

Allstone

Myers Road Aggregates Recycling Centre

Dust Management Plan

Reference: Issue

| 01 June 2022



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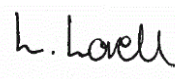

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1. Introduction

This dust management plan (DMP) has been prepared by Ove Arup and Partners Ltd (Arup) on behalf of Allstone, in the interest of limiting dust and air pollution associated with the crushing and screening of inert waste materials while producing secondary aggregates on the land to the south of Myers Road, Gloucester. This document includes a DMP to support the application for a permanent operating licence, building upon previous work done to satisfy planning conditions necessary for existing temporary operating licences.

The DMP whilst prepared by Arup, is to be owned and carried out by Allstone.

This document has been produced in the interests of limiting dust and air pollution, to protect the residential and commercial amenities, in accordance with the adopted Gloucestershire Waste Core Strategy Policy WCS4 and the adopted Gloucestershire Waste Local Plan 'saved' Policy 37. The relevant air quality legislation is described in Section 2, the policy and guidance relevant to this report are described in Section 3; the site development history is presented in Section 4; the construction dust assessment is presented in Section 5; the mineral dust assessment in Section 6 and the mitigation measures are compiled in the DMP in Section 7. The methodology for the construction dust and mineral dust assessments are presented in Appendix A.2 and Appendix A.3 respectively. Photographs taken across the site are also shown at the end of this document in Appendix A.1.

1.1 Site details

The site location is near Gloucester city centre, and the site can be accessed from a private road off Myers Road, which connects to Horton Road. To the south of the site is the railway line and the Mercedes-Benz car dealership; to the east is the existing concrete batching plant, operational waste recycling site and businesses; and to the west is the Irish Club car park and Gas Workers Cottages. Armscroft Park which is used by one of the local rugby clubs and as public open space, is located to the north-east and there are two residential areas (Swallow Park and Armscroft Park) located to the north and north-east of the site. The site location is shown in Figure 1 and Appendix A.4.

Since 2011, the site has been used as a facility for the crushing and screening of inert waste materials to produce secondary aggregates. The site is partially screened from the residential properties to the north by the natural fall of the land and is fenced on all sides. The site is also screened by precast concrete (PCC) walls to the north-west area of the site with plans to extend the PCC walls further to the west to protect residents of the Gasworks Cottage. On site, there is a processing zone in the eastern area, plant machinery and a washing pad on a concrete hardstanding area in the northern area and moving stockpiles occupy the rest of the site. The finer material is stored in stockpiles within bunker silos in the eastern and south-eastern area on site, furthest from residential dwellings. These silos are further screened by concrete walls. Stockpile exclusion zones are implemented to protect Network Rail property. The site layout is shown in Figure 2 and Appendix A.5.

Figure 1: Site location

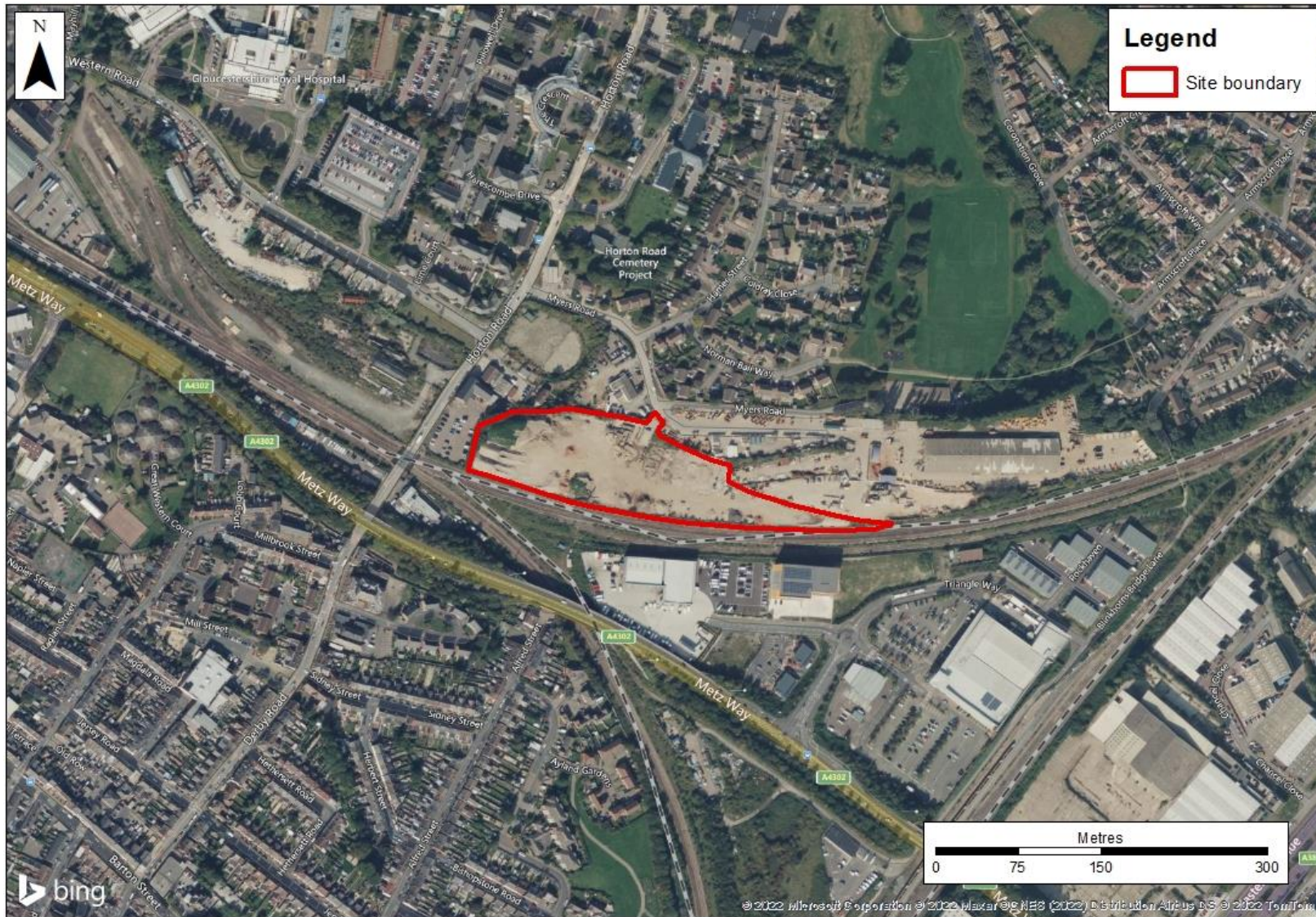
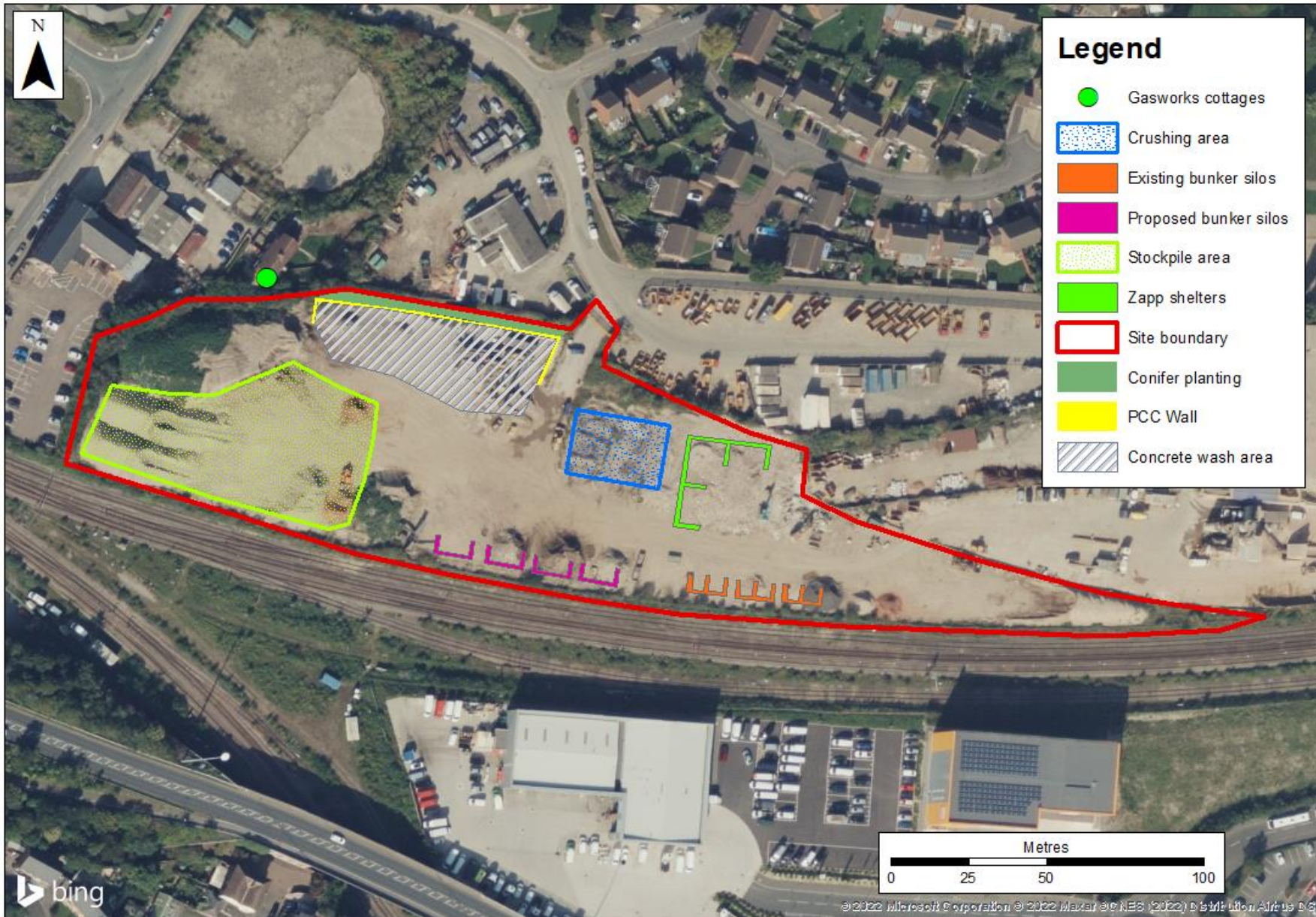


