Bromsberrow North Sandpit: Dust and Emissions Management Plan

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Prepared for

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1 Introduction

1.1 Background

This Dust and Emissions Management Plan (DEMP) has been prepared by Stantec UK Ltd (Stantec), on behalf of Allstone Sands and Gravels Aggregates Trading Co Ltd (Allstone) as part of an application for a new inert landfill Environmental Permit (EP). The operator of the EP will be Allstone.

This DEMP focuses on the management of dust and emissions during the progressive infilling of the quarry with inert materials at Bromsberrow North Sandpit, Bell Lane, Bromsberrow Heath, Ledbury, Gloucestershire HR8 1NX (the 'Site'). However, the preventative and mitigation measures presented by this DEMP will also aid the management of dust during the ongoing quarrying operations.

All operations at the Site are, and will be, carried out in accordance with the Site Operating Plan (SOP) (Stantec, 2024a), which forms part of the written Site Environmental Management System (EMS). This DEMP, along with the SOP, forms part of the written EMS for the Site.

This DEMP has been prepared in conjunction with the following relevant Environment Agency (EA) guidance:

- "*Dust & Emission Management Plan*" template (EA, 2018);
- "*Control and monitor emissions for your environmental permit*" (EA, 2022); and
- "*Risk assessments for your environmental permit*" (EA, 2023).

This document provides detailed information on the sources, risks and mitigation measures related to the potential emission of dust from the proposed waste operations to be undertaken on the Site.

1.2 Structure of the DEMP

This DEMP provides the following information:

- **Site Setting and Sensitive Receptors:** Comprising a summary of the setting of the Site and the proximity of receptors could be sensitive to dust emissions from the Site (Section 2).
- **Waste operations at the Site:** Comprising a summary of the operations to be undertaken at the Site under the EP (Section 3).
- **Dust Management and Mitigation:** Summarises the remedial and preventative mitigation measures that are implemented in relation to dust emissions (Section 4).
- **Monitoring:** Details the monitoring undertaken at the Site for dust emissions (Section 5).
- **Reporting and Complaints:** Summarises the reporting and complaints responses in the event of a dust emissions from the Site (Section 6).
- **Conclusion:** Comprising a summary of whether the proposed mitigation measures to be implemented at the Site will be effective in minimising dust emissions (Section 7).

1.3 Implementation of the DEMP

The Site Manager (David Ambrose) or his delegated representative will have responsibility for implementing and maintaining the DEMP.

This DEMP will be reviewed:

- Annually,
- Following any relevant change in the Site operations; and / or
- In the event of an incident.

This DEMP will be reviewed when a change in operations is deemed to have a potential effect on increasing dust emissions. The review process will amend any mitigation measures that have been identified as areas for improvement to reduce the potential for dust emissions from the Site.

The Site Manager:

- Is suitably trained and familiar with the Site and its processes;
- Will hold the appropriate technical competence qualifications for the operations; and
- Has responsibility for ensuring that the mitigation strategies in place are adhered to.

Where the Site Manager is unavailable to oversee the implementation of dust suppression measures, a suitably experienced supervisor is delegated responsibility.

All staff members will be given the necessary training to deliver dust suppression measures detailed within this DEMP. Staff will be given training on the EMS for the Site, which includes procedures relating on dust emissions. Site procedures will be communicated between staff via EMS training and toolbox talks. Where new dust suppression measures are to be implemented, refresher training will be provided to ensure staff remain competent. This training will be delivered by the Site Manager or appropriate representative.

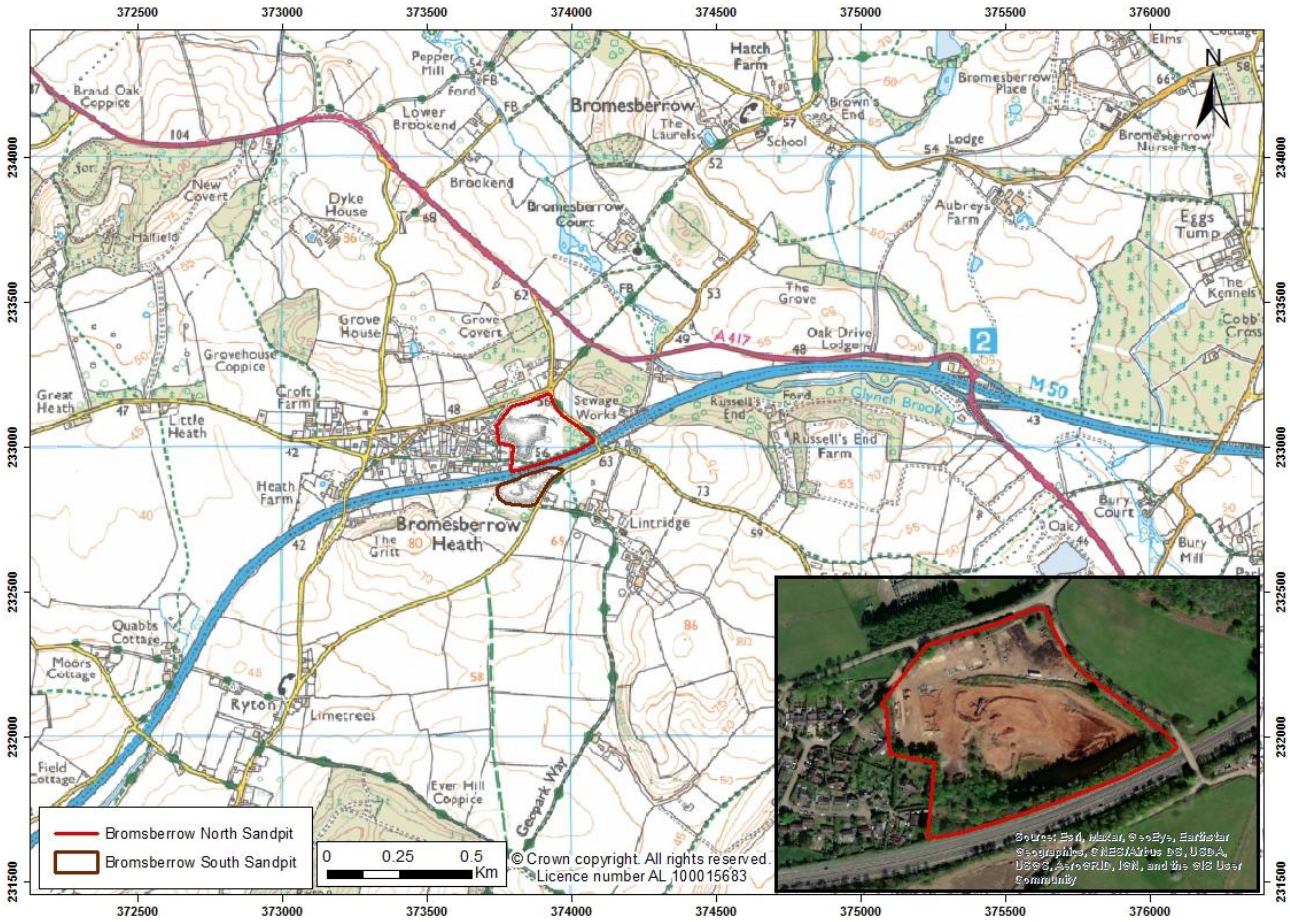
2 Site Setting and Sensitive Receptors

2.1 Site Location

The Site location is shown in Figure 2.1, with a summary of the Site setting provided in Table 2.1.

A complete description of the Site setting is provided in the Environment Setting and Site Design (ESSD) Report (Stantec, 2024b) prepared as part of the EP application.

