L.B. Silica Sand Limited
Reach Lane Quarry Landfill - Soil Wash Plant
Reach Lane, Bedfordshire

Environmental Setting and Site Design (ESSD)

Job No 213461

November 2024

AA Environmental Limited
4-8 Cholswell Court
Shippon
Abingdon
OX136HX
T01235 536042
F01235 523849
info@aae-ltd.co.uk
www.aae-ltd.co.uk

Document Control

Report for
L.B. Silica Sands Limited
27 St. Cuthberts Street
Bedford, England
MK40 3JG

Reach Lane Quarry Landfill
Reach Lane Quarry
Bryants Lane,
Bedfordshire
LU7 0AL

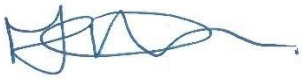
Issued by

Samantha Muir BSc AssocMCIWM

Reviewed by

Ed Brown BSc (Hons) MCIWM

Approved by



Matthew Lawman MSc BSc (Hons)

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AA Environmental Limited
4-8 Cholswell Court
Shippon
Abingdon
OX13 6HX

T 01235 536042
F 01235 523849
E info@aae-ltd.co.uk
W www.aae-ltd.co.uk

Registered Office (England and Wales) as above
Company No. 8474322

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APPENDICES

1.0 SITE DETAILS AND ENVIRONMENTAL CONTEXT

Site land use and other application details

1.1 The Site is located east of Heath and Reach village, and approximately 3km north of Leighton Buzzard in Bedfordshire. The site is centred at National Grid Reference SP 92796 28503. The site location is shown in drawing 213461/D/001.

1.2 The soil wash plant activity is located relatively centrally within the landfill permit area. All directly neighbouring land uses to the soil wash plant activity are of the Reach Lane landfill and quarry activities. The landfill permit is approved under reference EPR EPR/HP3094SQ. The soil wash plant is located within the quarry void and will be operational until the area is due for landfill and restoration (upon which the soil wash plant activity in the permit will be surrendered or moved).

1.3 The site is located within a mixed land use area. Immediately west of the permit boundary is the residential town of Heath and Reach, with further residential properties located along the northeast border off Overend Green Lane, and to the south off Gig Lane. North of the permit boundary is a recreational public open space, woodlands and an active landfill. The land to the east and south is predominantly agricultural, with a disused quarry restored to woodland. The environmental receptors are shown in drawing 213461/D/003A. Cultural and natural heritage receptors are shown in drawing 213461/D/003B.

Historical Development

1.4 Reach Lane Quarry has operated as a quarry for the extraction of sand and silica sand since 1948. Planning consent was given on 30th April 2003 by the Mineral Planning Authority.

1.5 A Pollution Prevention Control permit for the infill of the quarry with inert wastes was granted in March 2008 and the Environmental Permit (EPR/HP3094SQ) granted by the Environment Agency on 15th July 2010.

1.6 A permit variation was granted on 29th March 2021 for the increase of the landfill area from 5.3 ha to 48.5 ha. The additional area came from the combination of Reach Lane Quarry Landfill and Bryants Lane Landfill

Site General

1.7 The site is accessed off Reach Lane. The mineral working / restoration area, which includes the soil wash plant activity, will be secured with a lockable gate. The gate will be locked outside of operational hours.

1.8 The perimeter of the mineral working area will be secured with security fencing to prevent unauthorised access to the site. The integrity of the perimeter fences and gates will be inspected on a weekly basis. If damage is noted repairs will be made by the end of the working day or temporary security measures will be implemented until damage has been repaired.

1.9 The access road to the site will be surfaced with impermeable concrete surfacing. Once within the site, the site will be surfaced with compacted hardcore to create a stable running surface.

