fill is to:

a. Be placed at a depth of 2.0 m or more below the surface of the final cover.

b. Be below the maximum chemical concentrations for managed fill as set out in Table 6.

The following site-specific waste acceptance criteria have been developed for the Gleeson Huntly Managed Fill site and will be accepted if it meets the following permitted parameters detailed in Table 6. Please see **attached TECHNICAL REPORT 2** Waste Acceptance Criteria report.

Table 6: Proposed Waste Acceptance Criteria for the Gleeson Huntly Managed Fill[3]

Contaminant Type	Parameter[1]	Proposed Waste Acceptance Criteria (> 2 m) (mg/kg)	Proposed SPLP Leachability Limits (mg/L)[8]	Maximum Truckload Fill Concentrations Shallow (<2 m) Clean Fill (mg/kg)
Elements	Arsenic	100[2]	-	12
	Boron	45[3,10] (260)[2,7]	2	45
	Cadmium	7.5[4,9]	-	0.65[9]
	Chromium	400[4,9]	-	55
	Copper	325[4,9]	-	45
	Mercury	1.5	-	0.45
	Nickel	65 (320)[2,7]	1	35
	Lead	250[10] (1,000)[2,7]	1	65
	Thallium	23[12]	-	1
	Zinc	400[10] (2,000)[2,7]	1	180
BTEX Compounds	Benzene	0.2[10]	-	0.0054[9]
	Toluene	1.0[9]	-	1.01[9]
	Ethylbenzene	1.1[9]	-	1.10
	Total xylenes	0.61[9]	-	0.61
Polycyclic Aromatic Hydrocarbons (PAH)	Benzo-a-pyrene (eq)	20[4]	-	0.0054[9]
	Naphthalene	7.2[5]	-	0.013[11]
	C_7-C_9	120[5]	-	120[9]
	C_{10}-C_{14}	300 (1,400)[4,13]	-	58[9]

[3] Assessment of Effects and Waste Acceptance criteria, Table 5: Proposed Waste Acceptance Criteria for Managed Fill, PDP, October 2019.

Contaminant Type	Parameter[1]	Proposed Waste Acceptance Criteria (> 2 m) (mg/kg)	Proposed SPLP Leachability Limits (mg/L)[8]	Maximum Truckload Fill Concentrations Shallow (<2 m) Clean Fill (mg/kg)
Total Petroleum Hydrocarbons (TPH)	C_{15}-C_{36}	20,000[14]	-	-
Others	DDT and isomers	8.4[4,6]	-	0.7[9]
	Aldrin	0.7	-	-
	Dieldrin	0.7[4,6]	-	-
	Tributyltin	6[515]	0.3[154]	
Asbestos	Refer to Table 2 of the Huntly Quarry – Asbestos Fill Management Plan (PDP, 2019).			

Notes:

1. All values in mg/kg unless otherwise stated.
2. Ministry for the Environment (MfE) 'National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health' (MfE, 2012) for a commercial/industrial outdoor worker.
3. Auckland Regional Council (ARC) 'Technical Publication 153 (TP153) – Background Concentrations of Inorganic Elements in Soils from the Auckland Region' (ARC, 2001).
4. Auckland Council (AC) 'Auckland Unitary Plan: Operative Version' (AC, 2018), Table E30.6.1.4.1.
5. MfE' Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' (MfE, 2011). Table 4.15 Tier 1 soil acceptance criteria.
6. MfE' Identifying, Investigation and Managing Risks Associated with Former Sheep-dip Sites: A guide for local authorities' (MfE, 2006).
7. 2. Concentrations of boron above 45 mg/kg, lead above 250 mg/kg, nickel above 65 mg/kg and zinc above 400 mg/kg in infill materials will require Synthetic Precipitation Leaching Procedure (SPLP) testing to be carried out on the fill materials before acceptance, to demonstrate that elevated concentrations of these elements will not mobilise under conditions likely to be present in the fill area. The in-brackets value is the maximum concentration that can be accepted if SPLP results are satisfactory.
3. Leachability limits from the MfE' Guidelines for the management of hazardous waste – Module 2: Landfill Waste Acceptance Criteria and Landfill Classification' (MfE, 2004) and WasteMINZ (2018) Technical Guidelines for Disposal to Land – Type 2 landfill.
8. 4. Initial screening criteria based on Ridge Road. Value in bracket is the upper limit of TPH based upon criteria if soils meet BTEX and PAH criteria listed above. The higher value is based upon MfE' Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' (MfE, 2011). Table 4.20 Tier 1 soil acceptance criteria for Protection of Groundwater quality.
9. Total concentrations from WasteMINZ (2018) for cleanfill (Class 5 landfill Waste Acceptance Criteria).
10. Ridge Road, Quarry Managed Fill Acceptance criteria (2018).
11. Canadian Council of Ministers of the Environment (CCME, 2018) Recommended Criteria for the Protection of Freshwater Life.
12. Thallium guideline value based upon US EPA Regional Screening Levels for thallium sulfate for industrial sites (see **Error! Hyperlink reference not valid.**)
13. Initial screening criteria based for Ridge road. Value in bracket is the upper limit of TPH based upon criteria if soils meet BTEX and PAH criteria listed above. The higher value is based upon MfE' Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' (MfE, 2011). Table 4.20 Tier 1 soil acceptance criteria for Protection of Groundwater quality.
14. TPH C_{15}-C_{36} value is based upon MfE' Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand' (MfE, 2011). Table 4.20 Tier 1 soil acceptance criteria for Protection of Groundwater quality and assume soil also meets PAH criteria above.
15. 5. MfE' Guidelines for the management of hazardous waste – Module 2: Landfill Waste Acceptance Criteria and Landfill Classification' (MfE, 2004) – Class B landfills. Leachability limits are determined by TCLP test. Waste containing TBT higher than the 6 mg/kg as long as they meet SPLP criteria of 0.3 mg/L.

Material from industries or sites identified on the Ministry for the Environment (MfE) Hazardous Activity and Industries List (HAIL), (see **ATTACHMENT I Hazardous Activities and Industries List**) will

not be accepted unless testing shows compliance with the waste acceptance criteria in Table 6 above.

However, the contaminant list in Table 6 is not exhaustive. For managed fill containing other contaminants not listed in Table 6 the acceptance criteria shall be as follows:

- Contaminant concentrations shall not exceed the concentrations within TP153 Background Concentrations of Inorganic Elements in Soils from the Auckland Regional for volcanic soils.
- For organic contaminants not listed in Table 6 then CCME agricultural soils guidelines will be used an initial screening criterion. If no CCME agricultural soil guidelines exists or higher concentrations of contaminants are proposed to be deposited within the managed fill, then site-specific criteria will be developed and submitted to WRC for approval.

6.3. Unacceptable & Prohibited Wastes

The following items are prohibited and will not be accepted at the Gleeson Huntly Managed Fill:

Table 7: Prohibited Fill Material

The following fill material will not be accepted at the fill site and is prohibited:
• Acid generating tailings from the processing of sulphide ore • Bulk liquids. • Bulk fertiliser waste • Tyres. • Medical and Veterinary Waste • Coal Ash Waste. • Lead-acid batteries (lead-acid batteries can be recycled in New Zealand). • Used oil. • Explosive, flammable, oxidising or corrosive substances - as defined under the HSNO Act. • PCB wastes. • Persistent Organic Pollutants wastes (as defined by the Stockholm Agreement). • Drums or containers containing hazardous chemicals (including agrichemicals, solvents, • petroleum compounds or toxic chemicals (as defined under the HSNO Act)). • Viscous materials-liquids/tars/paints and painted material. • Household Hazardous Waste. • Vegetation, bark, wood chips and green waste. • Lithium ion batteries • Municipal solid waste and domestic refuse. • Organic Peroxide Compounds as defined under the HSNO Act • Other sulphuric mine tailings materials • Paper, cardboard, and fabrics. • Electrical components, cabling and insulation. • Biosolids from municipal or industrial wastewater treatment plants. • Radioactive materials • Waste from metalliferous minerals' physical and chemical processing (including mine mullock, iron slag and conveyor sludge)

7. FILL ACCEPTANCE & REJECTION

7.1. Pretested and Pre-Approved fill material

GMFL will accept managed fill mainly on a pre-approval basis only. The managed fill site is only open to account holders. Account holders will be required to prearrange access to the facility in advance, and will be required to notify GMFL of the source of the material, whether it comes from a Hazardous Activities and Industries List (HAIL) site, volume of fill to be disposed of and any testing that has been completed on the site by providing either a Site Investigation Report, Site Validation Report prepared in accordance with the MfE Guidelines or relevant testing results. Only fill that will ensure compliance with Tables 5 and 6 above will be accepted.