Figure 2.1 Site Location



The surrounding land is predominantly agricultural, with polytunnel fields identified on aerial photographs, to the south of the Site, beyond Bromsberrow Lane at approximately 250 m, and to the north of the Site beyond the Bromsberrow Borehole Pumping Station (BPS), at approximately 240m.

Further detail regarding the Site setting and local land use is provided in Table 2.1.

Table 2.1 Site Details

Site address	Bromsberrow North Sandpit, Bell Lane, Bromsberrow Heath, Ledbury, Gloucestershire, HR8 1NX	
NGR	SO 73896 33065	
Site location	The Site is located in Bromsberrow Heath, Gloucestershire, approximately 4.5 km southwest of Ledbury and 7 km north of Newent, close to the village of Bromsberrow in Gloucestershire. Existing access to the Site is via Bell Lane, which runs along the northwestern boundary of the Site, as seen in Stantec Drawing No. 331201261D1. The access to the Site is proposed to be changed in the future to a new access point from Wood End Street to the east.	
Topography	The elevation of the perimeter of the Site ranges between 55 and 60 metres Above Ordnance Datum (mAOD), while the proposed extraction void will extend to 36 mAOD. The Site topography is generally consistent with the western surroundings; however, the land rises eastwards to form Bevanhill Coppice, to more than 75 mAOD. To the south the land also rises from the Site, ranging between 70 to 75 mAOD around Russellsend Coppice to the southeast. East and north of the coppices, the land falls to 50 mAOD in the Glynch Brook valley.	
Surrounding land use	North	Beach Lane runs along the northern boundary of the Site, with Bell Lane forming the northwestern boundary, from which the Site is currently accessed. The Bromsberrow Borehole BPS Public Water Supply (PWS), operated by Severn Trent Water (STW), is located to the immediate north of the Site, beyond Beach Lane. Willows Farm also lies to the north beyond Beach Lane. Further north the land use is predominantly agricultural, with large areas of polytunnels being observable from satellite imagery.
	East	Wood End Street runs along the eastern boundary of the Site, beyond which Bromsberrow (High Bank) Local Wildlife Site (LWS) is located. An additional LWS, Bromsberrow (M50), is located 20m east of the Site along northern boundary of the M50 motorway. The majority of the land use to the east of the site is agricultural with areas of woodland (including Bevanhill Coppice, located 75m from the Site).
	South	The southern boundary of the Site is adjacent to the M50 motorway which runs in a southwest-to-northeast direction, beyond which the restored Ryton Road Sand Quarry Landfill is located, circa 35m from the Site's southern boundary. Further south the land use is predominantly agricultural, with large areas of polytunnels being observable from satellite imagery.
	West	To the west of the Site is the residential area of Bromsberrow Heath, with the closest residential property located 10m from the Site boundary.

2.2 Air Quality Management Area (AQMA)

Local Air Quality Management (LAQM) places an obligation on local authorities to periodically review and assess the current and future air quality in their areas. The authority must designate a place in their authority as an Air Quality Management Area (AQMA) where it is considered that an air quality objective is not likely to be met within the relevant time period.

The Site is not located within an AQMA. The closest AQMA boundary is Tewkesbury Town Centre AQMA for NO_2, situated approximately 15km west of the Site.

2.3 Meteorology

Generation of fugitive dust, unlike many other atmospheric pollutants, is particularly dependent upon weather conditions and the nature of the operations. Prevailing meteorological conditions at any site will be dependent upon many factors, including its microclimatic conditions.

The most important climatic parameters governing the release and dispersal of emissions are:

- **Wind direction,** which determines the broad transport of the emission and the sector of the compass into which the emission is dispersed; and
- **Wind speed,** which will affect the ground level emission by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment.

Therefore, data has been sought regarding the predominant wind speeds and directions appropriate to the Site.

The wind direction and percentage frequency from that direction over the past five years has been obtained from the Met Office is presented in Table 2.2. The data suggests that the prevailing wind direction at the Site is from the southwest and west-south-west.

Table 2.2 Wind Direction distribution in percent - average from 2017-2022

Wind Direction	Frequency (%)
North	1.92
North North East	8.45
North East	8.2
East North East	4.23
East	3.19
East South East	1.82
South East	3.03
South South East	6.04
South	4.77
South South West	4.42
South West	**15.8**
West South West	**15.4**
West	4.42
West North West	0.94
North West	1.9
North North West	0

2.4 Sensitive Receptors

Due to the nature of material being handled on the Site, the dust particle size likely to be emitted is considered to be intermediate to large particles.

Particulate emissions can arise from the unloading and on-site handling and placement of materials, handling of existing on-site materials and vehicle movements on-site and on potentially dusty roads. This can cause harm to the local population by harming human health by respiratory irritation and lead to nuisance from the deposit of dust on cars and homes, etc.

Potential receptors with sensitivity to dust within 1km of the Site have been identified and are presented in Table 2.3. The location of each receptor is shown on Drawing No. 331201261D2 with reference to the numbers in Table 2.3.

As a consequence of distance to the Site, receptors R1-R10 (0-100m) could be at risk of impact from dust emissions especially if mitigation measures are not implemented at the Site or there are high winds or dry weather.

Due to the distance from the Site to the sensitive receptors R11-R19 (220-820m), it is considered unlikely that dust from the waste operations at the Site will reach these sensitive receptors. The mitigation measures discussed in Section 4 of this DEMP will further limit the likelihood of dust emissions reaching sensitive receptors around the Site.

Table 2.3 Potentially sensitive receptors in the vicinity of the site

Ref	Receptor	Receptor type	Distance (m)	Direction from nearest boundary
R1	Public Highway: Bell Lane	Public highway (road)	<10	Northwest
R2	Public Highway: Wood End Street	Public highway (road)	<10	East
R3	Public Highway: Beach Lane	Public highway (road)	<10	North
R4	Public Highway: M50 Motorway	Public highway (motorway)	<10	South
R5	Bromsberrow High Bank LWS	Local Wildlife Site	<10	Northeast
R6	Bromsberrow Heath	Residential area	<10	West
R7	Bromsberrow LWS	Local Wildlife Site	20	East
R8	Ryton Road Sand Quarry Landfill (Bromsberrow South)	Landfill site operated by Terra Firma (Gloucestershire) LLP	35	South
R9	Bevanhill Coppice	Nearest area of deciduous woodland to the Site	75	Northeast

Ref	Receptor	Receptor type	Distance (m)	Direction from nearest boundary
R10	Bromsberrow BPS and Willows Farm	PWS and adjacent residential property	100	North
R11	Public Highway: A417	Public highway (road)	220	Northeast
R12	Lintridge Farm	Farm – agricultural buildings and land	200	South
R13	Ecasks	Barrel supplier	230	South
R14	Church View Farm	Farm – agricultural buildings and land	310	Northeast
R15	Grove House	Ponds	330	Northwest
R16	Glynch Brook	Surface water feature – stream	350	Northeast
R17	Bromsberrow Court	Farm – agricultural buildings and land	550	Northeast
R18	Foxbury Fields Vineyard & Winery	Vineyard	700	East
R19	The Poplars, Dyke House	Conference centre	820	Northwest

The Pre-application Nature and Heritage Conservation screening provided by the EA (EPR/LB3507FW/A001) shows a historic protected habitat, Grovehouse Coppice, within the Site boundary. This area of woodland no longer exists on the Site. Historic imagery shows the coppice disappearing between 2009 and 2013. Therefore, the Grovehouse Coppice is not considered as a sensitive receptor in this DEMP.

