

**Form IPPC Landfill Part C –
Application for a Variation**

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Use this part of the form if you are applying to vary the conditions or any other provision contained in your permit.

Preliminary information

C1.1 Name of the installation

The name that you gave in part A

**Ghallis Non-hazardous Engineered Waste
Facility**

C1.2 Permitted activities in the “stationary technical unit”

- ☐ Hazardous landfill
- ☒ **Non-hazardous landfill (this includes sites which will also accept hazardous stabilised non-reactive wastes)**
- ☐ Inert landfill

Outline of the proposed variations and directly associated activities

This permit renewal and variation seeks the competent authority’s consent for:

- **Continued operations of the non-hazardous landfill as approved under IP001/06/B;**
- **Shredding of mattresses prior to landfilling; and**
- **The extension of available landfill void space through construction of a retaining wall using stabilised waste, as described in the attached Project Description Statement (Annex 1).**

C1.3 Non-technical description

The proposed variations

Please provide a summary of the variations which you are applying for.

A non-technical summary is attached in the Introductory Document.

This should include:

- a description of the change in operation requiring the variation;
- an indication of the variations to the conditions of the permit that you wish to apply for.

Checklist for Part C of your application

Check that any **changes** in the installation are covered by an update of the documents below. The Authority will inform you on the number of copies which are to be submitted.

- ☐ Parts A and C, of the application form
- ☐ The appropriate fee as instructed by the Authority
- ☐ Conceptual model as per Section C2.1
- ☐ Your site report as per Section C2.1
- ☐ Scale plans and drawings specified in the relevant questions
- ☐ The environmental risk assessments as per Section C2.2
- ☐ A copy of any previous information relating to the Habitats Regulations (S.L. 549.44) provided in support of a planning application or for any other purpose. A completed Habitats Appendix 11 where relevant (further details can be obtained from the Habitats Directive Process Handbook).
- ☐ Diagram showing your management structure as per Section C.3.4.2.1. .
- ☐ A copy of the conditioning plan for your installation, as required by Schedule 4, Paragraph 1(9) of the Landfill Regulations (S.L.549.29) Please list any other items where you are providing copies of your own information below:

The application document consists of the following documents:

- i. Introductory document and Non-technical summary & attached annexes**
- ii. Application form part A**
- iii. Application form part C**

This form is designed so that you can provide the necessary information from your current and/or your proposed programme of risk-based design, construction and operation for your installation. The Form tells you the information we need and the way in which we need it to be provided. Before you complete the form

- You must determine what the current boundary of the whole installation is and any proposed variations to it.
- You should have developed a conceptual model of the site in relation to its environment, on the basis of a desk study, site investigation and report.
- The conceptual model should have been developed through risk assessments
- (e.g. hydrogeological, stability, landfill gas) into a detailed design for the construction and operation of the installation.
- This design should have been reviewed until you are confident that the design and operation of the installation will satisfy the emission standards you have identified for the site against the relevant BAT Conclusions and the current permit conditions.
- You should then complete the form in draft, and use this to discuss your conceptual model, risk assessments, detailed design and changes from current emission levels in pre-application discussions with the Authority.

You will be asked to provide specified drawings and risk assessments with the completed form.

Applies if “**Hazardous landfill**” on page 1 is ticked. Applies if “**Non-hazardous landfill** (this include sites which will also accept hazardous stabilized non-reactive wastes)” on page 1 is ticked. Applies if “**an inert landfill**” on page 1 has been ticked.

If you have already submitted some or all of these drawings and assessments to the Authority, then provided that they meet the specifications and do not require revision for this application, you do not have to create them again but may be asked to provide further copies. You are required to answer the relevant questions in the form, though, and to provide the relevant cross-references to the drawings and assessments you have already submitted.

Your completed application will consist of

- the completed application form
- the plans and drawings that are specified in the form, and
- the conceptual model, site report, hydrogeology, stability and landfill gas risk assessments on which the design, construction, operation and monitoring of the installation are based.

No other technical or procedural documentation should be required with the application, since the relevant information the Authority needs for routine and detailed compliance will have been distilled from the application form and referenced by the Authority in the standard conditions and standard reports of the permit.

If your application results in the issue of a variation to the current permit, then the permit conditions will incorporate one section of the completed Part C application into the permit. This is the Regulatory Specification (Section 3), which defines the standards within which the installation will be designed, operated and maintained.

Your Regulatory Specification will be enforceable under the permit, and will be supported by:

- the risk assessments submitted with the application, and
- the detailed design of the control and monitoring systems, which may not be submitted with the application, but which, for key engineering elements, will be submitted for each new cell before it is constructed and the construction of which will be subject to validation and Authority approval prior to operation of each new cell, and
- the documented management systems, which may not be submitted to the Authority with the application, but which must be implemented and maintained to keep the installation within the Regulatory Specification, and which may be inspected at any time by the Authority during compliance assessment.

The permit conditions will allow for the phased development of your installation provided that it continues to meet the regulatory specification, and will require that

- detailed design and Construction Quality Assurance (CQA) documents meeting the relevant parts of the regulatory specification are submitted for defined parts of the engineering for each new cell prior to construction for approval by the Authority; and
- the Construction Quality Assurance validation report for each new cell is approved by the Authority prior to it becoming operational.

Provided it continues to meet the regulatory specification your detailed operational documentation may be

changed by informing the Authority of the change and the date of its implementation unless such change would otherwise amount to a 'substantial change' as defined by the Industrial Emissions (Integrated Pollution Prevention and Control) Regulations (LN 10 of 2013, as may be amended from time to time).

C.2 Conception model of environmental setting and installation design with supporting risk assessments

C.2.1 Environmental setting and installation design

You must provide an updated conceptual model for your installation. The conceptual model should provide an understanding of the installation in its environmental setting and consideration of the proposed changes to the design and operation of the site at the time of the application. The conceptual model should address the source terms of the risk (e.g. waste), all pathways and receptors and must meet the specification set out in this section. The conceptual model must be based on the drawings listed below some of which will be “as built” and some will be proposals. One drawing can provide the information for more than one of the following, providing the drawing is clear. Identification numbers must be included for each monitoring point. These drawings must be to recognized scales to show the details specified below.

The drawing label must include:-

- Title of drawing
- Installation name
- Name and address of the operator
- Date the drawing was made
- Drawing identification number
- Scale of the drawing

The installation – to provide scale drawings showing the following

N.B. Kindly provide details to the questions below as applicable to the proposed changes. In case the proposal does not require an update to the required information, kindly indicate as “N/A” with justifications.

C.2.1.1 The existing and proposed boundaries of the installation in relation to local environmental receptors, emission sources and monitoring points.

N/A The existing site boundary is that as approved in IP 0001/06/B & PA 964/11.

Plan 1 – existing and proposed

All proposed interventions are located within the existing boundary.

Environmental Setting

C.2.1.2 The installation showing the phasing, the location, size and shape of hydraulically independent cells that are to be constructed and summarizing the areas where waste has already been deposited and areas yet to be filled with waste.

N/A Deposition of waste has been carried out in all cells approved under IP 0001/06/B. This renewal is intended to cover continued operations within the last cell, as per current practice, and increase landfill void space as described in Annex 1 and Plan 1.

C.2.1.3 The distances from the installation's existing and proposed boundaries to residential and recreational areas, waterways, water bodies and other agricultural or urban sites (up to 500m).

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Maghtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Maghtab complex carried out by ADI Associates Ltd.

C.2.1.4 A plan and vertical cross-sections adequately characterizing the local and regional geology, specifically taking into consideration the vertical and lateral variability, attenuation characteristics and the natural in-situ geological barrier.

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Maghtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Maghtab complex carried out by ADI Associates Ltd.

C.2.1.5 The local topography (given for at least 500m from the installation's proposed boundary).

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Maghtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Maghtab complex carried out by ADI Associates Ltd.

C.2.1.6 Proposed pre-settlement contours at appropriate intervals for the whole installation.

Pre-settlement contours are considered in the previous application for renewal, with proposal made by SLR. Reference is also made to the outline closure plan (Annex 9). This closure plan and the relevant pre-settlement contours are intended to be finalised as part of the final closure plan. The pre-settlement contours of the proposed recontouring is given in Plan 2 – sections.

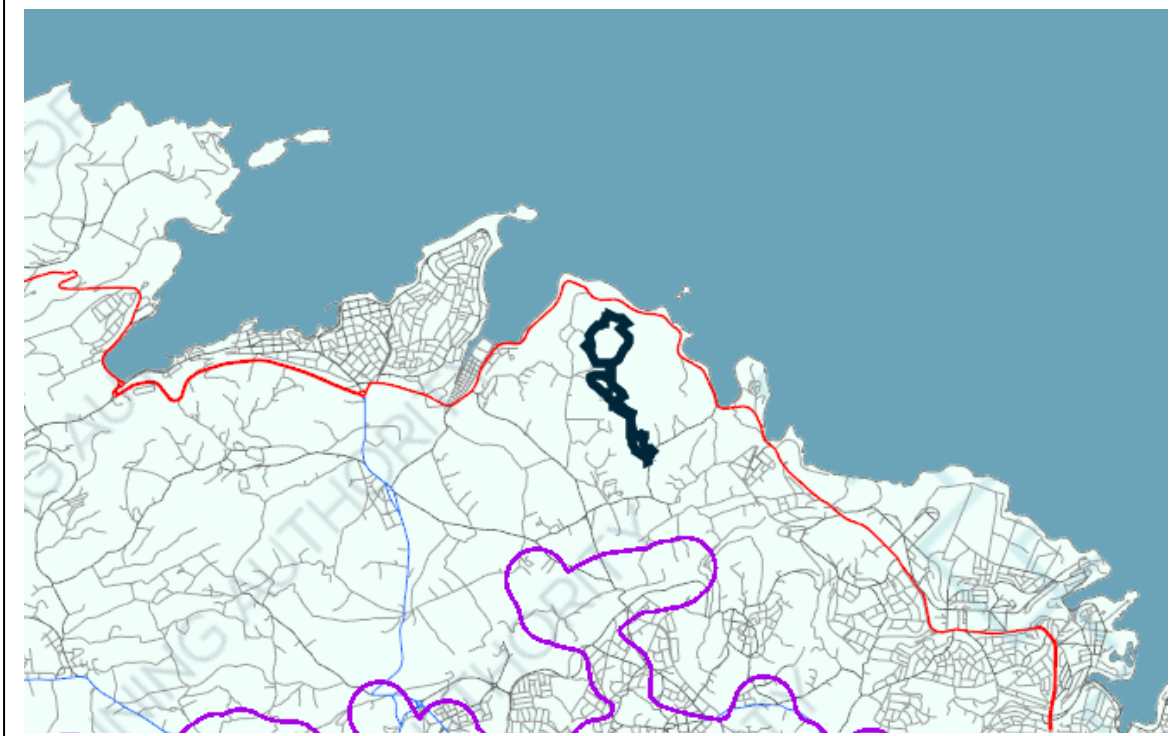
C.2.1.7 Predicted post-settlement contours of the whole installation and the surrounding land (given for at least 500m from the installation boundary); the proposed after-use of the installation and proposed planting.

Reference is made to the outline closure plan (Annex 9). This closure plan and the relevant post-settlement contours are intended to be finalised as part of the final closure plan, which shall also include proposed planting. A proposed after use for the site shall be subject to any required development permitting processes. A development permit application covering a closure plan by December 2019 and the submission to ERA of a closure plan in accordance with the requirements of S.L. 549.29 by December 2022.

C.2.1.8 The aquifer classification, any source protection zones, licensed abstractions, private water supplies and the vulnerability of the groundwater at the installation.

N/A with respect to entire Maghtab landfill complex, which has been evaluated as per Environmental Impact Assessment prepared by SLR Consulting Limited (SLR) in association with AIS Environmental Limited. Section 7 includes an assessment of water supplies and groundwater boreholes in the area, which does not include any protection zones of relevance to groundwater. The nearest groundwater protection is located to the South of the Maghtab landfill complex, 850m away from the edge of the 300m buffer zone (see image x below from the Planning Authority Geoserver)

Image 1: location of non-hazardous landfill indicated in dark blue; violet outline indicates locality of nearest groundwater safeguard).



C.2.1.9 The local and regional groundwater flow directions with groundwater contours.

N/A with respect to entire Maghtab landfill complex, which has been evaluated as per Environmental Impact Assessment prepared by SLR Consulting Limited (SLR) in association with AIS Environmental Limited (see p 91). The findings indicate that groundwater is generally brackish given its location at the edge of the aquifer lens, and that the flow is northerly towards the coast.

C.2.1.10 A scaled cross section (for each groundwater body) in the direction of predicted groundwater flow with boreholes and other relevant groundwater discharge points (e.g. springs, wetlands) identified on the drawing.

N/A with respect to entire Maghtab landfill complex – see above C 2.1.9

C.2.1.11 The areas of natural or cultural heritage and nature protection zone (consider up to 5km).

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Maghtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Maghtab complex carried out by ADI Associates Ltd. No variation is being proposed that would materially alter the findings of the above studies.

C.2.1.12 All the potential receptors of emissions to all environmental media (groundwater, surface water, land and air).

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Maghtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Maghtab complex carried out by ADI Associates Ltd. No variation is being proposed that would materially alter the findings of the above studies.

C.2.1.13 All the potential pathways to the identified installation specific receptors.

N/A Refer to C 2.1.12. Receptor pathways relevant to the new proposal are identical to those considered in the previous IPPC permit process for the entire site. These are reviewed in the Project Description Statement provided as Annex 01.

C.2.1.14 A wind rose for the site.

GH 14/2

Operational Details

C.2.1.15 The elements of site security for the installation.

Plan 5 – site security illustrates the upgrades that are being implemented, with the target being completion of the chain link fence by December 2018.

Leachate management and monitoring

C.2.1.16 The location of all leachate monitoring points, wells, sumps and leak detection layers (if present), piping and other fixed plant and equipment for leachate collection, extraction / recirculation, treatment.

Plan 6 – leachate monitoring points and associated infrastructure.

C.2.1.17 Vertical cross-section showing constructional details and depth(s) of each leachate monitoring point, wells and sump.

No further leachate monitoring points are planned, but those in the area of influence will be extended vertically to the appropriate level as works progress.

C.2.1.18 Process flow block diagram showing how the landfill connects to the leachate treatment plant. *This applies if Hazardous landfill on page 1 is ticked. Applies if Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes) on page 1 is ticked.*

Current leachate management involves the collection of leachate from wells, and recirculation of the leachate onto the landfill mass. Refer to Annex 7 on leachate management.

Landfill gas management and monitoring

C.2.1.19 Position of in-waste gas wells and monitoring points. *This applies if Hazardous landfill on page 1 is ticked. Applies if Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes) on page 1 is ticked.*

Plan 6 – gas wells and monitoring points

C.2.1.20 Changes and additions to the alignment of connection pipework (e.g. ring main headers and spurs with centralized control headers and spurs with outfield regulation). Indicate where this pipework will be buried and where exposed.

Refer to C 2.1.19 – no further variations are being proposed besides extension to accommodate vertical extension of landfill volume (system still in process of being implemented).

C.2.1.21 Changes to other fixed plant and equipment for landfill gas collection, extraction, treatment, disposal and/or use (e.g. knock-out pots).

Refer to C 2.1.19 – no further variations are being proposed besides extension to accommodate vertical extension of landfill volume (system still in process of being implemented).

C.2.1.22 Specifications of landfill gas flare(s) including any modifications to the current system.

N/A – not used on site

C.2.1.23 Changes to landfill gas energy utilization plant and exhaust stack(s).

N/A – no further variations are being proposed

C.2.1.24 New perimeter landfill gas monitoring boreholes.

N/A no further variations are being proposed besides extension to accommodate vertical extension of landfill volume (system still in process of being implemented).

C.2.1.25 New perimeter landfill gas monitoring points for aerial emissions.

N/A no further variations are being proposed besides extension to accommodate vertical extension of landfill volume (system still in process of being implemented).

Surface water management and monitoring

If any changes are identified, explain how the requirements of the Discharge of Dangerous Substance Regulations (LN 213 of 2001) and the Water Policy Framework Regulations (LN 345 of 2015, as amended) have been addressed.

C.2.1.26 Changes to layout of surface water collection, drainage and discharge systems.

No variations are being proposed to existing water management systems. The only addition resulting from the proposal described in Annex 1 involves the first implementation of capping of the part of the landfills, and includes a collection system for surface waters.

C.2.1.27 Changes surface water monitoring points location.

The approved monitoring programme for surface waters is sufficient; an additional monitoring point for runoff from the capping resulting from this extension is recommended, to confirm quality of runoff and proper disposal option.

C.2.1.28 Changes to location of any discharge points to surface water.

N/A Approved monitoring programme for the Maghtab Environmental Complex is sufficient given that no additional discharge points are being proposed.

Groundwater management and monitoring

If any changes are identified, explain how the requirements of the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009 as amended) have been addressed, and submit a map showing the proposed location of such emissions.

C.2.1.29 Changes to location of all groundwater monitoring points.

N/A - no variations are being proposed to the footprint of the landfill; existing containment will be preserved and extended. Annex 1 includes a description of the treatment of edge of the lining system that is an improvement over the current scenario.

C.2.1.30 Vertical cross-section(s) showing constructional details and depth(s) of each groundwater monitoring point.

N/A - no variations are being proposed to the approved monitoring programme

Nuisance and health monitoring

C.2.1.31 Changes to location and monitoring points.

N/A - no variations are being proposed to the approved monitoring programme

Installation Engineering

C.2.1.32 As built drawing for any proposed constructed containment engineering (including protection and leachate drainage system).

N/A – containment has yet to be built. Refer to Plan 3 – detail.

C.2.1.33 Changes to proposals for all subsequent containment engineering (including geological barrier, artificial sealing liner, protection and leachate drainage system).

Refer to Annex 1 & Plan 3 – detail.

Site Reports and landfill installations

A site report, providing a history of the site (including current and past uses) and describing the condition of the site of that part of the installation in respect of which you are applying for a variation to the permit, and, in particular, identifying any substance in, on or under the land which may constitute a pollution risk. A baseline report assessing the state of the groundwater and land in line with *Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions* shall also be required by the Authority.

The site report shall cover those parts of the landfill installation where waste will not be permanently deposited (waste reception areas, leachate treatment areas, etc.) as well as areas of permanently deposited waste. The baseline report referred to above will be used to establishing the background quality of land and groundwater at the site of the installation whilst providing a baseline to assess these specific impacts during operation, post closure and at the point of permit surrender, as required by the Waste Management (Landfill) Regulations (S.L.549.29). As with other 'specified waste management activities' the surrender assessment will take account of potential pollution arising from previously licensed activities.

The information submitted as part of site reports will also be required in support of risk assessments and conceptual models.

Where you intend to refer to the risk assessments and conceptual models to provide your site report please provide the document reference and drawing references below.

C.2.1.34 Do you intend to rely on information in the risk assessments and conceptual model to provide your site report for the parts of the installation where waste will be permanently deposited as proposed in this application for variation?

☐ No

Provide document reference for the site report

☒ **Yes**

HRA Section 3.0; SRA Section 2.0; EIS Section 14 for the existing landfill remain valid. The proposed variation involves a Stability Risk Assessment, and a report on surface water management.