All pre-approved fill loads will be inspected by a GMFL staff member at the weighbridge and then again at the tipping point disposal area. The fill load shall be exposed, and staff members (spotters) and/or plant operators fully trained in inspection, acceptance and rejection procedures shall be used to verify whether the deposited material meets the appropriate definitions and permitted parameters. A visual inspection will be completed prior to the material being authorized to be tipped at the fill area. At least 2 loads per day shall be randomly selected and analysed by a trained and qualified staff member in accordance with the XRF protocols outlined in BS EN 16424: Characterisation of waste screening methods for the elemental composition by portable X-ray fluorescence.

The Managed Fill Manger reserves the right not to accept any material until it has been tested and the results complies with the thresholds as stated in Table 6. Additional investigation of pre-approved loads will be undertaken if in doubt or concern is raised by a GMFL staff member on the compliance and suitability of the material.

In the event that a spotter or plant operator has a reason to suspect a load may be suspicious (strong petroleum odour, staining etc), the pre-approved load shall be quarantined on site.

7.2. Quarantine & Wet material

Pre-tested Loads that have been quarantined on site, shall remain in the quarantine area until laboratory analysis can be undertaken to confirm whether or not that material can be incorporated into the fill site. This material will be placed to one side in the vicinity of the tipping head and bunded. Any cost involved will be at the expense of the account holder. All testing is to be completed by an appropriately registered laboratory.

Where the test result of the imported fill in the quarantine area **complies** with the Acceptance Criteria as specified in Table 6, the operator will be notified, and the material will be uplifted and disposed into the fill area.

Where the test result of the imported fill in the quarantine area **does not comply** with the Acceptance Criteria as specified in Table 6, it will be removed to a suitably consented off-site disposal facility within two weeks of receiving the laboratory test result confirming unacceptability.

Imported fill that is visibly wet, has the appearance of mud, or that does not readily break apart due to the presence of moisture will be laid aside and not inspected until dry.

7.3. Fill Rejection

Fill that does not meet the following criteria will be rejected and will not be allowed to be disposed of on site:

1. If the fill material exceeds the Acceptance Criteria as indicated in Table 6;
2. If the fill material is included and defined in Table 7 Prohibited Material;
3. Any non-tested waste for a potentially HAIL site;
4. In the event that a spotter or plant operator identifies a load that is clearly non-compliant in terms of vegetative composition, foreign material composition, coloured liquids, or strong odour, the material shall be rejected from the site prior to tipping.

Any vehicle entering the site that has not obtained pre-approval or has material that has not be tested will not be allowed to dispose of their load on site. No material that has been rejected will be accepted or stored on site.

Other grounds such as commercial and operational reasons may also occur resulting in rejections of fill loads. Commercial reasons may include adequate notice not given by the customer or the fill material has not been pre-approved. Operational reasons may include site conditions that do not allow for safe and practical disposal of fill material.

7.4. Asbestos Material

Please refer to Huntly Managed Fill – Asbestos Fill Management Plan (AsbFMP) dated 10 January 2020 **(ATTACHMENT C)** for acceptance, handling and placement of ACM.

In summary the following tipping procedures are proposed.

- Material will be deposited into an excavated hole in the fill site and the material immediately covered with adjacent soil. The location of the tipping areas/excavations will vary around the site.
- Trucks with loads wrapped in plastic will be tipped directly into the hole. This will usually apply when the level of asbestos is Class A or B. As indicated in the Asbestos Fill Management Plan loads wrapped in plastic do not require truck bodies to be cleaned once these materials have been tipped. The truck bodies do require a visual assessment confirming no remaining asbestos material to be completed by a Licensed Asbestos Assessor (LAA) or Competent Person.
  Note: truck wheels will still need to be cleaned if they have been in contact with asbestos impacted soils.