2.5 Other Potential Sources of Dust

There are also a number of potential sources of dust within the vicinity of the Site. These have been listed below:

- There is the potential for dust to be emitted from vehicle movements along public highways surrounding the Site, especially with the high traffic volumes associated with the M50 which lies <10m south of the Site.
- Agricultural activities have the potential to also cause dust emissions, particularly as a consequence of soils from agricultural fields being blown and through the production, harvesting and drying of grains. Two farms (Lintridge Farm and Church View Farm) are located within 350m of the Site.
- The nature of the operations associated with the Ryton Road Sand Quarry Landfill, situated 35m south of the Site also have the potential to release dust. However, this site holds an EP

and is required to take mitigation and remedial measures for the prevention of dust emissions. As such, dust emissions from this site are considered possible but unlikely.

3 Waste Operations at the Site

3.1 Overview of Waste Operations

Operations to be carried out at the Site under the inert landfill EP will include the importation and deposition of waste to allow the progressive infilling of the quarry void with approximately 670,000m^3 of material. Suitable imported materials are proposed to be inert in nature.

Operations will be conducted by staff from Allstone and any deposition of wastes by external companies will be overseen by the Site Manager or their nominee on a daily basis. This includes the use of plant and equipment owned by Allstone.

The following have been identified as the main potential sources of dust and particulates from the Site:

- Waste handling and movement; i.e., the loading and off-loading of vehicles, equipment, and waste materials.
- The movement of vehicles within and off/onto the Site.
- The running of vehicle engines releasing nitrogen dioxide from exhaust systems.

It should be noted that other operations, such as the extraction and temporary storage of materials from the quarry, will also be carried out on this Site but not under the conditions of the EP. Preventative and mitigation measures presented by this DEMP will also aid the management of dust for these other operations.

Site operations will be undertaken in accordance with the SOP (Stantec, 2024a), which also forms part of the written Site EMS.

3.2 Site Layout

The proposed layout of the Site is shown on the Site Layout Plan, Drawing No. 21-248-D-012 Rev 02.

The Site will be accessed from a concreted public highway via Wood End Street. A wheel wash will be located at the access/egress point in order to wash the wheels of any outgoing vehicle from the Site. All vehicles are required to use the wheel wash facility.

The weighbridge office will be located in the northeast corner of the Site, adjacent to the proposed access point from Wood End Street.

A copy of this DEMP along with a copy of the issued EP and EMS will be kept within the Site office for reference on Site. Digital copies will be stored on computers, backed up using a ‘cloud storage’ service.

Visual dust monitoring by staff members can be taken anywhere within the Site boundary. More information on the monitoring undertaken at the Site is included in Section 5 of this DEMP.

The northern and eastern boundaries of the Site are defined by 2.5m high palisade fencing along with densely vegetated scrub, native species trees and hedgerows. The southern and western boundaries are also defined with various mature trees and hedgerows. The various boundary

definitions, including a 3.5m high bund along the Beach Lane boundary ensure that the majority of the Site is particularly well screened and effective in disrupting wind flow over the site.

Should unacceptable materials arrive on the Site, they will be temporarily quarantined and/or rejected from the Site in line with the procedures presented within the SOP.

Aggregate storage bays are located along the northern boundary of the Site. The materials stored in these bays are not directly associated with waste operations under the EP and will instead be used for the storage of mineral from the extraction operations. The aggregate storage bays border the 3.5m bund and are constructed of "Lego" type blocks to create walls approximately 2m high. Vehicles will be stored in an area to the south of the aggregate storage bays.

There is currently no concrete surfacing on the Site, however internal haulage will be restricted to clearly delineated routes, generally on a prepared surface and at low levels where possible. The haul routes will be compacted, graded, and maintained to provide a smooth surface and mitigate dust and particulate generation. Hardcore will be used as necessary.

3.3 Imported waste types

Strict waste acceptance procedures will apply at the Site to ensure that only List of Waste (LoW) codes allowed under the EP are accepted at the Site. The proposed waste types under the EP have been summarised and assigned a "low", "medium" or "high" risk level for their potential to emit dust in Table 3.1. In line with the Site's waste acceptance procedures, all loads must be visually inspected prior to tipping.

Table 3.1 Potential of LoW codes to produce dust

Dust Potential – Risk Level	LoW Code	Description	Process subjects to on site	Summary of mitigation measures implemented
Low	15 01 07	Glass packaging / glass	Handling and deposit	Mitigation measures to remain the same regardless of waste type accepted. Use of water to dampen surfaces to prevent dust becoming airborne when required (as meteorological conditions dictate). Monitoring undertaken by staff on waste to check for dust emissions.
	17 01 02	Bricks	Handling and deposit	
	17 01 03	Tiles and ceramics	Handling and deposit	
Medium	10 11 03	Waste glass-based fibrous material	Handling and deposit	
	17 01 01	Concrete	Handling and deposit	
	17 01 07	Mixtures of concrete, bricks, tiles and ceramics	Handling and deposit	
	17 02 02	Glass	Handling and deposit	

Dust Potential – Risk Level	LoW Code	Description	Process subjects to on site	Summary of mitigation measures implemented
	19 12 05	Glass	Handling and deposit	As above.
	20 01 02	Glass	Handling and deposit	
High	17 05 04	Soils and stones other than those mentioned in 17 05 03*	Handling and deposit	
	20 02 02	Soils and stones	Handling and deposit	

Mitigation measures to be implemented at the Site take the "worst-case" view of all waste types having a "high" risk level with regard to dust generation. All of the waste types to be accepted under the EP will be handled and deposited with mitigation measures in place to limit the dust emissions from the operations.

Wastes comprising of dust, powders or loose fibres will not be accepted at the Site. Wastes identified as being dry or with the potential to generate dust that could leave the Site boundary, will be dampened prior to unloading. Depending on the moisture content, it may be necessary to dampen after deposit. If the load is determined to be excessively dry or dusty it will be denied access to the Site and rejected.

HGVs must be sheeted when transporting material to and from the Site to prevent wind entrainment or loss of material from the vehicle. Before leaving Site, vehicles will pass through a wheel wash to remove residual dust from tyres. They will also be re-sheeted to control residual mud and dust.

3.4 Waste Deliveries and Waste Handling

Waste will be imported via the access point from Wood End Street by sheeted HGVs. It is estimated that 670,000m^3 of waste will be required to be imported to the Site in order to meet the proposed restoration level.

Vehicles entering the Site will be unsheeted and visually inspected prior to unloading. Excessively dusty loads will be rejected from the Site. Records of each load (Transfer Notes and Site Dockets) will be made in the Site Office. Once accepted the deliveries of waste will be directed to the tipping face.

In windy conditions or where the nature of the load may give rise to wind-blown dust, the vehicle will remain sheeted until it reaches the tipping face and the clerk will contact the dozer driver by radio with details of the vehicle, to ensure that the load is properly inspected at the tipping face.

3.5 Waste Storage

No waste materials are to be stored on the Site under the EP.

3.6 Plant and Equipment

The EP operations will employ the use of essential plant only. Nitrogen dioxide gas is a by-product of internal combustion engines and the site uses several items of plant with internal combustion engines.

Table 3.2 lists the make, model and emission ratings for the different mobile plant and equipment used on the Site.