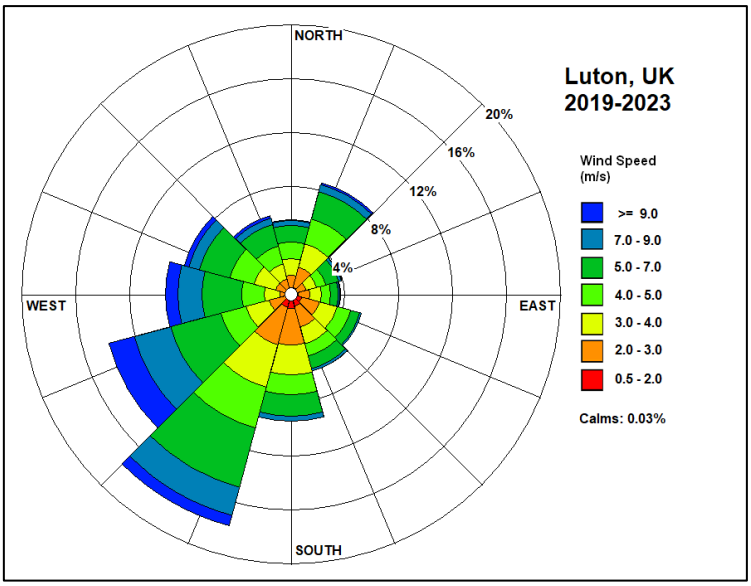
1.10 Fuel oil will be stored in a mobile self-bunded fuel bowser. Other oils and lubricants will be stored within their own sealed containers and will be kept within lockable units inside the site cabin.

1.11 The Importation Protocol (213461/LF/IP) details the site acceptance procedures. Any non-conforming waste will be placed in a demarcated dedicated quarantine area. Waste will be removed by the producer or transferred to a suitably licenced facility.

2.0 SITE DETAILS AND ENVIRONMENTAL CONTEXT

Air Quality / Climate

2.1 The frequency of exposure and likelihood of any fugitive emissions on sensitive land uses is determined by the magnitude of release, proximity of receptors and prevailing meteorological conditions. Meteorological wind data for five years has been acquired. The wind data has been taken from the Met Office Station in Luton. This data is considered representative of the site. The prevailing wind direction is from the west / south-west quadrant.



2.2 DEFRA Air Quality Management Areas (AQMAs) data shows the site and the surrounding area is not within an AQMA Boundary.

Geology

2.3 The topographical survey from 28th November 2023 by M 'Brien[1] shows the site at 140 m AOD along the boundary to the northeast, east and south and at 125 m AOD in the southwest. The site dips down to 95 m AOD in the centre of the site, and is 110 m AOD in the west of the site near the site entrance. There are stockpiles scattered across the site. The general topography of the landfill area falls in a southwesterly direction. The current topography at the site is shown in the Site Layout Plan (LBPLAN1808B).

2.4 The BGS records identify that there are superficial deposits (Oadby Diamicton) in the northeast quarter of the site only. Bedrock geology of the site records Gault Formation (mudstone) in the north western quarter of the site, and the Woburn Sands (sandstone) is shown to predominate remainder of the site. The geologic succession at the site is discussed in the Hydrogeological Risk Assessment.

2.5 The site has been significantly reworked since the 1940's. The quarry is still active and is being restored in phases alongside the extraction activities.

[1] Minerals and Waste Planning, Topographical Survey ref. 9865A/03 dated 03/02/2020

2.6 There are seven historical BGS borehole records on site. Five of these are in the northeast o the site and are confidential. The remaining two are in the southwest and west. One shows topsoil to 0.6 m over, clay of the gault formation to 19.5 m, over bands of sand of the lower greensand to 53 m (base of the borehole. The other records sandstone up to 28 m over clay to 38 m (base of the borehole).