- Trucks with unwrapped material will also be deposited directly into the hole. In this case, the truck body will be manually hosed out with the wastewater directed into the same disposal area. A water cart will be available for this purpose. Truck bodies which have been in contact with asbestos impacted material require cleaning and a visual assessment confirming no remaining asbestos material to be completed by a Licensed Asbestos Assessor (LAA) or Competent Person.
  Note: truck wheels will still need to be cleaned if they have been in contact with asbestos impacted soils.
  Note: if material being brought in is sticking to the bodies and therefore water use becomes high, then loads from this source may have to be wrapped.

Asbestos monitoring is proposed, and this is discussed in section 8 Monitoring and Recording of this SFMP.

7.5. Acid Sulphate Soils

Acid sulphate soils (ASS) may be imported to the site. They will be managed in accordance with the Acid Sulphate Soil Management Plan (ASSMP), provide in **ATTACHMENT L**. Such soil will be imported directly to an ASS processing area that will be managed to avoid the storage of soils overnight or during significant rainfall. Runoff from the processing area will be managed via a collection pond.

8. CONTINGENCY

8.1. Deposition of unauthorised waste

Inappropriate material identified at any of the assessment stages will be rejected and removed from the site. No further material will be accepted from that particular source without sound supporting documentation. Should there be doubt about particular material, then the material will be either immediately rejected and transported elsewhere, or separated and quarantined in a separate bunded area. It will be tested for the parameters listed in Table 6, which will determine whether the material is accepted or rejected. If rejected, the material will be removed from the site. GMFL will have agreements with its customers and these will include the customer's responsibility to deal with any material declined at the site.

8.2. Fuel Spills

The following procedures are undertaken in the event of a fuel spill.

1. The spill will be stopped e.g. drum righted.
2. The area will be bunded off (e.g. contained by earth bunds etc), "mopped up" with absorbents, sand or similar, and the material then disposed offsite.
3. Should a spill reach the sediment retention pond, pond outflow will be stopped by raising the decant arms and the material removed e.g. by floating absorbent booms.

Spill kits will be kept in all trucks, site machinery and the site office.

8.3. Waste slumping or slips

The geotechnical design, including subsurface and surface drainage, has been prepared so as to ensure long term stability of the fill and avoid slumping. Given the basin topography of the site, If slumping did occur it will be contained within the site. Any drainage that has been affected would be reinstated and the fill excavated and replaced on to the correct area. If the moist content of the slumped material is too high for placement, it will be spread in the site and dried before being blended with other fill. Any sediment laden runoff that is associated with slumps will be contained by the dirty water diversions and site topography, and directed to the sediment retention pond.

8.4. Natural Hazards

FA's are not in a flood prone area. Earthquakes and volcanic activity are identified as the two natural hazards that could occur at the site. Of these, earthquake risk is the main natural hazard and fill stability under seismic conditions is included as one of the assessment criteria of the detailed geotechnical design report for the site.

8.5. COVID-19 Response

The fill activity will ~~only~~ operate during any COVID outbreak ~~at Level 4~~in accordance with central, regional or local government guidelines for essential services ~~use only~~, and any works required to ensure the ongoing safety and protection of the fill operation and surrounding environment may be undertaken. During any COVID Lockdown ~~Level 4~~, the Fill Manager has the power to enter the site to carry out essential works.

Specifically, any wastewater from the sub-soil drainage that cannot be discharged into the SRP due to elevated contaminants, there are companies such as 'Allens United Services' who are listed as essential service providers and can provide management services for the water from the sub-soil drainage and tank during COVID alert levels.

9. MONITORING AND RECORDING

The following information will be recorded and kept on site. It will be made available to WRC and WDC officers on request/during inspections.

9.1. Truck loads and movements

A record of all trucks entering the site will be kept on the site which will include the following details:

1. Name and address of company delivering the material.

2. Registration Number.
3. Date and time of arrival on site.
4. Approximate weight/volume of the load deposited.
5. Verification that the waste type complies with the acceptance criteria (cleanfill/managed fill).
6. Physical address of the land the material was sourced from.
7. Detailed description of the type of material to be deposited.
8. Any noticeable characteristics of the waste.
9. Testing results.
10. Location (including GPS coordinates) of area being filled. This will include the date coordinated and the depth of fill being imported.

