Application for an Environmental Permit – Application Reference EPR/JB3509FR/A001

Tovil Quarry

Supporting Information

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NON-TECHNICAL SUMMARY

Introduction

This document provides the supporting information for an application for a waste recovery permit for Tovil Quarry, land off Farleigh Hill, Maidstone, Kent, ME15 6RQ. The site has been granted planning permission by Maidstone Borough Council for the development and construction of 272 No. house and associated infrastructure. In order to develop the site, works need to be undertaken to raise and lower the profile of the site in order to reach the development platform required. It is proposed that this work be undertaken with a combination of waste and non-waste material.

Activity Description

The site was originally quarried for limestone, locally referred to as ragstone, from the Hythe Beds of the Lower Greensand. Following quarrying, the site was used as a landfill for general and domestic waste in the 1970's. More recently, the landfilled waste has been excavated and screened with any non-inert waste being removed from site and the inert materials (mainly soil, ragstone and quarry waste hassock) being stockpiled for use as fill materials for the excavated valleys on the site which need to be reprofiled and recontoured for future development. This will be done as a waste recovery activity. In addition to this, some of the oversize material will require treatment prior to deposit, this material will be screened to remove oversize and the oversize crushed prior to deposit for recovery.

Site Operations

In order to progress the development, reprofiling and recontouring of the excavated workings is required. In total, approximately 56,722 m3 of waste will be used to reprofile and recontour the site in order to achieve the desired development platforms. The materials to be used are those from the screening of the deposited waste and quarry waste from the historic quarrying activities carried out at the site (predominantly the latter). These materials are already on site. There is an overall deficit of material on site, therefore, non-waste material will be imported to meet this deficit.

The waste types will be limited to inert waste already present on the site; no further waste materials will be imported. The waste will be moved around site by tipper and deposited in the required location. The waste will then be levelled using a bulldozer to the required depth and compacted with a suitable roller. The levelling will be undertaken in layers until the required development platform is reached.

Hours of operation will be limited to 7:30am – 6pm Monday to Friday, and 7:30am – 1pm on Saturday.

Management Systems

An environmental management system (EMS) will be developed by the groundworks contractor prior to undertaking operations at the site. The EMS will contain a set of procedures describing what will be done to minimise the risk of pollution from the activities covered by the permit. It will contain the following:

- Waste acceptance procedures;
- Accident management plan; and
- Fugitive emissions management including dealing with incidents and non-conformances

A technically competent person will be appointed to manage the site operations.

Permit Application

A full description of all operations is provided within the application. Application forms can be found in ***Appendix A***. Site plans and layouts can be found in ***Appendix B*****.**

An environmental risk assessment (ERA) (***Appendix C***) has been carried out to assess the potential impacts of odour, noise and vibration, fugitive emissions, visible plumes, and accidents ranges. These impacts have been assessed and range from ‘not significant’ to ‘low’.

A full description of the condition of the site at the time of this application is provided in the Environmental Setting and Site Design (ESSD) (***Appendix D***), which provides a coherent record of the site and its baseline conditions at the time of permitting.

An environmental management system (EMS) will be developed for the site, which will cover the elements required by the Environmental Permit; this includes details of the site operations, maintenance procedures, accident and incident management; non-conformances and complaints procedures; staff training and records management. Waste Acceptance procedures are included as ***Appendix E.***

In summary the proposed facility has been designed and is operated to ensure that significant impacts to the environment and human health do not arise as a result of its operation.

Contents

NON-TECHNICAL SUMMARY ..... **II**

Introduction ii
Activity Description ii
Site Operations ii
Management Systems ii
Permit Application ii

1 INTRODUCTION **1**

1.2 Background 1
1.3 The Site 1
1.4 Operator Details 6
1.5 Structure of the Application Document 6

2 MANAGEMENT OF ACTIVITIES **7**

2.1 Technical Ability 7
2.2 Environmental Management System 7
2.3 Staff Competence and Training 8
2.4 Accident Management 8
2.5 Site Security 8
2.6 Avoidance, Recovery and Disposal of Wastes 8
2.7 Reporting Non-compliances and Taking Corrective Actions 9
2.8 Servicing and maintenance 9
2.9 Design and Construction Quality Assurance 9
2.10 Reporting and Notification 9

3 SITE OPERATIONS **10**

3.1 Waste Management Activities 10
3.2 Waste Recovery 12
3.3 Waste Types and Quantities 12
3.4 Waste Storage 23
3.5 Waste Processing and Treatment 24

4 EMISSIONS AND MONITORING **25**

4.1 Groundwater 25
4.2 Gas 25
4.3 Fugitive Emissions 25
4.4 Topography 25

5 ENVIRONMENTAL IMPACTS **26**

5.1 Environmental Risk Assessments (ERA) 26
5.2 Environmental Setting and Site Design (ESSD) 26
5.3 Hydrogeological Risk Assessment (HRA) 27
5.4 Stability Risk Assessment (SRA) 27
5.5 Climate Change Risk Assessment (CCRA) 27

6 SITE CLOSURE **28**

REFERENCES **29**

Tables

Table 1-1: Nature and Heritage Conservation Sites....3
Table 1-2: Protected Species....3
Table 3-1 : Activities....11
Table 3-2: Waste Stockpiles / Areas Descriptions....13
Table 3-3: Waste Types....17

Figures

Figure 1.1: Site Location....2
Figure 1.2: Aerial Map....3
Figure 1.3: Historic Landfills....5
Figure 3.1: Waste Areas Plan....15
Figure 3.2: Permit Boundary....16
Figure 3.3: Proposed Material Movements – Phase 1....18
Figure 3.4: Proposed Material Movements – Phase 2....19
Figure 3.5: Proposed Material Movements – Phase 3....20
Figure 3.6: Cross Sections of Waste Fill Areas....21

Appendices

Appendix A Application Forms
Appendix B Site Plans and Layouts
Appendix C Environmental Risk Assessment
Appendix D Environmental Setting and Site Design
Appendix E Waste Acceptance Procedures
Appendix F Company Director Details
Appendix G Waste Recovery Plan
Appendix H Ground Gas Management Plan
Appendix I Topographical Survey
Appendix J Mobile Plant EMS Documents

1 INTRODUCTION

1.1.1 RPS has been commissioned by P.J. Burke Properties Ltd to prepare an application for an environmental permit for waste recovery operations to develop the former landfill site at Tovil Quarry, Farleigh Hill, Maidstone, Kent. In support of this application the following documents are submitted as appendices to this supporting information document:

- Application Forms (Parts A, B2, B4 and F1) and supporting documentation
- Site Layout Plans
- Environmental Risk Assessment (ERA)
- Environmental Setting and Site Design (ESSD)
- Waste Acceptance Procedures
- Management System Summary and Operating Techniques (OT)

1.2 Background

1.2.1 The site was previously quarried, and part of the site was subsequently used for landfill until the 1970s. Since being landfilled, the waste materials have been excavated and screened to remove residual wastes and recyclable material for removal off site leaving soils and inert materials to be used in re-profiling and developing the site for future development. As well as the screened materials, there is a substantial volume of site derived quarry waste materials remaining on site from the original quarrying process which will also be utilised in the preparatory works. The site is proposed for residential development and other such erections and infrastructure upon the land.

1.2.2 Planning permission has been granted for the erection of 272 No. dwellings by MBC (references MA/01/0686, MA/10/0256,15/509041/REM and 20/502266/FULL). Plans and layout of the proposed development can be found in ***Appendix B***.

1.2.3 The planning permission allows for the redevelopment of land at Farleigh Hill with a housing scheme to provide some 272 No. dwellings with associated access, parking and garaging. The scheme will secure the remediation of the site, provide a suitable substrate for the construction of new houses with gardens, allows for the regrading of the land to marry the nearby development.

1.2.4 In order to prepare the site for development, it is proposed that the stockpiled materials on site be used to create development platforms. The materials have already been treated and screened prior to stockpiling therefore no further treatment of waste, apart from crushing of oversize materials is proposed prior to placing as part of the recovery activity.

1.3 The Site

1.3.1 The site is located on the southern side of Farleigh Hill, Tovil approximately 2 km south west of Maidstone town centre. The centre of the site is at approximate grid reference TQ 75103 54110. The site address is:

Tovil Quarry,

Land off Farleigh Hill,

Maidstone,

Kent,

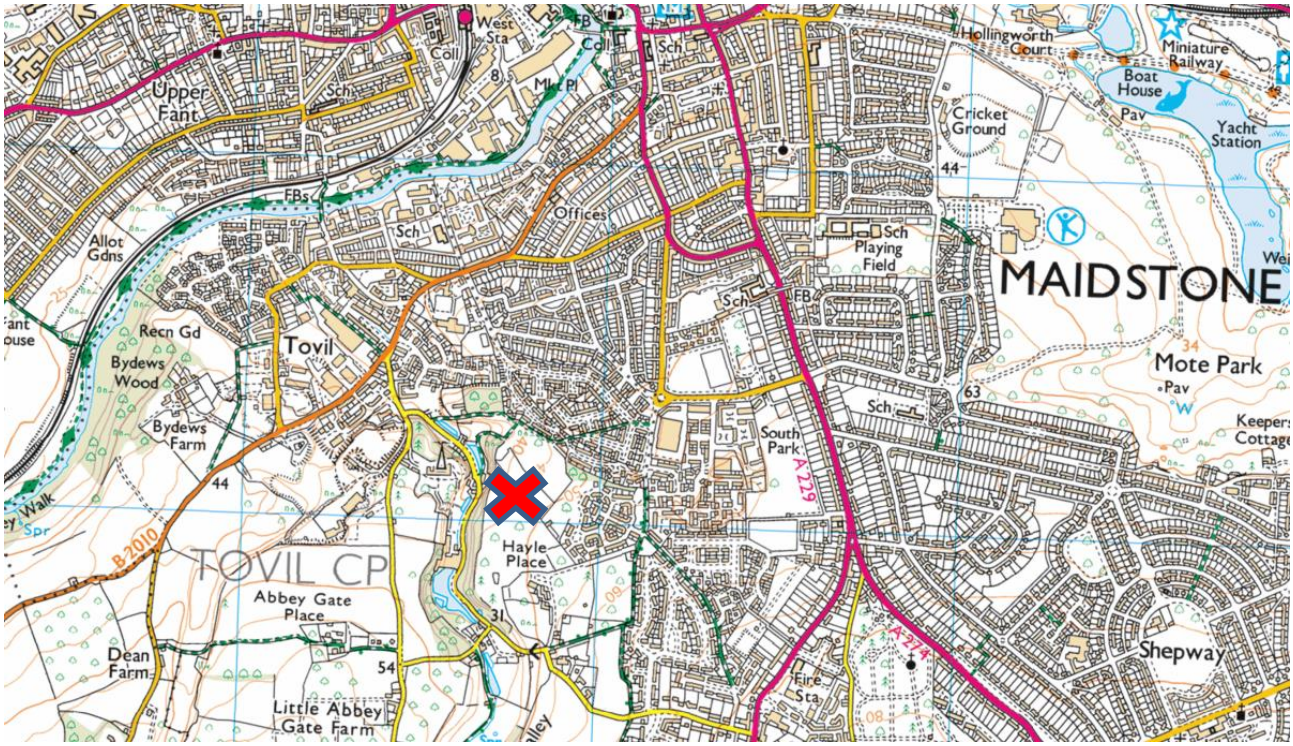
ME15 6RQ

1.3.2 The site is broadly ‘L’ shaped with dimensions 300 m by 220 m at its largest; the entrance to the site is off Farleigh Hill. There are a number of temporary site buildings located adjacent to the site entrance, along with an area set aside for plant storage and another for car parking. There are no other buildings located on the site.

1.3.3 A proportion of the site area is occupied by waste stockpiles which have been screened from the excavated landfilled materials as well as a substantial volumes of quarry waste materials from the original quarrying process.

1.3.4 The site location is shown marked with a red x in Figure 1.1 below:

Figure 1.1: Site Location



1.3.5 An historic aerial map of the site can be seen in figure 1.2 below.

Figure 1.2: Aerial Map

1.3.6 The site is bound to the north by Farleigh Hill, to the east by residential development, to the south by disused industrial land and to the south west by a historic landfill (KCC owned) that is currently occupied by fields used for grazing horses.

1.3.7 A site plan can be found in ***Appendix B***.

1.3.8 The site lies near several nature and heritage conservation sites as shown in Tables 1.1 below:

Table 1-1: Nature and Heritage Conservation Sites

Site Type	Site Name	Screening Distance (m)
Local Wildlife Sites	Loose Valley, Maidstone	<200
Ancient Woodland	Bydews Wood	<200
Ancient Woodland	Unnamed Wood	<200
Ancient Woodland	Unnamed Wood	<200

1.3.9 The site lies near several protected species as shown in Tables 1.2 below:

Table 1-2: Protected Species

Protected Species	Screening Distance (m)
Brown Trout	Up to 500 m
European Eel	
Bullhead	
European eel migratory route	

1.3.10 The site is also located near a Deciduous Woodland protected habitat (<500 m).

1.3.11 The site is located on the Lower Greensand Group comprising of the Hythe Formation which overlies the Atherfield Clay Formation. The British Geological Society's 'Geology of Britain Viewer'[1], describes this bedrock group as follows:

- Hythe Formation - Sandstone and [subequal/subordinate] Limestone, Interbedded. Sedimentary Bedrock formed approximately 113 to 126 million years ago in the Cretaceous Period. Local environment previously dominated by shallow seas.
- Atherfield Clay Formation - Sandstone and Mudstone. Sedimentary Bedrock formed approximately 113 to 126 million years ago in the Cretaceous Period. Local environment previously dominated by shallow seas.

1.3.12 The Hythe Beds are classified as a Principal Aquifer (layers of rock or drift deposits that have high intergranular and/or fracture permeability meaning they have the potential to provide a high level of water storage.), and groundwater within the Hythe Beds is expected to flow in a northerly direction towards the River Medway. The underlying Atherfield Clay is a Secondary B aquifer (predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering).

1.3.13 Based on existing records the site does not lie within a groundwater Source Protection Zone associated with an abstraction zone.

1.3.14 Groundwater has been recorded at various times in a number of boreholes across the site from 25.7 mbgl to 36 mbgl. Where the Atherfield Clay was exposed in the deepest excavations in the site, the groundwater was generally located only as a slow inflow at the top of the clay, so it appears that there is little groundwater flow passing through the site.

1.3.15 There are no identified Groundwater Source Protection Zones (GSPZ) within a 2 km radius of the site. The Groundwater Vulnerability Maps show the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a single square kilometre. Groundwater vulnerability in this area is classified as high.

1.3.16 The nearest watercourse is the Loose stream which is located 0.3 km to the east and the River Medway which is located approximately 0.55 km to the north west of the site.

1.3.17 The EA flood risk maps[2] have been consulted and it is shown that the areas of the site to be used for the waste recovery activity are located in flood zone 1, an area with a low probability of flooding.

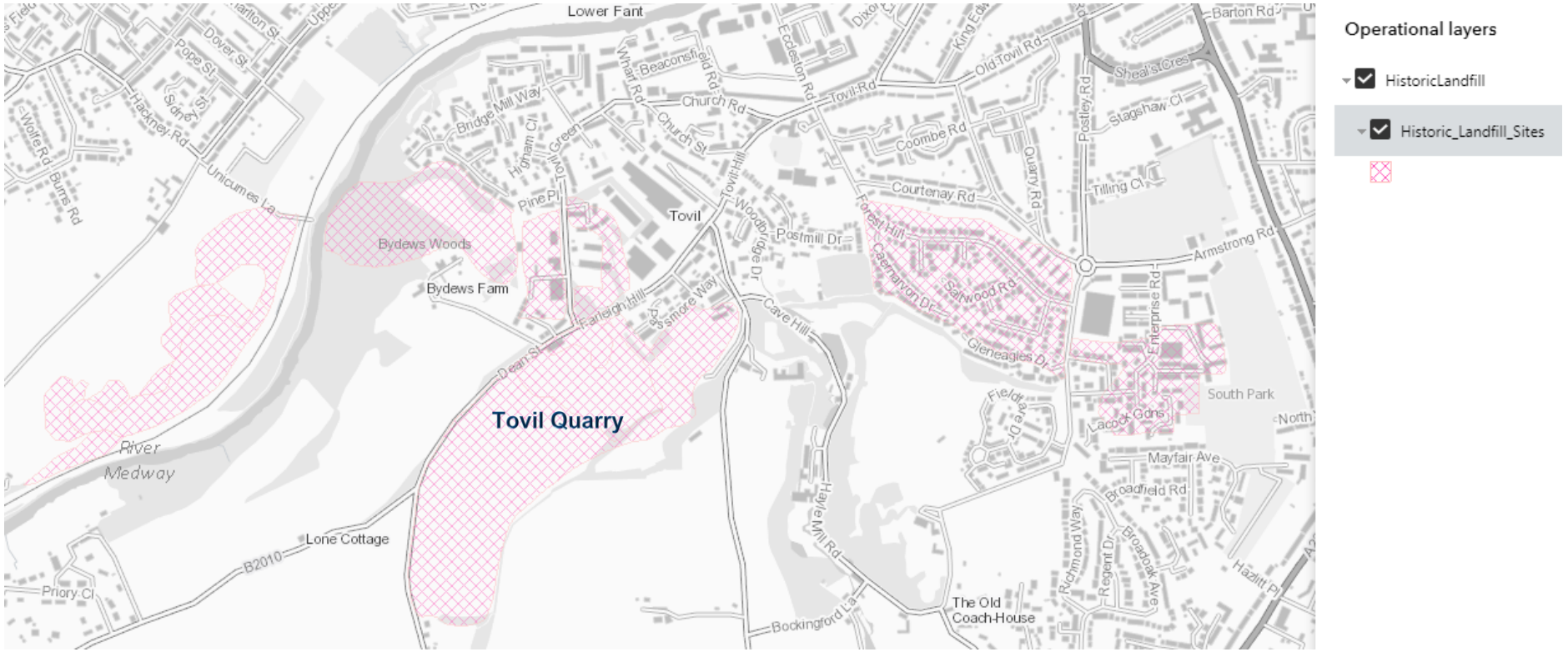
1.3.18 The DEFRA data services platform[3] has been reviewed for historic landfills and it has been confirmed that there are a number of historic areas of landfill close to the site as shown in Figure 1.3 below.

[1] http://mapapps.bgs.ac.uk/geologyofbritain/home.html?

[2] https://flood-map-for-planning.service.gov.uk/confirm-location?easting=575103&northing=154110&nationalGridReference=TQ7510354110

[3] https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricLandfill&Mode=spatial

Figure 1.3: Historic Landfills



1.4 Operator Details

1.4.1 P.J.Burke Properties Limited is registered with Companies House as company number 02189920. The registered office address is Moatlands Farm, Howlands Road, Marden, Kent, TN12 9LB.

1.4.2 The Company Directors as listed on Companies House and their dates of birth are provided in Application form part A and ***Appendix F***.

1.5 Structure of the Application Document

1.5.1 Supporting information in this document is set out as follows:

- Section 2 provides and overview of the operations and the proposed changes to the activities that necessitate this permit variation
- Section 3 identifies the environmental management systems in place at the site
- Section 4 provides the detailed operating techniques for the activities
- Section 5 identifies the environmental risks and summarises the environmental effects associated with the activities

Other supporting information is provided in Appendices including the completed Environment Agency (EA) application forms (Part A, B2, B4 and F1 forms), site plans, environmental risk assessment and environmental setting and site design.