Figure 2: Site layout



2. Air Quality Legislation

2.1 Environmental Act 2021

The Environment Bill become an Act¹ (law) in November 2021. The Environment Act 2021 amends the Environment Act 1995² It also amends the Clean Air Act 1993³ to give local authorities more power at reducing local pollution, particularly that from domestic burning. It also amends the Environmental Protection Act 1990⁴ to reduce smoke from residential chimneys by extending the system of statutory nuisance to private dwellings.

The following sections of the Environment Act 1995⁸ have been transposed into the Environment Act 2021:

For the Secretary of State to develop, implement and maintain an Air Quality Strategy. This includes the statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of local air quality management and declare an Air Quality Management Area (AQMA) where pollutant concentrations exceed the national air quality objectives. Where an AQMA is declared, the local authority needs to produce an Air Quality Action Plan (AQAP) which outlines the strategy for improving air quality in these areas.

The Act will implement key parts of the government's Clean Air Strategy and include targets for tackling air pollution in the UK.

Relevant to air quality⁵:

- For the Secretary of state for Defra to set long-term legally binding targets on air quality. These targets must be of at least 15 years in duration, and be proposed by late 2022;
- For the Secretary of State to publish a report reviewing the Air Quality Strategy every five years;
- For the government to set two targets by October 2022: the first on the amount of PM_{2.5} pollutant in the ambient air (the figure and deadline for compliance remain unspecified) and a second long-term target set at least 15 years ahead to encourage stakeholder investment;
- For the Office for Environmental Protection to be established⁶ to substitute the watchdog function previously exercised by the European Commission;
- For local authorities' powers to be extended under the current Local Air Quality Management framework, including responsibilities to improve local air quality and to reduce public exposure to excessive levels of air pollution;
- For "air quality partners" to have a duty to share responsibility for dealing with local air pollution among public bodies; and

1 Environment Act 2021. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>. Accessed [Accessed April 2022].

2 Environment Act 1995, Chapter 25, Part IV Air Quality

3 Clean Air Act 1993. Available at: <https://www.legislation.gov.uk/ukpga/1993/11/contents>. [Accessed April 2022]

4 Environmental Protection Act 1990. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>. [Accessed 2022]

5 Environment Act 2021. Part 4 Air Quality and Environmental Recall.

6 Environment Act 2021. Chapter 2. The Office for Environmental Protection.

- Introduces a new power for the government to compel vehicle manufacturers to recall vehicles and non-road mobile machinery if they are found not to comply with the environmental standards that they are legally required to meet.

2.2 Air Quality Standards Regulations 2010 (amended in 2016) (England)

The Air Quality Standards Regulations 2010 (amended in 2016) defines the policy framework for 12 air pollutants known to have harmful effects on human health or the natural environment. The Secretary of State for the Environment has the duty of ensuring compliance with the air quality limit values (pollutant concentrations not to be exceeded by a certain date).

Some pollutants have standards expressed as annual average concentrations due to the chronic way in which they affect health or the natural environment, i.e. effects occur after a prolonged period of exposure to elevated concentrations. Other pollutants have standards expressed as 24-hour, 1-hour or 15-minute average concentrations due to the acute way in which they affect health or the natural environment, i.e. after a relatively short period of exposure. Some pollutants have standards expressed in terms of both long and short-term concentrations. Air quality limit values and objectives are quality standards for clean air. Therefore, in this assessment, the term 'air quality standard' has been used to refer to the national limit values.

Following the UK exit from the European Union, The Air Quality Standards Regulations were retained EU-derived domestic legislation under s.2 of the European Union (Withdrawal) Act 2018. Practical amendments to ensure air quality management would continue were made via the Air Quality (Amendment of Domestic Regulation) (EU Exit) Regulations 2019⁷.

Table 1 sets out the national air quality standards for nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). Other pollutants have been screened out of this air quality assessment since they are not likely to cause exceedances of their respective standards.