9.2. Inspection and Testing of Fill Material

A record of all inspections carried out on the material will be kept on site and will include the following details:

1. Name and address of company delivering the material.
2. Date of inspection
3. Method of inspection
4. Details of staff member that completed the inspection
5. Indicate whether material was accepted / rejected
6. Further actions required: e.g. additional testing

Records of sampling and testing, analytical results, and any consequential actions will be kept by the Site Manager and made available to Waikato Regional Council upon request. The waste acceptance criteria stipulated in Table 6 may be varied only with the approval of Waikato Regional Council.

9.3. Water Sampling

Monitoring of water discharges is also required on a **[insert frequency i.e. monthly/quarterly]** basis from the locations required by WRC **[insert consent, condition and location]** and in in accordance with the Huntly Managed Fill Sampling and Analysis Plan (SAP) **(ATTACHMENT A).** The SAP provides the indicative locations of all sampling points, which will be confirmed once each fill site is established. These will include sampling of the discharge of each sediment retention pond, and from one location downstream that represents reasonable mixing.

~~These locations are subject to change as the filing activities progress to the different fill areas.~~

Physicochemical measurements for dissolved oxygen, electrical conductivity, pH and temperature will be undertaken at sampling locations identified in the SAP. Water samples will be collected from the monitoring sites and sent to an IANZ accredited laboratory and analysed for the parameters outlined in Table 7.

Table 7: Proposed Water Quality Parameters to be monitored at the Huntly Managed Fill

Parameter	Rationale
Total arsenic	Common contaminant which is known to be elevated in Waikato Soils and on some contaminant sites. Key indicator compound of CCA impacted soils
Total boron	Mobility water soluble and mobile in the environment.
Total cadmium	Elevated in some soils.
Total copper	Common contaminant which is known to be elevated in Waikato Soils and on some contaminant sites.
Total lead	Common contaminant which is known to be elevated in urban soils and on some contaminant sites.
Total zinc	Common contaminant which is known to be elevated in urban soils and on some contaminant sites. Moderate mobility under neutral pH conditions.
Total petroleum hydrocarbons (TPH)	Common contaminant.

The results of the Water Quality Monitoring Programme will be compared to site-specific trigger values. These site-specific triggers values will be developed as part of the SAP and will be based upon US EPA CMC guideline values.

The trigger value for total petroleum hydrocarbon will be based upon MfE (1998) Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand recommendation of 15 mg/m3.

Where US EPA CMC values do not exist (boron and copper), site-specific trigger values will be derived on a case by case basis.

Within five working days of receipt of results, the Managed Fill Manager shall provide the results to WRC/WDC.

If the discharges exceed the acceptable thresholds, then the SFMP will be reviewed and updated accordingly should corrective actions be required.

9.3.1. Deep Drainage Water Management – FA3

The deep drainage from the existing fill will be collected in a manhole riser and pumped to a 30,000-litre tank located adjacent to the fill site. That tank will have capacity for up to 5.4 days of storage for the maximum long-term inflow a subsoil discharge and approximately 1 day of flow at predicted initial flow rates rate (memorandum titled 'Estimated groundwater inflow to proposed sub-soil drain in Fill 3 – Gleeson Quarry'; 27 May 2021 prepared by PDP).

Water samples collected from the underdrain storage tank will be measured using a hand held or benchtop spectrophotometer and assessed against the assessment criteria provided in the SAP. Final disposal of that water will be determined on the decision trees provide in Figure 2.

If the water cannot be disposed to the sediment retention pond it will be trucked off site and disposed to trade waste or an alternative facility approved by WRC.

Train site personnel will undertake the sampling and report the recommended disposal to the Site Manager prior to implementation.