Table 3.2 Plant and equipment used on Site

Description	Make	Model	Emission Rating
Terex sand screen	Terrex Finlay	Terrex 693+	Tier 3
Front loading shovel	Volvo	L220	Tier 4
23 t excavator	Hitachi	Zaxis 210LC-5B	Tier 3
Dozer	Cat	D6LPG	Tier 4
Fire engine*	Volvo	FL6 14	Tier 2
Road sweeper*	DAF	LF230	Tier 6
Telehandler	JCB	JCB550-80WM	Tier 4

**This mobile plant is not kept on the Site on a permanent basis. It is brought onto the Site on an as-needs basis.*

All plant and equipment used on the Site are owned by Allstone. All plant and equipment will be maintained in accordance with the manufacturer's recommendations and will be subject to maintenance checks in accordance with procedures in the Site's EMS.

All plant will be operated in a manner appropriate to minimising emissions. There will be no unnecessary revving of engines and machinery will be shut off when not in use. Ultra-low / low sulphur fuel will be used.

The Operator will replace older machinery with new, low-emission machinery as it becomes available and as the business allows.

4 Dust Management and Mitigation

4.1 Overview of Dust Control at the Site

Dust control measures are in place to help mitigate dust emissions at the Site. The mitigation measures to be utilised at the Site are described fully in Table 4.2. These measures are implemented when appropriate, particularly in periods of dry weather or when dust is identified to be escaping the Site boundary.

The Site boundary is inspected regularly to identify any dust entrainment / emissions or dust leaving the Site. Presence of dense vegetation and trees in addition to bunding will assist in preventing dust from waste operation from leaving the Site boundary. If dust entrainment or emissions are observed, then the use of water is instigated to suitably dampen the material/ surface.

Strict waste acceptance controls will ensure that only suitable inert waste will arrive to and be deposited at the Site which will not include dry or dusty materials. Any rogue or dusty loads which may arrive on Site will either be rejected upon arrival or quarantined on-site with sheeting prior to off-site disposal.

Sheeting of vehicles carrying waste is required to prevent the escape of debris, dust and particulates from vehicles as they move into, from and around the Site. Excessively dusty loads will not be accepted into the operations, which will be ensured via visual checks of the waste to be accepted under the EP.

Particulate emissions can arise from the unloading and on-site handling and placement of imported materials, vehicle movements on-site and from unsealed surfaces. In order to reduce any impact on local receptors, the method of handling existing on-site material will be through appropriate use of excavators and Site plant to ensure that the soils are only moved in small quantities at any one time. This allows materials to be compacted soon after movement, to minimise further drying and the risk of dust generation. Drop heights when handling waste will be minimised. Minimising the height at which waste is dropped should reduce the distance over which dust could be blown and disperse by winds.

Good housekeeping will be implemented on the Site. A consistent, regular housekeeping regime that is supported by management, will ensure the Site is regularly checked and issues remedied to prevent and remove dust build up.

Any material stockpiles on the Site (e.g., mineral) will be managed in accordance with planning conditions for the Site.

Operations will cease during high winds and exceptionally dry conditions. Mobilisation of dust particles likely to be greater during periods of strong winds or exceptionally dry conditions. Hence, ceasing operations may be necessary during these times if other mitigation measures implemented at the Site are not effective in reducing / preventing dust emissions. The Site Manager will instruct staff to modify, reduce or suspend any activities that are identified to have the potential to cause dust to leave the Site boundary during dry windy weather. It is ultimately the decision of the Site Manager whether operations under the EP leading to dust emissions should be temporarily paused.

All Site surfaces will be dampened as necessary by the use of sprays to prevent material becoming airborne. A mobile water bowser will be available at the Site to dampen surfaces and material to prevent particulate matter becoming airborne. The condition and integrity of the bowser will be checked as part of regular inspections under the EMS.

A wheel wash will be present on the Site to clean wheels of outgoing vehicles and prevent mud from being tracked onto local highways. The wheel wash will be maintained in line with manufacturers specifications. The wheel wash will be inspected on a daily basis and will include checking spray nozzles, water levels and bed of the washing area.

If necessary, the wash area will be hosed to remove any residues. Any spillages will be cleared as quickly as possible by appropriate means to prevent unnecessary track-out onto the public highway.

Off-site inspections of the local public highways (Wood Street Lane, Beach Lane and Bell Lane) for tracked dust and soils will be undertaken daily and any material observed on the road surface will be swept the same day or as soon as practicable.

A road sweeper will be deployed when mud/dust is observed on the local highways and access road to the Site. Internal pathways and routes will be kept clear of debris and checked daily. A 15mph speed limit on surfaced roads and 10mph speed limit on unsurfaced haul roads will be enforced.

4.2 Sources and Control of Fugitive Dust Emissions

Table 4.1 details the potential sources of dust on the Site and which mitigation measures are implemented to break the source-pathway-receptor routes for dust emissions.

Table 4.2 lists the mitigation measures to control dust emissions at the Site.

Table 4.1 Source-pathway-receptor routes

Source	Pathway	Receptor	Type of Impact	Where relationship can be interrupted
Mud	Transportation of dust on wheels and vehicles, then mud dropping off wheels/vehicles when dry.	Wood End Street, Beach Lane, local highways, and local businesses.	Mud on and other local roads. Resuspension of mud as airborne particulates.	All vehicles exiting the Site must do so via the wheel wash. The Site and unpaved surfaces/ haul routes are dampened down by mobile water bowsers when overly dry or dusty conditions present. Should the above measures fail, a road sweeping vehicle will be deployed when necessary to mitigate any mud on the public highways and prevent the generation of dust as a result of the Site operations.
Debris	Falling off lorries.	Wood End Street, Beach Lane, local highways, and local businesses.	Visual soiling, also consequent resuspension as airborne particulates.	Vehicles delivering waste are sheeted. Where debris is identified, it will be cleared up immediately, either manually or by road sweeper. All areas are subject to regular housekeeping.
Tipping of wastes in the open	Atmospheric dispersion.	Surrounding sensitive receptors.	Visual soiling and airborne particulates.	The potential of dust emissions will be minimised by lowering drop heights, where possible. It is intended for incoming waste to be deposited directly into the tipping face or as close to its intended deposit location as is operationally possible. Operations will be halted when wind speeds are deemed to be excessive.
Vehicle/ Plant Movements	Atmospheric dispersion from resuspension of dust.	Surrounding sensitive receptors.	Airborne particulates and build-up of dust on surfaces of site and local roads.	The Site is subject to regular housekeeping and water is utilised to dampen surfaces as required.
Vehicle exhaust emissions	Atmospheric dispersion.	Surrounding sensitive receptors.	Airborne particulates.	No idling policy will be implemented. All vehicles/ site plant will be maintained in accordance with manufacturer recommendations.

Table 4.2 Mitigation Measures

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
Site/process layout in relation to receptors	Locating particulate emitting activities at a greater distance. The site is downwind of most sensitive receptors which will ultimately reduce receptor exposure, provided that emissions from the source are not dispersed over significant distances.	Deposition of waste at the tipping face. Stockpiles are stored in areas surrounded by dense vegetation or bays constructed of “Lego” type blocks, circa 2m high. Operations predominantly occur down wind of the local sensitive receptors Finer grade materials will be stored furthest from residential dwellings. Measures will be implemented by staff training on the EMS and SOP.	These measures will be implemented whenever the Site is operational.	If excessive dust emissions are observed to be leaving the Site boundary, then the further mitigation measure(s) will be triggered. If excessive dust emissions from site process layout is observed, the Site Manager will have to review the Site layout and processes.
Site speed limit, ‘no idling’ policy and minimisation of vehicle movements on Site	Reducing vehicle movements reduces dust emissions from the Site. Enforcement of the speed limit and limiting movements will reduce the chance and amount of resuspension of dust by vehicle wheels.	There is a no-idling policy in place on the site for vehicles. Vehicle movements will be minimised by ensuring that the double handling of materials is avoided where possible. A 15mph speed limit on surfaced roads and 10mph on unsurfaced haul roads will be enforced. These measures will be implemented by staff training, through use and understanding of the EMS and speed limit signs on Site.	Speed limit signage. Enforcement of speed limit by Site Manager and constant observation and reminders by Site operatives.	If there is mud on the access road, then a mobile bowser will be deployed to clean and dampen the surface. Speed limit may be reduced to 5mph at the discretion of the Site Manager. If excessive dust emissions from vehicle movements continue after these measures, then operations shall cease.