⁷ The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019
<https://www.legislation.gov.uk/uksi/2019/74/made>

Table 1 Air quality standards

Pollutant	Averaging period	Limit value / objective
Human health		
Nitrogen Dioxide (NO ₂)	Annual mean	40µg/m ³
	1-hour mean	200µg/m ³ ^[1]
Fine Particulate Matter (PM ₁₀)	Annual mean	40µg/m ³
	24-hour mean	50µg/m ³ ^[2]
Very Fine Particulate Matter (PM _{2.5})	Annual mean	20µg/m ³ ^[2]
Natural environment (ecological receptors)		
Oxides of nitrogen (NO _x , as NO ₂)	Annual mean	30µg/m ³
<i>[1] not to be exceeded more than 18 times a year (99.79th percentile)</i>		
<i>[2] updated on 1 January 2020⁸</i>		

2.2.1 Dust Nuisance

Dust is the generic term used in the British Standard document BS 6069 (Part Two) to describe particulate matter in the size range 1–75µm in diameter. Dust nuisance is the result of the perception of the soiling of surfaces by excessive rates of dust deposition. Under provisions in the Environmental Protection Act 1990⁹, dust nuisance is defined as a statutory nuisance.

There are currently no standards or guidelines for dust nuisance in the UK, nor are formal dust deposition standards specified. This reflects the uncertainties in dust monitoring technology and the highly subjective relationship between deposition events, surface soiling and the perception of such events as a nuisance. In law, complaints about excessive dust deposition would have to be investigated by the local authority and any complaint upheld for a statutory nuisance to occur. However, dust deposition is generally managed by suitable on-site practices and mitigation rather than by the determination of statutory nuisance and/or prosecution or enforcement notice(s).

⁸ The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020

⁹ Environmental Protection Act 1990, Chapter 43, Part III Statutory Nuisances and Clean Air

3. Planning policy and guidance

3.1 National policy and guidance

3.1.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹⁰ was updated in July 2021 with the purpose of planning to achieve sustainable development. Paragraph 186 of the NPPF on air quality states that:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.”

In addition, paragraph 105 states that:

“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

Paragraph 174 discusses how planning policies and decisions should contribute to and enhance the natural and local environment. In relation to air quality, NPPF notes that this can be achieved by:

“e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.”

3.1.2 Planning Practice Guidance for Air Quality

National Planning Practice guidance (PPG) on various topics, including air quality, was developed in order to support the NPPF. The guidance provides a concise outline as to how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application. This includes factors such as changes in traffic volumes, vehicle speeds, congestion or traffic composition, the introduction of new point sources of air pollution, exposure of people to existing sources of air pollutants, and the potential to give rise to air quality impacts at nearby sensitive receptors.

3.1.3 National Planning Policy for Waste

The National Planning Policy for Waste¹¹ was adopted in October 2014 and sets out the Government’s ambition to work towards a more sustainable and efficient approach to resource use and management.

¹⁰ Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework

¹¹ Department for Communities and Local Government (2014) National Planning Policy for Waste Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf [Accessed May 2022]

Appendix B provides advice about the determination of planning applications, which includes air emissions and dust:

“g) Considerations will include the proximity of sensitive receptors, including ecological as well as human receptors, and the extent to which adverse emissions can be controlled through the use of appropriate and well-maintained and managed equipment and vehicles.”

3.2 Local policy and guidance

3.2.1 Gloucestershire Waste Core Strategy

Gloucestershire’s Waste Core Strategy (WCS)¹² was adopted in November 2012 and forms part of the Minerals and Waste Development Framework, providing a planning framework for waste management across the county of Gloucestershire in the period 2012 - 2027. It identifies a vision, objectives and strategy relevant to Gloucestershire compliant with the NPPF. The policies from the WCS relevant to dust and air quality are:

- Policy WCS4 - Inert Waste Recycling and Recovery

“Proposals for inert waste recycling and recovery facilities will be permitted where it can be demonstrated that:

- 1) The impact on the environment and neighbouring land uses is acceptable including detailed assessment of the impact of noise and dust and attenuation measures.”*

- Policy WCS10 - Cumulative Impact

“In determining proposals for waste related development for new or enhanced waste management facilities the Council will have regard to the cumulative effects of previous and existing waste management facilities on local communities alongside the potential benefits of co-locating complimentary facilities together. Planning permission will be granted where the proposal would not have an unacceptable cumulative impact.

In considering the issue of cumulative impact, particular regard will be given to the following: 1. Environmental quality; 2. Social cohesion and inclusion; and 3. Economic potential.

Within these broad categories this will, subject to the scale and nature of the proposal, include an assessment of the following issues: noise, odour, traffic (including accessibility and sustainable transport considerations), dust, health, ecology and visual impacts.”

- Policy WCS18 - Bulking and Transfer

“In order to promote greater efficiency and to reduce the potential impact of transporting waste by road, particularly on the Strategic Road Network (SRN) the Council will support in principle, proposals relating to the development of new and expanded bulking and transfer facilities.

Planning permission will be granted subject to the following criteria being met:

- 1. It can be demonstrated that the impact on the environment and neighbouring land uses is acceptable.*
- 2. The highway access is suitable for the proposed vehicle movements.*
- 3. The proposal contributes towards providing a sustainable waste management system for Gloucestershire.”*

- Policy WCS19 - Sustainable Transport

¹² Gloucestershire County Council (2012) Gloucestershire Waste Core Strategy. Available at: http://www.gloucestershire.gov.uk/media/5855/adopted_wcs_211112-53886.pdf [Accessed May 2022]

“Development that would have an adverse impact on the highway network which cannot be mitigated will not be permitted.”

3.2.2 Gloucestershire Waste Local Plan

The Gloucestershire Waste Local Plan (WLP)¹³ was adopted in October 2004. The following WLP policies are ‘saved’ and as yet not replaced policies relevant to dust and air quality:

- Policy 37 - Proximity to Other Land Uses

“Proposals for waste development will be determined taking into account such matters as the effect on the environment, occupants’ and users’ amenity and health, the countryside, the traditional landscape character of Gloucestershire, the local highway network, any hazardous installation or substance and any adverse cumulative effect in combination with other development in the area. Where appropriate, suitable ameliorative measures shall be incorporated in the proposals to mitigate, attenuate and control noise, dust, litter, odour, landfill gas, vermin, leachate and flue emissions.”

- Policy 38 - Hours of Operation

“The Waste Planning Authority will where appropriate impose a condition restricting hours of operation on waste management facilities to protect amenity.”

- Policy 42 - Reinstatement

“In considering proposals for temporary waste development, the waste planning authority requires reinstatement measures for the land including appropriate aftercare to secure acceptable and sustainable after-use by a set date.”

3.2.3 Gloucestershire Minerals Local Plan

The Minerals Local Plan for Gloucestershire (2018 – 2032)¹⁴, adopted on the 20th March 2020 replaces in full the previously adopted Gloucestershire Minerals Local Plan (1997 – 2006). It provides an up-to-date policy framework for assessing the acceptability of mineral development proposals until the end of 2032. This plan has been prepared in accordance with the NPPF 2012 under transitional arrangements outlined in paragraph 214 of the NPPF 2019. The following policies from the Mineral Local Plan are relevant to dust and air quality.

Paragraph 278 states that:

“Mineral developments can impact upon local air quality affecting both local communities and the quality and supply of ecosystem services. This may occur through the release of particulates from emissions and dust, and in some instances, through unpleasant odours. Air pollution can arise from on-site mineral working activities, but may also be caused by vehicles using unsurfaced roads, from wind blowing across stockpiles and quarry waste storage, and the exposure of unconsolidated, bare ground. An air quality impact assessment may be necessary to accompany a mineral development proposal and the requirement for such an assessment, will be decided on a case-by-case basis having considered the nature and scale of development and the level of concern about air quality. Where assessments are required, they must take into account existing air quality levels prior to development and establish whether any new sources of air pollution are likely to arise and what their influence on existing air quality could be. The impact on air quality from changes to local traffic linked to minerals development both near to the site and /or further afield along defined freight routes will need to be included. Account should also be given to the scale, duration, hours of operation, type of activities being proposed; whether they are likely to be temporary or continuous and the existence of other operations in the same locality.”