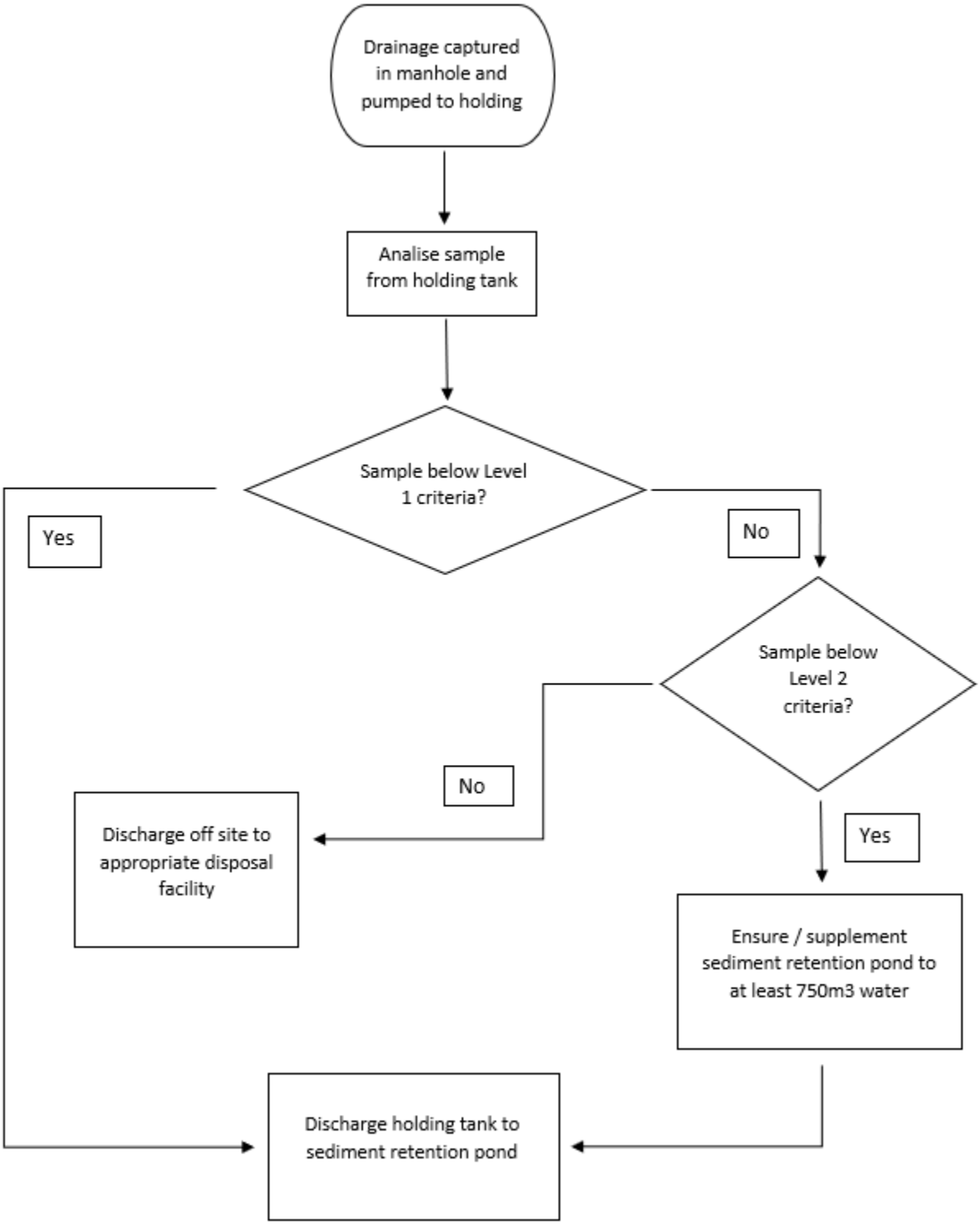

Figure 2: Deep drainage disposal decision tree based on SAP criteria.

9.4. Dust Monitoring and Recording

A daily monitoring log is to be kept recording all aspect relating to any dust or potential dust emissions these include but are not limited to the following: -

1. Date and details on any visible emission of dust and the source,
2. Frequency of watercart usage and the volume of water applied,

3. The volume of water used for dust suppression other than water cart usage,
4. Wind direction and speed,
5. The date and signature of the person entering the information,
6. Details and actions of dust complaints will be recorded in the Complaints register

9.5. Asbestos Emissions Monitoring and Recording

To limit asbestos emissions from the managed fill operations the following mitigation measures are proposed:

- Adhere to a Performance Based Asbestos Air Monitoring Programme **[ATTACHMENT G].**
- 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 might reduce to monitoring on a quarterly basis for the remainder of the first year of operation.
- 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,
    - Adjacent to any simultaneous work that may be occurring within the Managed Fill area.