C.2.1.35 Do you intend to rely on information in the risk assessments and conceptual model to provide your site report for the parts of the installation where waste will not be permanently deposited as proposed in this application for variation?

☐ No

☒ **Yes**

HRA Section 3.0; SRA Section 2.0; EIS Section 14 for the existing landfill remain valid. The proposed variation involves a Stability Risk Assessment, and a report on surface water management.

C.2.2 Risk Assessments

This section provides the information on risk assessments and impact assessments that you have carried out and that are the basis for the detailed design and operation of your installation as described in this application for variation. The regulatory specification that you provide in Section 3 of this form must be justified with reference to the risk assessments you describe on this section.

In addition to answering the questions in this section, you must provide the following detailed risk assessments with your application. You should give the reference for any previous risk assessments that have been submitted to the Authority:-

- Hydrogeological risk assessment
- Stability risk assessment
- Landfill gas risk assessment.

Hydrogeological risk Assessment

The hydrogeological risk assessment must demonstrate compliance with the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009 as amended) over the lifetime of the installation and establish the technical measures necessary to comply with the Landfill Regulations 2002 and the Groundwater Regulations. The installation must be designed and operated such that substances in List I are prevented from entering groundwater and the discharge of List II substances is limited so as to avoid groundwater pollution. The Groundwater Regulations define List I and List II substances.

C.2.2.1 Provide the following information

Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill** (this include sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "**an inert landfill**" on page 1 has been ticked.

► Do the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009 as amended) apply?

If any changes are identified, explain how the requirements of the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009 as amended) have been addressed, and submit a map showing the proposed location of such emissions.

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☒ **Yes**

Annex 13 & HRA Section 3.0

► Do additional arrangements need to be made to collect contaminated water and leachate?

☐ **The installation poses no potential hazard to the environment in view of its location and waste types accepted.**

HRA Section 3.0 – the sequential construction and infill of cells within the landfill has resulted in leachate being detected at points along the landfill bottom contours. Completion of the lining of the final cell currently being infilled will serve to complete the containment system of the cell as approved by the previous renewal of IP/0001/06, as described in Annex 7 on leachate management.

☐ Arrangements needed.

► Does the risk assessment determine the technical measures necessary for the geological barrier, engineered containment, and leachate management systems?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☒ **Yes**

HRA SECTION 3.6 & 3.7 PAGE 39 – 41. These have been used as a basis for the design of the extended containment system.

► Have groundwater control and trigger levels for the proposed variation been derived?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☐ Yes

HRA SECTION 3.3.1 PAGE 34 – 39; SECTION 4.0 PAGE 42 – 43; SMS appendix 5

► Has the monitoring programme for groundwater, surface water and leachate been designed using the hydrogeological risk assessment?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☐ Yes

HRA SECTION 3.3.1 PAGE 34 – 39; SECTION 4.0 PAGE 42 – 43; SMS appendix 5

C.2.2.2 Provide the following information Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill** (this include sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "**an existing inert landfill**" on page 1 has been ticked

Repeat this section for each closed, pre-operational and operational cell/phase of the installation as covered by this application for variation from the original consolidated IPPC Form B application form.

Name of cell / phase

While certain cells have been filled, these are still technically operational given that the capping has yet to be implemented. Active tipping is currently restricted to cell 9.

The proposal for variation involves further infilling within the cells of the eastern side of the landfill, as indicated in Plan 1.

Type

☐ Pre-operational ☒ **Operational** ☐ Closed

Name of cell / phase

The proposal for variation involves further infilling within the cells of the eastern side of the landfill, as indicated in Plan 1.

Type

☐ Pre-operational ☐ Operational ☐ Closed

►Do the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009 as amended) apply?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☒ Yes

Refer to section C 2.2.1

►Do arrangements need to be made to collect contaminated water and leachate?

☐ The installation poses no potential hazard to the environment in view of its location and waste types accepted.

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☒ **Arrangements needed**

Refer to section C 2.2.1 – Proposals for treatment of leachates are currently being developed.

►Does the risk assessment determine the technical measures necessary for the geological barrier engineered containment leachate management systems?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☐ Yes

Annex 13 - HRA SECTION 3.6 & 3.7 PAGE 39 - 41

►Have groundwater control and trigger levels been derived?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☐ Yes

Annex 13 - HRA SECTION 3.3.1 PAGE 34 – 39; SECTION 4.0 PAGE 42 – 43; SMS appendix 5. Also approved monitoring programme.

►Has the monitoring programme for groundwater, surface water and leachate been designed using hydrogeological risk assessment?

☐ No

Provide a summary of the reasons why not and the reference to the relevant section/page of the detailed justification in your hydrogeological risk assessment.

☒ Yes

Annex 13 - HRA SECTION 3.3.1 PAGE 34 – 39; SECTION 4.0 PAGE 42 – 43; SMS appendix 5. Also approved monitoring programme.

C.2.2.3 Please provide your hydrogeological risk assessment for the installation covered by this application for variation, which must address the following key issues:-

►Version and full reference of the hydrogeological risk assessment report.

HYDROGEOLOGICAL RISK ASSESSMENT - November 2004 SLR Ref.: 4C-585-001/HRA

►Location including grid reference.

Annex 13 - HRA SECTION 2.1 PAGE 3

►Installation maps and plans (as specified in section 2 above.

Plan 1

►Historical activities.

Annex 13 - HRA SECTION 2.2 PAGE 4 – 5.

►Operational phasing.

Annex 13 - HRA SECTION 2.3 PAGE 5 – 6. The operational phasing described within this section has not been implemented since the facilities for treatment and disposal of hazardous wastes are no longer being considered as appropriate. Alternative plans are being developed for additional facilities within the Maghtab Environmental Complex, and a holistic approach towards management of waters on site is recommended once these plans are finalized to optimize management of waters on site.

►Landfill classification.

N/A - variation does not affect landfill classification

►Nature of wastes to be accepted.

N/A – variation does not affect nature of wastes to be affected

► Characterisation of leachate.

Annex 13 - HRA SECTION 3.3 PAGE 31 – 32

C.2.2.4 Please provide a documented model in support of the conceptual model detail in Environmental setting and installation design which contains:

► Geology (vertical/lateral, variability, attenuation characteristics) e.g. maps, cross-sections.

Annex 13 - HRA SECTION 2.5 PAGE 11

► Hydrology, topography, climate.

Annex 13 - HRA SECTION 2.4 PAGE 7

► Hydrogeological conditions (groundwater levels, flow and quality regime, vulnerability, source protection zones).

Annex 13 - HRA SECTION 2.6 PAGE 16 - 27

► Long term hydrogeological changes.

Annex 13 - HRA SECTION 2.6 PAGE 16 - 27

► Source term characteristics (leachate head levels, chemical characteristics, short and long term changes, presence of polluting substances).

Annex 13 - SECTION 3.3 PAGE 31

► Water balance for the installation.

Annex 13

► Pathways to receptors.

Annex 13 – SECTION 3.4.1 PAGE 35

► Receptors (groundwater below/adjacent to installation, abstractions, surface water).

Annex 13 - SECTION 2.4.2 PAGE 10

C.2.2.5 Engineering and active management (controls – rationale for proposed):

►Capping.

Annex 13 - HRA 3.6.1 PAGE 39 – proposed capping within variation is consistent with this engineering requirement

►Lining Design.

Annex 13 - HRA SECTION 3.6.2 PAGE 39 – proposed lining extension within variation is consistent with this engineering requirement

►Leachate drainage systems.

Annex 13 - HRA SECTION 3.6.3 PAGE 39 – proposed leachate drainage layer consistent with this engineering requirement

Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this include sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill" on page 1 has been ticked. Applies if "Arrangements needed" in section C2.2.1 has been ticked.

►Leachate head control.

N/A HRA SECTION 3.6.4 PAGE 39 – variation does not affect leachate head control management systems

►Groundwater management systems (if appropriate).

N/A – groundwater management is through engineered containment of contaminated liquids, and groundwater monitoring as per the approved monitoring programme.

►Leak detection systems.

N/A – groundwater management is through engineered containment of contaminated liquids, and groundwater monitoring. Leak detection systems are based on monitoring.

C.2.2.6 Risk Assessment

►Justification for methodology used.

Annex 13

►Likely/plausible worst case impacts on existing and potential receptors.

Annex 13 - HRA SECTION 3.1–3.4 PAGES 30-36

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- Quantified impact of long term failure scenarios of engineering and active management controls.

Annex 13 - HRA SECTION 3.1–3.4 PAGES 30-36

- Consideration of assessment limitations, safety factors and uncertainties.

Annex 13 - HRA SECTION 3.1–3.4 PAGES 30-36

- Sensitivity analysis.

No sensitivity analysis conducted in original application

C.2.2.7 Modelling (numerical/analytical) *Applies if **Arrangements needed** in section C2.2.1 is ticked*

- Justification for using particular computer model, particularly suitability for installation's hydrogeological conditions.

Annex 13 - HRA SECTION 3.4.1 PAGE 35

- Verification for third party code/models including relevant equations.

Not available

- Supply electronic copies of all models including instructions.

Hard copies provided at HRA APPENDICES 2 & 3

- Identification of receptors, compliance criteria and calibration.

Annex 13 - HRA SECTION 3.1–3.4 PAGES 30-36

- Schematic diagrams showing relationship of conceptual model to computer model inputs

RA 6

- Multiple model runs to stimulate different phases (time) and justified range of input parameter values.

Annex 13 - HRA APPENDICES 2 & 3

- Justification for field measurements and model defaults.

Annex 13 - HRA SECTION 3.5 PAGE 37

- Interpretation of model output.

Annex 13 - HRA SECTION 3.6 PAGE 39

► Reporting of maximum acceptable leachate head and contaminant concentrations in leachate. Applies if "Arrangements needed" in section C2.2.1 is ticked.

Annex 13 - HRA SECTION 3.6.4 PAGE 39

C.2.2.8 Requisite surveillance

► Risk-based monitoring scheme – location, frequency and method of sampling for groundwater, leachate and surface water.

Approved monitoring programme (Annex 18)

C.2.2.9 Groundwater control and trigger levels - Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill** (this include sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "**an existing inert landfill**" on page 1 has been ticked. Applies if "**Arrangements needed**" in section C2.2.1 has been ticked.

► Groundwater control and trigger levels for selected polluting substances.

N/A – approved monitoring programme for Maghtab Environmental Complex

► Methods used to derive control and trigger levels.

N/A – approved monitoring programme for Maghtab Environmental Complex

► Locations for compliance monitoring.

N/A – approved monitoring programme for Maghtab Environmental Complex

► Justification for choice of environmental assessment levels for selected polluting substances.

N/A – approved monitoring programme for Maghtab Environmental Complex

C.2.2.10 Surrender evaluation

► Estimate of time until application to surrender permit

Yet to be determined as part of a holistic plan for landfill management at the Maghtab Environmental Complex

Stability risk assessment

In constructing a landfill liner the operator should ensure that:

- the placement of the waste should ensure its stability and the stability of associated structures and in particular must avoid slippages; and
- when an artificial barrier is used, the geological substratum must be sufficiently stable, taking into account the morphology of the installation to prevent settlement that may cause damage to the barrier.

Therefore in establishing the various design standards as set out within Section 3.3 on page 41 they must be defined on the basis of the risk of a failure of the structure or liner.

To aid in the assessment of the stability of the system, it is proposed that you consider the 5 different components as identified in Figure 1 below.

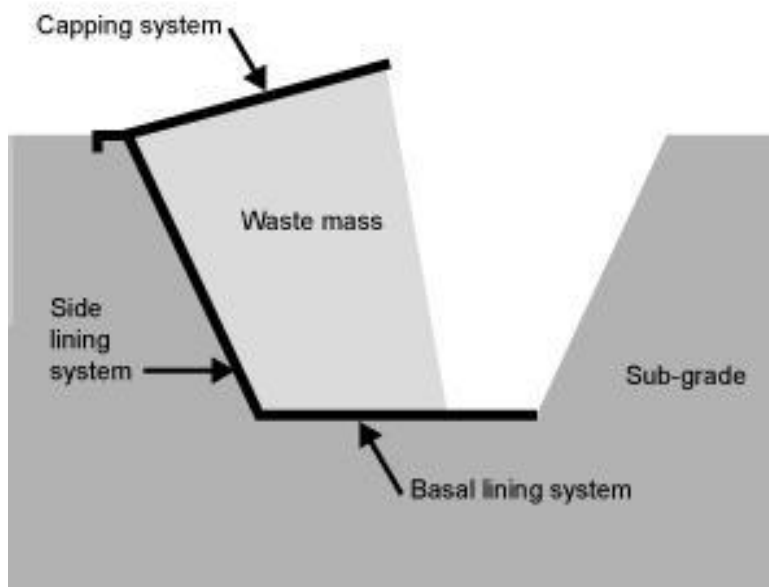


Figure 1: The various components of a landfill that should be considered in the stability

Stability and integrity

As a landfill is a complex structure, damage can occur as a result of large and small movement/forces. You should consider the following within this risk assessment:

- the likelihood that slippage of the landfill or lining system occurs, and as such it should be designed in such a way to ensure that such a slippage does not occur or is controlled. For the purpose of this risk assessment this is the stability; and
- the stresses, and hence deformations, in both mineral and geosynthetic lining materials are controlled to ensure preferential flow paths are not formed (e.g. shear zones in clay liners and tears in geomembranes). For the purpose of this risk assessment this is integrity.

Factors of safety (FoS)

A factor of safety is the numerical expression of the degree of confidence that exists, for a given set of conditions, against a particular failure mechanism occurring. Using factors of safety allows

engineers to overcome a range of uncertainties in input parameters and analysis methods. Such uncertainties may arise from the inevitable simplification and approximation required in analysis methods, the controlling material parameters, and the possibility of missing a potential failure mechanism and changes that might occur locally and with time. It is commonly expressed as the ratio of the load or action which would cause failure against the actual load or actions likely to be applied during service. There is no fixed value for an appropriate factor of safety within landfill engineering as this will be dependent on the confidence in input parameters and consequence of failure.

Factors to consider

For each component of the installation that needs to be assessed the following list of questions should be considered. . It is strongly advised that the completion of these questions should be carried out with the assistance of a suitably qualified and experienced geotechnical engineer.

The stability risk assessment report should contain the details of all parts of the assessment including calculations, results of models and justification for discounting a factor. It should be noted that not all relevant issues will require a detailed calculation. As with the choice of factors of safety, the level of analysis required should be chosen on the basis of sound engineering judgement.

Assessment of the subgrade

C.2.2.11 Assessment of the base of the landfill covered by this application for variation

► Does the base of the landfill have excessively compressible sub-grade?

☒ No

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 – 10; the same parameters have been applied in the Frisoli SRA

☐ Yes

Section / page number of stability report which deals with this issue

► Are cavities likely to develop within the subgrade?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ Yes

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 - 10; the same parameters have been applied in the Frisoli SRA

► Is basal heave at the base of the landfill likely to affect the integrity of the sub-grade?

☒ No

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 - 10; the same parameters have been applied in the Frisoli SRA

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

C.2.2.12 Which of the following is to be used as a subgrade? *Select all that apply*

☐ **Waste Slope**

C.2.2.13 Assessment of the waste slope as a sub-grade

► Is this settlement within the slope (both in confined and unconfined conditions) likely to affect the integrity or stability of the landfill liner?

☒ **No**

Not applicable to this variation

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

☐ **Hard Rock Slope**

C.2.2.14 Assessment of the hard rock slopes as a sub-grade

► Is the presence of discontinuities/joints/faults within the slope, likely to make it unstable (both in confined and unconfined conditions)?

☒ **No**

Not applicable to this variation

☐ Yes

Relevant design parameters

Minimum factor of safety
Section/page number of stability report which deals with this issue

►Is the presence of groundwater within the slope likely to make it unstable (both in confined and unconfined conditions)?

☒ No

Groundwater level far below area of intervention; SRA Frisoli section 2
--

☐ Yes

Relevant design parameters
Minimum factor of safety
Section/page number of stability report which deals with this issue

☐ **Cohesive soils slope**

C.2.2.15 Assessment of cohesive soil slopes as a sub-grade

►Is the cut of the slope likely to become unstable in unconfined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☒ Yes

See Plan 3 - details
Annex 14 – Stability Risk Assessment – Frisoli SRA section 2.6
Annex 14 – Stability Risk Assessment – Frisoli SRA section 2.6

►Is the cut slope likely to become unstable in confined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☒ Yes

See Plan 3 - details

Annex 14 – Stability Risk Assessment – Frisoli SRA section 2.6

Annex 14 – Stability Risk Assessment – Frisoli SRA section 2.6

► Is the presence of groundwater within the slope (both in confined and unconfined conditions) likely to affect the integrity or stability of the slope?

☒ No

Groundwater level far below area of intervention; SRA Frisoli section 2

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

C.2.2.16 Assessment of the basal lining system

► Is the presence of excessive settlement within the sub-grade (both in confined and unconfined conditions) likely to affect the integrity or stability of the landfill liner?

☒ No

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 - 10; the same parameters have been applied in the Frisoli SRA

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Is the presence of cavities within the sub-grade (both in confined and unconfined conditions) likely to affect the integrity or stability of the landfill liner?

☒ No

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 - 10; the same parameters have been applied in the Frisoli SRA

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Is basal heave at the base of the landfill likely to affect the integrity or stability of the installation liner?

☒ No

Annex 14 – as per SLR SRA SECTION 2.1.1 PAGE 9 - 10; the same parameters have been applied in the Frisoli SRA

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

Assessment of slope lining system covered by this application for variation

C.2.2.17 Which of the following is to be used in the slope lining system?

☐ Mineral-only barriers

C.2.2.18 Assessment of mineral only barriers

► Will the material and construction method used result in stability failure in unconfined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ Yes

See Frisoli SRA Appendix A

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.**

► Will the material and construction method used result in stability failure in confined conditions?

☒ No

Provide the justification and reference to the relevant section/page in your stability report. **SRA Frisoli Section 2.1.4.**

☐ Yes

Relevant design parameters

Minimum factor of safety
Section/page number of stability report which deals with this issue

►Will the material and construction method used result in integrity failure in unconfined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☒ **Yes**

Relevant design parameters See Frisoli SRA Appendix A
Minimum factor of safety Stability Risk Assessment – Frisoli SRA section 2.6
Section/page number of stability report which deals with this issue Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.

►Will the material and construction method used result in integrity failure in confined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☒ **Yes**

Relevant design parameters See Frisoli SRA Appendix A
Minimum factor of safety Stability Risk Assessment – Frisoli SRA section 2.6
Section/page number of stability report which deals with this issue Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.

☐ **Mineral-geosynthetic composite barriers**

C.2.2.19 Assessment of mineral-geosynthetic composite barriers

►Will the material interfaces used result in stability failure in unconfined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☒ **Yes**

Relevant design parameters See Frisoli SRA Appendix A
--

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.**

►Will the material interfaces used result in stability failure in confined conditions?