¹³ Gloucestershire County Council (2004) Gloucestershire Waste Local Plan Available at: http://www.gloucestershire.gov.uk/media/5853/adopted_gloucestershire_waste_local_plan_-2002_-_2012-22434.pdf [Accessed May 2022]

¹⁴ Gloucestershire County Council (2020) Minerals Local Plan Available at: <https://www.gloucestershire.gov.uk/media/2096569/mlp-for-glos-2018-2032-adopted-march-2020.pdf> [Accessed May 2022]

Paragraph 279 states that:

“In the consideration of any potential dust-related emissions, commitments to meet appropriate mitigation standards will be required and any resulting actions must be taken throughout the lifespan of operations. Technical advice on how dust emissions should be handled is provided within planning practice guidance.”

3.3 Other relevant policy and guidance

3.3.1 Institute of Air Quality Management (IAQM) Construction Dust Guidance

The Institute of Air Quality Management (IAQM) guidance¹⁵ provides guidance to development consultants and environmental health officers on how to assess air quality impacts from construction. The IAQM guidance provides a method for classifying the significance of effect from construction activities based on the ‘dust magnitude’ (high, medium or low) and proximity of the proposed development to the closest receptors. The guidance recommends that once the significance of effect from construction is identified, the appropriate mitigation measures are implemented. Experience has shown that once the appropriate mitigation measures are applied, in most cases the resulting dust impacts can be reduced to negligible levels.

3.3.2 Institute of Air Quality Management (IAQM) Mineral Dust guidance

The IAQM mineral dust guidance¹⁶ provides assistance to practitioners undertaking operational-phase dust assessments, for activities such as preparation of the land, extraction, processing, handling and transportation of extracted material. The guidance uses a simple distance-based screening process to identify sites where the dust impacts are unlikely to be significant. Then if a more detailed assessment is required it recommends using the source-pathway-receptor approach.

4. Site development history

Allstone has operated as an aggregate crushing and recycling site since 2011. Throughout this operational period Allstone has aimed to continuously improve the control of dust generation and mobilisation in order to reduce the risk of dust generation and impact of dust at nearby receptors.

Recent management improvements are discussed in the following sections.

4.1 Quarterly liaison stakeholder group

A quarterly liaison group that is open to local stakeholders, including local residents, Officers of Gloucestershire County Council (Planning and Enforcement) and Gloucester City Council (Environmental Health) to discuss the impact of the operations on the local environment, including dust generation. In the past 18 months one complaint related to dust has been raised through this mechanism. The meetings provide an open and transparent forum for discussing the works and any concerns from local stakeholders.

4.2 Stockpile silos and zap shelters

A number of silos and shelters have been installed to aid in the storage and screening of stockpiles before sorting on site and movement off site. These are shown in Photograph 1 and Photograph 2 and their location is shown as “Bunker silos” in Figure 2.

¹⁵ IAQM (2016) Guidance on the Assessment of Dust from Demolition and Construction (Version 1.1)

¹⁶ Institute of Air Quality Management (2016) Guidance on the assessment of mineral dust impacts for planning v1.1. Available at: http://www.iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf [Accessed May 2022]

4.3 PCC walls and planting

The existing PCC walls shown in Photograph 3 and Figure 2 have been extended west to protect more of the gas works cottage and planting is due to take place to further screen these receptors from possible dust movement.

4.4 Replacement of yard surface area

Part of the site has been re-surfaced with Structural Material for Reinstatement (SMR) sub base material, which acts as a concrete type surface enabling easier cleaning and maintenance, which reduces dust generation and resuspension. Allstone propose to re-surface the full extent of the site as and when funds allow.

4.5 Improved crushing and washing equipment

Allstone have invested in a new crusher machine with improved on-board washing facilities. This new machinery allows for better control of dust generation from crushing activities.

4.6 Community engagement

Allstone have bought a new road sweeper for sweeping dust from nearby access roads that are used for transport of material to and from site. Allstone is also funding an application to improve the access road Myers Road to the site. Improving the road surface and reducing the opportunity for interactions with parked vehicles on the road should reduce trackout related dust emissions on Myers Road.

5. Construction dust assessment

This section provides the results of the assessment of potential impacts from construction dust related activities on air quality. The dust generating activities on the site have been assessed using the qualitative approach described in the latest IAQM construction dust guidance. The construction dust assessment has been completed using the approach described in Appendix A.2.

5.1 Dust emission magnitude

The guidance requires that four construction activities be considered to assess their dust emission magnitude, demolition, earthworks, construction and trackout. On this site, assessment of construction and demolition is not required as these activities do not take place. Earthworks and trackout have been considered and assigned a dust emission magnitude, as shown in Table 2.

Table 2: Dust emission magnitude for dust generating activities

Activity	Dust emission magnitude	Reasoning
Earthworks	Large	Total site area >10,000m ³ Potentially dusty soil type <5 heavy earth moving vehicles at any one time
Trackout	Medium	10 - 50 HGV movements in any one day Potentially dusty surface material Unpaved road length 50-100m

5.2 Sensitive receptors

Sensitive receptors are defined as those residential properties/schools/hospitals that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction and operation of a proposed development.

The closest sensitive receptors to the site boundary are residential receptors which are considered “high sensitivity receptors” for dust soiling effects and human effects of PM₁₀ by the IAQM construction dust guidance. Figure 3 shows there are fewer than 10 residential properties within 20m of the site boundary and fewer than 100 receptors within 100m of the site boundary and fewer than 100 receptors within 100m of the site boundary.

The HGV routes have been considered to enable the presence of trackout receptors to be included in the assessment. Vehicle trackout may occur along the public highway up to 200m from sites classified as medium according to the IAQM construction guidance. Figure 4 shows the limits of the 200m trackout buffer from site along the private access road and Myers Road. The trackout impact ends at the Horton Road junction. The IAQM construction dust guidance states that “*it is only necessary to consider trackout impacts up to 50m from the edge of the road*”. Figure 4 shows there are fewer than 10 residential properties within 20m of the trackout road and fewer than 100 receptors within 50m of the trackout road.

There are no designated ecological receptors sensitive to dust within 350m of the site boundary. Therefore, ecological impacts are not considered further in this assessment.