2.7 The borehole logs for 5 of the boreholes installed in 2007 (BHQ1, BHQ3, BHQ4, BHQ5 and BHQ6) across the site are provided in Appendix C. The boreholes were drilled between 17 m to 52 m below the ground level. The boreholes were installed in the quarry footprint, and so no superficial deposits were encountered. Each borehole shows the Woburn Sands to a depth of between 55.77 m AOD to 90.01 m AOD. BHQ1 and BHQ3 did not encountered clay at base. BHQ4, 5 and 6 encountered the Ampthill Clay underlying the Woburn Sands.

2.8 A further 6 boreholes were installed in 2022 (BHQ5, BHQ6, BHQ9, BHQ10, BHQ11, BHQ12, BH01), the logs are provided in Appendix C. Each borehole included the installation of a groundwater monitoring standpipe. BHQ5 & BHQ6 soil logs show only Woburn Sands up to 18.0 m and 32.5 m respectively. BHQ11 and BHQ12 show the Gault Formation to 22 m below the existing ground level, underlain by Woburn Sands up to 60-61 m where the borehole was terminated. BHQ9 and BHQ10 initially penetrated the artificially engineered geological liner up to circa 5 m below ground level. BHQ9 encountered further clay between 5 – 10 m not identified as the liner. Both boreholes show Woburn Sands to the base of each borehole, at 52.5 and 61.5 m respectively. BH01 recorded surface of asphalt over bands of silty clay and gravelly sand up to circa 11 m below ground level where granite is recorded.

Hydrogeology

2.9 The Woburn Sands are designated a principal aquifer. The site is within in a groundwater source protection zone (GSPZ) III. Approximately 1090 m northeast of the site is a GSPZ II, followed by a GSPZ I a further 100 m away.

2.10 There are public water supply abstractions shown on drawing LBPLAN1808B. The groundwater monitoring data shows that the flow is toward the southeast which is away from the public water supply abstraction locations to the north but is potentially upgradient of the public water supply to the south east.

2.11 The groundwater levels in the 2023 Annual Report from ECL is shown to range between 83.28m AOD to 95.07 m AOD. Groundwater monitoring will be undertaken on a quarterly basis at each of the perimeter groundwater monitoring boreholes. Location of the groundwater monitoring boreholes are shown in drawing 213461/D/005.

2.12 The groundwater quality is impacted by the historic and active landfill activities located upgradient of the Reach Land Quarry Landfill.

2.13 There are no private or licenses abstraction from the groundwater within 1 km downgradient of the site.

2.14 The nearest discharge consent is located circa 30 m south of the site along Gig Lane. The discharge consent is registered to Mr and Mrs TL Owen for the discharge of sewage into freshwater stream/ river (tributary of the River Ouzel). It is unclear if this is still active. The second nearest is circa 70 m east of the site near Overend Green Lane Farm. The discharge consent is registered to Mr R Smallridge for the discharge of sewage into a tributary of the Clipstone Brook. It is unclear if this is still active.

Hydrology

2.15 The site itself houses several ponds associated with the quarrying activities and re-use of surface water. The nearest major surface water course is the River Ouzel, approximately 1.6 km southwest of the site which flows south through Leighton Buzzard.

2.16 The nearest off-site surface water is a pond at Overend Farm immediately east of the site, and an unnamed drainage ditch circa 50 m south of the site. There are a network of surface ponds circa 390 m east of the site at Jones' Pit (Eastern Way Quarry Complex – landfill).

2.17 The site is within Flood Zone 1 with no watercourses in the immediate vicinity. The site is not at risk of fluvial or coastal flooding. There is a risk of surface water flooding in places.

Man-made Subsurface Pathways

2.18 The site has been subject to historic and on-going mineral extraction works.

Environmental Setting & Cultural and Natural Heritage

2.19 A detailed list of the nearest receptors is provided in Appendix A. The location of environmental and cultural and natural heritage receptors are shown in

2.20 The nearest statutory designated site is King's Wood and Rushmere circa 340 m north and north west of the site. King's Wood AND Rushmere is designated both a National Nature Reserve and Site of Special Scientific Interest. There are two further SSSI within 500m; Double Arches Pit to the northeast and Nine Acres pit to the south east.