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
Minimising drop heights for waste	Minimising the height at which waste is dropped should reduce the distance over which dust could be blown and dispersed by winds.	The EMS will require that the handling of waste material on Site will be minimised where possible. Staff will be trained about the importance of reducing drop heights. Measure will be implemented by plant operators ensuring that they lower grabs/shovels on the equipment being used to move and deposit materials.	This measure will be implemented whenever the Site is operational i.e., whenever material is being moved.	Water will also be available to dampen surfaces and stockpiles to reduce dust generation. If excessive dust emissions continue after these measures, then operations shall cease.
Good housekeeping	Having a consistent, regular housekeeping regime that is supported by management, will ensure the Site is regularly checked and issues are remedied to prevent and remove dust and particulate build up.	Inspections will take place twice daily with actions followed up immediate by Staff on site. Staff will target areas not caught by the road sweeper or other cleaning apparatus. The waste types to be accepted at the Site will contain very little, if any, litter, or dust. Good housekeeping is implemented by following the housekeeping guidance as set out in the EMS.	These measures will be implemented whenever the Site is operational.	If excessive dust emissions are observed to be leaving the Site boundary, then the further mitigation measure(s) will be triggered e.g., water suppression.
Sheeting of vehicles	Prevents the escape of debris, dust, and particulates from vehicles as they travel.	The EMS and SOP will state that all vehicles entering / exiting the Site must be sheeted to minimise the likelihood of dust emissions. Excessively dusty loads will not be accepted to the Site.	Loading/ unloading of materials to/from a vehicle will be followed by closing of the sheet covers on that vehicle. Visual observation of incoming vehicles will take place to	If excessive dust emissions are observed to be leaving the Site boundary, then the further mitigation measure(s) will be triggered. Materials may be dampened.

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
		Sheeting equipment will be activated and checked to ensure proper coverage before the vehicle can leave the site. Incoming vehicles that are not sheeted will be rejected from the site or sheeted immediately.	ensure vehicles arriving are sheeted. All vehicles carrying waste to the site will be sheeted at all times unless being loaded or unloaded.	
Ceasing operation during high winds and/or prevailing wind direction	Mobilisation of dust and particulates is likely to be greater during periods of strong winds and hence ceasing operation at these times may reduce peak pollution events.	Methods are likely to reduce dust and particulate emissions but are not considered long term solutions. During exceptionally dry and/or windy conditions, if any operations / Site movements cause or are likely to cause visible dust emissions beyond the Site boundary, or if abnormal dust emissions are observed within the Site, site waste operations may be suspended to avoid further dust emissions. The weather conditions at the Site will be considered and recorded at the start of each working day so that the day's work may be planned to take in regard any potential dust emissions. If the wind speed and direction are likely to increase the risk of nuisance then operations may be temporarily stopped. There are no set values/ criteria for this to occur as there are other contributing factors that dust is dependent on such as rain. Weather conditions are recorded in the site diary. These include, but are not limited to; wind strength, wind direction and rain. The decision to cease operations because of weather conditions is at the discretion of the Site Manager.	If excessive dust is being generated by the operations, then the Site Manager will notify staff and operations may be temporarily ceased. Operations commence once the wind has subsided and/or the area is dampened down. Prevailing weather condition monitoring (visual observation) including wind strength, wind direction and rainfall. This monitoring will be recorded in the Site diary.	N/A

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
Road sweeper	Removes the mud from the access road, Beach Lane, Wood End Street and Bell Lane. It dampens down dust and particulates whilst brushing and collecting dust and particulates from the road surface, particularly at the kerbside. It also reduces the potential for dust emissions from vehicle movements in the area.	A road sweeping vehicle is on site at all times. It will be deployed to control the amount of mud on local roads and minimise the generation of dust when required. The road sweeper will be maintained in accordance with manufacturer's specifications. The cleanliness of roads in the vicinity of the Site entrance are checked daily. The road sweeper would be deployed to clean the access road and local roads (Wood End Street and Beach Lane). Site management instructs a trained Site Operative to carry out the road sweeping.	Visual observation of the state of the access roads and local roads to be conducted and recorded in the Site Diary. This will identify the requirement for the use of the road sweeper. Constant observations to be made by all operatives on the Site. The Site Manager will check on the state of the road at least once daily and if mud is visible on the road, which has been tracked out from the Site, then the road sweeper will be hired and deployed.	N/A
Installed wheel wash	Provides a high pressure wash of vehicle wheels and lower parts (including under body) using a series of jet sprays.	The wheel washing facility is used solely to remove mud from the wheels of vehicles and is inspected on a regular basis to ensure the facility is in working order. Vehicles will drive through the wheel wash slowly to allow sufficient time for dust and dirt to be effectively removed. The wheel wash will be used by all vehicles exiting the site.	The wheel wash will be used by all vehicles exiting the site.	N/A

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
Water suppression with hoses and water cannons	Use of a hose and water cannon is a quick method of damping down large areas of the Site. Water cannons provide a means for delivery of powerful water streams. With variable nozzles, the spray pattern can be controlled and varied between jet and fog.	The cannons will have coverage of areas that have the potential to cause dust. The water cannon and hose will be used will be used at the instruction of the Site Manager.	During periods of dry/ windy weather to prevent entrainment of dust by wind. When excessive dust emissions are observed to be leaving the Site boundary. Visual observation will be carried out by all employees on the Site. Visual observations carried out by Site operatives during operational hours will determine when cannons and bowsers are to be utilised.	If excessive dust emissions are continued to be observed leaving the Site boundary, then the further mitigation measure(s) is triggered. Cease operations causing the dust emission.
Water suppression with water bowser	Using a mobile water bowser to dampen Site surfaces.	Highly water intensive and more likely to minimise dust and particulates on the ground that is at risk of being re-suspended rather than already airborne dust and particulates. Very effective at dampening down haul roads and large surface areas. Can also come with hose attachments and other attachments to increase its versatility.	During periods of dry/ windy weather to prevent entrainment of dust by wind.	If excessive dust emissions are continued to be observed leaving the Site boundary, then the further mitigation measure(s) is triggered. Cease operations causing the dust emission.

Abatement / Mitigation Measure	Description / Effect	Overall implementation on Site	Trigger for implementation	Further mitigation measure if ineffective
Fire Engine	A fire engine owned by Allstone will be used to dampen down large surface areas on Site in extreme circumstances e.g. when other mitigation measures are not effective.	A fire engine can be used in extreme events when other mitigation measures are not effective at the discretion of the Site Manager. The Site Manager will instruct for one of the Allstone-owned fire engines to be brought to the Site. The fire engine will be used to target large surface areas that rapidly require suppression by water.	During periods of dry/ windy weather to prevent entrainment of dust by wind when other mitigation measures are considered ineffective.	N/A

4.3 Other Considerations

4.3.1 Water Availability

Water for dust suppression will be obtained from the mains water supply at the Site. Additional water may be tankered into the site from external sources if required.