2 MANAGEMENT OF ACTIVITIES

2.1 Technical Ability

2.1.1 A technical competent manager will be appointed as part of the groundworks contract for the works to be undertaken at the site. The technically competent manager will be in place prior to permitted operations being undertaken, full detail will be provided to the agency.

2.1.2 It is proposed that the technically competent manager for the site will hold the following qualifications as a minimum:

- WAMITAB Level 4 Medium Risk Operator Competence for Non-hazardous waste treatment and transfer (601/8528/4) (MROC1); or
- WAMITAB Level 4 Certificate in Waste and Resource Management (603/3581/6) (VRQ410)

2.2 Environmental Management System

2.2.1 An environmental management system (EMS) will be established prior to commencement of operations at the site. The EMS will be developed in house or as a requirement of the appointed groundworks contractor to have a suitable EMS for the operations at the site. A ground works contractor will be appointed to undertake the development works.

2.2.2 The following procedures will be included as part of the site EMS:

- Waste acceptance;
- Waste storage and treatment;
- Waste rejection and quarantine;
- Staff competency and training;
- Servicing and maintenance;
- Fugitive emissions management;
- Accident management;
- Emergency and incident response including spillage and fire response;
- Record keeping and reporting;
- Complaints management

2.2.3 A system for keeping of all relevant records including but not limited to the following, will be developed and implemented prior to operation:

- Waste movement and placements.
- records of incidents, accidents and emergencies including details of follow-up; and
- any other records required to be kept by the permit.

2.2.4 The climate change risk screening shall be included as part of the site management system. See Section 5.5 for further information on the climate change risk screening.

2.2.5 The site-based EMS will be implemented before the site becomes operational.

2.2.6 A number of procedures were in place for the mobile treatment operation carried out to screen the landfill excavated materials. Copies of these procedures are included as ***Appendix J*** and will be used to inform the preparation of management system documents for the waste recovery and treatment operation.

2.3 Staff Competence and Training

2.3.1 The site manager will have day to day control and be responsible for compliance with the Waste Recovery Permit. Sufficient competent staff will manage and operate the site. All staff will receive training to ensure the facility is managed and operated by a fully trained workforce. Training will not only address normal operations but will also include those actions required in the event of abnormal operations and emergencies.

2.3.2 Training records for all staff will be kept demonstrating competency. These will be available for inspection as required.

2.4 Accident Management

2.4.1 As part of the site EMS, an accident management plan shall be produced which will include the following:

- Identification of potential accidents;
- How accidents or breaches of the permit will be recorded, investigated and responded to;
- the date it was reviewed;
- when it will next be reviewed;
- a list of emergency contacts and how to reach them;
- a list of substances stored at your site, and your storage facilities; and
- forms to record accidents on

2.4.2 Procedures will be developed to address those operations deemed a risk, this includes emergency scenarios such as spills or leaks and fire response.

2.4.3 Additionally, an incident reporting and investigation procedure will be produced as part of the EMS. This will cover incidents on site or reported to site by external parties such as neighbours and ensures all incidents are investigated and appropriate corrective and preventative actions put in place.

2.4.4 Further details on assessment of the risks from accidents at the facility can be found in the Environmental Risk Assessment in ***Appendix C***.

2.5 Site Security

2.5.1 The hours of operation will be limited to 7:30am – 6pm Monday to Friday, and 7:30am – 1pm on Saturday. Outside of these hours the gated site entrance site will remain locked.

2.5.2 Security is provided by fencing around the perimeter of the site. It is not currently proposed to have additional security features such as CCTV or site security patrols, however, once operational, this will be considered if vandalism and/or trespassing becomes an issue.

2.5.3 Site security infrastructure will be inspected as part of the daily inspections. Should any defects or issues be identified, these will be rectified as soon as possible.

2.6 Avoidance, Recovery and Disposal of Wastes

2.6.1 The operations at the facility are unlikely to give rise to a significant amount of waste. The only anticipated waste from the operations will be general waste from packaging of any products, chemicals or fuels to be used in the site plant and general waste produced by staff.

2.6.2 Where possible, waste will be kept to a minimum with packaging materials re-used where possible.

2.7 Reporting Non-compliances and Taking Corrective Actions

2.7.1 Staff will be fully trained in the requirements of the permit relating to reporting non-compliances and taking corrective actions. EMS procedures will ensure that appropriate corrective actions are taken should an issue be identified at the site as part of routine operations, routine inspections or following notification from a member of the public or other body. The procedures will be produced as part of the EMS and will ensure that non-conformances are reported to senior management and the environment agency, investigated and any lessons learnt are used to updated procedures / staff training etc. as required to ensure non-compliances are minimised and prevented.

2.8 Servicing and maintenance

2.8.1 The management system will ensure that all plant and equipment is subject to a planned programme of servicing and maintenance following manufacturers recommendations so as to minimise any downtime and risk of pollution through faulty equipment.

2.9 Design and Construction Quality Assurance

2.9.1 Construction Quality Assurance (CQA) plans will govern all construction activities necessary in the development. These CQA plans will be prepared by competent and suitably qualified persons. A competent and suitably qualified person will supervise the construction activities.

2.9.2 The CQA plan preparation, along with the competent and suitably qualified person to supervise the construction activities will be a requirement of the groundworks contractor.

2.10 Reporting and Notification

2.10.1 Within one month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

2.10.2 A topographical survey of the site referenced to ordnance datum shall be carried out:

a. prior to commencement of the recovery activity; and

b. on completion of the recovery activity to show final waste levels.

2.10.3 Each topographical survey shall be used to produce a plan of a scale adequate to show the surveyed features of the site. The plan shall be produced within 1 month of the completion of the survey. This will be carried out on an annual basis.

2.10.4 The operator will notify the Environment Agency in writing:

a. at least 14 days before the commencement of the recovery operation; and

b. within 14 days of completion of the recovery operation.

2.10.5 The Environment Agency will be notified without delay following the detection of:

a. any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

b. the breach of a limit specified in the permit; or

c. any significant adverse environmental effects.

2.10.6 Written confirmation of actual or potential pollution incidents and breaches of emissions will be submitted within 24 hours.

3 SITE OPERATIONS

3.1 Waste Management Activities

3.1.1 Inert materials which have been recovered from the screening of excavated landfill materials and from excavated soils which were previously used at the site as cover materials and dust control are to be to be used for the reprofiling and recontouring of the site. These principally comprise naturally occurring materials from the site comprising ragstone (gravel and cobble of limestone and sandstone) and hassock (silt and fine sands) deposits derived from former workings of the Hythe Beds and soils.

3.1.2 The specified waste management activities that will be carried out at the site are as follows:

Table 3-1 : Activities

Description of Activities	Limits of Activities	Hazardous Waste Treatment Capacity	Non-hazardous Waste Treatment Capacity
R13: Storage of wastes pending any of the operations numbered R5 and R10 R5: Recycling/reclamation of other inorganic compounds R10: Land treatment resulting in benefit to agriculture or ecological improvement	The use and associated secure storage of a maximum of 56,722 m^3 of wastes listed in table 3.3 for the purposes of the construction work and/or restoration, reclamation or improvement of land as detailed in the approved waste recovery plan. In any event the total quantity of waste used shall not exceed the amount needed to complete the recovery operation to the final levels in the approved waste recovery plan. Only the waste types specified in table 3.3 that are specified in the approved waste recovery plan shall be accepted. Such wastes shall only be used as specified in the approved waste recovery plan. Restoration, reclamation and land improvement activities must only be carried out on land that has been previously subject to industrial or other manmade development. No waste shall be deposited into a water body or subwater table. Treatment of wastes listed in table 3.3 consisting only of sorting, separation, screening, crushing and blending of waste for recovery as a soil, soil substitute or aggregate.	0.00 m^3	56,722 m^3
Total Storage Capacity		0.00 tonnes	~102,100 tonnes (based on 1.8 tonne per m^3)
Annual throughput		0.00 tonnes	~102,100 tonnes (no further waste will be imported; this is the quantity already present and proposed to be used in the waste recovery activity)

3.2 Waste Recovery

3.2.1 A Waste Recovery Plan (WRP) for the above site was submitted to the Environment Agency for assessment detailing the required criteria as detailed in the EA guidance on waste recovery[4] in December 2020. The applicant confirms it will implement the scheme and meet all commitments set out in the WRP.

3.2.2 The assessment is still ongoing and a decision on the activity as recovery is awaited.

3.3 Waste Types and Quantities

3.3.1 The material to be used is the inert wastes that have been excavated from the landfill and then screened. No additional waste material is to be sourced for the development and final profiles of the site will be achieved using non-waste topsoil materials.