Figure 3: Site boundary buffers

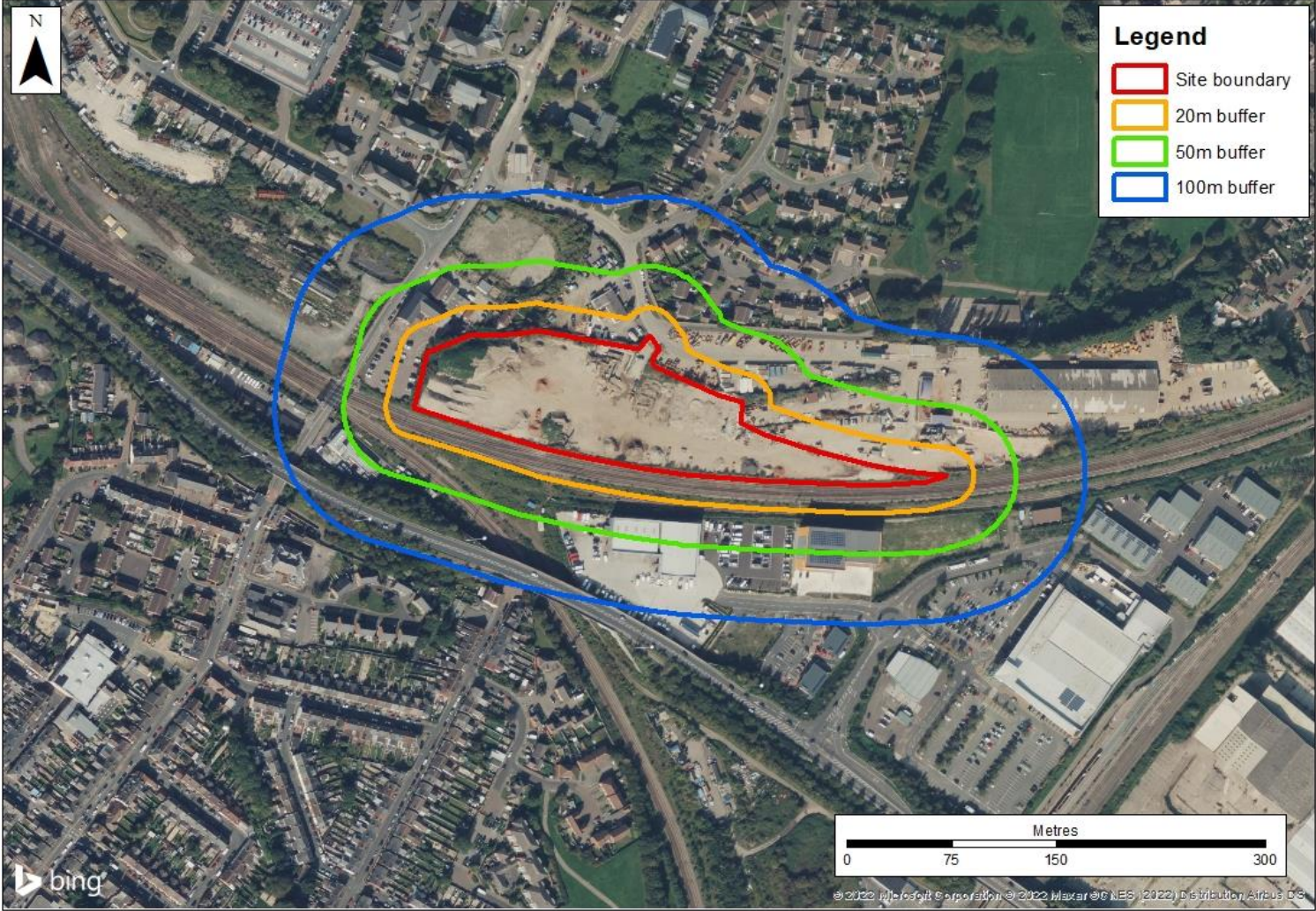
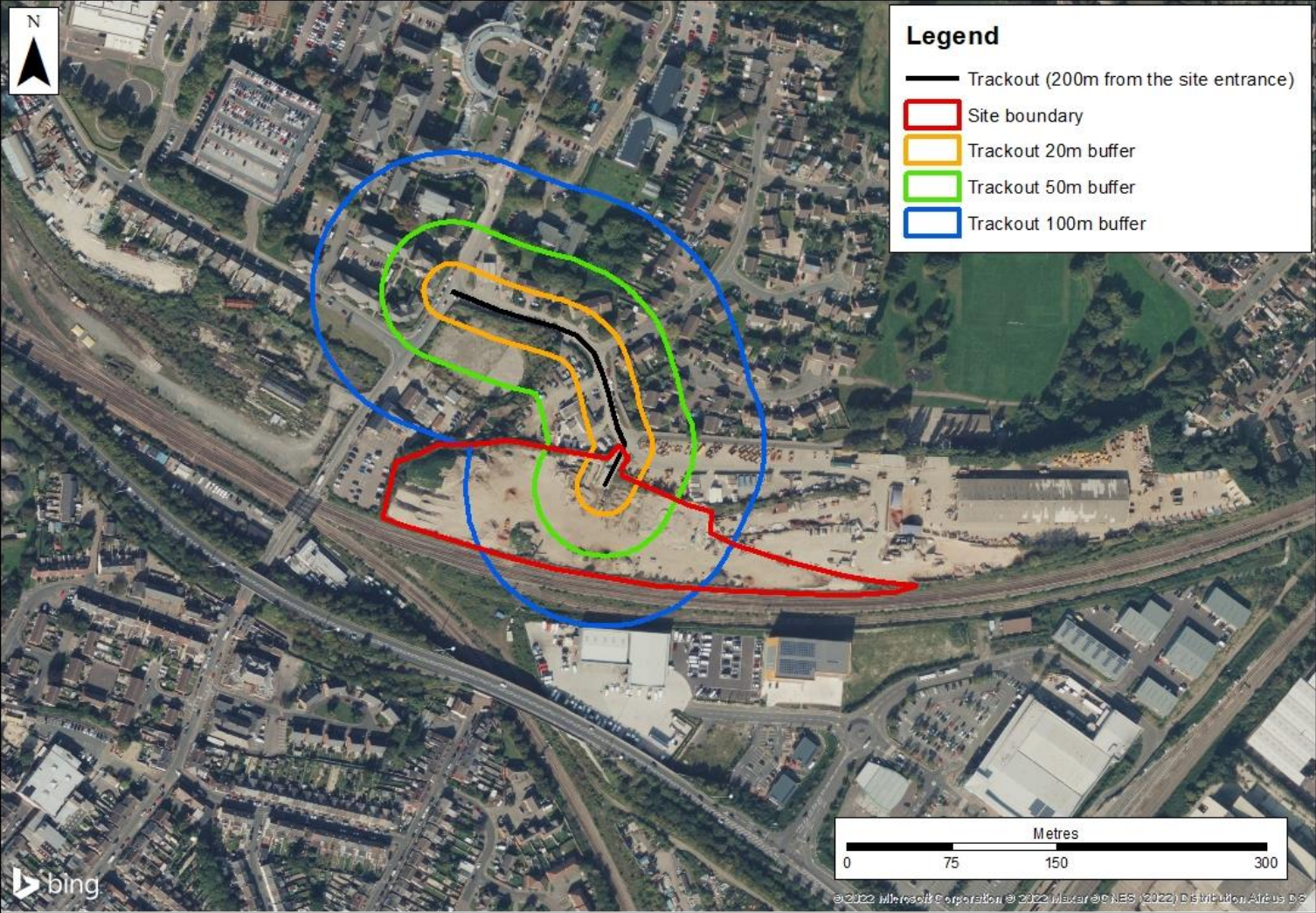


Figure 4: Trackout buffers



5.3 Sensitivity of the area

The sensitivity of the area to dust soiling has been classified as medium, due to the presence of fewer than 10 high sensitivity receptors within 20m of the site boundary and trackout zone and fewer than 100 high sensitivity receptors within 50m of the site boundary and trackout zone.

The Defra website¹⁷ provides estimated annual mean background PM₁₀ concentration for each 1km by 1km OS grid square. The estimated background PM₁₀ concentration for the grid square containing the site was 14.5µg/m³ in 2022 (Table 3). The sensitivity of the area to human health impacts has been assigned as low, due to the presence of fewer than 10 high sensitivity receptors within 20m of the site boundary and the low estimated background PM₁₀ concentration.