4.3.2 In the Event of a Drought

During exceptionally dry and/or windy conditions, if any operations / site movements cause or are likely to cause visible dust emissions beyond the Site boundary, or if abnormally high dust emissions are observed within the Site, operations may be suspended to avoid further dust emissions. This will be decided by the Site Manager.

Depending on the severity of the drought conditions, restrictions may be in place on the amount of water available for use on Site from the supplier (mains water supply – Severn Trent Water). In this case, operations may be reduced or suspended in order to comply with any water usage restrictions. Water may also be imported onto the Site via tanker if required.

4.3.3 Maintenance of Plant and Site Infrastructure

It is recognised that regular scheduled maintenance is essential to prevent fugitive emissions from the Site. The following best practice measures will be implemented to limit emissions, in so far as is possible:

- All vehicles will be maintained in accordance with manufacturer recommendations;
- All non-road-going plant will be maintained in accordance with manufacturer recommendations, cleaned and serviced regularly;
- Paved surfaces on and in the vicinity of the Site along will be swept as required during Site operations. This may be reduced during periods of reduced traffic/site operations, or increased if material deposition on surfaces can be observed to be accumulating during the day;
- Plant operational areas and processing areas will be kept tidy and orderly, with any loose material being cleared and removed or stockpiled by the end of each working day;
- On-Site vehicles will be cleaned on a weekly basis to prevent the build-up of dust and mud, which may become entrained. The frequency may be increased if higher rates of soiling are observed or decreased if high rates of soiling are not observed to occur;
- All haul roads and surfaces will be maintained in a good state of repair. All surfaces will be inspected weekly for defects or repaired as they arise or following notification from a Site operative/ driver.
- Site speed limit of 15mph on surfaced roads and 10mph on unsurfaced haul roads will be enforced.
- Fencing, bunds, and hedgerows/ trees along the Site boundary will be regularly checked for damage and will be maintained as appropriate.

4.3.4 Staff Training and Management

All Site personnel will be trained in best practice for dust control via regular toolbox talks on the Site.

Operatives will to be briefed on the requirements to keep dust to a minimum in their induction training and through method statement briefings. To ensure that environmental standards are maintained, Allstone considers it necessary that all personnel working on the site are aware of company and their personal environmental responsibilities.

4.3.5 Out of Hours Arrangements for Mitigation

For out of hours arrangements, the Site Manager or his delegated person will make the decision on whether to implement mitigation measures depending on the forecast for the upcoming closed hours. Should a complaint of dust be received out of hours, a trained operative will be informed by the Site management to attend the Site in order to implement remedial measures and/ or investigate the cause of the complaint.

More information regarding the complaints procedure can be found in Section 6.

5 Monitoring

5.1 Visual Dust Monitoring

Visual monitoring will be conducted by Site staff at all times as they carry out their daily tasks. Observations will be undertaken anywhere within the Site boundary, depending on where operations are taking place. It will also be expected that all staff members will check for dust emissions as they approach and leave the Site. Reports of dust potential or dust emissions will be made to the Site Manager as soon as possible.

The Site Manager, or his nominee that is appropriately trained, will carry out recorded visual monitoring of the Site at least twice each working day (start of the day and mid-day as a minimum). This monitoring is referred to as “qualitative monitoring”.

The observations recorded will include:

- Date & Time;
- Location of where the monitoring has been undertaken on the Site;
- Weather conditions;
- Level of dust observed – rated on a scale from 1 to 5 (1 indicating “No noticeable issue” through to 5 indicating “Major issue”);
- Cause of dust emission;
- Detail of remedial action(s) required;
- Confirmation that instruction is given to a Site Operative for remedial action(s) to occur; and
- Initials of checker.

Undertaking recorded visual monitoring at the times when the Site is considered to have the highest potential for dust emissions is considered the most beneficial method to ensure that the mitigation measures in place at the Site are effective. A copy of the Dust Visual Monitoring Check Sheet can be found in **Appendix A**.

These records will be kept on Site for a minimum of 3 years.

Extra and unplanned monitoring will be carried out on the Site when conditions are particularly windy or dry, new activities are being undertaken, new machinery is being used or following the receipt of a complaint or incident related to dust emissions.

There will be no specific particulate monitoring equipment kept routinely on site.

5.2 Action in Case of Observed Dust Emission

If dust from the Site is detected beyond the Site boundary, either as a visual plume or observed dust deposition immediately outside the Site, and if not detected by the Site Manager or representative, the detection should be reported to them directly. The following actions will be taken by the Site Manager / their representative:

- Active activities will be assessed for dust generating potential;

- Any active processes such as waste handling or vehicle movements will be immediately stopped;
- If the source of emission is deemed to be fugitive emissions from the Site surface or stockpiles, dampening of the material/surface will take place immediately;
- If the source is deemed to be re-suspension of dust on the road as a consequence of tracked mud, the road will be swept immediately, and a record made of the conditions which lead to the mud being tracked;
- If the source is deemed off-site a record will be made in the Site diary for future reference;
- In all cases, the observation and resulting action and any lessons learned will be recorded in the Site diary; and
- Any subsequent actions will be incorporated into the DEMP.

If it is not possible to resume activities without causing emissions – e.g., if prevailing weather conditions do not allow, then works will remain suspended until conditions are favourable.

A record of the emission and the attributed cause will be recorded. A note should be made of any procedural improvements to prevent recurrences which should be implemented as soon as practicable. Revisions to this DEMP should be implemented, if required.

6 Reporting and Complaints

6.1 Engagement with the Community

A notice board will be displayed prominently by the Site entrance and will contain the following information to enable direct contact with the Site Manager and the relevant authority:

- Name and address of the facility.
- Statement that the Site is permitted by the EA.
- EP reference number.
- The emergency contact information of the EP holder.
- The EA's national numbers for general enquiries and emergencies.
- Days and hours that the Site is open to receive waste.

Members of the community will therefore have the ability to contact the operator of the EP in the event of any incident or wish to submit a complaint.

6.2 Receipt of Complaints

The Site Notice Board will allow members of the public to notify Allstone about any fugitive emissions, including outside of the Site's normal operational hours, or to make a complaint.

All complaints will be recorded in a complaints log, together with any action required/taken, and any procedural changes necessary to prevent a similar recurrence. Information on the complaint including the nature of the complaint, the likely cause, time and date of the complaint and photographs where appropriate will be shared among the wider Allstone Team.

The Site Manager will ensure that:

- Any visual observations recorded at the time of the complaint are analysed by authorised personnel;
- Site activities at the time are reviewed and investigated; and
- Additional mitigations are identified and implemented at the earliest opportunity.

Complaints will be acknowledged promptly to the complainant along with an explanation as to what, if any, action is being undertaken as a result and an estimated time in which they will aim to respond. For minor issues, it is expected that responses can be provided within two working days. If further investigation is required beyond this time, this too will be communicated to the complainant together with a revised timescale.

The suspected activity will be ceased until it can be determined what the cause for the complaint is if the complaint is warranted and what action should be taken. If the complaint is a result of something outside the control of Allstone, this will be clearly communicated to the complainant in a timely manner.

A complaint outside of normal operating hours, when the Site is unmanned, may require remedial action to be implemented at the Site as soon as possible. A relevantly trained operative will be informed by management to attend the Site in order to implement remedial measures and/or investigate the cause of the complaint.

6.3 Reporting of Complaints

Allstone will keep a record of all complaints received in relation to dust and particulates suspected to result from the Site by completion of a Complaints Form (**Appendix B**). Each substantiated compliant will be reported to the EA as soon as practicable.