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **SRA Frisoli Section 2.1.4.**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

►Will the material interfaces used result in integrity failure in unconfined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ **Yes**

Relevant design parameters **See Frisoli SRA Appendix A**

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.**

►Will the material interfaces used result in integrity failure in confined conditions?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☐ Yes

Relevant design parameters

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.4. , 2.8.4.**

C.2.2.20 Assessment of the waste

►Are the temporary waste slopes within the landfill likely to become unstable?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ **Yes**

Relevant design parameters **See Appendix A and Appendix C**

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.5.**

►Is leachate re-circulation likely to make the waste mass unstable? *Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.*

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **SRA Frisoli Section 2.1.5.**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

►Is the waste mass at pre-settlement contours likely to become unstable? What is the steepest profile?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ **Yes**

Relevant design parameters **See Appendix A and Appendix C**

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.5., , 2.7.6., 2.8.6.**

► Is the waste mass at post-settlement contours likely to become unstable?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☒ **Yes**

Relevant design parameters **See Appendix A and Appendix C**

Minimum factor of safety **Stability Risk Assessment – Frisoli SRA section 2.6**

Section/page number of stability report which deals with this issue **Stability Risk Assessment – Frisoli SRA section 2.7.5., 2.7.6., 2.8.6.**

► Is the settlement within the waste covered by this application for variation likely to impact on the effectiveness of the leachate and landfill gas collection system? *Applies if “**Hazardous landfill**” on page 1 is ticked. Applies if “**Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.*

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **SRA Frisoli Section 2.1.5.**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

Assessment of the capping system covered by this application for variation

C.2.2.21 Which of the following will be used in the capping system? Select all that apply

☐ Mineral – only barrier

C.2.2.22 Assessment of mineral only barriers

► Is the cap likely to become unstable?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.

☐ Yes

Relevant design parameters

Minimum factor of safety
Section/page number of stability report which deals with this issue

►Will the settlement within the waste mass affect the integrity of the cap?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☐ Yes

Relevant design parameters
Minimum factor of safety
Section/page number of stability report which deals with this issue

►Will construction plant used on the cap affect its integrity?

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☐ Yes

Relevant design parameters
Minimum factor of safety
Section/page number of stability report which deals with this issue

►Will the gas pressures in the waste affect the integrity of the cap? *Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.*

☐ No

Provide the justification and reference to the relevant section/page in your stability report.
--

☐ Yes

Relevant design parameters
Minimum factor of safety
Section/page number of stability report which deals with this issue

☒ **Mineral-geosynthetic composite barriers**

C.2.2.23 Assessment of mineral-geosynthetic composite barriers

The following sections provide details ref stability concerning the side slope lining system in the short and long-term:

- 1.2.4 Side Slope Lining System Model,
- 2.1.4 Side Slope Lining System Screening,
- 2.4 Justification for Modelling Approach and Software,
- 2.5.4 Parameters Selected for Side Slopes Liner Analyses,
- 2.6.4 Factor of Safety for Side Slope Lining System,
- 2.7.4 Side Slopes Liner Analyses,
- 2.8.4 Side Slopes Liner Assessment,
- 3.1.4 Side Slope Lining System Monitoring, Appendix H, Appendix E.

Will the material interfaces used in the cap result in stability failure?

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **Not applicable for this application due to the nature of the patented technique utilized by Frisoli, and as per calculations in Frisoli SRA**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Will the materials used within the cap result in integrity failure?

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **Not applicable for this application due to the nature of the patented technique utilized by Frisoli as per calculations in Frisoli SRA**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Will settlements within the waste mass affect the integrity of the cap?

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **Not applicable for this application due to the nature of the patented technique utilized by Frisoli as per calculations in Frisoli SRA**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Will construction plant used on the cap affect its integrity?

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **Not applicable for this application due to the nature of the patented technique utilized by Frisoli as per calculations in Frisoli SRA**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

► Will the gas pressures in the waste covered by this application for variation affect the stability or integrity of the cap? *Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.*

☒ **No**

Provide the justification and reference to the relevant section/page in your stability report. **SRA Frisoli Section 2.1.5.**

☐ Yes

Relevant design parameters

Minimum factor of safety

Section/page number of stability report which deals with this issue

Landfill gas generation and risk assessment

A Landfill gas generation assessment for your installation

Your landfill gas management plan for the areas covered by this application for variation should be based on estimates of the rates of gas production on an annual basis (e.g. using an appropriate model). These estimates need to take into account the types and quantities of wastes to be accepted and, if appropriate, the characteristics of the wastes already deposited at the installation (e.g. moisture content). All calculations and assumptions must be specified within the gas management plan.

C.2.2.24 Provide a gas generation profile forecast for your installation in graphical form including uncertainty estimates.

N/A – unchanged from original EIA and IPPC application; given that the variation will involve use of materials that are not biodegradable, this is expected to decrease.

C.2.2.25 In what year do you propose to start collecting landfill gas? ? Applies if "Yes, there is a need to collect landfill gas" on in section C.3.3.44 is ticked. Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.

Gas collection is commencing at this point in time.

Pathways and environmental monitoring.

Landfill gas risk assessment.

C.2.2.26 Does your landfill gas risk assessment address the following key issues?

►Emissions from landfill gas flares. Applies if "Yes, there is a need to collect landfill gas" on in section C.3.3.44 is ticked. Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.

☐

No

Provide the justification and reference to the relevant section/page number. of your landfill gas risk assessment

☒ Yes

Section/page number of landfill gas risk assessment and any comments Assessed in previous application; this new variation is not expected to increase the risk, given the use of non-biodegradable wastes, and performance of the CHPs has been satisfactory in handling the biogas generated.

►Ambient air quality at the boundary of the installation.

☐ No

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment

☒ **Yes**

Section/page number of landfill gas risk assessment and any comments receptors including Habitats Regulation Sites **Assessed in previous application; this new variation is not expected to increase the risk, given the use of non-biodegradable wastes, and performance of the CHPs has been satisfactory in handling the biogas generated. Already included in EMP.**

►Ambient air quality at local sensitive.

☐ No

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment

☒ **Yes**

Section/page number of landfill gas risk assessment and any comments **Assessed in previous application; this new variation is not expected to increase the risk, given the use of non-biodegradable wastes, and performance of the CHPs has been satisfactory in handling the biogas generated. Already included in EMP.**

►Derivation of landfill gas control & trigger levels.

☐ No

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment

☒ **Yes**

Section/page number of landfill gas risk assessment and any comments **Assessed in previous application; this new variation is not expected to increase the risk, given the use of non-biodegradable wastes, and performance of the CHPs has been satisfactory in handling the biogas generated. Already included in EMP.**

►Design of your monitoring programme for landfill gas emissions.

☐ No

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment

☒ **Yes**

Section/page number of landfill gas risk assessment and any comments **Already included in EMP.**

Combined emissions from utilization plants and flares.

C.2.2.27 Has dispersion modelling been undertaken to predict the following?

- The location of the maximum ground-level concentrations from the proposed utilization plant and flares.

☒ **No**

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment **Not applicable – the plant utilised for this purpose has been approved as part of the rehabilitation project for Maghtab after assessment in EIS (Section 14.8.5 page 256), and are monitored as per approved monitoring programme.**

☐ Yes

Section/page number of landfill gas risk assessment and any comments

- The maximum ground level concentrations for relevant compounds and relevant averaging times (e.g. averaging times of National Air Quality Objectives)?

☒ **No**

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment **Not applicable – the plant utilised for this purpose has been approved as part of the rehabilitation project for Maghtab, and are monitored as per approved monitoring programme**

☐ Yes

Section/page number of landfill gas risk assessment and any comments

- Description of stack heights for both utilization plant and flares.

Provide the justification and reference to the relevant section/page number of your landfill gas risk assessment **Not applicable – the plant utilised for this purpose has been approved as part of the rehabilitation project for Maghtab, and are monitored as per approved monitoring programme**

Risk assessment for nuisance and health issues.

C.2.2.28 Provide a copy of the risk identification template for the installation for identifying risks from landfills.

Document Reference: **Original risk assessments provided in Site Management System documentation, and updated in PDS Annex 01**

C.2.2.29 Provide a copy of the hazards, receptors and high sensitivity receptor assessment templates for the installation for identifying risks from landfills.

Document Reference: **Original risk assessments provided in Site Management System documentation, and updated in PDS Annex 01**

C.2.2.30 Do the risk assessments indicate the need to carry out additional risk management or monitoring measures for any of the following?

► Noise and Vibration

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

► Odour

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

► Particulate matter

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

► Litter

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

►Mud on external public roads

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

►Vermin, birds and insects

☐ No

Provide the justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

Works monitoring required

Habitats risk assessment carried out under the Habitats Regulations.

The Flora, Fauna & Natural Habitats protection Regulations, 2003 (Legal Notice 311 of 2006 as amended; S.L. 549.44) and the Conservation of Wild Birds Regulations 2006 (LN 79 of 2006 as amended; S.L. 549.42) require the Authority, as the 'competent authority', to assess landfill activities and ensure that they do not cause an adverse effect on the integrity of any protected area of national or international importance which have been specifically designated to protect rare and significant habitats or species (termed Natura 2000 sites). Whether your site is affected by the requirements of S.L. 549.44 is determined by its proximity to a Natura 2000 site and may be subject to an assessment of impact. These assessment are known as 'appropriate assessments' and will be carried out for all IPPC permit applications. In general the specified distance is 2km unless the site could attract birds and falls within 5km of an SPA or other vulnerable site. Further information on the location of these sites can be found at <http://natura2000.eea.europa.eu/>.

C.2.2.31 Is the landfill within the specified distance of any Natura 2000 Site?

☐ No

☒ Yes

What is the distance?

Is-Salini:	1km
L-Ghadira s-Safra:	280m
Zona tal-Bahar fil-Grigal ta Malta	280m

C.2.2.32 Protected Sites

► If there is more than one relevant Natura 2000 Site and/or Protected Site, please reference each and provide separate information for each.

Name of site

See C.2.2.31

C.2.2.33 Could the proposed changes to the landfill be responsible for any adverse effects on the integrity of the Protected Site? *If there is a Relevant Natura 2000 Site, you will need to address relevant issues in the risk assessments provided in support of this application, for groundwater and surface water, leachate, landfill gas, particulate matter, birds/vermin/insects, litter and disturbance (noise and vibration). Please ensure that for each hazard you consider all the relevant activities/emissions.*

☒ No

☐ Yes

C.2.2.34 Which of the following hazards could be responsible for any adverse effects on the integrity of the Protected site?

☒ Toxic Contamination

☒ Nutrient Enrichment



☐ Habitat loss or physical damage

☐ Situation

☐ Smothering

☐ Disturbance

☐ Predation

The above hazards are not expected given the containment measures currently applied, which are sustained by the results of the monitoring programmes applied to date. The proposed variation consists of an extension of this activity, which is not expected to result in an intensification of existing impacts, given that the activity will be of the same order of magnitude as the existing tipface.

3. Regulatory specification

C.3.1 Installation Type

C.3.1.1 Maximum total capacity of installation including, if appropriate, wastes already deposited in existing areas covered by this application.

M³ post settlement – tonnes (state conversion factors used) **Variation is expected to result in a volume increase of between 300,000 to 350,000 tonnes.**

C.3.1.2 Compile a designation table with reference to the drawing required by Question 2.1.2. This table will detail all areas of infilling at the site and future areas separately identified, for example Cell 1, Phase A. Applies if “an existing Hazardous landfill?” on page 1 is ticked. Applies if “an existing Non-hazardous landfill” on page 1 is ticked. Applies if “an existing inert landfill” on page 1 has been ticked. Details of each for each cell shall include whether the wastes that have been or are intended to be deposited are hazardous, stable and non-reactive hazardous, non-hazardous or inert. The status of each cell is to be indicated as either closed, operational, pre-operational (engineering of liner) or pre-operational (engineering design).

C.3.2 Waste types and quantities

Regulation 6 of Subsidiary Legislation 549.29, the Landfill Regulations as published by Legal Notice 168 of 2002, and amended stipulates which wastes are prohibited from being accepted at landfills. Regulation 8 defines the types of waste that may be accepted in the different classes of landfill, which acceptance of waste should be in line with the waste acceptance criteria and procedures set out in Schedule 2 of S.L. 549.29, including general principles for the acceptance of waste into the various classifications of landfill. The risk assessments in Section 1 of this form will also affect the waste types which may be accepted at your installation and you will be required to make reference to this as part of the description of the waste.

Co-disposal -Applies if **a hazardous landfill?** on page 1 is ticked:

You should tell us about wastes you propose to accept. In your improvement plan you must provide details of how you will manage the different waste types and the waste acceptance criteria to accept the wastes listed in response to Question 2.2.5.

Properties and lists of waste types

You must refer to the Waste Regulations (S.L. 549.63) and to the European Waste Code Classification system.

Wastes for disposal

Waste for disposal is any incoming waste being brought onto the installation to be placed in the landfill (not for capping, engineering or restoration).

C.3.2.1 List the waste (types you propose to accept for disposal at your installation. *Applies if "a new hazardous landfill?" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "" on page 1 is ticked.*

Use Regulation 7 of S.L. 549.63 and the consolidated text of Commission Decision 2000/532/EC, as amended by Commission Decision 2014/955/EU. [Consolidated version]SL. 549.63 to guide you. For each waste type you must show:

- *The full EWC Code*
- *Description including physical description e.g. solid, sludge, nuisance risk*
- *Waste classification i.e. hazardous, non-hazardous, stable, non reactive hazardous waste.*

Document Reference: Waste list is as per that approved for IP 001/06/B; no change is being proposed
--

C.3.2.2 Is the proposed change covering a hazardous landfill which shall continue to co-dispose hazardous and non-hazardous wastes?

Applies if "**an existing hazardous landfill?**" on page 1 is ticked.

☒ No

C.3.2.3 List the waste types you will accept for disposal at your installation

- *The full EWC Code*
- *Description including physical description e.g. solid, sludge, nuisance risk*
- *Waste classification i.e. hazardous, non-hazardous, stable, non reactive hazardous waste.*

Document Reference: **See 3.2.1**

☐ Yes

C.3.2.4 List the waste types you will accept for disposal at your installation
For each type of waste you must show:

- *The full EWC Code*
- *Description including physical description e.g. solid, sludge, nuisance risk*
- *Waste classification i.e. hazardous, non-hazardous, stable, non reactive hazardous waste.*

Document Reference: **See 3.2.1**

For each type of waste you must show:

- *The full EWC Code*
- *Description including physical description e.g. solid, sludge, nuisance risk*
- *Waste classification i.e. hazardous, non-hazardous, stable, non reactive hazardous waste.*

In your improvement plan you must provide details of how you will manage the change in waste types and waste acceptance criteria

Document Reference: **See 3.2.1**

Wastes for restoration

Wastes for restoration on-site engineering, for the purposes of this section, is any incoming waste being brought onto the installation for the purposes of engineering, capping and restoration.
N.B. Applicant to note that such activity would constitute a recovery operation and shall be permitted as such.

C.3.2.5 List the waste types that will be used for capping, engineering and restoration in accordance with the provisions laid down in Schedule 1 of S.L. 579.29.

Use Regulation 7 of SL 549.63 and the consolidated text of Commission Decision 2000/532/EC, as amended by Commission Decision 2014/955/EU. [Consolidated version] to guide you. **For each type of waste you must show:**

- The full EWC Code
- Description including physical description e.g. solid, sludge, nuisance risk
- Waste classification

Document Reference: **For capping details and wastes used kindly refer to Annex 14 Frisoli SRA**

C.3.2.6 What is the maximum quantity of waste that is deposited in the installation in any year?

Annual Waste inputs limits category	Limit tonnes/year	Comments
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Waste acceptance criteria and procedures

Regulation 10 of Subsidiary Legislation 549.29, the Landfill Regulations as published by Legal Notice 168 of 2002, and amended requires you to ensure the conditions of the landfill permit. The waste acceptance criteria and procedures set out in Schedule 2 of S.L. 549.29 should also be followed, and must be shown by documented waste acceptance procedures that cover a basic characterization of the waste prior to delivery to the installation, and compliance testing and on-site verification on arrival at the installation.

An outline of the interim waste acceptance criteria is set out in Schedule 2 S.L. 549.29, the Landfill Regulations.

C.3.2.7 Your waste acceptance procedures must include the following information and must be in place before any waste can be accepted under the permit.

- The waste acceptance criteria for the installation.
- Level 1 basic characterization of wastes: quality assured procedures and method of recording the results;
- Level 2 compliance testing of wastes: quality assured procedures and method of recording the results;
- Level 3 on-site verification of wastes: quality assured procedures and method of recording the results;
- Sampling plan, including quality assured methods and procedures for sampling and testing of wastes and method of recording the results;
- Register of waste deposited including the location of hazardous waste.
- Method for checking that the waste has been treated before delivery to the installation and recording the results;

- Method for ensuring that waste is stored and handled properly prior to final deposit;
- Method for ensuring that wastes that have been rejected during the acceptance procedures are removed from the installation within 24 hours of the quarantine container becoming full, and in any event within 5 days of receipt at the installation; and
- Method for ensuring that the Authority is notified as soon as reasonably possible if a waste delivery is rejected.

Document Reference: **This variation does not include any changes to waste acceptance**

C3.3 Engineering and operational management and monitoring

All landfills will require sufficient monitoring to be carried out to check:-

- That the processes within the landfill proceed as desired;
- That the environmental protection systems are functioning fully as intended; and
- That the conditions of the permit are fulfilled.

To successfully complete this part of the application, you will need to have prepared **an environmental monitoring plan** for the whole installation. Your environmental monitoring plan must be developed from the conceptual model of the installation and will be refined as knowledge of the hydrogeological and environmental setting of the installation increases.

Landfill containment engineering

Engineered control systems include both the basal areas and side slopes of the landfill void and the capping and restoration of the final waste profiles.

Use this section to:-

- Describe the containment engineering for each area of the landfill and to
- Demonstrate that the containment engineering and leachate management and collection systems you provide will ensure compliance with the Groundwater Regulations and Landfill Regulations 2002.

The specifications in this section should have been generated during the risk assessment process (hydrogeological, landfill gas, stability etc.). Provide specifications for:-

- The base of all pre-operational areas;
- Side slopes for all pre-operational; and
- Capping for all areas as yet capped.

You may have already provided as-built drawings for constructed areas as part of the conceptual model.

Provide plans and schematic cross-sections through the containment engineering to illustrate the specifications in each area, including any differences between basal areas and side slope; you may refer to plans prepared for the risk assessments.

Landfill containment engineering

If you intend to use the same engineering design for all subsequent cells/areas, then you only need to complete this section of the form once. However, within a cell/area, you will need to repeat the section if the containment engineering is different for base, sides and/or cap.

If you envisage the design changing (due to site geology etc) then you must repeat this section of the form for each cell/area.

Provide references to the appropriate risk assessment and section/page number or drawing which provides justification for each critical specification.

C.3.3.1 Will the same engineering design be used for all cells?

☐ Same engineering design for all subsequent cells

☒ **Engineering design will change**

See plans

C.3.3.2 What part of the containment engineering does this specification apply to?