Table 3: Defra estimated background PM₁₀ concentration in 2022

OS grid square (m)		Annual mean PM ₁₀ concentration (µg/m ³)
X	Y	
384500	218500	14.5

5.4 Risk of impacts

Taking into consideration the dust emission magnitude and the sensitivity of the area, the risk of the site to dust soiling and human health has been classified for all activities as presented in Table 4.

Table 4: Summary dust risks prior to mitigation

Activity	Sensitivity of the surrounding area	
	Dust soiling	Human health
Earthworks	Medium risk	Low risk
Trackout	Medium risk	Low risk

5.5 Discussion

The dust emitting activities can be greatly reduced or eliminated by applying the site-specific mitigation measures for medium risk sites according to the IAQM construction dust guidance. The mitigation measures suggested for medium risk sites have been adopted in the site-specific dust management plan outlined in Section 7. The IAQM guidance notes that with the application of effective site-specific mitigation, the environmental effect will not be significant in most cases.

¹⁷ Defra website. Available at: <https://uk-air.defra.gov.uk/data/iaqm-background-maps?year=2017> [Accessed May 2022]

6. Mineral dust assessment

Following screening, a detailed mineral dust assessment has been completed for the site. The operational-phase mineral dust assessment of the site has been assessed using the source-pathway-receptor approach described in Appendix A.3.

6.1 Disamenity dust impacts

6.1.1 Site characteristics

The first step of the IAQM mineral dust guidance involves describing the site activities and characteristics. Since 2011, the site has been used as a facility for the crushing and screening of inert waste materials to produce secondary aggregates. The site is partially screened from the residential properties to the north by the natural fall of the land. The site is also screened by PCC walls on the north-west area of the site with a plan to extend the PCC walls further to the west to protect residents of the Gasworks Cottage. On site, there is a processing zone in the eastern area, plant machinery and a washing pad on a concrete hardstanding area in the northern area and moving stockpiles occupy the rest of the site. The finer material is stored in stockpiles within silos in the eastern and south-eastern area on site, furthest from residential dwellings. These silos are further screened by concrete walls (see Photograph 2). The stockpiles do not exceed a height of 6m and are kept away from the site boundary. All chutes and conveyors on site are enclosed, skips are covered to mitigate dust and wet methods are used as effective dust/particulate matter suppression/mitigation Photograph 6 and Photograph 7.

The site is approximately 2 hectares in size, and it has a hardcore surface.

The site can be accessed from a private road off Myers Road, which connects to Horton Road. There are approximately 25 heavy goods vehicle movements a day. This includes an allowance for 50% backhauling where lorries bringing inert waste to the site will leave with aggregate. The estimated number of heavy goods vehicles generated equates to two vehicle movements per hour. A low-speed limit of 15mph on surfaced roads and 10mph on un-surfaced haul roads is implemented on site.

6.1.2 Baseline conditions

According to the 2019 Air Quality Annual Status Report (ASR)¹⁸ produced by Gloucester City Council, the local authority does not carry out any routine monitoring of PM₁₀ or PM_{2.5} in the local authority area. As presented in Section 5.3, the estimated background PM₁₀ concentration by Defra for the grid square containing the site is 14.5 µg/m³ in 2022.

6.1.3 Dust sensitive receptors

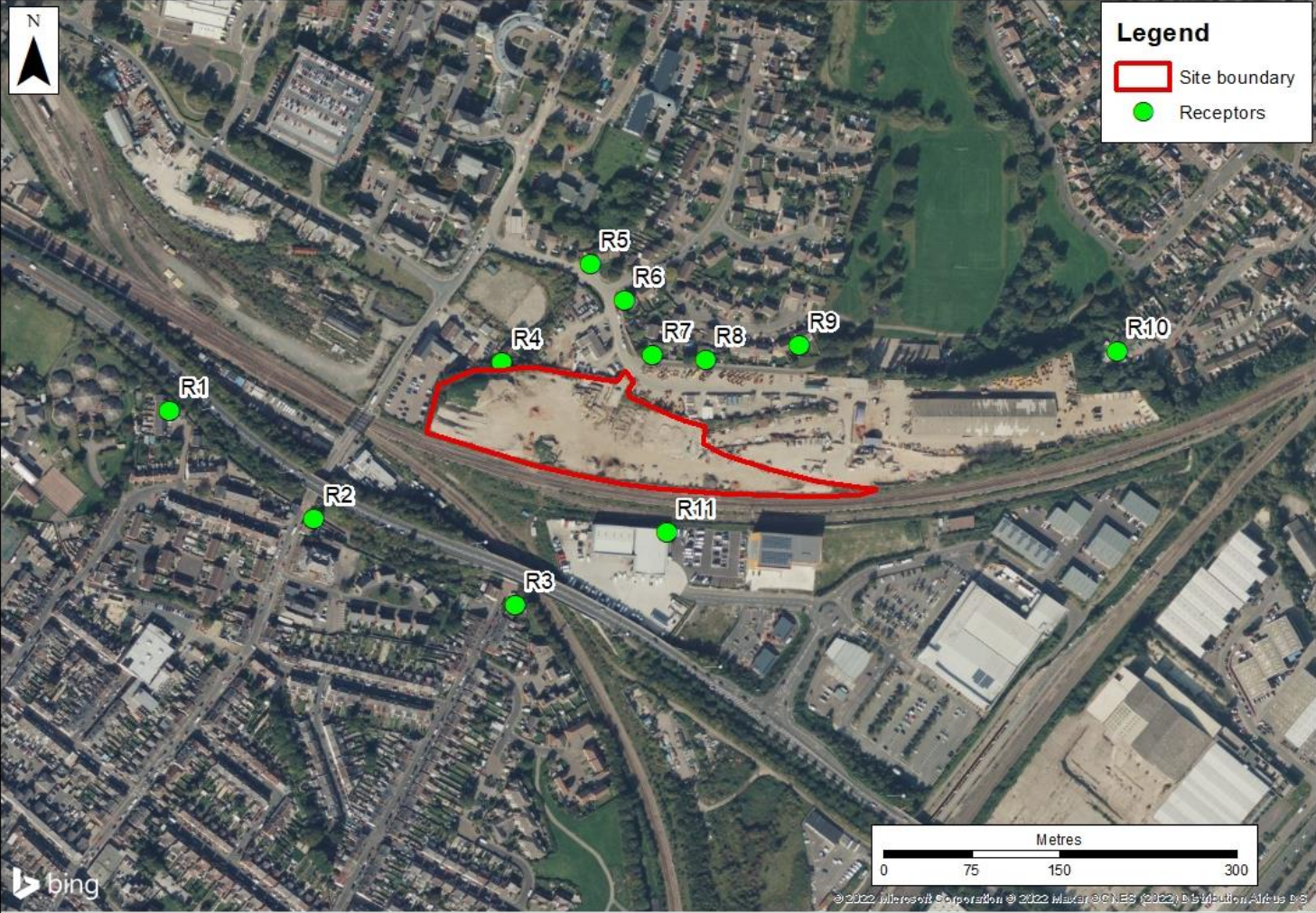
The guidance details two types of relevant receptors that will be considered in the assessment – human and ecological receptors. The human receptors nearest the site are residential dwellings and a car showroom, which are classified as “high-sensitivity receptors” according to the IAQM mineral dust guidance. There are no designated ecological receptors sensitive to dust within 1km of the site boundary, so no ecological effects assessment has been undertaken. Nearest receptors have been selected in all directions from the site. The receptors are detailed in Table 5 and presented in Figure 5.