6.4 Management Responsibilities

Management has the responsibility to:

- Ensure all relevant staff have received suitable training to carry out the visual dust monitoring and reporting responsibilities;
- Ensure that all necessary mitigation equipment (water bowsers etc) are provided;
- Ensure the Site notice board is legible and contains correct information; and
- Ensure complaints and non-compliances are reported to the EA.

7 Conclusion

This DEMP considers the potential sources of particulate matter and dust associated with the proposed operations to be undertaken on the Site. The potential for dust impacts on local sensitive receptors are subsequently assessed together with the identification of appropriate mitigation measures and sets out how the Site will prevent, mitigate and monitor against dust and particulate emissions from the Site.

This DEMP will be regularly reviewed, either following an event which requires its update, following a change in Site operation or as part of the Site's operating techniques.

The standard and Site-specific mitigation measures will be employed by Allstone, described in this document, will ensure close control is maintained by Allstone on the generation and mitigation of fugitive dust and particulate emissions from the Site.

It is considered that due to the mitigation measures proposed, those receptors most sensitive to dust and particulates should not experience any significant adverse impact as a result of the Site operations. Any adverse impacts experienced will be minor and reversible, and will be dealt with constructively by Allstone, including appropriate and rapid mitigation, effective response to complaints and swift revision to operating procedure, as required.

Allstone will ensure that relevant Site information is prominently displayed outside the Site such that complaints may be submitted by the public. All complaints will be investigated, recorded, and reported, where relevant. The complainant will be kept informed of the investigation process and outcome. Management will provide all necessary staff with training and equipment to ensure dust will be adequately mitigated.

REFERENCES

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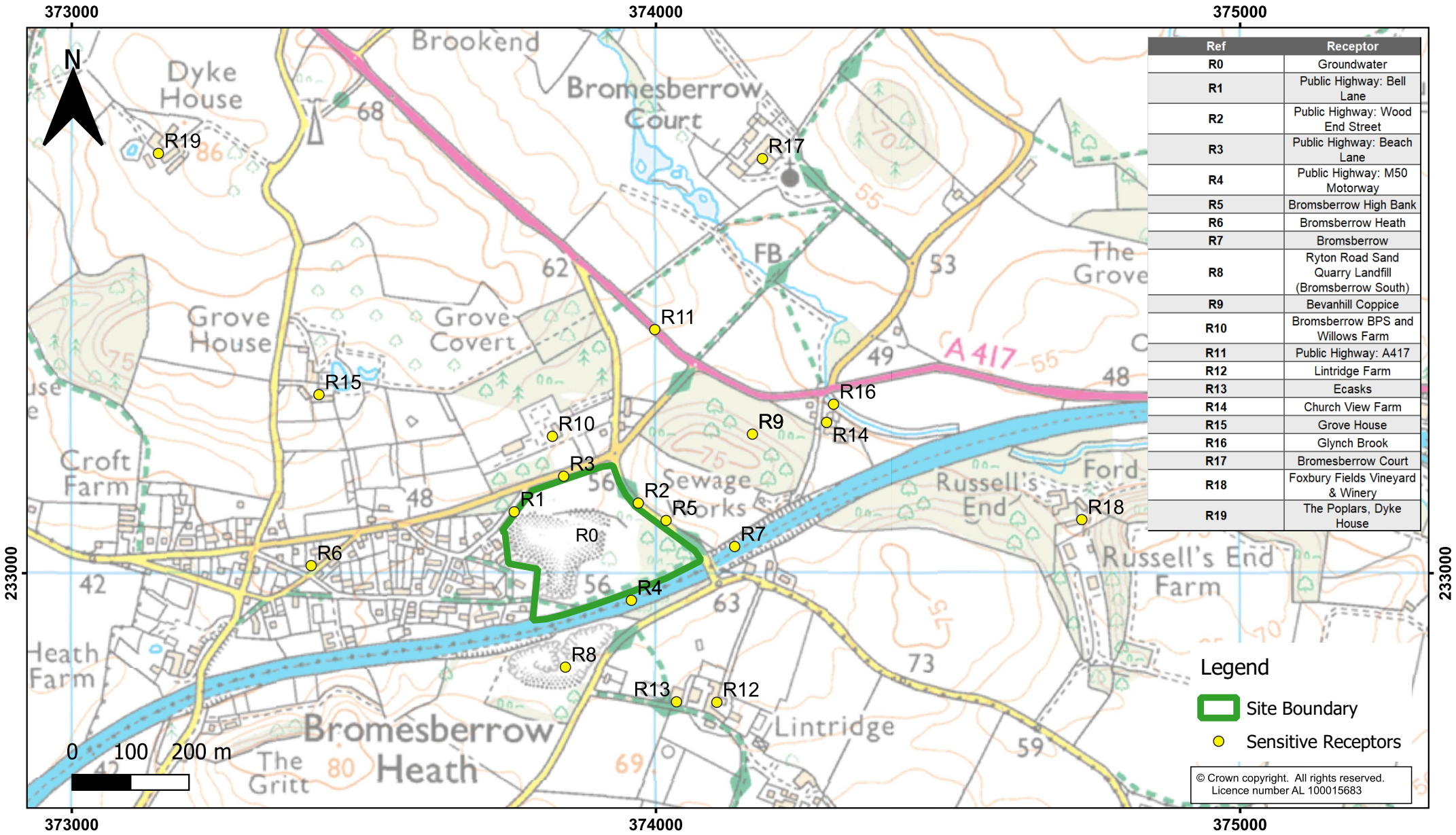
EA, 2023. Risk assessments for your environmental permit, [online], available at https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit. Last updated 31 August 2022.

Stantec, 2024a. Bromsberrow North Sandpit: Site Operating Plan – Extraction and Infilling, January 2024. Report reference 331201261R5.

Stantec, 2024b. Bromsberrow North Sandpit: Environmental Setting & Site Design, January 2024. Report reference 331201261R2.

DRAWINGS

Sensitive Receptors	Drawing No. 331201261D2
Proposed Site Layout Plan	Drawing No. 21-248-D-012 Rev 02



Ref	Receptor
R0	Groundwater
R1	Public Highway: Bell Lane
R2	Public Highway: Wood End Street
R3	Public Highway: Beach Lane
R4	Public Highway: M50 Motorway
R5	Bromsberrow High Bank
R6	Bromsberrow Heath
R7	Bromsberrow
R8	Ryton Road Sand Quarry Landfill (Bromsberrow South)
R9	Bevanhill Coppice
R10	Bromsberrow BPS and Willows Farm
R11	Public Highway: A417
R12	Lintridge Farm
R13	Ecasks
R14	Church View Farm
R15	Grove House
R16	Glynch Brook
R17	Bromesberrow Court
R18	Foxbury Fields Vineyard & Winery
R19	The Poplars, Dyke House