3.3.2 Details of the stockpiled wastes on site to be used in the recovery operation can be found in table 3.2 below:

[4] https://www.gov.uk/guidance/waste-recovery-plans-and-permits

Table 3-2: Waste Stockpiles / Areas Descriptions

Area / Pile No	Cut Volume	Fill Volume	Material Description
Pile 1 Materials recovered prior to off-site removal of domestic waste	1,699.65 m3	-	Predominantly a well graded mix of ragstone and hassock deposits previously used as cover materials during deposition of domestic refuse and won back by selective excavation and screening. With minor quantities of brick, glass, concrete and plastic. A proportion of the western boundary has been filled with quarry waste to form the ground gas barrier separating the subject site from the adjacent former landfill.
Pile 2 Materials recovered prior to off-site removal of domestic waste	610.02 m3	-	
Pile 3 Materials recovered prior to off-site removal of domestic waste	131.92 m3	-	
Pile 4	2,834.91 m3	-	Predominantly a well graded mix of ragstone and hassock deposits previously used as cover materials during deposition of domestic refuse and won back by selective excavation and screening. With minor quantities of brick, glass, concrete and plastic. A proportion of the western boundary has been filled with quarry waste to form the ground gas barrier separating the subject site from the adjacent former landfill.
Pile 5	795.20 m3	-	
Pile 6	3,719.33 m3	-	
Area A (Former Fuel Depot and Site Entrance)	7,120.20 m3	5,272.06 m3	Mainly a mix of ash and clay to approximately 14m depth, with lesser quantities of quarry waste (ragstone and hassock deposits derived from Hythe Beds strata) and builder waste (mainly brick) Ash derived from paper manufacturing processes.
Area B (Area where domestic waste was tipped in 1970s – since remediated by PJ Burke by excavation and off-site disposal)	5,753.92 m3	11,930.07 m3	Currently there is a layer of between 0.00m and 2.70m of predominantly sand and gravel derived from Hythe Beds strata mixed with lesser quantities of bricks, locally ash, concrete, metal, plastic and glass. Below this, typically at 1.0 mbgl is underlain by quarry waste materials derived from Hythe beds. (NOTE: Previously up to 6m depth of domestic waste and shredded paper waste overlying 0m-5m of sandy clay and gravelly sand, underlain at depth by quarry waste (ragstone and hassock deposits derived from Hythe Beds strata).
Area C	2,044.87 m3	11,374.59m3	Predominantly quarry waste materials. Within the upper 3m this is mixed with small gravel sized inclusions of brick, glass and plastic. A proportion of the western boundary has been filled with quarry waste to form the ground gas barrier separating the subject site from the adjacent former landfill.
Area D	1,742.45 m3	1,413.49 m3	Sandy gravelly clay with inclusions of brick and ash underlain by quarry wastes
Area E	30,268.52m3	182.89 m3	Sandy gravelly clay underlain by quarry waste material
Area F	1.00 m3	36,120.53m3	Predominantly quarry waste materials. Within the upper 3m this is mixed with small gravel sized inclusions of brick, glass and plastic.
Total Volume	56,721.99 m3	66,293.63 m3	Deficit of material = 9,571.64 m3
Total Tonnage	102,099.582 tonnes#	119,328.534 tonnes	Deficit of material = 17,228.95 tonnes

#1.8 tonnes /m^3 conversion

3.3.3 The above table represents the following stockpiles at the site:

- 1A-1D Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (4No.)
- 2A-2B Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (2No.)
- 3A-3D Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (4No.)
- 4A-4B Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (2No.)
- 5 Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (1 No.)
- 6A-6B Recovered cover soils (ragstone and hassock predominantly) - remediated landfill waste (2No.)

3.3.4 Area A is identified as including ash materials which are not suitable for use as infill as detailed in the earthworks specification. The borehole logs from the site investigation carried out by Southern Testing in 2004 have been reviewed and identified that the main concentrations of ash have been identified in the northern section of Area A which in turn is identified as an area of fill rather than cut. The boreholes in this area are boreholes 5, 13 and 14. The boreholes in the area identified as cut material for use an in-fill are boreholes 9 and 11 which show that the majority of this material is clay and quarry waste and therefore suitable for use as infill. It should be noted that the landfilled material (glass, plastic and metal etc.) identified in the borehole logs for boreholes 9 and 11 has been removed and screened as part of the works identified above. Appendix K of the waste recovery plan includes borehole logs and a location plan to confirm that cut materials from Area A are not expected to include ash or asbestos materials. Based on this, the volumes included for the cut material in Area A does not include ash material, only quarry waste material suitable for use in the waste recovery activity.

3.3.5 Waste acceptance procedures identify that should any ash or asbestos materials be identified in cut materials from area A, it will be removed to the quarantine area for removal from site and therefore not used as fill materials in the waste recovery activity. Any deficit of material will be met with non-waste material sourced from off site.

3.3.6 Plans identifying the areas of the landfill referenced in Table 3.1 above can be found in the site plans included in Figures 3.1 and 3.2 below and also in ***Appendix B.***

Figure 3.1: Waste Areas Plan

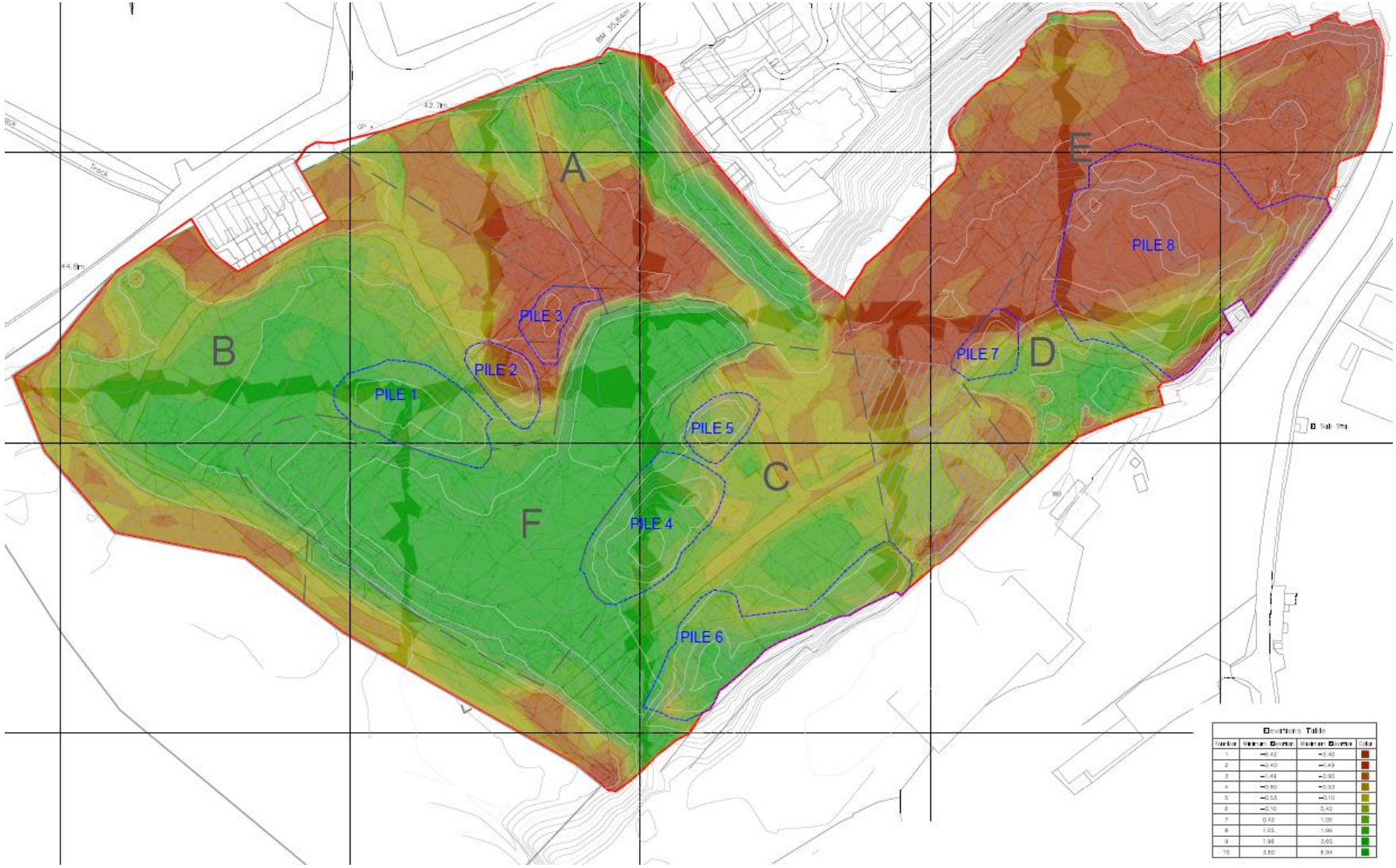
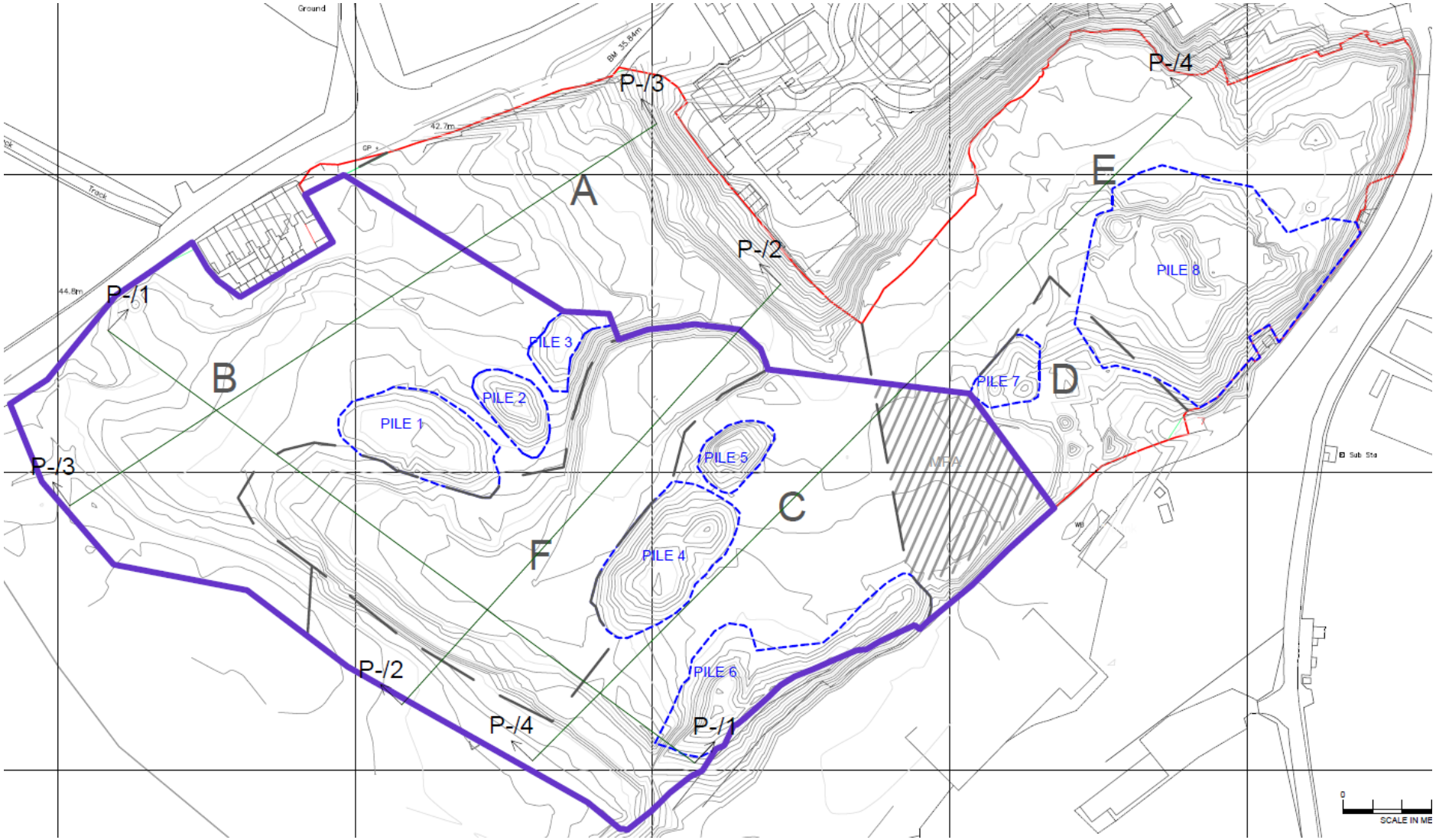