☐ Basal engineering

☒ Side slope engineering

☒ Cap

C.3.3.3 Give details of the sub-grade

Material	Not affected by this variation
Strength	
Other relevant/critical design parameters	
Reference of the appropriate risk assessment and section/page number or drawing which provides justification for each critical specification	

C.3.3.4 Is there a natural geological barrier? *Details on the permeability of such barrier are required.*

☐ No

☒ **Yes**

Material	Crushed and screened limestone fill
Minimum thickness (m)	Minimum 2m thick crushed and screened limestone fill, maximum permeability 1x10⁻⁷m/s
Reference of the appropriate risk assessment and section/page number or drawing which provides justification for each critical specification SLR Ref.: 4C-585-001/SRA Ghallis, Malta; November 2004; SRA Frisoli section 1.2.4.	

C.3.3.5 Is there an artificially established mineral barrier? *This is required where the natural geological barrier does not provide sufficient attenuation capacity. Details on the permeability of such barrier are required.*

☐ No

Reference of the appropriate risk assessment and section/page number or drawing which provides justification for each critical specification

☒ Yes

SRA Frisoli Sections 1.2.4. , 2.7.4., 2.8.4.

C.3.3.6 What materials are used? *Select all that apply.*

☒ **Clay or similar 'natural material**

SLR Ref.: 4C-585-001/SRA Ghallis, Malta; November 2004; Section 2.4.

Maximum hydraulic conductivity (m/s)

Range of consistency limits (%)

Minimum shear strength kN/m² (specify drained or undrained)

Attenuation capacity (e.g. CEC, foc, KD)

Other relevant/critical design parameters

Relevant design document

Relevant drawing including cross-section

Permeability

☐ **Bentonite Enhanced Sand (BES)**

Minimum Thickness (mm)

Maximum hydraulic conductivity (m/s)

Minimum montmorillonite content of bentonite (mg/g)

Range of consistency limits (%)

Minimum shear strength (specify drained or undrained) kN/m²

Attenuation capacity (e.g. CEC, foc, KD)

Other relevant/critical design parameters

Relevant design document
Relevant drawing including cross-section
Permeability

☐ **Other Material**

Description
Minimum thickness (mm)
Maximum hydraulic conductivity (m/s)
Range of consistency limits (%)
Minimum shear strength (kN/m ²) (specify drained or undrained)
Attenuation capacity (e.g. CEC, foc, KD)
Other relevant/critical design parameters
Relevant design document
Relevant drawing including cross-section
Permeability

C.3.3.7 Is there an artificial sealing liner? *If **Arrangements needed** in section C2.2.1 is ticked.*

- ☐ No
☒ **Yes**

C.3.3.8 What materials are used? *Select all that apply.*

☒ **Yes** **Flexible membrane liner (e.g. HDPE, VLDPE etc.)**

HDPE
Design life (years)
Thickness: 2 (mm)
Installers are accredited for welding and installation
SRA Frisoli: Appendix A

Relevant design documents
Relevant drawing including cross-section Plans 1 - 3
Permeability Permeability: -gas ASTM D1434 6,18 E-8 cm²/sec@1atm -liquid EN 14150 <10-6 m³xm⁻² xs⁻¹

☐ **Dense asphaltic concrete**

Minimum thickness (mm)
Maximum hydraulic conductivity (m/s)
Strength
Materials
Mix composition (bitumen type & grade, aggregate and filler properties)
Thermal stability
Physical stability
Chemical resistance (flow resistance)
Longevity
Maximum acceptable deformation (differential settlements)

Compatibility with adjacent materials

Relevant design document
Relevant drawing including cross-section
Permeability

☐ **Compacted clay liner**

Minimum thickness (mm)
Maximum hydraulic conductivity (m/s)

Range of consistency limits (%)
Minimum shear strength (specify drained or undrained) kN/m ²
Attenuation capacity (e.g. CEC, foc,KD)
Minimum thickness (mm)Other relevant/critical design parameters
Maximum hydraulic conductivity (m/s)Relevant design document
Range of consistency limits (%)Relevant drawing including cross-section
Minimum shear strength (specify drained or undrained) kN/m ²
Attenuation capacity (e.g. CEC, foc,KD)
Other relevant/critical design parameters
Relevant design document
Relevant drawing including cross-section
Permeability

☒ **Yes Geosynthetic clay liner (GCL)**

Maximum hydraulic conductivity (m/s): $\leq 10^{-14}$ (m/s)
Minimum thickness : 600 (unhydrated,mm)
Index Flux: 5×10^{-9} (m³/m²)/s
12.0 / 12.0 Internal shear strength (kN/m² and factor of safety)
Minimum montmorillonite content (mg/g)
Other relevant/critical design parameters
Relevant design document SRA Frisoli: Appendix A
Relevant drawing including cross-section Plans 1 - 3
Permeability

☐ **Bentonite enhanced sand (BES)**

Maximum hydraulic conductivity (m/s)

Minimum thickness (mm)
Minimum thickness (mm)
Maximum montmorillonite content of bentonite (mg/g)
Range of consistency limits (%) Minimum shear strength (specify drained or undrained)
Minimum shear strength (specify drained or undrained ((kN/m ²)Other relevant/critical
Other relevant/critical design parameters
Relevant design document/drawing including cross-section
Relevant drawing including cross-section Permeability

Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**" on page 1 is ticked. Applies if an existing "**inert landfill?**" on page 1 is ticked.

C.3.3.9 Provide details of the leachate collection layer. This is required where there is an artificial sealing liner.

Basal ingredients As existing – not affected by this application
Materials used & grading if appropriate
Minimum thickness (mm)
Maximum hydraulic conductivity (m/s)
Minimum strength (kN/m ²)
Chemical compatibility

Leachate collection extraction pipework and wells

Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**" on page 1 is ticked. Applies if an existing "**inert landfill?**" on page 1 is ticked.

C.3.3.10 Provide details of the leachate collection pipework. This is required where there is a leachate collection layer.

Pipework layout & spacing As existing – not affected by this application except for vertical extension where required
--

Minimum pipework strength
Perforation layout
Bedding material & thickness
Will maintenance be provided?
Relevant design document
Relevant drawing including cross-section

C.3.3.11 Provide details of the leachate extraction wells.

As existing – not affected by this application except for vertical extension where required – see Annex 7
Will you retrodrill, and if so, when?
Type and design of foundation
Pipework material
Minimum pipework diameter
Minimum pipework strength
Pipework surround material
Relevant design document
Relevant drawing including cross-section

C.3.3.12 Is there a surface water drainage layer?

☐ No

Provide the justification and reference to the relevant section/page number of the risk assessment
--

☒ **Yes**

Give specifications Annex 13 – Hydrological Study Frisoli
Relevant design document

Relevant drawing including cross-section

Applies if "**Hazardous landfill**" on page 1 is ticked. Applies if "**Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**" on page 1 is ticked. Applies if an existing "**inert landfill?**" on page 1 is ticked.

C.3.3.13 Is there a groundwater management system?

☐ No

Provide the justification and reference to the relevant section/page number of the risk assessment

☒ Yes

Give specifications **System of monitoring boreholes**

Relevant design document **Annex 13 – SLR Hydrological Risk Assessment, Annex 18 – Environmental Monitoring Plan**

Relevant drawing including cross-section

C.3.3.14 Is there a leakage detection system?

☒ No

Provide the justification and reference to the relevant section/page number of the risk assessment **Not included in original application, and not affected by this variation**

☐ Yes

Give specifications

Relevant design document

Relevant drawing including cross-section

C.3.3.15 Is there leachate storage and treatment? Applies if **Arrangements needed** in section C2.2.1 is ticked.

☒ No

Provide the justification and reference to the relevant section/page number of the risk assessment **Refer to Annex 7 on leachate**

☐ Yes

Give specifications
Relevant design document
Relevant drawing including cross-section

C.3.3.16 Are waste deposit and emplacement procedures in place for the installation, which ensure the following?

►The first layers of waste in a new cell are selected and inspected during placement to ensure that these do not cause damage to the installed barriers and liners.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Annex 19 – Construction Management

►Waste is emplaced in each cell in such a way as to ensure stability of the mass of waste and associated structures, particularly in respect of avoidance of slippages.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Annex 19 – Construction Management

►The maximum and minimum gradients are specified and complied with for the working face, intermediate slopes and the final slopes of the landform.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Annex 19 – Construction Management, Annex 14 – Frisoli SRA

►Waste is emplaced in each cell in such a way as to prevent damage to the engineering of the barriers and liners, and, if appropriate, the leachate and landfill gas management systems.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Annex 19 – Construction Management, Annex 14 – Frisoli SRA

►Waste is discharged prior to placement in the appropriate operational areas, in a manner that prevents the releases to the environment of particulate matter, litter, odour an other nuisances.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

►Waste is not discharged in adverse weather conditions that may give rise to the production of airborne materials such as litter or particulate matter.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

►Waste is placed and compacted in the appropriate operational areas, to ensure stable surfaces and slopes.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

►The final layers of waste are selected and inspected during placement to ensure that these do not cause damage to the final capping.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☐ Yes

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

► Appropriate handling and compaction plant and techniques are used.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

► The size of the operational area is limited while accommodating the placement of the waste.

☐ No

Justification and/or date when they will be in place meeting the relevant standard – which must be prior to the acceptance of any waste under the permit

☒ **Yes**

Give specifications **Annex 19 – Construction Management, Annex 14 – Frisoli SRA**

Leachate management and monitoring

*Applies if “**Hazardous landfill**” on page 1 is ticked. Applies if “**Non-hazardous landfill**” on page 1 is ticked. Applies if an existing “**inert landfill?**” on page 1 is ticked. Applies if “Arrangements Needed” in section C2.2.1 is ticked.*

Leachate is defined by the Landfill Regulations 2002 as any liquid percolating through the deposited waste and emitted from or contained within a landfill. Leachate composition is dependant on the waste types accepted and the age of the waste and thus landfills for hazardous waste will produce different leachate to landfills for non-hazardous waste. This section of the form should be completed with reference to your hydrogeological risk assessment.

All emissions to surface water require consent to discharge from the Authority which may be incorporated into the IPPC Permit.

Where leachate is treated by pumping to an off-site sewage treatment works, an effluent treatment/discharge permit is required from the Water Services Corporation.

Leachate management

C.3.3.17 Which of the following applies to the leachate treatment plant at your installation?

Select all that apply.

- ☐ Disposal of hazardous waste
- ☐ In a facility with a capacity less than 10 tonnes per day
 - ☐ In a facility with a capacity of more than 10 tonnes per day

- ☒ **Yes** Disposal of non-hazardous waste
- ☐ In a facility with a capacity of less than 50 tonnes per day
 - ☐ **In a facility with a capacity of more than 50 tonnes per day**

C.3.3.18 Do the current documented systems, procedures and work instructions for leachate management for the current landfill site need to be updated to include the following:-

►Water Balance calculations for each cell and the overall installation?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **Data on leachate levels collected regularly; not affected by proposed variation – see Annex 7**

☐ Yes

►Extraction and collection?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **see Annex 7**

☐ Yes

►Details of leachate treatment methods?

☐ No

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **see Annex 7**

☒ **Yes**

►Details of leachate disposal and discharge methods and routes?

☐ No

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **see Annex 7**

☒ **Yes**

► Temporary leachate management systems?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **leachate is recirculated - see Annex 7**

☐ Yes

► Details of system monitoring (including telemetry), during pre-operational, closure and after care phases (volume, meteorological conditions and quality)?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

☐ Yes

► Details of control strategies, including phasing of operations and re-circulation?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **See monitoring protocol in Annex 18 – Environmental Monitoring Programme on trigger levels**

☐ Yes

► Operation, appropriate inspection and maintenance procedures?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit - **See Annex 7 on leachate management**

☐ Yes

► Dissolved gas content control?

☒ **No**

Justification and/or date when they will be in place– which must be prior to the acceptance of any waste under the permit **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

☐ Yes

C.3.3.19 Do these documented systems, procedures and work instructions ensure that the leachate collection, treatment and disposal system will have sufficient capacity to handle the maximum predicted rate of leachate generation for the installation, and maintain leachate levels in each separately engineered cell below those specified in the leachate monitoring programme from the date that waste is accepted under the permit?

☐ No

Proposal is not expected to increase rate of generation of leachate

☒ **Yes**

Leachate treatment techniques with regards to this application for variation.

Use this section to describe the leachate treatment techniques and performance parameters. If or when the leachate is disposed of off site, specify where it will go to.

C.3.3.20 Where is leachate treated?

☒ on site

☐ at another site (please provide location details below):

Leachate is recirculated – see Annex 7

Primary treatment

C.3.3.21 Type of plant

Refer to Annex 7

C.3.3.22 Performance parameters

Average daily flow (m³/d)

Peak hourly maximum (m³/h)

Will you monitor turbidity/suspended solids on-line?

Suspended solids (mg/l) on screen effluent

Suspended solids (mg/l)

Other performance parameters

Name of parameter

Measure and units

Secondary treatment

C.3.3.23 Type of plant

Refer to Annex 7

C.3.3.24 Performance parameters

Influent BOD/COD (mg/l)

Effluent BOD/COD (mg/l)

Mixed liquor suspended solids (mg/l)

Metals (mg/l)

Percent dry solids in influent and effluent

Other performance parameters

Name of parameter

Measure and units

Tertiary Treatment

C.3.3.25 Type of plant

Refer to Annex 7

C.3.3.26 Performance parameters

Suspended solids (mg/l)
Turbidity
Conductivity
Transmissivity (for UV)
Coliform count
Pathogenic analysis

Other performance parameters

Name of parameter
Measure and units

C.3.3.27 Can any of the stages be bypassed? Not Applicable

☐ No

☐ Yes

How often does it happen?
What steps are taken to reduce emissions?

☐ off- site

Leachate treatment off-site Not Applicable

How leachate is treated is the operator's commercial decision and the operator must demonstrate that the chosen route is the Best Available Technique (BAT), whether it is treated on site or a third party is paid to treat it on their behalf. Note also that dilution is not a factor that can be claimed as a contribution to minimizing pollution.

C.3.3.28 Provide details of the treatment provided at the sewage treatment works or similar off-site treatment facility. Not Applicable

The treatment at the sewage works must be equivalent to that achieved if the leachate were treated on-site, based on reduction of load (not just concentration) of each substance to the receiving water. Justify where it will not: in general this can be answered generically e.g. if the indicative BAT would be

settlement followed by aerobic treatment and the STW has both these steps (noting that a sewage treatment works will normally have a greater retention time than an onsite plant) it can be concluded that the sewage treatment works is potentially at least as good as a dedicated plant. You may need to discuss these issues with your treatment provider.

Not Applicable

C.3.3.29 Provide details of sewage treatment plant bypass and protection: Not Applicable

The probability of sewer bypass, via storm/emergency overflows or at intermediate sewage pumping stations must be acceptably low (you may need to discuss this with your sewage operator).

► % of the time the sewage treatment works is bypassed

Not Applicable

► An estimate of the increased annual load of metals and persistent substances which will result from bypassing

Not Applicable

► Summarise the action plans in the event of bypass, such as knowing when bypass is occurring, or even shutting down. Justify if there is no action taken

Not Applicable

► What events could cause a release which could adversely effect the sewage treatment works and what actions (e.g. holding tanks, monitoring, batch release etc) are taken to prevent this?

Not Applicable

Leachate monitoring

This section of your regulatory specification must be justified by the hydrogeological risk assessment you provided in Section C2.2.

The risk assessments (hydrogeological, stability, landfill gas) described in section 1 will have determined the leachate levels and quality necessary to ensure protection of the environment. Leachate quality monitoring is required to check that processes within the landfill are proceeding as expected (e.g. waste degradation). Leachate level monitoring is necessary to ensure that leachate collection systems are performing as designed, and to confirm that the containment engineering will protect the environment.

Assessment criteria are used to determine whether an installation is performing as designed and are intended to draw the attention of installation management and the Authority to the development of adverse trends in the monitoring data (e.g. leachate levels). If breached, they indicate that the installation may not be performing as predicted. They should be regarded, therefore, as an early warning system to enable appropriate investigation or corrective measures to be implemented, rather than as an indication that pollution has occurred.

Compliance limits are regulatory values and a breach of these limits is expected to give rise to pollution. The compliance limits will be laid down in your permit.

Contingency action plans must specify the action to be taken in the event that assessment criteria and/or compliance limits are exceeded; these actions will include notification of the Authority.

C.3.3.30 Are leachate monitoring procedures (for quality and levels as appropriate) in place to ensure that assessment criteria and compliance limits are not exceeded?

☐ No

Date by which they will in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes**

Reference of procedures **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

C.3.3.31 Are contingency action plans in place in case assessment criteria and/or compliance limits are exceeded?

☐ No

Date by which they will in place meeting the relevant standard which must be 3 months of the issue of the permit

☒ **Yes**

Reference of contingency action plans **See monitoring protocol in Annex 18 – Environmental Monitoring Programme; also Site Management System Annex 21**

C.3.3.32 Leachate level monitoring. *This question can be used for multiple monitoring locations if appropriate.*

► Cell or phase number

See Annex 07 Leachate management

► Leachate level compliance point (eg. LM1). *This should be remote from the leachate abstraction sump.*

See Annex 07 Leachate management

► Control level (e.g. 0.5 metre above liner or 74m AOD)

See Annex 07 Leachate management

► Compliance limit (e.g. 1 metre above liner or 74.5m AOD)

See Annex 07 Leachate management

► Frequency of monitoring

See Annex 07 Leachate management

► Relevant section & page number of hydrogeological risk assessment and any comments

See Annex 07 Leachate management

C.3.3.33 Leachate quality monitoring. *This question can be used for multiple monitoring locations if appropriate.*

► Cell or phase number

See Annex 07 Leachate management

► Leachate sampling point (e.g. LSP1).

See Annex 07 Leachate management

► Leachate monitoring determinands * (e.g. ammonium, chloride, Mecoprop). *Note that you will not need to determine assessment criteria ad compliance limits for every contaminant at your installation.*

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

► Assessment criteria (e.g. ammonium = 400mg/), detection limit and accuracy.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

► Compliance limit (e.g. ammonium = 800 mg/l detection limit and accuracy.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

► Frequency of monitoring.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

► Relevant section & page number of hydrogeological risk assessment and any comments.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

Surface water management plan

C.3.3.34 Are documented systems, procedures and work instructions in place for surface water management at your installation to be updated to include the following:-

► the designs and CQA plan?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

►precipitation and flood risk calculations?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

►details of engineered drainage systems including quarantine areas?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

►connection pipework configurations and alignments?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

►details of the mechanical control systems (e.g. weirs, penstocks)?

☐ No

Not applicable

☐ Yes

►details of collected surface water treatment methods?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

►details of system monitoring, during pre-operational, operational, closure and after care phases (volume, meteorological conditions and quality)?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

► details of control strategies, including phasing of operations?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

► operation, inspection and maintenance procedures?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

C.3.3.35 Does the surface water management plan ensure that the surface water collection, drainage and discharge system will have sufficient capacity to handle the maximum predicted rate of rainfall for the installation as proposed in this application for variation from the date that waste is accepted under the permit?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See site management system – Annex 21**

Discharges direct to controlled waters

Under the Environment Protection Act 2016 you require permission from the Authority if you intend to discharge the effluent to

- Inland surface water bodies, including water courses.
 - coastal waters,
 - groundwaters; and
 - Land.
-

C.3.3.36 Do you need to apply for permission (a Consent) to discharge effluent?