Drawing No. 331201261D2

Sensitive Receptors Plan

Date	2023	Drawn	CAB
Scale	As shown	Checked	GW
Original	A4	Revision	2

File Reference

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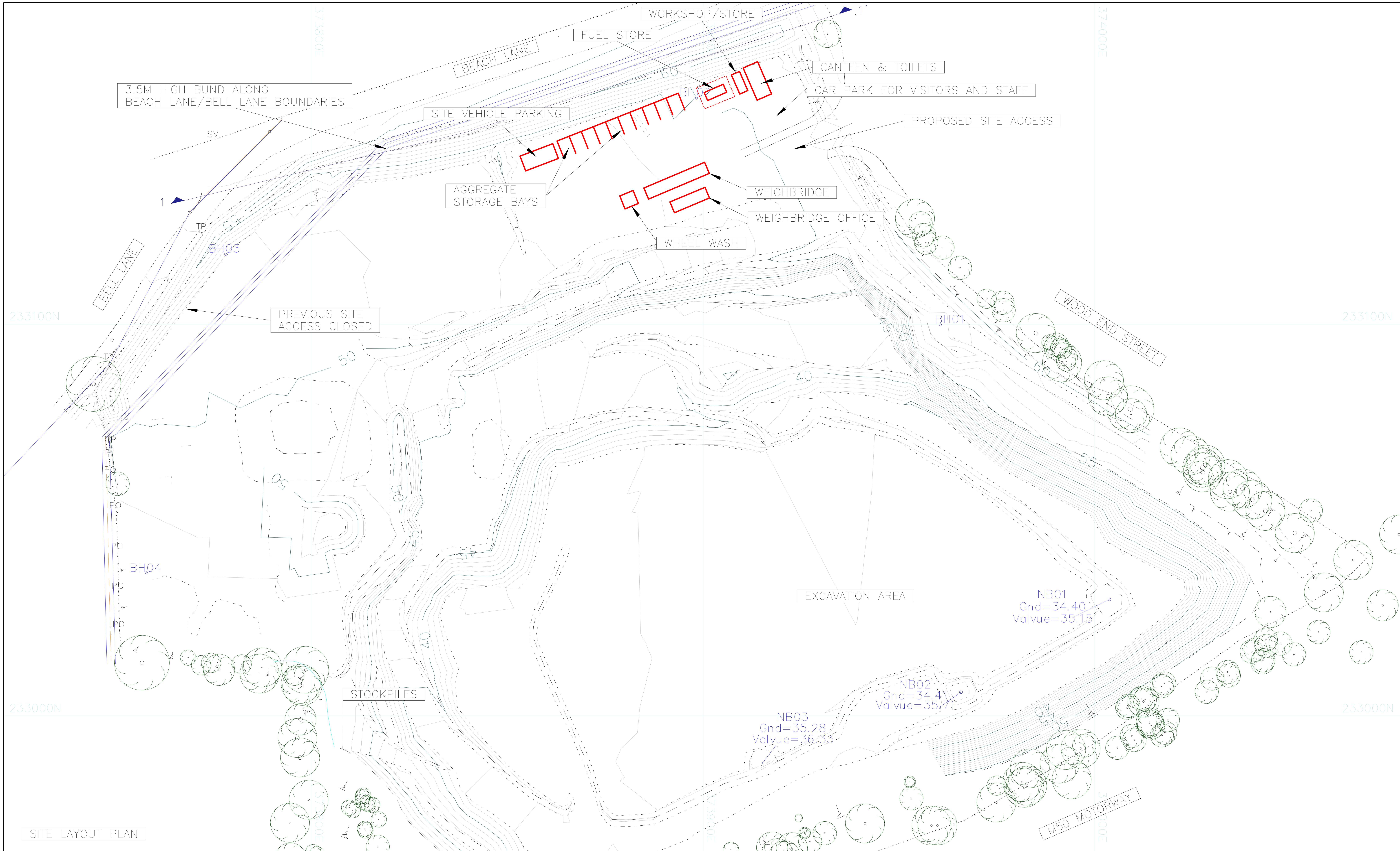
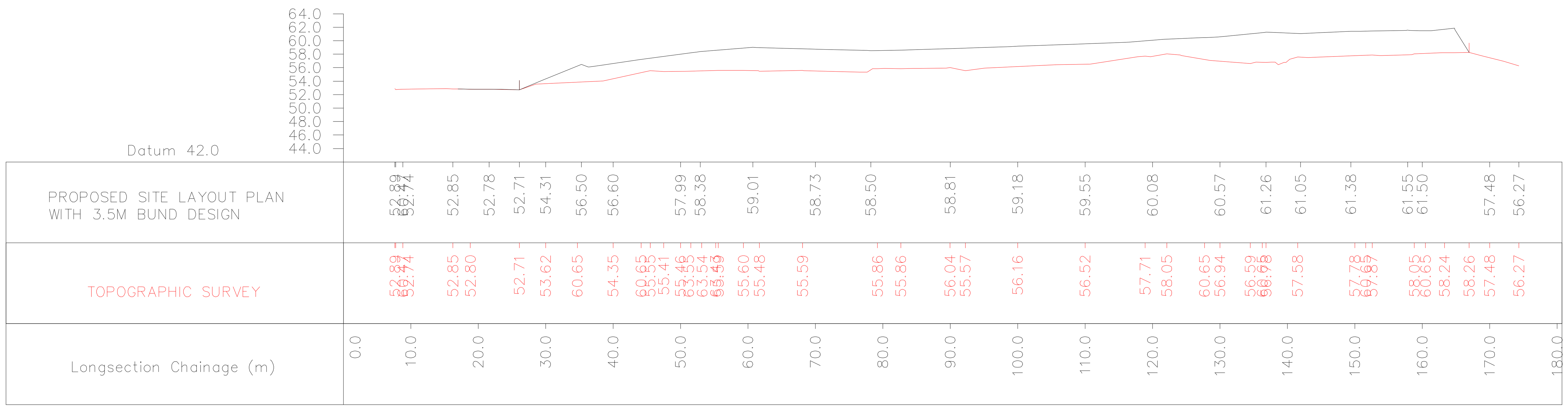
Stantec





SECTION THROUGH PROPOSED EARTH BUND ALONG 'BELL LANE' AND 'BEACH LANE' BOUNDARIES

Rev.	Revision Detail	Drawn	Date
02	Updated drawing with March'23 topo	RB	07/11/23
01	First Issue	RB	28/04/22

CLIENT:
ALLSTONE SANDS GRAVELS AGGREGATES TRADING CO. LTD

PROJECT:
BROMSBERROW QUARRY

TITLE:
PROPOSED SITE LAYOUT PLAN

DRAWN:	CHECKED:	DATE:
RB	BD	NOV '23
SCALE: 1:500	ORIGINAL SHEET SIZE: A1	STATUS: FINAL

DRAWING NO. 21-248-D-012 REVISION: 02

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APPENDICES

Appendix A

Dust Visual Monitoring Check Sheet

Report Reference: 331201261R8

Report Status: Final

Dust Visual Monitoring Check Sheet

Date	Time	Location on Site	Weather Conditions	Level of dust observed (1 to 5) 1 – No noticeable issue through to 5 – Major issue	Cause of dust emission (*if observed)*	Detail of remedial action required	Instruction given for remedial actions? (Y/N)	Initials of checker

Appendix B

Dust Complaint Form

Report Reference: 331201261R8

Report Status: Final

DUST COMPLAINT FORM

Customer Details	
Customer Name -	
Address – Postcode -	
Customer Contact Details -	
Tel -	
Email -	
Date -	
Complaint Ref Number -	
Complaint Details -	

Investigation Details	
Investigation carried out by -	
Position -	
Date & time investigation carried out -	
Weather conditions -	
Wind direction and speed -	
Investigation findings -	
Feedback given to Environment Agency and/or local authority -	
Date feedback given -	
Feedback given to public -	
Date feedback given -	

Review and Improve	
Improvements needed to prevent a reoccurrence -	
Proposed date for completion of the improvements -	
Actual date for completion -	
If different insert reason for delay -	
Does the dust management plan need to be updated -	
Date that the dust management plan was updated -	

Closure	
Site manager review date	
Site manager signature to confirm no further action required	