Figure 3.2: Permit Boundary



3.3.7 Full versions of the plans/figures included above can be found in the ***Appendix B.***

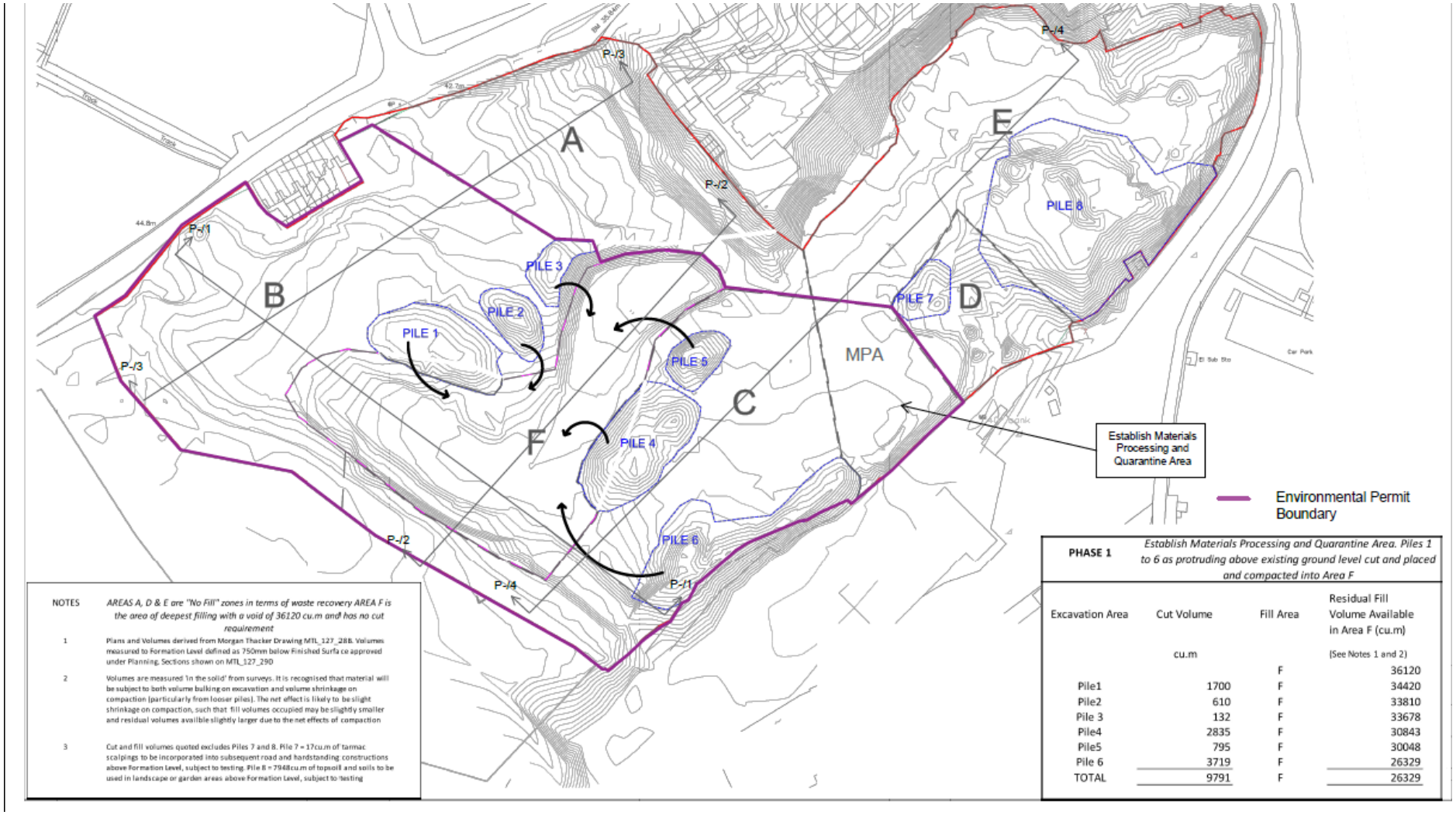
3.3.8 The list of wastes proposed for acceptance and use in the waste recovery activity are detailed in Table 3.3 below:

Table 3-3: Waste Types

EWC Code	Description	Area / Pile No
17 05 04	Soil and stones other than those mentioned in 17 05 03	Areas A, B & C, Area E materials that do not require further processing
19 12 09	Minerals (for example sand, stones) only. Restricted to wastes from treatment of waste aggregates that are otherwise naturally occurring minerals. Does not include fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard.	Area E
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	Stockpiles 1 to 6

3.3.9 The placement and movement of waste is proposed to be undertaken in phases to allow the areas to be filled and waste treated in a logical order so as to make best use of the area available on site for processing without restricting movements or waste recovery activities. The figures below detail the phases and planned movements of waste around the site.

Figure 3.3: Proposed Material Movements – Phase 1



NOTES

AREAS A, D & E are "No Fill" zones in terms of waste recovery AREA F is the area of deepest filling with a void of 36120 cu.m and has no cut requirement

1 Plans and Volumes derived from Morgan Thacker Drawing MTL_127_28B. Volumes measured to Formation Level defined as 750mm below Finished Surfa ce approved under Planning. Sections shown on MTL_127_290

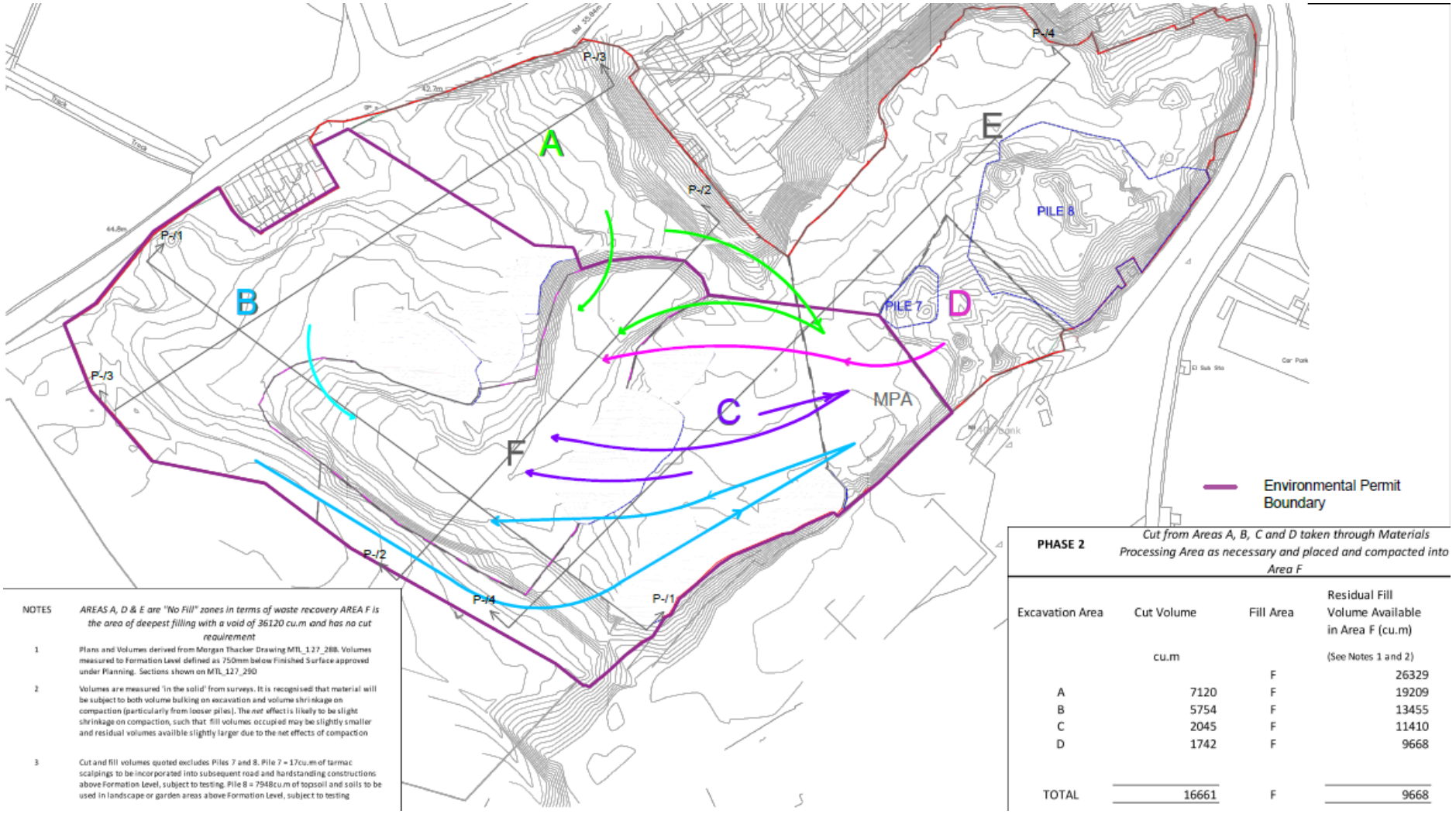
2 Volumes are measured 'in the solid' from surveys. It is recognised that material will be subject to both volume bulking on excavation and volume shrinkage on compaction (particularly from looser piles). The net effect is likely to be slight shrinkage on compaction, such that fill volumes occupied may be slightly smaller and residual volumes availble slightly larger due to the net effects of compaction