2.21 There are Priority Habitats within 1 km of the site. The nearest are 120 m east of the site. The environmental receptors are shown in drawing 213461/D/003a.

2.22 There are a number of active and historic landfill sites within 1 km of the site boundary, the nearest being an active landfill located circa 40 m north of the site (Stone Lane Quarry).

Surface Water Management

2.23 Surface water will be managed in accordance with the surface water management section of the already approved Environmental Management Systems.

Gas Monitoring

2.24 Gas monitoring will be in accordance with the Gas Risk Assessment.

3.0 SOURCE PATHWAY LINKAGES AND CONCEPTUAL MODEL

3.1 Human Health / Loss of Amenity – Noise and Vibration. The waste operations are an existing part of the background noise. The works involve the importation and placement of suitable material and treatment of inert construction and demolition arisings, which will involve the following plant: tipper lorries, dozers, excavators, generators and pumps. The nearest sensitive receptors are the residents of Reach and Heath including along Gig Lane and Overend Green Lane, and users of the public right of ways in the locality. No activities will take place outside of normal working hours. There is no change in the noise profile connected with the landfill activity. A Noise Management Plan sets out the noise controls as part of the soil washing activity.

3.2 Human Health / Natural Heritage/ Loss of Amenity – Dust and mud. The works involve the importation, and placement of suitable material, which will involve tipper lorries, dozers, and excavators. The nearest sensitive receptors are the residents of Reach and Heath including along Gig Lane and Overend Green Lane, and users of the public right of ways in the locality. Without suitable working controls the works may potentially cause fugitive dust emissions, mud deposition on the road and a loss of amenity and potential nuisance to surrounding sensitive receptors. There is no change in the dust risk regarding the landfill activity. A Dust Emissions Management Plan sets out the dust controls for the soil washing facility.

3.3 Cultural Heritage and Natural Heritage – Direct and Indirect impact: Given the distance and type of operations, there is a very low risk of direct or indirect impact on the Listed Structures or any Schedule Ancient Monuments. There are no SSSIs, SPAs, SACs, LNRs or Ramsar sites within 1 km of the site. There are no records of European Protected Species within 500 m of the site.

3.4 Controlled Waters – Pollution: - The import of potentially contaminated materials or spillages of oils and hydrocarbons creates a risk of potential pollutants entering the surface water. The implementation of the Importation Protocol (213461/LF/IP) will ensure only acceptable fill material is imported. A HRA was completed and approved by the Environment Agency in July 2020. The addition of one EWC code does not change the Conceptual Site Model and the EWC code must comply with the source term of inert WAC as per the existing approved assessment. There is no requirement for a new Hydrogeological Risk Assessment (HRA). The importation criteria will use the appropriate inert landfill, human health criteria and leachable criteria (in accordance with the site-specific HRA). The surface water management is in accordance with the Environmental Management System.

3.5 Ground Gas –The restoration works at the site will only import inert material, with a low organic content and use and site won material from the mineral extraction works. The additional EWC code must comply with the Importation Protocol. The risk of ground gas generation from inert material is not considered significant. The gas risk and monitoring are detailed in the Gas Risk Assessment shown in Appendix E. The assessment does not change and this has been included for information purposes.

3.6 Stability - The final land use is not at risk of the impacts of stability. Given the accepted waste types are limited to mineral / aggregate only, the risk of instability is not considered significant. The works will be in accordance with an approved design. The Operator will use well known earthworks compaction techniques to ensure material is suitably compacted during landfilling. Refer to the Stability Risk Assessment in Appendix D which has been approved by the EA in the 2019 permit variation. The assessment does not change and this has been included for information purposes.

3.7 A Site Condition Report detailing the current baseline conditions is submitted with the application.

DRAWINGS

Appendix A

Appendix B

Appendix C

Appendix D