☒ **No**

☐ Yes

Surface water monitoring

C.3.3.37 Is surface water monitoring being provided for your landfill?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ Yes

See monitoring protocol in Annex 18 – Environmental Monitoring Programme; this includes monitoring strategies for on-site surface water monitoring and monitoring of coastal waters. These describe the monitoring points selected, the parameters monitored, including methodologies and sampling rationale.

Surface water monitoring plan

C.3.3.38 Is a surface water monitoring plan in place for the installation which provides the following information?

► surface water monitoring locations and schedules?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ Yes **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

► monitoring schedules which? Specify

- The surface quality determinands to be monitored?
- The assessment criteria?
- The surface water flows to be measured?
- The frequency of sampling?
- The units, accuracy and detection limits for each determinand?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ Yes **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

► monitoring and sampling of surface water is carried out under quality controlled procedures in the field and the laboratory?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ Yes

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

► a contingency action plan, including possible corrective measures, if the relevant assessment criteria are exceeded?

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

► the recording and secure keeping of surface water monitoring and sampling data and results.

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

► The periodic submission (at least annually) of an interpretative report of surface water monitoring results.

☐ No

Justification and/or date when they will be in place meeting the relevant standard which must be prior to the acceptance of waste under the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme**

Surface water monitoring points

This section can be used for multiple sampling locations if appropriate, and should be reproduced for each location where the criteria are different.

C.3.3.39 Surface water monitoring point(s)

► Name of monitoring point (e.g. SW 1,2)

SW 1, SW2, SW3

► Surface water monitoring determinands. Note that you will not need to determine assessment criteria and compliance limits for every contaminant at your installation.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme,

► Assessment criteria (e.g. ammonium = 0.25mg/l), detection limit and accuracy.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme, section 9

► Frequency of monitoring.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme, section 9

► Relevant section & page number of hydrogeological risk assessment and any comments

SLR HRA in Annex 13 – page 42

Groundwater management and monitoring

This section of your regulatory specification must be justified by the hydrogeological risk assessment you describe in your answers to section C2.2.

Groundwater monitoring and level management

C.3.3.40 Is the groundwater monitoring being provided for your landfill?

☐ No

Date by which it will be in place which must be prior to the acceptance of waste under the permit

☒ **Yes**

See monitoring protocol in Annex 18 – Environmental Monitoring Programme

C.3.3.41 Is management of groundwater levels being provided for your landfill? *Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 has been ticked.*

☐ No

☒ **Yes**

See monitoring protocol in Annex 18 – Environmental Monitoring Programme – which describes the process of monitoring from 9 boreholes around the Maghtab Environmental Complex, explaining the rationale applied behind the selection of determinands, monitoring locations and trigger values applied.

Groundwater monitoring plan

C.3.3.42 Is an update to the current groundwater monitoring plan for the installation with regards to the following information:-

► Monitoring locations and schedules?

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ Yes

► Monitoring schedules which specify:-

- The groundwater quality determinands to be monitored;
- The groundwater control and trigger levels;
- The groundwater levels to be measured;
- The frequency of sampling; and
- The units, accuracy and detection limits for each determinand.

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ **Yes**

► Quality controlled procedures in the field and laboratory for monitoring and sampling groundwater.

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ **Yes**

► Borehole logs from the construction of the monitoring boreholes (note: you can include them in the hydrogeological risk assessment report instead).

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ **Yes**

► A contingency action plan, including possible corrective measures, if the relevant control and/or trigger levels are exceeded.

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation; also SMS (Annex 21)

☐ **Yes**

► Recording and secure keeping of groundwater monitoring and sampling data and results.

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ **Yes**

► Periodic submission (at least annually) of an interpretative report of groundwater monitoring results.

☒ **No**

Approved monitoring protocol in Annex 18 – Environmental Monitoring Programme is a holistic approach for the entire complex that caters for this variation

☐ Yes

Groundwater monitoring

The following section should be used to summarise your groundwater monitoring programme, and identify the groundwater control and trigger levels that were derived in your hydrogeological risk assessment (Section C2.2).

It can be used for multiple sampling locations if appropriate, and should be repeated for each location where the criteria are different.

C.3.3.43 Groundwater monitoring point (s).

► Name of monitoring point (e.g. BH 1,2).

**boreholes BH1, BH2, BH3, BH4, BH5,
MBH 5, 2130, 2041 and from borehole 00574**

► Groundwater monitoring determinands (e.g. ammonium, chloride, mecoprop). You will not need to determine assessment criteria and compliance limits for every contaminant at your installation.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 8)

► Control level (e.g. ammonium = 0.25mg/l), detection limit and accuracy.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 8)

► Trigger level (e.g. ammonium = 0.5mg/l) detection limit and accuracy.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 8)

► Frequency of monitoring.

See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 8)

► Relevant section & page number of hydrogeological risk assessment and any comments.

Landfill gas management and monitoring

To successfully answer the questions under this section, you will need to have reviewed any existing landfill gas generation assessment and a landfill gas risk assessment for your installation with regards to the proposed variations, and provided them in support of your answers to 'Landfill' gas generation and risk assessment' in Section 1.2.

Applies if "Hazardous landfill" on page 1 is ticked. Applies if "Non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 has been ticked.

C.3.3.44 Is there a need to collect landfill gas?

- ☐ No need to collect landfill gas

Provide the justification and reference to the relevant section/page number of the landfill gas risk assessment

- ☒ **Yes**, there is a need to collect landfill gas

The system of landfill gas extraction is currently being implemented

C.3.3.45 Which of the following technical measures are required?

- ☐ Landfill gas flaring

Reference of the appropriate risk assessment and section/page number and any comments

- ☒ **Landfill gas utilisation**

Landfill gas is being used in the Maghtab Environmental Complex

Landfill gas collection. *Applies if Yes, there is a need to collect landfill gas in section C.3.3.44.*

Landfill gas management plan

C.3.3.46 Which of the following technical measures are required?

- ☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

Gas production for installation life

► Gas production calculations and assumptions.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

► Phased development Plans for gas collection, treatment and utilization (including extraction from operational cells, capping etc.).

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

► Collection efficiency calculations and assumptions, throughout life of installation.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

► System capacity of utilization and flaring plant (to ensure that sufficient capacity exists to handle maximum predicted gas generation).

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

Gas system design and specification

► Gas pre-treatment (if applicable).

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction.

☐ Yes

► Gas extraction wells.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

► Connection pipe-work and configuration.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

► Facilities for condensate removal.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradeable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

► Control systems (e.g. valves, telemetry, alarm systems, interlock).

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

► Gas flares, e.g. design specification: to include design capacity, turndown range, method of combustion control, proposed minimum retention time (s^{-1}) and minimum temperature ($^{\circ}C$); function: to include capacity (%) of utilization system if flare function is to back up the utilization system, excess gas combustion.

☒ No

Not applicable as flares are not used on site.

☐ Yes

► Utilisation plant, e.g. specification, gas flow rate. Applies if **Yes, there is a need to collect landfill gas** in section C.3.3.44 is ticked.

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

► Temporary and emergency provisions.

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

Construction quality assurance

► Roles and responsibility.

☐ No

Justification and/or date by which it will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** Besides CQA procedures and roles for existing facilities, additional CQA will be provided for the modifications proposed by this variation.

►Quality assurance principles.

☐ No

Justification and/or date by which it will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** Besides quality assurance for existing facilities, additional QA will be provided for the modifications proposed by this variation.

►As built documentation.

☐ No

Justification and/or date by which it will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes:** additional as built documentation will be provided once the modifications proposed by this variation are built.

►Validation report.

☐ No

Justification and/or date by which it will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes:** additional validation reports will be provided once the modifications proposed by this variation are built.

Operational techniques

►Management responsibilities (e.g. utilization plant)

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

►Routine operational procedures for extraction and collection (e.g. balancing of system).

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

►Start up and shut down procedures for flare and utilization plant.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ **Yes**

► Measures to collect and control landfill gas where there is insufficient methane to support combustion.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ **Yes**

► Management of odour and lateral migration while maintaining utilization, e.g. separate systems. Applies if Yes, there is a need to collect landfill gas on Section 3.3.44 is ticked.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ **Yes**

► Measures additional to collection and flaring or utilization, e.g methane oxidation, gas barriers.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ **Yes**

► Engine by-pass procedures following mechanical failure or non-routine situation.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

Maintenance

► Inspection programme.

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

► Planned and unplanned maintenance.

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

Monitoring

► System monitoring during pre-operational, operational, closure and aftercare stages (flow, pressure, composition).

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accomodate the recontouring of the waste profile.

☐ Yes

► Meteorological monitoring.

☒ No

Issue has already been addressed in previous renewals, and meteorological monitoring is already established as part of the monitoring programme.

☐ Yes

Action Plan

► Procedures to be implemented in the event of ingress of air into the system.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

► Procedures to be implemented if leaks in the gas system are identified.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; this variation is not expected to introduce the need for a change in plan given that material brought on site is to be pre-treated to remove biodegradable fraction. The only change that may be required is the removal and redeployment of the landfill gas collection points, to accommodate the recontouring of the waste profile.

☐ Yes

Data management and recording

► Methods of maintaining system records.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; data records are being maintained, and will not be affected by variation.

☐ Yes

► Gas composition and volume records.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; data records are being maintained, and will not be affected by variation.

☐ Yes

► Inspection and maintenance records.

☒ **No**

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; data records are being maintained, and will not be affected by variation.

☐ Yes

► Monitoring records including those received by telemetry.

☒ No

Issue has already been addressed in previous renewals, and landfill gas is in the process of being implemented; data records are being maintained, and will not be affected by variation.

☐ Yes

Landfill gas flaring

*Applies if **Landfill gas flaring** in Section 3.3.45 is ticked. If your installation contains more than one type of flare please provide additional data sheets where necessary. Refer to Council Decision 2014/953/EU establishing a list of wastes.*

C.3.3.47 Does the flare include the following control features?

► Flame detectors in the flare.

☒ No

Not applicable as flares are not used on site.

☐ Yes

► Automatic flame temperature controls.

☒ No

Not applicable as flares are not used on site.

☐ Yes

► Slam-shut valves.

☒ No

Not applicable as flares are not used on site.

☐ Yes

► Flame arrestors on the flare feed line.

☒ No

Not applicable as flares are not used on site.

☐ Yes

► Flame arrestors fitted at any other point.

☒ **No**

Not applicable as flares are not used on site.

☐ Yes

Landfill gas monitoring

Landfill gas monitoring must be provided at the installation. Kindly refer to Council Decision 2014/953/EU establishing a list of wastes . The following provides the regulatory specification for your landfill gas monitoring programme which must be justified by the landfill gas risk assessment you describe in your answers to Section 3.2. You should use this section to demonstrate whether documented systems, procedures and work instructions need to be updated for all cells or areas generating landfill gas including those covered by this application for variation.

C.3.3.48 Are documented systems, procedures and work instructions for landfill gas monitoring in place for the installation, that include the following:-

► Design and construction of gas monitoring installations.

Including as appropriate,

- In-waste boreholes and wells;
- Perimeter boreholes;
- Location of monitoring installations; and
- Location of all in-waste, gas monitoring installations and perimeter boreholes.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

► Construction quality assurance.

Including as appropriate,

- Roles and responsibilities;
- Quality assurance principles;
- As-built documentation; and
- Validation report.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See Annex 21 – SMS Section 12.7.1**

► Monitoring measurements and schedules.

Including as appropriate,

- Installation reference (in-waste, perimeter, gas flares, utilization plants);
- Monitoring frequency; and

- Parameters.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

►Monitoring techniques.

Including as appropriate,

- In-waste and perimeter boreholes;
- Gas flares;
- Utilization plants;
- Surface emissions;
- Aerial emissions; and
- Off-site monitoring in the event of migration.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

►Compliance limits and action plan.

Including as appropriate,

- Control trigger levels; and
- Procedures to be followed when levels of emissions exceed control and trigger levels.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

►Data management and reporting procedures.

Including as appropriate,

- Methods of recording and maintaining monitoring data;
- Reporting routine data to the Environment and Resources Authority;
- Annual reporting of monitoring data;
- Reporting in the event of a trigger event; and
- Records of complaints.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

Applies if “hazardous landfill” on page 1 is ticked. Applied is “non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)” on page 1 is ticked. Applies if “an existing inert landfill?” on page 1 is ticked.

► Do the documented systems, procedures and work instructions for landfill gas monitoring currently in place and those proposed in this variation ensure that:-

- Gas quality and quantity from each section of installation be identified and controlled;
- Perimeter monitoring is adequate to cover the pathways of migration to identified off-site receptors;
- High permeability sections of the cap can be located;
- Leaks in the gas collection system will be identified;
- Volume of landfill gas sent to utilization/disposal system;
- Ingress of air into installation can be detected and located;
- Sufficient balancing of the landfill gas collection system will be undertaken;
- Performance of boreholes will be maintained to design specification;
- The concentration and composition of the trace gas components will be measured so that appropriate management can be undertaken; and
- The monitoring from flares and utilization plant sufficient to determine the quality and quantity of emissions.

☐ No

Justification and/or date by which the system will be in place meeting the relevant standard which must be within 6 months of the issue of the permit

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

In-waste landfill gas monitoring

C.3.3.49 Is routine monitoring to be undertaken for:-

► Methane.

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

► Carbon dioxide.

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

► Oxygen.

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

► Temperature.

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

► Carbon monoxide

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

C.3.3.50 Is annual monitoring being undertaken for trace component? *Applies if “hazardous landfill” on page 1 is ticked. Applied is “non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)” on page 1 is ticked. Applies if “an existing inert landfill?” on page 1 is ticked.*

☐ No

Provide justification

☒ **Yes** **See monitoring protocol in Annex 18 – Environmental Monitoring Programme (section 4)**

Monitoring of emissions from landfill gas flares and gas engine exhausts

Applies if “hazardous landfill” on page 1 is ticked. Applied is “non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)” on page 1 is ticked. Applies if “an existing inert landfill?” on page 1 is ticked.

After landfill gas has been abstracted and collected, it is either utilized via an engine or flared. These combustion processes release air emissions whose impacts on the environment may be assessed by emission measurements, modeling, and ambient air-quality monitoring.

Monitoring flare emissions

C.3.3.51 **Kindly provide details on the flare emissions monitoring being undertaken at currently permitted installation and those proposed in this variation?**

Monitoring protocol for CHP and RTO are given in Annex 18 – Environmental Monitoring Programme (p16)

Monitoring utilization system emissions. *Applies if **Yes there is a need to collect landfill gas** in Section 3.3.44 ticked.*

C.3.3.52 Is landfill gas engine emissions monitoring being undertaken?

☐ No

Provide justification

☒ **Yes** **Monitoring protocol for CHP and RTO are given in Annex 18 – Environmental Monitoring Programme (p16)**

Perimeter landfill gas monitoring – sub-surface emissions

Applies if **“hazardous landfill”** on page 1 is ticked. Applied is **“non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)”** on page 1 is ticked. Applies if **“an existing inert landfill?”** on page 1 is ticked.

Sub-surface monitoring of landfill gas at the installation perimeter is needed to check on any lateral migration of gas through the sides/perimeter of the installation. As a minimum, methane and carbon dioxide must be monitored. Other gasses should be measured, as required, according to the composition of the waste deposited.

This section can be used for multiple sampling locations if appropriate, and should be reproduced for each location where the criteria are different.

C.3.3.53 Perimeter landfill gas monitoring details. *This question can be used for multiple monitoring locations if appropriate. This shall cover any changes in the monitoring locations in the current permit and proposed in this application for variation.*

► Monitoring point location/reference.

Monitoring points for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p15)

► Methane.

► Control level, detection limit and security

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Trigger level (for example, 1% above agreed background concentrations based on 20% of the lower explosion limit – LEL), detection limit and accuracy

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Control level, detection limit and security

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Carbon dioxide

► Monitoring point location/reference

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Control level, detection limit and accuracy

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Trigger level (for example, 1.5% above agreed background concentrations based on 20% of the 8 hour British occupational exposure standard – OES), detection limit and accuracy

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Frequency of monitoring

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Other

► Name of parameter

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Monitoring point location/reference

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

Control level, detection limit and accuracy

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Name of parameter

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Frequency of monitoring

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

Landfill gas monitoring – surface emissions

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.

These are measurements of atmospheric emissions made at or just above the surface of an installation. There are two main types of measurements.

- Near-surface concentration measurements: these are measurements of ambient concentrations made routinely or occasionally with hand-held monitors at particular locations or along particular traverses; and
- Surface flux measurement: these are measurements of emissions collected in open-bottomed containers (flux boxes) placed over particular surface positions so as to collect emitted emissions over a defined period of time. The measurements can be interpreted in terms of the local average rate of emission per unit area i.e. flux.

Flux measurements are generally more useful than concentration measurements for managing and controlling the atmospheric emissions and impacts of installations. For example, they are more readily compared with estimates of fugitive release rates from modeling (see Section 1), and are more easily related to climate change objectives which are expressed in terms of pollutant emission rates.

C.3.3.54 Is surface monitoring being undertaken?

☐ No

Provide justification

☒ **Yes** **Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)**

Perimeter landfill gas monitoring – aerial emissions

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.

These are measurements of ambient concentrations of atmospheric emissions made around the parameter of the installation. Boundary monitoring is to be used to demonstrate how the management and regulation of the installation is affecting outcomes in receiving environments. The measurements are important of the following specific purposes:

- To show the impacts of fugitive landfill emissions at points of maximum off-site concentration i.e. before the emissions disperse away from the installation boundary;
- To identify the types and levels of air emissions being released towards receiving environments and local communities;
- To provide field-based estimates of the fluxes of fugitive emissions emitted from the installation, based on dispersion back-projection;
- To identify the impacts of elevated gas utilization sources (flares and engines) in near-field dispersion situations;
- To identify the background concentrations of emissions in air arriving at the installation boundary from outside the landfilled area;
- To show the incremental impact of the installation on ambient air quality by comparing measurements at the upwind and downwind boundaries of the installation;
- To validate concentrations and emission rates based on gas production modeling; and
- To provide source term estimates for use in dispersion modeling of the impact of landfill emissions on sensitive receptors.

C.3.3.55 Will you monitor the perimeter for methane or any other compound?

☐ No

Provide justification

☒ **Yes** **Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)**

C.3.3.56 Which compounds?

☒ Methane

☒ Compounds other than methane:

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

C.3.3.57 Details of perimeter aerial emission monitoring point. *Repeat this section for changes to monitoring points in the current permit and those proposed in this application for variation.*

► Name of monitoring point (e.g. PAEMP1,2).

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Parameter.

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Control level, detection limit and accuracy.

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Trigger level, detection limit and accuracy.

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Frequency of monitoring e.g. continuous

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

C.3.3.58 Give these details in case of any changes to the perimeter-monitoring stations are in place.

► Height above ground for perimeter sampling e.g. 1.5m.

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Proximity and direction of the boundary relative to monitoring station(s).

Monitoring details for landfill gas monitoring are given in Annex 18 – Environmental Monitoring Programme (p11-14)

► Local topography relative to the monitoring station(s).

N/A This has been evaluated as per Environmental Impact Assessment processes carried out on the Magtab Environmental complex facilities: the SLR & AIS Ltd. EIS for PA 4834/04, and that for GF 121/06 for the entire Magtab complex carried out by ADI Associates Ltd.