3 Cut and fill volumes quoted excludes Piles 7 and 8. Pile 7 = 17cu.m of tarmac scalpings to be incorporated into subsequent road and hardstanding constructions above Formation Level, subject to testing. Pile 8 = 7948cu.m of topsoil and soils to be used in landscape or garden areas above Formation Level, subject to testing

PHASE 1 *Establish Materials Processing and Quarantine Area. Piles 1 to 6 as protruding above existing ground level cut and placed and compacted into Area F*

Excavation Area	Cut Volume	Fill Area	Residual Fill Volume Available in Area F (cu.m)
	cu.m		(See Notes 1 and 2)
		F	36120
Pile1	1700	F	34420
Pile2	610	F	33810
Pile 3	132	F	33678
Pile4	2835	F	30843
Pile5	795	F	30048
Pile 6	3719	F	26329
TOTAL	9791	F	26329

Figure 3.4: Proposed Material Movements – Phase 2



NOTES

AREAS A, D & E are "No Fill" zones in terms of waste recovery AREA F is the area of deepest filling with a void of 36120 cu.m and has no cut requirement

1 Plans and Volumes derived from Morgan Thacker Drawing MTL_127_288. Volumes measured to Formation Level defined as 750mm below Finished Surface approved under Planning. Sections shown on MTL_127_290

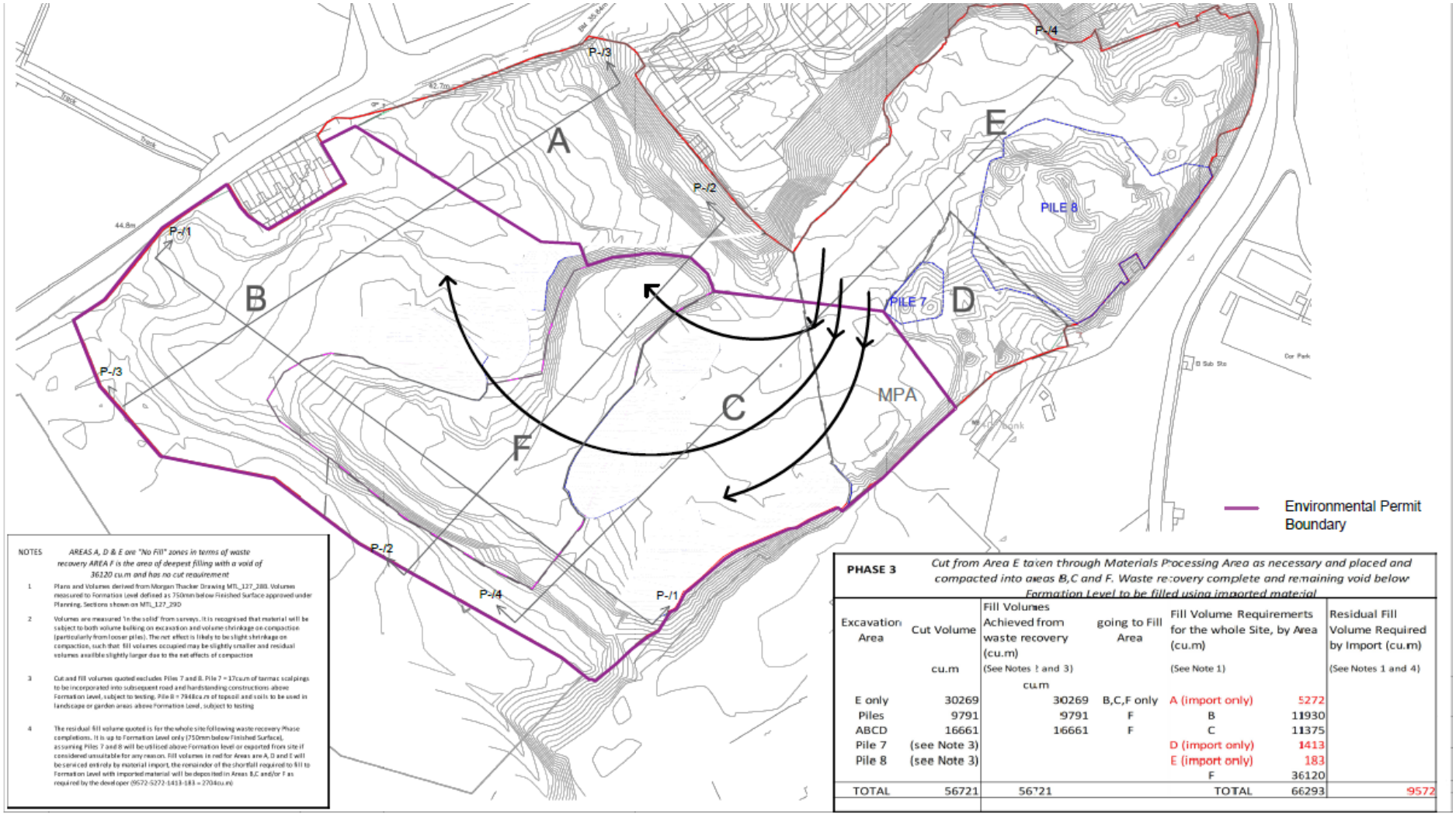
2 Volumes are measured 'in the solid' from surveys. It is recognised that material will be subject to both volume bulking on excavation and volume shrinkage on compaction (particularly from looser piles). The net effect is likely to be slight shrinkage on compaction, such that fill volumes occupied may be slightly smaller and residual volumes availble slightly larger due to the net effects of compaction

3 Cut and fill volumes quoted excludes Piles 7 and 8. Pile 7 = 17cu.m of tarmac scalpings to be incorporated into subsequent road and hardstanding constructions above Formation Level, subject to testing. Pile 8 = 7948cu.m of topsoil and soils to be used in landscape or garden areas above Formation Level, subject to testing

PHASE 2 *Cut from Areas A, B, C and D taken through Materials Processing Area as necessary and placed and compacted into Area F*

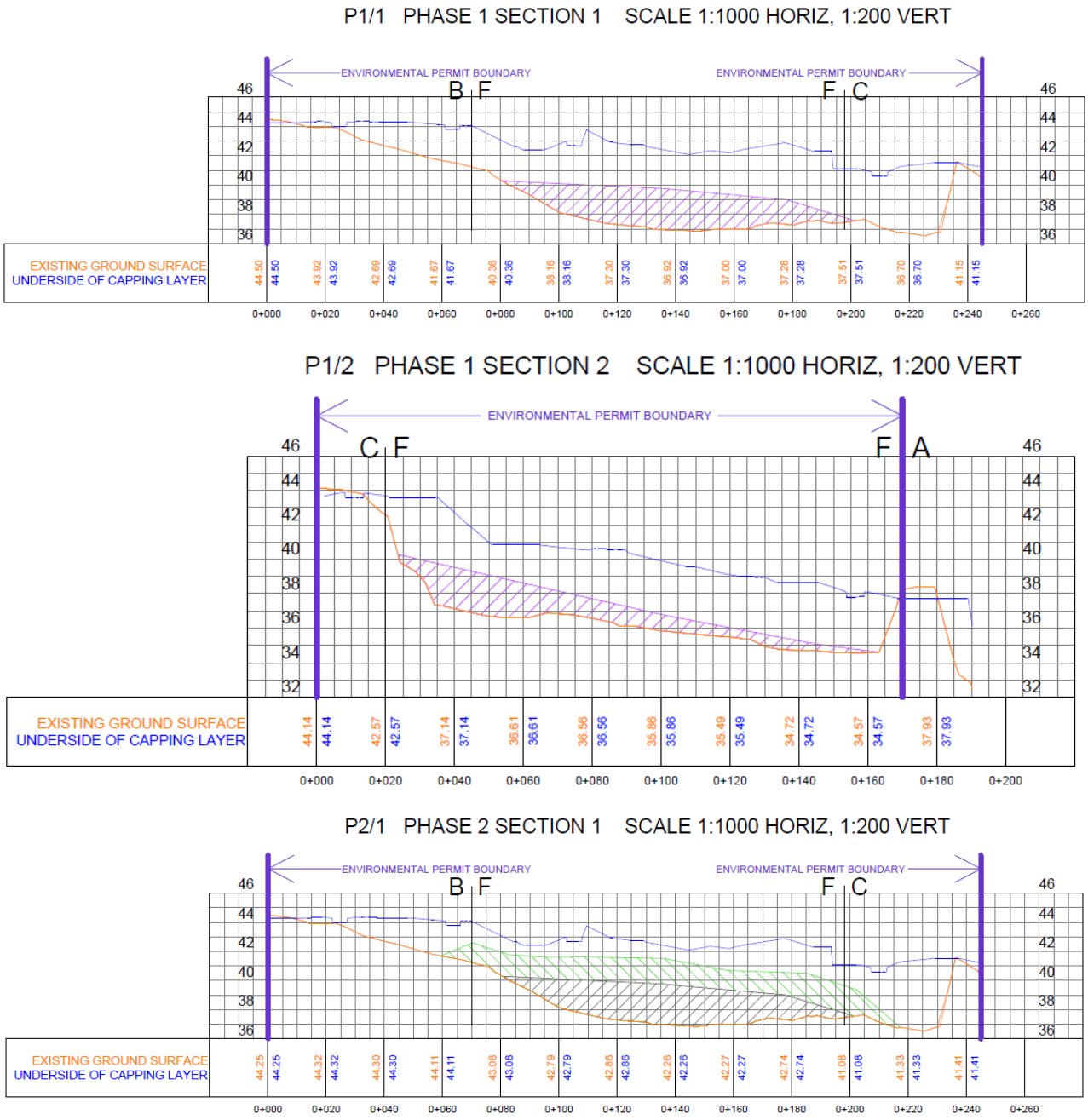
Excavation Area	Cut Volume	Fill Area	Residual Fill Volume Available in Area F (cu.m)
	cu.m		(See Notes 1 and 2)
		F	26329
A	7120	F	19209
B	5754	F	13455
C	2045	F	11410
D	1742	F	9668
TOTAL	16661	F	9668