¹⁸ Gloucester City Council (2021) 2021 Air Quality Annual Status Report (ASR)

Table 5: Details of selected dust sensitive receptors

Receptor ID	Receptor description	Receptor sensitivity	OS grid reference (m)	
			X co-ordinate	Y co-ordinate
R1	Lobb Court	High	383995	218289
R2	Derby Road	High	384117	218197
R3	Alfred Street	High	384288	218124
R4	Gas Workers Cottages	High	384277	218330
R5	Myers Road 1	High	384352	218413
R6	Myers Road 2	High	384381	218383
R7	Myers Road 3	High	384405	218336
R8	Myers Road 4	High	384450	218332
R9	Myers Road 5	High	384530	218345
R10	Blinkhorns Bridge Lane	High	384800	218339
R11	Mercedes-Benz dealership	High	384417	218186

Figure 5: Selected dust sensitive receptors



6.1.4 Residual source emissions

The activities assessed for residual source emissions are detailed in Table 6. The residual source emissions can be classified as small, medium or large. Considering all activities, the overall residual source emissions for the site is medium.

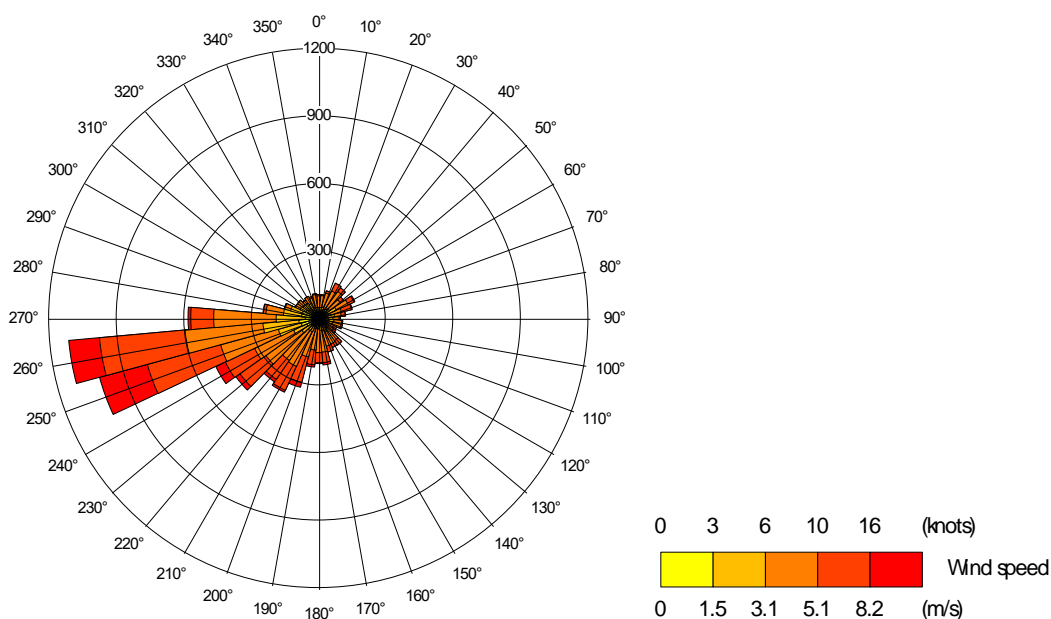
Table 6: Residual source emissions by activity

Activity	Residual source emissions	Reasoning
Site preparation and restoration	Medium	Small working area of approximately 2ha Moving stockpile locations Material of high dust potential
Mineral extraction	Not applicable	
Materials handling	Medium	Unconsolidated/bare surface Activities close to site boundary Material of high dust potential
On-site transportation	Small	Use of enclosed conveyers Controlled (low) vehicle speed
Minerals processing	Medium	Raw material of high dust potential End product of medium dust potential Low volume material processed
Stockpiles and exposed surfaces	Medium	Small working area of approximately 2ha Frequent material transfers Material of high dust potential Long-term stockpiles Stockpiles will not exceed 20,000 tonnes per annum Stockpiles close to site boundary
Off-site transportation	Small	25 HGV movements per day Paved surfaced site access road Extensive vehicle cleaning facilities Employment of an effective road sweeper

6.1.5 Pathway effectiveness

Meteorological data was reviewed to identify the percentage of time for dry days when the wind direction could carry dust from the site to each receptor. The meteorological data has been taken from Filton meteorological station, which is located 50km south-east of the site. The wind rose for the meteorological data is shown in Figure 6.

Figure 6: Wind rose for Filton meteorological station in 2017



The frequency of potentially dusty winds affecting each of the receptors was classified using criteria in the IAQM mineral dust guidance: infrequent, moderately frequent, frequent or very frequent. The results of this assessment are shown in Table 7.

Table 7: Frequency of potentially dusty winds

Receptor ID	Wind direction impacting receptor (degrees)	% yearly winds over 5m/s on dry days	Frequency of potentially dusty winds
R1	60-120	1.6	Infrequent
R2	30-90	2.7	Infrequent
R3	330-90	3.3	Infrequent
R4	90-270	25.1	Very Frequent
R5	120-240	10.2	Moderately Frequent
R6	120-270	24.8	Very Frequent
R7	120-270	24.8	Very Frequent
R8	120-270	1.9	Infrequent
R9	150-270	24.1	Very Frequent
R10	240-270	14.6	Frequent
R11	270-90	5.2	Moderately Frequent

For each receptor, the distance from the source was measured and the distance category was classified as: close, intermediate or distant. Then the frequency of potentially dusty winds and the distance category were used to classify the pathway effectiveness using the IAQM mineral dust guidance, as shown in Table 8.

Table 8: Receptor sensitivity, distance from source and pathway effectiveness

Receptor ID	Frequency of potentially dusty winds	Distance to nearest dust source (m)	Distance category	Pathway effectiveness
R1	Infrequent	218	Distant	Ineffective
R2	Infrequent	120	Intermediate	Ineffective
R3	Infrequent	119	Intermediate	Ineffective
R4	Very Frequent	6	Close	Highly Effective
R5	Moderately Frequent	95	Close	Moderately Effective
R6	Very Frequent	60	Close	Highly Effective
R7	Very Frequent	27	Close	Highly Effective
R8	Infrequent	55	Close	Ineffective
R9	Very Frequent	107	Intermediate	Highly Effective
R10	Frequent	236	Distant	Moderately Effective
R11	Moderately Frequent	35	Close	Moderately Effective

6.1.6 Risk of dust impacts

For each receptor, the site residual source emissions (medium) and the individual pathway effectiveness were used to define the risk of dust impacts, as shown in Table 9.

Table 9: Risk of mineral dust impacts

Receptor ID	Residual source emissions	Pathway effectiveness	Risk of dust impacts
R1	Medium	Ineffective	Negligible Risk
R2		Ineffective	Negligible Risk
R3		Ineffective	Negligible Risk
R4		Highly Effective	Medium Risk
R5		Moderately Effective	Low Risk
R6		Highly Effective	Medium Risk
R7		Highly Effective	Medium Risk
R8		Ineffective	Negligible Risk
R9		Highly Effective	Medium Risk
R10		Moderately Effective	Low Risk
R11		Moderately Effective	Low Risk

6.1.7 Magnitude of dust effects

For each receptor, the receptor sensitivity and the risk of dust impacts were used to classify the magnitude of dust effects, as shown in Table 10. The overall magnitude of dust effect for the site is considered to be ‘Moderate Adverse Effect’, without the application of appropriate mitigation.