Receptor monitoring – aerial emissions

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.

In some cases it will be appropriate to extend monitoring of potential installation impacts to sensitive receptors, where there is particular concern with the air quality impacts of the installation.

C.3.3.59 Are these reasons for undertaking new receptor monitoring based on the following?

► Complaints received.

☐ No

Provide justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

While the landfill aerial emissions strategy is adequate, the possibiity of ad hoc monitoring in case of complaints should be considered.

► Proximity of sensitive environments.

☒ **No**

The changes in operations that is proposed is equivalent to the existing conditions, in that a portion of material currently being deposited at the tipface will be relocated to the area proposed for recontouring. The additional pre-treatment that will be applied to select non-biodegradable wastes will reduce scope for emissions compared with the present scenario at the existing tipface.

☐ Yes

Reference to relevant section/page number of risk assessment

► risk of exceeding recognized air-quality standards.

☒ **No**

The changes in operations that is proposed is equivalent to the existing conditions, in that a portion of material currently being deposited at the tipface will be relocated to the area proposed for recontouring. The additional pre-treatment that will be applied to select non-biodegradable wastes will reduce scope for emissions compared with the present scenario at the existing tipface.

☐ Yes

Reference to relevant section/page number of risk assessment

► other installation-specific reasons

☒ **No**

The changes in operations that is proposed is equivalent to the existing conditions, in that a portion of material currently being deposited at the tipface will be relocated to the area proposed for recontouring. The additional pre-treatment that will be applied to select non-biodegradable wastes will reduce scope for emissions compared with the present scenario at the existing tipface.

☐ Yes

C.3.3.60 Do you have existing monitoring of air emissions in receptor situations?

☐ No

Provide justification and reference to the relevant section/page number of risk assessment

☒ **Yes**

What do the results indicate?

C.3.3.61 Will you undertake any additional receptor monitoring or change the existing monitoring system?

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.

☒ **No**

The changes in operations that is proposed is equivalent to the existing conditions, in that a portion of material currently being deposited at the tipface will be relocated to the area proposed for recontouring. The additional pre-treatment that will be applied to select non-biodegradable wastes will reduce scope for emissions compared with the present scenario at the existing tipface. However, additional monitoring is being proposed as a response to complaints that may be raised.

☐ Yes

Compounds to be monitored

Number and location of monitoring stations

Frequency and duration of monitoring

C.3.3.62 Specify the control and trigger levels which are proposed in order to decide when a change to the gas management plan is needed.

Annex 18 – Environmental Monitoring Programme (p11-14) include details regarding control and trigger levels which are proposed in order to decide when a change to the gas management plan is needed.

Landfill gas monitoring action plan

C.3.3.63 Do you propose any changes to any existing landfill gas monitoring action plan which covers the elements listed below?

►Appropriate actions to be taken if:-

- Abnormal changes are observed in collected monitoring data;
- A reported event occurs, e.g. and odour complaint?;
- Migration and release of landfill gas; and
- Impact to local air quality, e.g. sub-surface fire

☒ **No**

Annex 18 – Environmental Monitoring Programme (p11-14) include details regarding control and trigger levels which are proposed in order to decide when a change to the gas management plan is needed.

☐ Yes

►Procedures and protocols to manage:-

- Emergency actions to counter extraordinary events e.g. evacuation of buildings;
- Changes to gas management techniques and other operational control measures that are required to redefine the control of gas on the installation e.g. installation of additional gas collection wells; and
- Changes to the strategy for routine monitoring using identified monitoring protocols to provide improved data to evaluate the event e.g increased perimeter monitoring?

☐ No

Provide justification and/or date by which measures will be specified which must be within 6 months of the issue of the permit

☒ **Yes** **Emergency and health and safety provisions specific to this project are being proposed see Annex 19 – Construction management p 15**

►For each identified event do the emergency procedures define:-

- The name of the person responsible for managing the emergency actions;
- Emergency notification and contact procedures e.g. Authority and emergency services;
- Phone number and contact names;
- Assessment parameters for each emergency scenario;

- Description of emergency actions for each emergency scenario (what actions are to be taken and who will undertake them);
- Monitoring requirements for each emergency scenario;
- Reporting parameters (what should be reported to the parties or persons involved);
- Completion parameters (what criteria identifies that the emergency action can be considered as complete; and
- Procedures for reviewing emergencies and the performance of the gas management plan?

☐ No

Provide justification and/or date by which measures will be specified which must be within 6 months of the issue of the permit

☒ **Yes** **Emergency and health and safety provisions specific to this project are being proposed see Annex 19 – Construction management p 15**

Installation infrastructure

C.3.3.64 Describe any proposed changes to the security arrangements on your installation

►in terms of:-

- Type of security;
- Design standards for physical security, detailing design and specification, including access;
- Operational standards for security, including operational and out-of-hours provisions; and
- Maintenance and repair schedules.

Security provisions specific to this variation are being proposed see Annex 19 – Construction management p 16. Otherwise security arrangements remain unchanged as from existing permit.

Sub-surface structures (excluding landfill containment engineering)

C.3.3.65 For all sub-surface pipework, sumps and storage vessels secondary containment or continuous leakage detection must be in place prior to the acceptance of any waste under the permit. Not applicable to the scope of this variation; other sub-surface structures remain unchanged from previous permit renewals.

►Please indicate which method you will use.

- ☐ Secondary containment
☐ Continuous leakage detection

C.3.3.66 Is there an inspection and maintenance programme, e.g. pressure tests, leak tests, material thickness checks or CCTV which are completed for all such equipment and repeated at least every 3 years?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be prior to the acceptance of any waste under the permit

☒ **Yes** **Certifications are renewed regularly.**

C.3.3.67 Installation surfacing (excluding landfill containment engineering): has the following been applied to the areas of the installation covered by the proposed variation listed below?

For each area where there is potential for the activities to pollute the ground or controlled waters, confirm that it is surfaced and that the surfacing complies with each of the requirements in the section below.

The design quality assurance and inspection and maintenance programme must cover, for each area:-

- Capacities;
- Thicknesses;
- Falls;
- Materials;
- Hydraulic conductivity;
- Strength/reinforcement;
- Resistance to chemical attack; and
- Inspection and maintenance procedures and quality assurance of construction.

►Waste reception area.

☒ **No**

Not within scope of this variation & renewal; waste taken directly to tipface from point of waste segregation at Malta North plant.

☐ Yes

►Waste storage area.

☒ **No**

Not within scope of this variation & renewal; waste taken directly to tipface; waste taken directly to tipface from point of waste segregation at Malta North plant.

☐ Yes

►Fuel store area.

☒ **No**

No new fuel storage areas are proposed. Re existing specifications see annex 8.

☐ Yes

►Other areas.

☐ No

Provide justification and/or date by which measures will be specified which must be within 6 months of the issue of the permit

☒ **Yes – see annex 11 re specifications for hazardous waste quarantine area**

► Confirm that it is surfaced and that the surfacing complies with each of the requirements.

☐ No

Provide justification and/or date by which measures will be specified which must be within 6 months of the issue of the permit

☒ **Yes**

Bunds

For each tank containing liquids whose spillage could be harmful to the environment, confirm that it is bunded and that the bunding complies with each of the requirements in the section below within 6 months of the date of the issue of the permit.

C.3.3.68 Bunding details

No new liquid storage areas are proposed by this variation

Drawing reference

C.3.3.69 Type of tank

☒ Fuel storage

☒ Waste oil from on site maintenance

☐ Leachate storage tanks

☐ Other

No new liquid storage areas are proposed by this variation – selections above are already present on site.

► Is it impermeable and resistant to the stored materials?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Does it drain to a blind collection point and have no outlet (i.e. no drains or taps)?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Is the pipework routed within bunded areas with no penetration of contained surfaces?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Is it designed to catch leaks from tanks or fittings?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Does it have a capacity of 110% of the largest tank or 25% of the total tankage, whichever is the greater?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Is it subject to regular visual inspection and any contents pumped out or otherwise removed under manual control after checking for contamination?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Where not frequently inspected, will it be fitted with a high-level probe and an alarm as appropriate?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☐ Yes

► Does it have fill points within the bund where possible or otherwise provide adequate containment?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

► Is there a routine programmed inspection of bunds, (normally visual but extending to water testing where structural integrity is in doubt)?

☐ No

Justification and/or date by which it will be in place meeting the relevant standard

☒ **Yes**

Particulate matter management and monitoring

This section provides the regulatory specification for your particulate matter management and monitoring programme.

C.3.3.70 Is particulate matter management required at the installation?

☐ No

Justification and reference to the relevant section/page of the particulate matter risk assessment

☒ **Yes – as per Annex 21 section 14 on particulate management and monitoring**

►Are all appropriate measures in place to minimize any particulate matter escaping beyond the installation boundary?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per IPPC permit condition**

►Are the high particulate matter risk waste streams (as identified in the risk assessment) clearly specified?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 section 14 on particulate management and monitoring**

►Are the criteria (e.g. wind speed and direction) for closing the installation to the high particulate matter risk waste streams clearly specified?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 section 14 on particulate management and monitoring**

►For those waste streams identified as a high litter risk in the risk assessment are there measures requiring sources to have it appropriately treated or bagged?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 section 17 on littering management and monitoring**

►Are the criteria for using an emergency tipping area clearly identified?

☐ No

Justification and / or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 section 17.3.9 on littering management and monitoring**

C.3.3.71 Is any additional particulate matter monitoring required at the installation?

☐ No

Justification and reference to the relevant section/page of the particulate matter risk assessment

☒ **Yes – Annex 18 – Environmental Monitoring Programme section 6 describes the monitoring of particulate monitoring; additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring**

►What types of particulate matter are being generated and emitted?

Particulate matter being generated and emitted – **described in Annex 21 section 14 on particulate management and monitoring**

Monitoring method – **described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions**

►Are measures in place to monitor particulate matter within the installation boundary at the hazard location for particulate matter identified in the risk assessment?

☐ No

Provide justification and reference to the relevant page/section of the particulate matter risk assessment

☒ **Yes**

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

►Are measures in place to monitor particulate matter escaping the installation boundary?

☐ No

Provide justification and reference to the relevant page/section of the particulate matter risk assessment

☒ **Yes**

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

►Are measures in place to monitor particulate matter at specific locations, for high sensitivity receptors identified in the particulate matter risk assessment?

☐ No

Provide justification and reference to the relevant page/section of the particulate matter risk assessment

☒ **Yes**

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions considers sensitive receptors and recommends continued monitoring at particular monitoring points.

C.3.3.72 Details of particulate matter monitoring points

►Name of monitoring point.

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

► Determinand.

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

► Frequency of monitoring.

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

► Units and accuracy.

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

► Control level.

described in Annex 18 – Environmental Monitoring Programme section 6 on the monitoring of ambient air emissions

Odour Management and monitoring

This section provides the regulatory specification for your odour monitoring programme.

C.3.3.73 Is additional odour management required at the installation?

☐ No

Provide justification and reference to the relevant page/section of the odour risk assessment

☒ **Yes – Annex 18 – Environmental Monitoring Programme section 5 describes the monitoring of odours; additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring**

► at the installation boundary?

☒ **No**

Annex 18 – Environmental Monitoring Programme section 5 makes adequate provision for odour monitoring at the installation boundary

☐ Yes

► Are the high odour risk waste streams (as identified in the risk assessment) clearly specified?

☐ No

Justification and /or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 SMS - section 15 on odour management and monitoring; pre-sorting of wastes at Malta North MBT will reduce scope for odour generation**

►Are the criteria (e.g. wind speed and direction) for closing the installation to the high odour risk waste streams clearly specified?

☐ No

Justification and /or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 SMS - section 15 on odour management and monitoring; pre-sorting of wastes at Malta North MBT will reduce scope for odour generation**

►For those waste streams identified as a high odour risk in the risk assessment, are there measures requiring sources to have it appropriately treated?

☐ No

Justification and /or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 SMS - section 15 on odour management and monitoring; pre-sorting of wastes at Malta North MBT will reduce scope for odour generation**

►Are the criteria for using an emergency tipping area clearly identified?

☐ No

Justification and /or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – as per Annex 21 SMS - section 15 on odour management and monitoring**

C.3.3.74 Is additional odour monitoring required at the installation?

☐ No

Justification and reference to the relevant section/page of the odour risk assessment

☒ **Yes**

Annex 18 – Environmental Monitoring Programme section 5 describes the monitoring of odours; additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring

►Are measures in place to monitor odour within the installation boundary at the hazard location for odour identified in the risk assessment?

☐ No

Justification and reference to the relevant page/section of the odour risk assessment

☒ **Yes**

see Annex 21 SMS - section 15 on odour management and monitoring

► Are measures in place to monitor odour escaping the installation boundary?

☐ No

Justification and reference to the relevant page/section of the odour risk assessment

☒ **Yes**

State frequency of monitoring and provide justification and reference to the relevant section/page of the odour risk assessment

► Are measures in place to monitor odour at specific locations, for high sensitivity receptors identified in the odour risk assessment?

☐ No

Justification and reference to the relevant page/section of the odour risk assessment

☒ **Yes**

see Annex 21 SMS - section 15 on odour management and monitoring

C.3.3.75 Details of proposed changes to existing odour monitoring points and any proposed in this application for variation

► Name of monitoring point.

Additional monitoring point downwind from operations area considered by this variation.

► Determinand.

As per Annex 21 SMS - section 15 on odour management and monitoring

► Frequency of monitoring.

As per Annex 21 SMS - section 15 on odour management and monitoring

► Units and accuracy.

As per Annex 21 SMS - section 15 on odour management and monitoring

► Control level.

As per Annex 21 SMS - section 15 on odour management and monitoring

Dirt and mud management and monitoring

This section provides the regulatory specification for your dirt and mud management monitoring programme.

C.3.3.76 Is additional dirt and mud management required at the installation?

☒ No

Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision

☐ Yes

►Are all appropriate measures in place to minimize the dirt and mud being carried beyond the installation boundary?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ Yes **Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision**

►In the event that dirt and mud is carried beyond the installation boundary, are measures in place to ensure that the dirt and mud is cleared as soon as practicable i.e. without delay?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ Yes **Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision**

►Are the criteria (e.g. mud on an external public road) for closing the installation to the acceptance of waste clearly specified?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ Yes **Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision**

►Are measures in place to ensure that the priorities for clearing dirt and mud are related to the meteorological conditions and the high sensitivity receptors identified in the risk assessment?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ Yes **Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision**

C.3.3.77 Dirt and mud clearance

►What is the maximum period for clearing the dirt and mud accumulations within the installation from the current and proposed operations?

Annex 21 SMS - section 6 on dirt and mud management and monitoring specifies that action will be taken within a week when necessary

►What is the maximum period for clearing dirt and mud accumulations outside the boundary of the installation from the current and proposed operations?

Annex 21 SMS - section 6 on dirt and mud management and monitoring specifies that action will be taken within 24 hours when required

C.3.3.78 Is additional dirt and mud monitoring required at the installation?

☒ **No**

Annex 21 SMS - section 6 on dirt and mud management and monitoring has adequate provision

☐ Yes

►Are measures in place to monitor dirt and mud within the installation boundary at the locations identified in the risk assessment?

☐ No

Justification and reference to the relevant section/page of the dirt and mud risk assessment

☒ **Yes**

State frequency of monitoring and provide justification and reference to the relevant section/page of the dirt and mud risk assessment

►Are measures in place to monitor dirt and mud being carried outside the installation boundary?

☐ No

Provide justification and reference to the relevant page/section of the dirt and mud risk assessment

☒ **Yes**

Annex 21 SMS - section 6 on dirt and mud management and monitoring specifies daily

►Are measures in place to monitor dirt and mud at specific locations identified as high sensitivity receptors identified in the dirt and mud risk assessment?

☐ No

Provide justification and reference to the relevant page/section of the dirt and mud risk assessment

☒ **Yes**

Annex 21 SMS - section 6 on dirt and mud management and monitoring specifies daily

Litter management and monitoring

This section provides the regulatory specification for your litter management and monitoring programme.

C.3.3.79 Is additional litter management required at the installation?

☒ **No**

Annex 21 SMS - section 17 on litter management and monitoring has adequate provision

☐ Yes

► Are all appropriate measures in place to minimize litter escaping beyond the installation boundary?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► In the event that litter does escape beyond the installation boundary, are measures in place to ensure that the litter is retrieved as soon as practicable i.e. without delay?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► Are the criteria (e.g wind speed and direction) for closing the installation to high litter risk waste streams clearly specified?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► Are the high litter risk waste streams (as identified in the risk assessment) clearly specified?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► For those waste streams identified as a high litter risk in the risk assessment are there measures requiring sources to have it appropriately treated, bagged or baled?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► Are the criteria for using an emergency tipping area clearly identified?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

► Are measures in place to ensure that the priorities for clearing litter are related to the meteorological conditions and the high sensitivity receptors identified in the risk assessment?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 SMS - section 17 on litter management and monitoring has adequate provision**

C.3.3.80 Litter collection

► What is the maximum period for clearing litter accumulations within the installation?

Annex 21 SMS - section 17 on litter management and monitoring specifies that cleanup will be as soon as possible where necessary

► What is the maximum period for clearing litter escaping the boundary installation?

Annex 21 SMS - section 17 on litter management and monitoring specifies that cleanup will be as soon as possible where necessary

C.3.3.81 Is additional litter monitoring required at the installation?

☒ **No**

Annex 21 SMS - section 17 on litter management and monitoring has adequate provision

☐ Yes

►Are measures in place to monitor litter within the installation boundary at the hazard location for litter identified in the risk assessment?

☐ No

Provide justification and reference to the relevant page/section of the litter risk assessment

☒ Yes

Annex 21 SMS - section 17 on litter management and monitoring has adequate provision

►Are measures in place to monitor litter at specific locations, for high sensitivity receptors identified in the litter risk assessment?

☐ No

Provide justification and reference to the relevant page/section of the litter risk assessment

☒ Yes

Annex 21 SMS - section 17 on litter management and monitoring has adequate provision

Birds, vermin and insect management

This section provides the regulatory specification for your bird, vermin and insect management and monitoring programme.

C.3.3.82 Is additional bird, vermin and insect management required at the installation?

☒ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☐ Yes

►Are all appropriate measures (e.g. bird deterrent techniques, physical barriers) in place to minimize the presence of birds, vermin and insects at the installation?

☐ No

Annex 21 SMS - section 18 on birds, vermin and insect management are implemented

☒ Yes

►In the event that birds, vermin and insects are causing annoyance at the installation, are measures in place to manage their presence as soon as practicable i.e without delay?

☒ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☐ Yes

►Are the criteria for closing the installation to the waste streams with a high risk of attracting birds, vermin and insects?

☐ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☒ Yes

►Are the waste streams with a high risk of attracting birds, vermin and insects (as identified in the risk assessment) clearly specified?

☐ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☒ Yes

►For those waste streams identified with a high risk of attracting birds, vermin and insects in the risk assessment, are the sources required to take appropriate measures?

☐ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☒ Yes

►Are measures in place to ensure that the priorities of birds, vermin and insects management are related to the meteorological conditions and the high sensitivity receptors identified in the risk assessment?