Figure 3.5: Proposed Material Movements – Phase 3

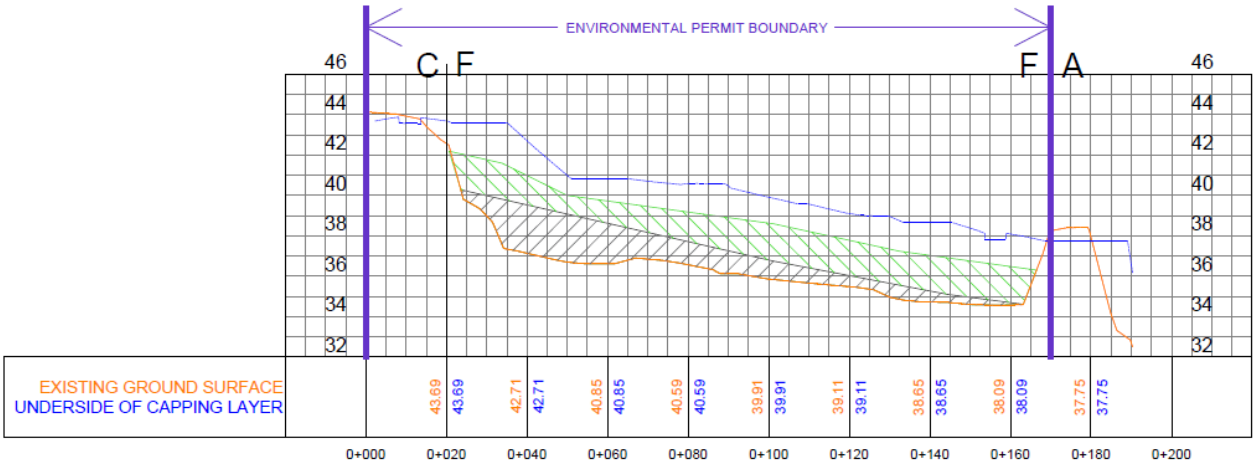


3.3.10 Once materials have been placed, the site will be completed as shown in the cross sections below:

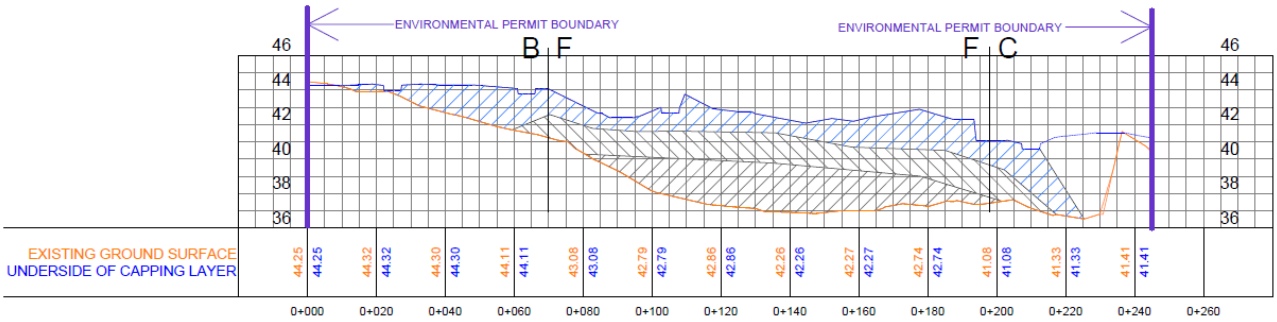
Figure 3.6: Cross Sections of Waste Fill Areas



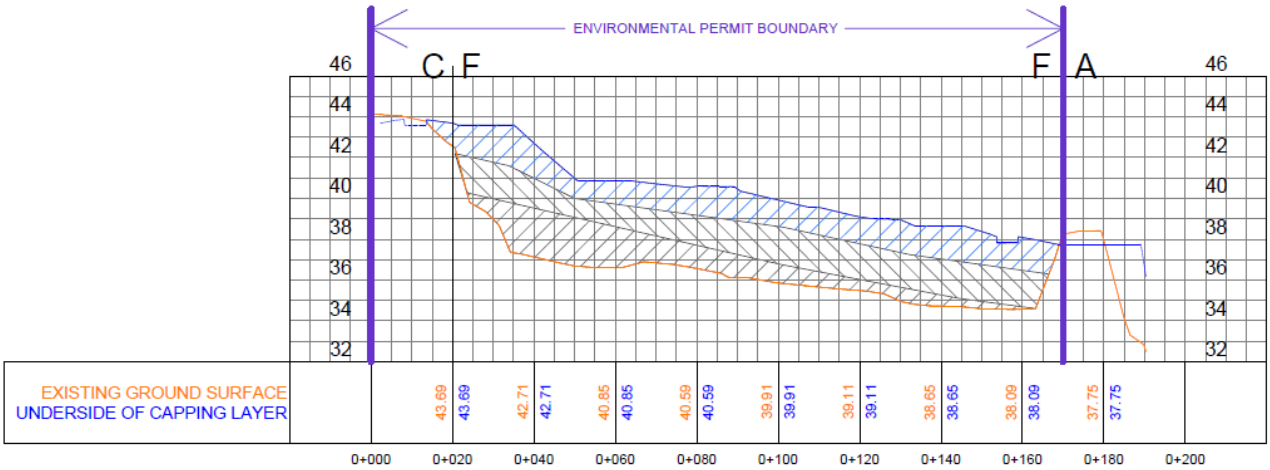
P2/2 PHASE 2 SECTION 2 SCALE 1:1000 HORIZ, 1:200 VERT

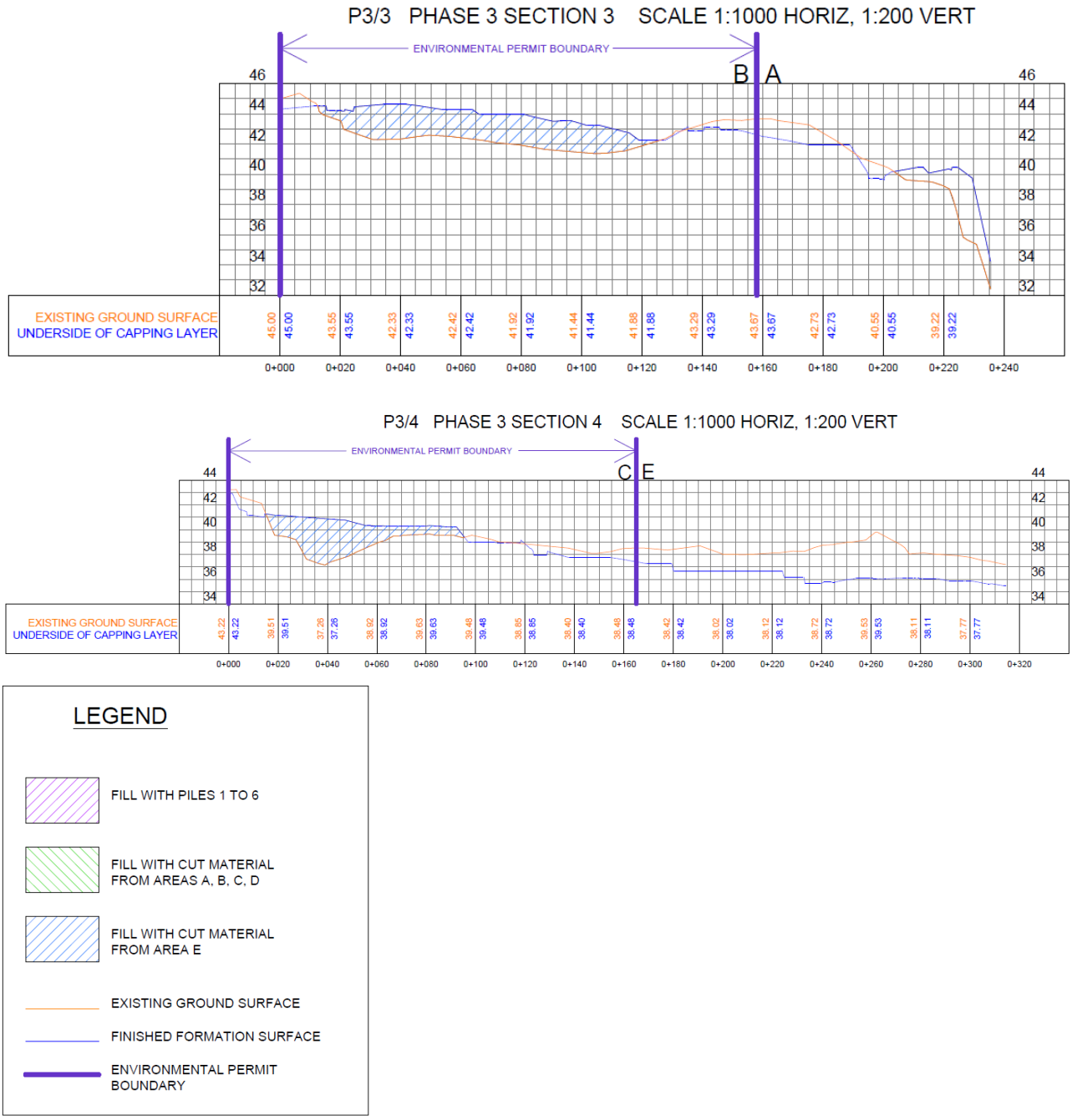


P3/1 PHASE 3 SECTION 1 SCALE 1:1000 HORIZ, 1:200 VERT



P3/2 PHASE 3 SECTION 2 SCALE 1:1000 HORIZ, 1:200 VERT





3.3.11 The void would first be filled with processed soils from the screen (the waste) on code 19 12 12, and then a layer of soil and stones, code 17 05 04. This would prepare the site to a development platform for the site developer to place the necessary levels of construction materials subsoil and topsoil needed for the residential area and would be able to carry out foundations and groundworks without excavating the soils, and wastes deposited as part of the recovery activities.