9.6. Acid Sulphate Soils Monitoring

The management of ASS will be in accordance with the ASS Management Plan (**ATTACHMENT L**). Each set of loads that are processed with Aglime will be tested for pH prior to transfer to the active fill area. The collection pond servicing the ASS processing area will be tested in accordance with the ASS Management Plan, including ensuring a neutral pH is achieved prior to disposal of water to the quarry pit.

9.7. Training Records

A record of all training completed for staff will be kept on the site and will include the following details as a minimum:

1. Name and Family name of staff member
2. Date of when training was completed'
3. Description of the training conducted
4. Training material (where relevant)
5. Follow up training requirements

Further GMFL will hold and maintain training records for asbestos workers. All internal asbestos training will be kept on accessible electronic files by GMFL. Induction details of all site attendees shall also be maintained.

10. ANNUAL REPORTING

Any reporting requirements will be specified in this section along with their timing.

11. COMPLAINTS

All complaints shall be recorded and retained at the GMFL site office and a Complaints Register kept.

A compliant register will be established and will record:

- The date, time, location and nature of the complaint.
- The name, phone number and address of the complainant unless the complainant requests to be anonymous;
- The most likely cause of the alleged issue.
- Any remedial actions required to be taken and who is responsible to resolve the matter;
- Any remedial actions undertaken.

Copies of the Complaints Register shall be made available to the WRC/WDC on request.

Each complaint shall be investigated and reported in accordance with GMFL internal complaint management procedures. Where changes to practices or procedures are identified as appropriate through the complaints' procedure, amendment of this SFMP may be required.

12. REVIEW

This SFMP and all other Management Plans associated with FA2-4 will be reviewed at any other time deemed necessary. The review shall assess whether the management practices are resulting in compliance with the conditions of consents and permits and whether the objectives set out in the Management Plans are being achieved through the actions and methods being taken. The review shall result in amendments that are compliant with consent/permit conditions

Table 7: Fill Management Plan Review

REVISION	DATE OF REVIEW	SECTION REVIEWED	PROPOSED AMENDMENTS	REVIEWED BY	APPROVED BY

13. ATTACHMENTS

Remainder to be added

ATTACHMENT	TITLE	AUTHOR	Revision	DATE
MANAGEMENT PLANS				
A	**Huntly Managed Fill Surface Water Sampling and Analysis Plan (SAP)**	*Andrew Rumsby EHS Support*		~~*March*~~ *June 2022*
B	**Chemical Treatment Management Plan**	*To be developed – Southern Skies*		
C	**Huntly Managed Fill - Asbestos Fill Management Plan (AsbFMP)**	Pattle Delamore Partners Ltd		Oct'2019
D	**Ecological Management Plan (EMP)**	*Jamie McKay Wildlands*		March 2021
E	**Adaptive Management Plan (AMP)** ***To be developed***	Michael Parsonson Southern Skies Environmental		
F	**Contaminated Site Management Plan (FA3)**	*Andrew Rumsby EHS Support*		Sept 2021
G	**Performance Based Asbestos Air Monitoring Programme**	*Pattle Delamore Partners (PDP)*		TBC
H	**Fish Management Plan - FMP**	*Jamie McKay Wildlands*		June 2022
J	**Rehabilitation Management Plan**			TBC
K	**Complaints Register**	*To be developed*		
L	**Acid Sulphate Soils Management Plan**	*Andrew Rumsby EHS Support*		May 2022
TECHNICAL REPORTS				
1	**Detailed Geotechnical Investigation Reports – FA2 & FA3**	*Matthew Kernott Gaia Engineering*		*August 2021*
2	**Waste Acceptance Criteria Report (WAC)**	*Andrew Rumsby EHS Support*		June 2022
3	**Erosion and Sediment Control Plan & drawings (ESCP)**	Michael Parsonson Southern Skies Environmental		June 2022
4	**Proposed Managed Fill Noise Effects Assessment**	Nevil Hegley Hegley Acoustics Consultants		June 2022
5	**Ecological Impact Assessment (EiAC)**	Boffa Miskell Limited		July'2019

6	**Wetland Assessment (for Gleeson) & WRC Peer Review**	Kristy Harrison Stantec Nicholas Singers NSES Ltd		30 Nov 2021 1 March 2022
~~6~~7	**Archaeology Assessment**	Clough & Associates Ltd		July'2019