☐ No

Annex 21 SMS - section 18 on birds, vermin and insect management has adequate provision

☒ Yes

C.3.3.83 Bird Vermin and insect control

►How often are visual inspections of the installation carried out for the presence of birds, vermin and insects?

Annex 21 SMS - section 18 on birds, vermin and insect management specifies weekly

►Are measures in place to visually inspect at specific locations, for high sensitivity receptors identified in the bird, vermin and insect risk assessment report?

Annex 21 SMS - section 18 on birds, vermin and insect management specifies weekly

►How often do pest control contractors visit the installation?

Annex 21 SMS - section 18 on birds, vermin and insect management specifies weekly

►What is the maximum period taking measures to control birds, vermin and insects following identification of nuisance within the boundary of the installation?

Annex 21 SMS - section 18 on birds, vermin and insect management specifies within 24 hours

►What is the maximum period for taking measures to control birds, vermin and insects following identification of nuisance outside the boundary of the installation?

Annex 21 SMS - section 18 on birds, vermin and insect management specifies within 24 hours

Noise and vibration management and monitoring

This section provides the regulatory specification for your noise and vibration management and monitoring programme.

C.3.3.84 Is additional noise and vibration management required at the installation?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes – Annex 18 – Environmental Monitoring Programme section 12 describes the monitoring of noise and vibration; additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring**

C.3.3.85 Will additional noise and vibration management be undertaken?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes – additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring**

►Will additional measures be put in place to minimize noise and vibration escaping beyond the installation boundary?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes – vehicles used to implement the operations proposed by this operation will be maintained to ensure that noise and vibrations do not escape installation boundary**

►In the event that noise and vibration is perceived beyond the installation boundary, will additional measures be put in place to ensure that remedial action is taken as soon as practicable i.e. without delay?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 section 19.5 includes adequate provision**

►Are measures in place to ensure that the remedial action is related to the meteorological conditions (e.g. wind direction) and the high sensitivity receptors identified in the risk assessment?

☐ No

Justification and/or date by which they will be in place meeting the relevant standard which must be within 3 months of the issue of the permit

☒ **Yes - Annex 21 section 19.5 includes adequate provision**

C.3.3.86 Is additional noise and vibration monitoring required at the installation?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes – additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring**

C.3.3.87 Will additional noise and vibration monitoring be undertaken?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes**

additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring

►Are measures in place to monitor noise and vibration within installation boundary?

☒ **No**

Annex 18 – approved Environmental Monitoring Programme section 12 reviews external monitoring of noise and concludes that noise monitoring at external locations indicates that noise generation is within the limits specified by the IPPC permit

☐ Yes

State frequency of monitoring and provide justification and reference to the relevant section/page of the noise and vibration risk assessment

►Are measures in place to monitor noise and vibration at the installation boundary?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes**

As per Annex 18 – approved Environmental Monitoring Programme section 12

►Are measures in place to monitor noise and vibration at specific locations, for high sensitivity receptors identified in the noise and vibration risk assessment?

☐ No

Justification and reference to the relevant section/page of the noise and vibration risk assessment

☒ **Yes -**

As per Annex 18 – approved Environmental Monitoring Programme section 12

C.3.3.88 Changes to details of noise and vibration monitoring points covered in the current and proposed operations:

► Name of monitoring point.

additional monitoring would be required at the site of operations proposed by this variation, as part of works monitoring

► Determinand.

As per Annex 18 – approved Environmental Monitoring Programme section 12

► Frequency of monitoring.

weekly

► Units and accuracy.

As per Annex 18 – approved Environmental Monitoring Programme section 12

► Control levels.

As per Annex 18 – approved Environmental Monitoring Programme section 12

C.3.4 Other Assessments

Raw and auxiliary materials selection and minimization.

This section looks at the selection and minimization of the raw and auxiliary materials used in the operation of the installation. It is understood however that nearly all of these materials are required to minimize the adverse effects on the environment and therefore the minimization of them may be inappropriate. It is therefore suggested that, although consideration should be given to minimizing the use of materials required for abatement techniques, the operator should ensure that the integrity and ability of the abatement systems are not compromised.

C.3.4.1 Raw Materials

Use this section to identify any changes (including changes in estimated annual consumption) to the current list of the principle materials used, and any others that have the potential for significant environmental impact, for example vermin control, fuels, leachate treatment and raw materials required for engineering. Repeat for each material used.

► Raw material/function.

Other materials introduced by this variation are those used in the creation of the retaining structures used in the lateral extension of the landfill i.e. geomeshes and metal (see Annex 14 – Frisoli SRA section 2.2 for details)

► Chemical nature/composition..

Plastic, metal

► Addition rate.

Fate **All materials will form part of the landfill retaining structures and capping**

► % of product.

► % to water.

► % to wasteland.

► % to air.

► Environmental impact where known *e.g. degradability, bioaccumulation potential, toxicity to relevant species.*

No significant impact arising from use of materials

► Practical alternatives for those with significant impact potential and reasons why they are not used.

Materials selected are specific to project needs and specifications

► Could the material be a significant accident risk by virtue of nature or quantity stored?

Probability of accident risk very low

Energy

The principle that energy should be used efficiently is only a requirement for landfills covered by Section 5.4 of Schedule 1 of the Industrial Emissions (IPPC) Regulations. The landfill sector is not considered to be a significant energy user and the opportunity for significant energy efficiency will be limited. However, an operator will be expected to have basic, low cost, physical techniques in place to avoid gross inefficiencies.

Basic energy requirements

Changes to the annual energy consumption of the activities must be presented in Table 1 below, broken down by energy source. When energy is exported from the installation, the operator should also provide this information. An example of the format in which this information should be presented is given in below.

C.3.4.2 Annual energy consumption

Table 1

Energy Source	Energy Consumption		
	Delivered, MWh	Primary MWh	% of total
Electricity from public supply			
Electricity from other source*		Most generated from landfill gas	
Gas		N/A	
Oil	56,000 litres of diesel	N/A	
Coal		N/A	
Other (operator to specify?)			

- Specify source and conversion factor from delivered to primary energy (Note that the permit will require energy consumption information to be submitted annually).

C.3.4.3 Energy efficiency measures

What energy efficiency techniques are applicable to the activities proposed in this application for variation?

- List those which are applicable to the activities but have not yet been implemented; and
- State the CO₂ savings achievable by that technique over the technique or the installation's lifetime.

Where other appraisal methodologies have been used, state the method, and provide evidence that appropriate discount rates, asset life and expenditure (Lm/t) criteria have been employed.

Add rows if necessary

Energy Efficiency Measure	CO ₂ savings (tones)	
	Annual	Lifetime

No specific measures proposed

C.3.4.4 Accident management plan

Complete this section for any event arising from the proposed variation which could have significant environmental consequences.

Flooding

► Likelihood of occurrence.

Low

► Consequences of occurrence.

Flooding of tipping area

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.2 p.120 - 1

► Actions planned if the event does occur.

Annex 21 – SMS section 22.2 p.120 - 1

Subsidence

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous**” on page 1 is ticked.
Applies if “**an existing inert landfill?**” on page 1 is ticked.

► Likelihood of occurrence.

Low

► Consequences of occurrence.

Major breach of installation liner

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.5.2 p.124

► Actions planned if the event does occur.

Annex 21 – SMS section 22.5.2 p.124

Landslides

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous**” on page 1 is ticked.
Applies if “**an existing inert landfill?**” on page 1 is ticked.

► Likelihood of occurrence.

Low

► Consequences of occurrence.

Instability of waste mass, damage to infrastructures, injuries to persons

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.5.3 p.126

► Actions planned if the event does occur.

Annex 21 – SMS section 22.5.3 p.126

Fires

► Likelihood of occurrence.

High

► Consequences of occurrence.

Damage to infrastructures, injuries to persons

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.3 p.120 - 121

► Actions planned if the event does occur.

Annex 21 – SMS section 22.3 p.120 - 121

Explosions

► Likelihood of occurrence.

Low given that wastes used for implementation of this variation are pre-sorted

► Consequences of occurrence.

Damage to infrastructures, injuries to persons

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.3 p.120 - 121

► Actions planned if the event does occur.

Annex 21 – SMS section 22.3 p.120 - 121

Major breach of installation liner

► Likelihood of occurrence.

Low

► Consequences of occurrence.

Contamination of groundwater

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.5 p.125 - 127

► Actions planned if the event does occur.

Annex 21 – SMS section 22.5 p.125 - 127

Others (please specify)

► Type of accident or abnormal release.

Spillage & Leakage

► Likelihood of occurrence.

Low

► Consequences of occurrence.

Contamination

► Actions taken or proposed to minimize the chances of it happening.

Annex 21 – SMS section 22.6 p.127 - 128

► Actions planned if the event does occur.

Annex 21 – SMS section 22.6 p.127 - 128

C.3.4.5 Which of the above do you consider to pose the most critical risks to the environment from your installation?

Breach of installation liner

Meteorological monitoring plan

Applies if “**hazardous landfill**” on page 1 is ticked. Applied is “**non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)**” on page 1 is ticked. Applies if “**an existing inert landfill?**” on page 1 is ticked.

It is important to obtain information on meteorological conditions at times of gas and air-pollutant monitoring in order to help to interpret these data. Meteorological data are relevant to interpreting all types of monitoring (i.e. sub-surface, surface, boundary and receptor monitoring), for example in terms of :-

- How representative the gas/pollutant measurements are;
- Whether surface monitoring is at times of ingress or egress caused by changes in atmospheric pressure;
- Which source(s) are contributing to ambient pollutant concentrations;
- Emission rates associated with measured ambient concentrations;
- Modeled impacts on downwind receptors; and
- Any special factors causing particular events e.g. wind-raised dust.

C.3.4.6 Does the meteorological monitoring plan specify the following measurements and frequencies?

►Volume of precipitation;

- Operational phase; daily
- Aftercare phase; daily, added to monthly values.

☐ No

N/A – as per approved Monitoring Programme - Annex 18 (p5-6)

☒ Yes

►Temperature;

- Operational phase; daily
- Aftercare phase; daily, added to monthly values.

☐ No

N/A – as per approved Monitoring Programme - Annex 18 (p5-6)

☒ Yes

►Direction and force of prevailing wind

- Operational phase; daily
- Aftercare phase; daily, added to monthly values.

☐ No

N/A – as per approved Monitoring Programme - Annex 18 (p13-14)

☒ Yes

►Evaporation

- Operational phase; daily
- Aftercare phase; daily, added to monthly values.

☐ No

N/A – as per approved Monitoring Programme - Annex 18 (p5-6)

☒ Yes

-
- Atmospheric humidity;
- Operational phase; daily
 - Aftercare phase; daily, added to monthly values.

☐ No

N/A – as per approved Monitoring Programme - Annex 18 (p5-6)

☒ Yes

C.3.4.7 How does the averaging period relate to the determinands being monitored and their interpretation? i.e rainfall and wind direction would require different averaging periods.

N/A – as per approved Monitoring Programme - Annex 18 (p5-6)

Meteorological monitoring points

C.3.4.8 For each monitoring point provide the following information.

- Meteorological monitoring point reference number.

N/A – as per approved Monitoring Programme - Annex 18 (p5-6). Kindly noted that the meteorological monitoring station is currently undergoing refurbishment given system failures, and in the interim weather data is being procured from other sources.

-
- Is data obtained from a local meteorological station or from site monitoring?

☒ Local meteorological station

☒ Site Monitoring

-
- Is this location the same as where monitoring is undertaken?

☐ No

☒ Yes (see previous answer)

-
- Specify the height above ground at which meteorological data are measured.

Response or document reference

-
- Is the measuring equipment mounted on the side or top of a building?

☐ No

☐ Yes

- Describe the monitoring position relative to the supporting building and the extension above it.

Response or document reference

- Describe the relevant position of all buildings of comparable height within 200 m of the monitoring location.

Response or document reference

- Describe the topography adjacent to the monitoring location; include a description of land relief relative to the monitoring position.

N/A – as per approved Monitoring Programme - Annex 18 (p6) includes a map of the location relative to the boundary; the monitoring station is located south of the Ghallis and Maghtab masses, on the site of il-Wied Ta Kieli, that runs east to Qalet Marku. The valley sides north and south tend to have a gentle slope. However, see entry above regarding repairs to the station.

- Describe the position of the monitoring location relative to any boundary monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p6) includes a map of the location relative to the boundary

- Describe the position of the monitoring location relative to identified sensitive receptors.

N/A – as per approved Monitoring Programme - Annex 18 (p6); Annex 1 (Project Description Statement) considers sensitive receptor locations

Improvement plan

C.3.4.9 Give a summary of the improvement plans at the time of your application.

This section should be kept as brief as possible, typically a paragraph for each, while conveying a reasonable summary of the improvements planned. It is your opportunity to describe what you are doing to protect the environment, how well you are doing and any improvements you intend to make. You are advised to complete this section after the rest of the application as you will then know what you are summarizing.

- Action.

Annex 2 – Improvement programme

- Date.

Annex 2 – Improvement programme

Landfill body monitoring

You are required to record the structure and composition of the landfill body annually.

C.3.4.10 Are updates to documented systems, procedures and work instructions in place to record the structure and composition of the current and proposed landfill body using the following parameters?

► Annual recording of the structure and composition of the landfill body?

☐ No

Annex 21 – SMS section 24.1 page 131

☒ Yes

► Surface occupied by waste.

☐ No

Annex 21 – SMS section 24.1.1 page 131

☒ Yes

► Value and composition of waste.

☐ No

Annex 21 – SMS section 24.1.3 page 131

☒ Yes

► Methods of depositing.

☐ No

Annex 21 – SMS section 24.1.4 page 131

☒ Yes

► Time and duration of depositing.

☐ No

Annex 21 – SMS section 24.1.5 page 131

☒ Yes

► Calculation of remaining capacity.

☐ No

Annex 21 – SMS section 24.1.6 page 131

☒ Yes

► Annual surveying of the settling behavior of the landfill during the operation and after-care phases.

☐ No

Annex 21 – SMS section 24.1.7 page 131

☒ Yes

C.3.4.11 Specify any other techniques.

Technique

Not applicable

C3.5 Closure, restoration, aftercare and completion

An installation or part of it may only be considered as definitively closed after the Authority has carried out a final on-site inspection, has assessed all the reports submitted by the Operator and has communicated to the Operator its approval for closure. This shall not in any way reduce the responsibility of the Operator under the conditions of the Permit which will continue until the surrender of the permit has been accepted by the Authority. After an installation has been definitively closed, the Operator shall continue to be responsible for the maintenance, monitoring and control in the aftercare phase for as long as may be required by the Authority, taking into account the time during which the installation could present hazards. Closure should be considered at the design stage of any new or existing development to increase the ease and security of the closure.

The Operator's Closure, restoration, aftercare and completion plan will need to cover the proposed measures, upon definite closure, to avoid any pollution risk and return the installation to a satisfactory state. This includes measures relating to the design and construction of the installation.

C3.5.1 How often will you monitor waste levels in each cell covered by this proposal for variation?

Annually

C3.5.2 Specify the accuracy of the monitoring method.

50 mm

20 mm

C3.5.3 Specify the frequency that the result will be reported to the Authority.

Annually from definite closure of the site
--

Restoration and aftercare

An aftercare plan should be developed to ensure that the installation can be maintained to avoid any pollution risk up to the point of the Authority accepting the surrender of the permit when it is no longer likely to cause a hazard to the environment.

C3.5.4 Are procedures in place for existing closed cells and existing operational cells, and will they be in place for new cells to ensure that:

- Final pre-settlement waste levels are achieved and are not exceeded?
- ☐ No

Annex 21 – SMS section 25.1.2 page 135

☒ Yes

►All above ground management systems are adequately protected from damage (including vandalism) to ensure their continued suitability for use throughout the aftercare phase?

☐ No

Annex 21 – SMS section 25.2 page 135

☐ Yes

►All environmental management and monitoring infrastructure is maintained (and where necessary replaced) to ensure their continued suitability for use throughout the aftercare phase?

☐ No

Annex 21 – SMS section 25.1.8 page 135

☒ Yes

►The security measures are in place and are maintained (and where necessary replaced) to ensure their continued effectiveness in controlling access to the installation and to detect and discourage illegal dumping at the installation throughout the aftercare phase?

☐ No

Annex 21 – SMS section 25.2 page 135

☒ Yes

►The landfill gas management systems, including gas treatment, utilization plan or flares, are operated and maintained (and where necessary replaced) such that they remain suitable for use throughout the aftercare phase?

Applies if "hazardous landfill" on page 1 is ticked. Applied is "non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.

☐ No

Annex 21 – SMS section 25.1.8 page 135

☒ Yes

►The leachate management systems, including extraction, treatment, and disposal, are operated and maintained (and where necessary replaced) such that they remain suitable for use throughout the aftercare phase?

Applies if "Arrangements needed" in section C2.2.1 is ticked. Applies if "hazardous landfill" on page 1 is ticked. Applied is "non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.

☐ No

Annex 21 – SMS section 25.1.8 page 135

☒ Yes

►The long and short term stability of the proposed landform including the waste deposits and associated structures such as the capping layer, drainage layer, soil cover and leachate and landfill gas management structures, as appropriate?

☐ No

Annex 21 – SMS section 25.3.1 page 136 Also Annex 14 Frisoli SRA section 3

☒ Yes

►The proposed after-use and restoration does not conflict with access requirements for monitoring and maintenance of environmental management and monitoring systems, for example the required pre-drilling of landfill gas extraction boreholes?

☐ No

Annex 21 – SMS section 25.3.4 page 136

☒ Yes

►Post-closure settlement surveys are carried out?

☐ No

Annex 21 – SMS section 25.4 page 136

☒ Yes

►The estimated costs of the closure and after-care of the installation for the predicted period over which the installation is likely to present a hazard are covered by the price to be charged for the disposal of waste at the installation?

☐ No

Refer to section 3.4.4.8

☒ Yes

C3.5.5 What features will you monitor to prove that you are ready to go into closure?

Refer to Article 9(g) of the Landfill Regulations.

These issues require further study as part of the preparation of an aftercare and monitoring plan.

C3.3 Emission Benchmarks

C3.3.1 Emissions inventory and benchmark comparison.

In accordance with the development programme for your installation and as described in the Regulatory Specification in Section 3 of this form, you must now identify the emissions you are expecting to release from point sources and from fugitive sources. These values will be included within permit conditions. You must also identify when the measures you are proposing will be in place. This should also take account of relevant improvement programmes to reduce emissions agreed at the time of the determination of your application, for example, emission standards for gas engines will depend on the age of the engine and replacement of an engine will lead to reduced emissions.

The emissions limits in this section must be expressed in terms of annual capacity limits of the relevant emission to the receiving medium. These can be based either:

- On an estimate of the relevant concentration limit x volume emitted annually; or
- On a more accurate assessment based on the operating profile of the relevant emissions.

The emission levels you specify must be supported by and consistent with the relevant assessments you describe in Section 1, and with the regulatory specifications for control measures and monitoring that you set out in Section 2.

Emissions to Sewer

Applies if "hazardous landfill" on page 1 is ticked. Applied is "non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)" on page 1 is ticked. Applies if "an existing inert landfill?" on page 1 is ticked.