3.4 Waste Storage

3.4.1 As shown in the site plans included in ***Appendix B***, screened waste stockpiles are currently stored awaiting use in the waste recovery activity or processing and treatment.

3.4.2 Materials requiring processing will be moved to the processing area as shown in the phase diagrams in **Appendix B**, where they will be processed within 2 weeks of being moved into the processing area. No waste will be stored for more than 2 weeks in the processing area.

3.4.3 Following processing, screened and crushed materials will be stockpiled in dedicated areas prior to being used for the waste recovery activity. No waste will be stored for more than 2 weeks in the processing area.

3.4.4 Stockpiles will be managed so that there is a flow of incoming and outgoing waste to the materials processing area.

3.4.5 A dedicated quarantine area will be allocated within the materials processing area for the storage of any non-conforming waste such as metals, plastics, wood or textiles identified during operations. Any non-confirming waste will be stored in a dedicated skip and removed from site within 1 week.

3.5 Waste Processing and Treatment

3.5.1 It has been identified that some of the waste materials on site, will require further processing and treatment comprising screening and crushing of over-sized ragstone to prepare for use as fill material.

3.5.2 The works will be carried out in phases to allow for the materials to be moved around the site from areas of cut to areas of fill and allowing for treatment (screening and crushing) of oversized materials where required. Plans showing details of the phases and the materials movements for each phase can be found in ***Appendix B.***

3.5.3 An area of the site, as identified in the hatched area in figure 3.2 has been set aside for materials processing. This area will comprise the following:

- Unprocessed waste storage;
- Processing area (to include screening & crushing);
- Processed waste storage; and
- Quarantine area

3.5.4 A layout plan of the material processing area is included in ***Appendix B***.

3.5.5 The processing will just involve screening to give two separate outputs:

- material that requires no further treatment and can be placed as is; and
- oversized material that requires crushing prior to placement as fill.

3.5.6 The materials to be used as fill must meet the grading requirements for Highways Specification Class 2A/2B/2C materials. Based on this specification, all materials must pass the 125mm sieve therefore all materials exceeding 125mm will be screened out using the trommel screen and crushed.

4 EMISSIONS AND MONITORING

4.1 Groundwater

4.1.1 There will be no point source emissions to groundwater. As detailed in Section 5 of the Waste Recovery Plan included in ***Appendix G***, the void will be filled with site won material which will not contain any hazardous pollutants. The groundwater encountered in previous site investigations was not found to exceed drinking water standards. The works are considered to have negligible effect on the deep groundwater on site.

4.2 Gas

4.2.1 A ground gas management plan (Knapp Hicks & Partners Limited, November 2020) has been prepared for the management of gas for the overall site. As part of this management, a number of monitoring boreholes are installed on the site perimeter. These are monitored for migrating gas from the adjacent landfill. No gas has been identified on any other areas of the site and no further monitoring boreholes are proposed due to the inert nature of the material to be used and the fact that it is site won therefore would have been present during previous gas monitoring/risk assessment exercises. A copy of the ground gas management plan can be found ***Appendix H.***

4.3 Fugitive Emissions

4.3.1 An assessment of fugitive emissions is included in the environmental risk assessment in ***Appendix C.***

4.3.2 Daily site inspections will take place for any issues such as noise, odour, dust, mud on the roads etc. This will be detailed in the site EMS.

4.4 Topography

4.4.1 A topographical survey will be undertaken at least annually. The most recent topographic survey was carried out in May 2019. No further works have been carried out since the topographical survey in May 2019.

4.4.2 Topographical survey (May 2019) of the site can be found in ***Appendix I****.*

5 ENVIRONMENTAL IMPACTS

5.1 Environmental Risk Assessments (ERA)

5.1.1 An ERA is included as ***Appendix C.*** This has assessed that the risks from the operations and activities are considered low or very low.

5.2 Environmental Setting and Site Design (ESSD)

5.2.1 An Environmental Setting and Site Design (ESSD) report has been prepared using the template[5] provided by the EA. The ESSD defines the site's conceptual model including the potential source, pathway and receptor linkages. It provides details on the site's environmental setting and the proposed design of the site.

5.2.2 The site is located on the Lower Greensand Group comprising of the Hythe Formation which overlies the Atherfield Clay Formation. Previous investigations proved Hythe Formation overlain by over 20 m of Made Ground. This Made Ground is quarry waste material which is generally well compacted.

5.2.3 The nearest watercourse is the Loose Stream which is located 0.3 km to the east and the River Medway which is located approximately 0.55 km to the north west of the site. There are no surface water abstractions within 1 km of the site.

5.2.4 The site is in a flood zone 1, an area with a low probability of flooding. The site is not located in a flood alert or flood warning zone and is at a very low risk from flooding, from rivers.

5.2.5 The Hythe Beds are classified as a Principal Aquifer (layers of rock or drift deposits that have high intergranular and/or fracture permeability meaning they usually provide a high level of water storage.). The underlying Atherfield Clay is a Secondary B aquifer (predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering).

5.2.6 There are no identified Groundwater Source Protection Zones (GSPZ) within a 2 km radius of the site. The Groundwater Vulnerability Maps show the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a single square kilometre. Groundwater vulnerability in this area is classified as high.

5.2.7 Groundwater within the Hythe Beds is expected to flow in a northerly direction towards the River Medway. On site groundwater samples analysed by Knapp Hicks and Partners in 2019 did not identify any criteria exceeding drinking water quality standards.

5.2.8 The primary groundwater receptor for both Non-Hazardous Pollutants and Hazardous Substances is the Principal Aquifer within the Hythe Beds underlying the site. The void will be filled with site won material which does not contain any hazardous pollutants and the groundwater encountered in previous site investigations was not found to exceed drinking water standards. The works are considered to have negligible effect on the deep groundwater on site. The chemical testing has concluded that there is no significant contamination noted in any test areas. Further details on suitability of materials can be found in Section 5 of the Waste Recovery Plan included as ***Appendix G.***

5.2.9 In summary, the site is not bound by the Landfill Directive's engineering requirements due it being operational prior to these requirements. The voids are to be filled with inert waste to achieve the formation levels approved by the Planning Authority.

[5] https://www.gov.uk/government/publications/report-template-environmental-setting-and-site-design

5.2.10 The ESSD report is enclosed as ***Appendix D.***

5.3 Hydrogeological Risk Assessment (HRA)

5.3.1 Details of the HRA are included in the ESSD in ***Appendix D***.

5.4 Stability Risk Assessment (SRA)

5.4.1 Details of the SRA are included in the ESSD in ***Appendix D.***

5.5 Climate Change Risk Assessment (CCRA)

5.5.1 The duration of the proposed site activities is less than 5 years therefore no CCRA has been carried out for the site.

6 SITE CLOSURE

6.1.1 There is no requirement for a Closure and Aftercare Plan for recovery activities.

6.1.2 Upon completion of the recovery activity, a completion report will be prepared detailing the waste accepted as part of the recovery activity, outcomes of monitoring throughout the life of the permit and confirmation that no pollution incidents or contamination have occurred at the site. If any pollution incidents or contamination are identified, details of any investigation and remediation shall be confirmed.

6.1.3 Following completion of the development, an application to surrender the permit will be prepared and submitted to the Environment Agency (EA). This will take account of records of the waste deposited at the site and assist in demonstrating the inert nature of the waste.

6.1.4 As the site is to be filled with site won inert wastes, no gas generating wastes are anticipated therefore it is not proposed to undertake any period of gas monitoring following completion and prior to permit surrender.

6.1.5 A ground gas management plan (Knapp Hicks & Partners Limited, November 2020) has been prepared for the management of gas for the overall site. As part of this management, a number of monitoring boreholes are installed on the site perimeter. These are monitored for migrating gas from the adjacent landfill. No gas has been identified on any other areas of the site and no further monitoring boreholes are proposed due to the inert nature of the material to be used and the fact that it is site won therefore would have been present during previous gas monitoring/risk assessment exercises. A copy of the Ground Gas Management Plan can be found ***Appendix H.***

REFERENCES

1. British Geological Society's 'Geology of Britain Viewer' - http://mapapps.bgs.ac.uk/geologyofbritain/home.html?
2. EA flood risk maps - https://flood-map-for-planning.service.gov.uk/confirm-location?easting=575103&northing=154110&nationalGridReference=TQ7510354110
3. DEFRA data services platform - https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricLandfill&Mode=spatial
4. EA Waste recovery plans and permits Guidance - https://www.gov.uk/guidance/waste-recovery-plans-and-permits
5. Environmental Setting and Site Design template - https://www.gov.uk/government/publications/report-template-environmental-setting-and-site-design

Appendices

Appendix A

Application Forms

Appendix B

Site Plans and Layouts

Appendix C

Environmental Risk Assessment

Appendix D

Environmental Setting and Site Design

Appendix E

Waste Acceptance Procedures

Appendix F

Company Director Details

Appendix G

Waste Recovery Plan

Appendix H

Ground Gas Management Plan

Appendix I

Topographical Survey

Appendix J

Mobile Plant EMS Documents