C3.3.2 Emissions limit into sewer

► Sewer emission monitoring point number e.g. S1.

Not applicable - no discharge to sewer

► Determinand.

Not applicable - no discharge to sewer

► Frequency monitored.

Not applicable - no discharge to sewer

► Units and accuracy.

Not applicable - no discharge to sewer

► Control level.

Not applicable - no discharge to sewer

Emissions to surface water

C3.3.3 Emissions limit into surface water

► Surface water emissions monitoring point number, e.g. W1

N/A – as per approved Monitoring Programme - Annex 18 (p31-41)

► Determinand.

N/A – as per approved Monitoring Programme - Annex 18 (p31-41)

► Frequency monitored.

N/A – as per approved Monitoring Programme - Annex 18 (p31-41)

► Units and accuracy.

N/A – as per approved Monitoring Programme - Annex 18 (p31-41)

► Control level.

N/A – as per approved Monitoring Programme - Annex 18 (p31-41)

Emissions to air

Applies if **"hazardous landfill"** on page 1 is ticked. Applied is **"non-hazardous landfill (this includes sites which will also accept hazardous stabilized non-reactive wastes)"** on page 1 is ticked. Applies if **"an existing inert landfill?"** on page 1 is ticked. Applies if **"Yes, there is a need to collect landfill gas"** is ticked.

Gas Engines

Applies if **"Landfill gas utilisation"** is ticked.

► Identification of gas engine

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.4 NO_x emissions

Best practice for minimization: combustion control

► Frequency of monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed trigger levels including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.5 SO_x emissions

Best practice for minimization: pre-stripping

► Frequency of monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed trigger levels including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.6 HCl emissions

Best practice for minimization: pre-stripping

► Frequency of monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed trigger levels including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.7 CO emissions

Best practice for minimization: Combustion control

► Frequency of monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A – as per approved Monitoring Programme - Annex 18 (p16)

► Proposed trigger levels including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.8 CO₂ emissions

► Frequency of monitoring.

Not required by approved Monitoring programme

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

► Proposed trigger levels including units.

C3.3.9 Total VOC emissions

Best practice for minimization: Combustion control

► Frequency of monitoring.

Not required by approved Monitoring programme

► Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

► Proposed trigger levels including units.

C3.3.10 Polychlorinated dibenzodioxins & polychlorinated dibenzofurans

Best practice for minimization: Combustion control

-
- Frequency of monitoring.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

- Proposed emission figures including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

- Proposed trigger levels including units.

N/A – as per approved Monitoring Programme - Annex 18 (p16)

C3.3.11 Noise emissions

Best practice for minimization: Baffles

- Frequency of monitoring.

Not required by approved Monitoring programme

- Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

- Proposed trigger levels including units.

Gas Flares

Applies if "Landfill gas flaring" is ticked.

- Identification of gas flare.

N/A

C3.3.12 NO_x emissions

Best practice for minimization: Combustion control

- Frequency of monitoring.

N/A

- Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

- Proposed trigger levels including units.

N/A

C3.3.13 SO_x emissions

Best practice for minimization: pre-stripping

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.14 HCl emissions

Best practice for minimization: pre-stripping

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.15 HCl emissions

Best practice for minimization: combustion control

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.16 CO₂ emissions

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.17 Total VOC emissions

Best practice for minimization: combustion control

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.18 Polychlorinated dibenzodioxins & polychlorinated dibenzofurans

Best practice for minimization: combustion control

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.3.19 Noise Emissions

Best practice for minimization: baffles

►Frequency of monitoring.

N/A

►Proposed emission figures including units (Can be drawn from existing data or manufacturer's specification if not available).

N/A

►Proposed trigger levels including units.

N/A

C3.4 Non-technical summary and management systems overview

C3.4.1 Please include your non-technical summary here.

This section should be kept as brief as possible while conveying a reasonable summary of the activities being proposed in this application for variation. It is your opportunity to tell the reader how well you are doing and the improvements you intend to make. You are advised to complete this section after the rest of the Application as you will then know what you are summarizing.

Summary

Refer to Introductory Document

C3.4.2 Management Techniques

The holder of the permit must be a 'Technically competent person.' This includes a component whereby the management of the specified waste management activity that is or is to be carried out is in the hands of a technically competent person. The qualifications and experience that demonstrate technical competence. The Landfill Regulations 2002 have introduced the requirement for ongoing technical and professional development for both the technically competent person and staff employed at the installation.

In addition to this requirement, an effective system of management covering both the currently permitted installation and its proposed variation is a key technique for ensuring that all appropriate pollution prevention and control techniques are delivered reliably and on an integrated basis. The Authority requires the operation of environmental management systems (EMSs). The Authority recommends that the ISO 14001 standard is used as the basis for an environmental management system.

Certification to this standard and/or registration under EMAS (EC Eco Management and Audit Scheme) (OJ L 168, 10.7.93) are also strongly supported by the Regulator. Both certification and registration provide independent verification that the EMS conforms to an assessable standard. EMAS now incorporates ISO 14001 as the specification for the EMS element. For further details about ISO 14001 and EMAS contact the Malta Competition and Consumer Affairs Authority (MCCAA) respectively. An operator with such a system will find it easier to complete not only this section but also the technical/regulatory requirements in the following sections.

The steps required in this section may help you to make good any shortfalls in your management system. An effective EMS will help you to maintain compliance with regulatory requirements and to manage other significant environmental impacts. The techniques listed below are the same as those required in a formal EMS and are also capable of delivering wider environmental benefits. However, it is information on their applicability to IPPC that is primarily required in this application.

C.3.4.2.1 provide a diagram showing your management structure. Other than for the technically competent management of the site-show posts, rather than names.

Document Reference

Environmental management system

The Authority will recognize an Environmental Management System (EMS) if:

- It is certified to ISO 14001 standard or registered to EU Eco-Management and Audit Scheme (EMAS);
- Certification has been carried out by an accredited organization; and
- The certification or registration covers the whole of the Installation included in this Application and all of the elements listed below.

C.3.4.2.2 Does your environmental management system meet of the above criteria?

☒ No

Description of site management

If you are not certified, registered or if your system does not cover all of the installation or all of the elements listed below then you will need to provide us with further information about how you intend to manage the site.

If you do intend to have a documented system or amend the one you currently have to meet the necessary standards, you must provide a description of how you manage each of the listed issues and the date by which your documented system will be in place.

If you do not intend to have a documented system, you must provide an overview of the management systems for each of the listed issues.

Operations and Maintenance

► Effective operational and preventative maintenance shall be employed on all aspects of the process where any failure could impact on the environment.

C.3.4.2.3 Do any documented procedures to control operations that may have an adverse impact on the environment require any amendments?

☒ No

Annex 17 - EMS

☐ Yes

C.3.4.2.4 Is there a defined procedure for identifying, reviewing and prioritizing items of elements of the installation for which a preventative maintenance regime is appropriate?

☐ No

Annex 17 – ADM EP04 Aspects and Impacts Procedure, MEC EP08 Landfill Inspection & Maintenance Procedure

☒ Yes

C.3.4.2.5 Do you have documented procedures for monitoring emissions or impacts?

☐ No

Annex 17 – MEC EP05 Environmental Monitoring

☒ Yes

C.3.4.2.6 Does a preventative maintenance programme exist covering all elements of the installation, whose failure could lead to impact on the environment, including regular inspection of major 'non productive' items such as tanks, pipework, retaining walls, bunds ducts and filters?

☒ No

A formal preventative Maintenance Plan is being designed.

☐ Yes

C.3.4.2.7 Does the maintenance programme include auditing of performance against requirements arising from the above and reporting the result of audits to top management?

☒ No

Refer to C. 3.4.2.6 – this will be included in the Plan

☐ Yes

Competence and Training

The operator shall ensure that all relevant management and operational staff (including contractors and those responsible for purchasing equipment and materials) receive adequate training with regard to their responsibilities under the Permit. Particular attention should be given to the following:

- Minimization of all potential environmental effects from operations under normal or abnormal circumstances;
- Prevention of accidental emissions and action to be taken when accidental emissions occur; and
- Need to report deviation from the permit.

C.3.4.2.8 Confirm that an assessment of training needs has been carried out which identifies the posts for which specific environmental awareness training is needed and the scope and level of such training.

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

How often is this assessment reviewed? – Training requirements are reviewed annually. The following CIWM training is planned for our landfill personnel:

- **Practical Aspects of Landfill Gas and Groundwater Monitoring**
- **Practical Management and Control of Landfill Gas**
- **Landfills: Closure, Aftercare and Economy**
- **Leachate Management**

See competence matrix in Annex 17

C.3.4.2.9 Confirm that training systems, covering the following items, are in place for all relevant staff which cover:

► Awareness of the regulatory implications of the permit for the activity and their work activities.

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

► Awareness of all potential environmental effects from operation under normal and abnormal circumstances.

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

► Awareness of the need to report deviation from the permit.

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

► Prevention of accidental emissions and action to be taken when accidental emissions occur.

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

C.3.4.2.10 Are the skills and competencies necessary for key posts documented and are records of training needs and training received for these posts maintained?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

C.3.4.2.11 Do the key posts include contractors and those purchasing equipment and materials?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

C.3.4.2.12 Are the potential environmental risks posed by the work of contractors assessed and instructions provided to contractors about protecting the environment while working on site?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

Accidents / incidents/ non conformance

The operator shall maintain an accident management plan which identifies potential events or failures which might lead to an environmental impact. The plan shall identify:-

- The likelihood of, and the actions to be taken to minimize, these potential occurrences;
- The environmental consequences and an action plan to deal with such occurrences;

- The operator shall have a written procedure for handling, investigating, communicating and reporting incidents of actual or potential non-compliance including taking action to mitigate any impacts cause and for initiating and completing corrective action; and
- In the case of abnormal emissions the operator shall: investigate and undertake remedial action immediately; and promptly record the events and actions taken; and ensure the Regulator is made aware, as soon as practicable.

C.3.4.2.13 Do you have an accident plan?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

Annex 10 Emergency Response Plan is in the process of being updated

C.3.4.2.14 Does the plan identify the likelihood and consequence of accidents?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

C.3.4.2.15 Does the plan identify actions to prevent accidents and mitigate any consequences?

☐ No

Annex 10 - Emergency Preparedness and Response

☒ Yes

C.3.4.2.16 Do you have written procedures for handling, investigating, communicating and reporting actual or potential non-compliance with operating procedures or emission limits?

☐ No

Annex 17 EMS – procedures refer to internal documentation used for such purposes

☒ Yes

C.3.4.2.17 Do you have written procedures for handling, investigating, communicating and reporting environmental complaints?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

C.3.4.2.18 Do you have written procedures for investigating incidents, (and near misses) including identifying suitable corrective action and following up implementation of the action?

☒ No

Annex 10 Emergency Response Plan is in the process of being updated

☐ Yes

Organisation

The following aspects of organizational controls and site management procedures may not be in permit conditions but are likely to have an impact on the Authority's resources required to apply the Industrial Emissions (IPPC) regulations.

C.3.4.2.19 Has your company adopted an environmental policy and programme which:

► Includes a commitment to continual improvement and prevention of pollution?

☐ No

Annex 17 – Environmental Policy

☒ Yes

► Includes a commitment to comply with relevant legislation, and with other requirements to which the operator subscribes?

☐ No

Annex 17 – Environmental Policy

☒ Yes

► Identifies, sets, monitors and reviews environmental objectives, independently of the permit?

☐ No

Annex 17 – Environmental Policy, MEC Env Objectives and Targets

☒ Yes

C.3.4.2.20 Are there procedures that incorporate environmental issues into the following areas (as supported by demonstrable evidence e.g. written procedures)?

► The control of the process change on the installation?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

► design and review of new facilities (including provision for their decommissioning), engineering and other capital projects?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

► capital approval?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

► purchasing policy?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☐ Yes

C.3.4.2.21 Are these audits, at least annually, to check that all activities are being carried out in conformity with the above requirements?

☐ No

Reference to section/page number of relevant document and date by which EMS systems will be in place

☒ Yes

Managing documentation and records

C.3.4.2.22 Provide the required information for each of the following elements of your management system.

	Where Kept	How identified	Who responsible
Policies Responsibilities	Stored and backed up on the Company Server. They are available online on the Company website and on the site notice board.	Policies are identified through Management Review Meetings and endorsed by Senior Management.	The Management Systems Team within the Company is responsible for their upkeep however every employee working within the facility is aware of the policies in place.
Targets	Stored and backed up on the Company Server. They are	Policies are identified through Management Review	It is the responsibility of the Works Manager to action

	available on the site notice board.	Meetings and endorsed by Senior Management.	and implement targets.
Maintenance records	Works Manager office.	Identified by the Works Manager depending on exigencies.	Works Manager
Procedures	Stored and backed up on the Company Server. They are also available on the Company intranet.	Identified by the Works Manager depending on exigencies.	The Management Systems Team within the Company is responsible for their upkeep however it is up to the works manager to identify the need for change in any of the procedures.
Monitoring records	Stored and backed up on the Company Server.	ERA approved Ghallis Environmental Monitoring Programme.	Laboratory Technician is responsible for the implementation of the monitoring programme.,
Results of audits	Stored and backed up on the Company Server.	Internal or third party (MCCAA) audits.	The Management Systems Team within the Company is responsible for monitoring of results and any action required. However, it is the responsibility of the employee which was audited to implement the action required.
Results of reviews	Stored and backed up on the Company Server.	Internal or external audits/reviews.	The Management Systems Team within the Company is responsible for monitoring of results and any action required. However, it is the responsibility of the employee which was reviewed to implement the action required.

Complaints and incident records	Stored and backed up on the Company Server.	Internal procedures related to complaints and incident management.	Customer Care Team is responsible for the management of complaints.
Training records	HR Office	Works manager following appraisal of employees.	HR Office

☐ Yes

Name the Certification body
Certification body's registration number with UKAS
Copy of the registration / certification – document reference
Certificate registration number
What is the document reference for your system
Where is your system kept?

C3.4.3 Environmental statements

C.3.4.3.1

Is the installation in possession of any development consents from any competent authority?

- ☐ No
☒ Yes

PA 04834/04 – approved; PA 964/11 - approved

Will the proposed intervention require any development consents from any competent authority? Kindly provide justification on the relevant reply below:

- ☐ No

- ☒ Yes

Consultation with the Planning Authority has highlighted the need for a development permit, details on which are provided below.

Has the development of the installation (or any subsequent change or extension of the development) required an environment impact assessment?

- ☐ No
☒ Yes

The landfill facility was originally approved for development by PA 04834/04 after an Environmental Impact Assessment process carried out by SLR Ltd. in conjunction with AIS Ltd. Further development permits on site were required to permit various modifications and upgrades as part of a Master Plan for the Maghtab Environmental Complex, which was assessed via an update to the original EIS (GF 00121/06), carried out by ADI Ltd.

Both are appended as Annex 16.

C3.4.3.2 Statutory consultees

We will use this information in this section to identify who we must consult about your proposals.

C3.4.3.3 In which local authority area is the installation located?

Naxxar

C.3.4.3.4 Are there any other sites which may be affected by emissions from the installation?

☐ No

☒ Yes

Residents of neighbouring local council (St. Paul's Bay) have expressed concern on the site in the past.

CC.3.4.3.5 Could the installation involve the release of any substance into a harbour managed by a harbour authority?

☒ No

☐ Yes

Please give name of harbour authority

C.3.4.3.6 Could the installation involve the release of any substance directly into relevant territorial waters or coastal waters?

☒ No

☐ Yes

Please name the local fisheries committee

C3.4.4 Specified waste management activities

C.3.4.4.1 Are you applying to operate any 'specified waste management activities' other than landfill?

☒ No

☐ Yes

Please give details

C.3.4.4.2 Which of the following applies to the specified waste management activities?

We cannot issue a permit unless at least one of the following applies. We will need to see a copy of the relevant documents.

☐ You have a development permission

Document reference number

☐ You have a certification of lawful existing use or development

Document reference number

☐ You have an established use certificate

Document reference number

☐ Planning permission is not required

Please say why and provide written confirmation from the Planning Authority

☒ **Permission which has not yet been determined**

PA 1586/18 To amend permit PA 964/11 and alter the internal lateral landfill profile to increase volume capacity of Ghallies non-hazardous Landfill while retaining site area.

C.3.4.4.3 Has the operator or any other 'relevant person' been convicted of any 'relevant offence'?

Relevant offences

We need to make sure that whoever holds the permit is a 'technically competent person' in relation to any specified waste management activities. This includes consideration of relevant offences, technical competence and financial provision.

The information we need is listed below:

- *Full name of company or individual convicted;*
- *If an individual has been convicted, please state their position at time of offence;*
- *Name of court;*
- *Offence and penalty imposed;*
- *Date of any outstanding appeal lodged against conviction;*
- *Any additional information which the operator would like us to take into account in determining whether they are a 'technically competent person'. For example, why the offence happened, and what has been done to prevent a similar event occurring.*

A 'relevant person' includes each partner, director, manager, company secretary or any similar offence or can be an employee.

- ☐ No
☐ Yes

Please give full information or document reference number.

Document reference number or full information

Technical competence

C.3.4.4.4 Who will be responsible for managing the specified waste management activities?

Please give details for each responsible person. For each person named below, we need to see a statement of qualifying experience and may want to carry out our own assessment.

Responsible person

Title e.g. Mr, Mrs, Dr

First Name

Surname
Position
Document reference of Authority letter

C.3.4.4.5 Who will provide the technically competent management of the specified waste management activities?

Responsible person

Title e.g. Mr, Mrs, Dr
First Name
Surname
Position
Document reference of Authority letter

Management of other installations

C.3.4.4.6 Are any of these 'responsible people' already providing the technically competent management at other IPPC installations?

- ☒ No
☐ Yes

For each person, please provide the site/installation name and address and licence/permit reference number.

Document reference number or full information

Technical and professional development

C.3.4.4.7 How will you demonstrate ongoing technical and professional development for both the technically competent person and staff employed at the installation?

Summary of proposal or document reference

Financial Provision

C.3.4.4.8 If known, how does the operator intend to make financial provision for the specified waste management activities?

-
- ☐ Renewable bonds
 - ☐ Bonds

☒ **Bank Guarantee**

- ☐ Parent company guarantee

For parent company guarantee please provide one copy of the parent company's audited trading accounts for the last three years (or for the period of trading if less than three years). These should be no more than 18 months out of date.

Document reference for Accounts

- ☐ Escrow account
- ☐ Trust Fund
- ☐ Insurance captive
- ☐ Lump sum
- ☐ Other

Please specify

C.3.4.4.9 Provide a plan of the estimated expenditure for each phase of the installation. This must show expenditure for each year for at least 30 years after the closure of each phase. For sites where stabilization is not likely for 30 years, then a period of 60 years should be used.

The plan should include the likely costs of:

- *Monitoring;*
- *Restoration – landfill only;*
- *Aftercare – landfill only;*
- *Clearing the installation (including drainage systems) of all wastes – non-landfill; and*
- *Remedial action in the event of the failure of pollution control systems. We recognize that this plan may need to be revised before the issue of final permit.*

It is estimated that the cost for the above for a period of 30 years will be that of 6.7 million.