Table 10: Magnitude of dust effect

Receptor ID	Receptor sensitivity	Risk of dust impacts	Magnitude of dust effect
R1	High	Negligible Risk	Negligible Effect

Receptor ID	Receptor sensitivity	Risk of dust impacts	Magnitude of dust effect
R2	High	Negligible Risk	Negligible Effect
R3	High	Negligible Risk	Negligible Effect
R4	High	Medium Risk	Moderate Adverse Effect
R5	High	Low Risk	Slight Adverse Effect
R6	High	Medium Risk	Moderate Adverse Effect
R7	High	Medium Risk	Moderate Adverse Effect
R8	High	Negligible Risk	Negligible Effect
R9	High	Medium Risk	Moderate Adverse Effect
R10	High	Low Risk	Slight Adverse Effect
R11	High	Low Risk	Slight Adverse Effect

6.2 Human health effects

To assess the potential human health of the site, the background PM₁₀ concentration was obtained from the Defra background maps for 2022, as presented in Table 3, Section 5.3. The IAQM mineral dust guidance states that if the background PM₁₀ concentration is below 17µg/m³, there is little risk that the additional Process Contribution (PC) would lead to an exceedance of the annual-mean objective. As the predicted background PM₁₀ concentration in 2022 is 14.5µg/m³, the effects on human health are considered to be not significant.

6.3 Discussion

Good practice mitigation measures are suggested in the IAQM mineral dust guidance, with their implementation the magnitude of dust effect can be greatly reduced or eliminated at all receptors. The good practice mitigation measures have been adopted in the site-specific dust management plan outlined in Section 7. By implementing an effective dust monitoring plan it is likely dust impacts would be not significant.

7. Dust management plan

7.1 Roles and responsibilities

Table 11 provides a list of the key roles and responsibilities for complying with the Dust Management Plan (DMP). The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary.

Table 11: Person(s) accountable for air quality and dust issues

Name	Role	Responsibilities
Mr R Street	Operations Director	<ul style="list-style-type: none">To record all dust and air quality incidents and complaints on-site or off-site, and the actions taken to resolve the situation
Mr R Heffter	Commercial Director	<ul style="list-style-type: none">To record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log bookTo undertake daily on-site and off-site dust inspections to monitor compliance with DMPTo inspect haul routes and record any subsequent repairs or actionsTo record all movements in and out of the site; records will contain vehicles' weight, registration number and the time and date of the movementTo produce quarterly reports of the results of the site log book, which includes details of site inspectionsTo send quarterly reports to Waste Planning Authority

7.1.1 Daily inspections

The person accountable for air quality and dust issues will undertake daily on-site and off-site inspections:

- On-site inspections to monitor compliance with the DMP; and
- Off-sites inspections, which include regular dust soiling checks of surfaces, such as street furniture, cars and windowsills within 100m of the boundary. In addition, the inspection of haul routes for any necessary repairs.

The frequency of site inspections will be increased when activities with a high potential to produce dust are being carried out, and during prolonged dry or windy conditions.

7.2 External stakeholders

7.2.1 Network Rail

No work will be carried out on the site that would endanger the safe operation of the railway. No part of the development will cause any existing railway level crossing, road signs, traffic signals or the crossing itself to be obscured.

Clear sighting of the crossing will be maintained during operational period and as a permanent arrangement. This stipulation includes the parking of vehicles and equipment, which again must not cause rail and road approach sight lines of the crossing to be obstructed. Items to be stockpiled on-site will be kept away from the Network Rail boundary, at an equal distance as the pile is high to avoid the risk of toppling and damaging or breaching the boundary as shown in Photograph 2, unless items are stockpiled in silos. This will reduce the risk of toppling and damaging adjacent Network Rail land and assets, in accordance with 'saved' Policy 37 of the adopted Gloucestershire Waste Local Plan.

7.2.2 Local residents

The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary.

All dust and air quality incidents and complaints either on-site or off-site will be recorded. Then in a timely manner the cause must be identified, and appropriate measures taken to mitigate dust and/or air emissions. All actions taken to resolve the situation will be recorded in the site logbook.

7.2.3 City of Gloucester

The person(s) accountable for air quality and dust issues will keep a site logbook which will detail:

- All dust and air quality incidents and complaints on-site or off-site, and the measures taken to resolve the situation;
- Results of daily on-site and off-site dust inspections;
- All inspections of haul routes and any subsequent repairs or actions; and
- All movements in and out of the site; records will contain vehicles' weight, registration number and the time and date of the movement.

The site logbook will be available for inspection by officers of Gloucestershire County Council when requested and quarterly reports will be sent to the Waste Planning Authority.

7.2.4 S E Davis contractor

Allstone undertake 'campaign' crushing activities as part of the operational activities associated with the aggregates recycling operations. The crushing periods take place over a 2-4 week period depending on the amount of material that is required to be processed. Due notice of crushing is given to the Waste Planning Authority and Gloucester City Council in accordance with the relevant planning condition. An external contractor, S E Davis, have been used by Allstone to undertake washing of the crushed recycled material. Allstone have however reviewed this part of their recycling operations and the washing process is proposed to be conducted in house.

7.3 Site management

7.3.1 Hours of operation

To protect the amenities of local residents in accordance with 'saved' Policy 38 of the adopted Gloucestershire Waste Local Plan, no machinery will be operated, no process will be carried out and no skips will be moved, onto, around or from the site outside the following hours:

- 0730hrs to 1800hrs Monday to Friday;

Deliveries will only be taken at or dispatched from the site between:

- 0730hrs to 1800hrs Monday to Friday; and
- 0730hrs to 1300hrs Saturday.

There will be no operations on Sundays, Bank Holidays or Public Holidays.

7.3.2 Site layout and screens

To mitigate the effects of dust the access gates are located at least 10m from receptors. The site layout will be planned so that machinery and dust causing activities are located away from receptors, as far as is possible. The finer material will be stored furthest from residential dwellings when possible.

The site will be kept clean and tidy at all times, with any mud or debris to be collected/swept up at least once a day or when site conditions require, but the dry sweeping of large areas will be avoided.

The site is partially screened from the residential properties to the north by the natural fall of the land. Site fencing, barriers and scaffolding will be kept clean using wet methods as detailed in Section 7.3.5.

7.3.3 Storing material

No material other than inert soil; sub soils; naturally excavated material; and inert material from household, construction, demolition, commercial and industrial sources will be imported to the site. Any material which is rejected from the recycling process will be transported off-site to a landfill facility authorised to accept such material. In addition, materials that have a potential to produce dust will be removed as soon as possible, unless being re-used on site. Wet methods, as detailed in Section 7.3.5 will be used when required for effective dust/particulate matter suppression/mitigation.

Stored material will be stockpiled on-site. These stockpiles cannot exceed a height of 6m. Items to be stockpiled on-site will be kept away from the Network Rail boundary at an equal distance therefrom as the pile is high to avoid the risk of toppling and damaging or breaching the boundary. The height of any operational plant working on the site shall not exceed 4m from existing ground level. Stockpiles of recycled materials will not exceed a maximum of 20,000 tonnes per annum.

7.3.4 Machinery

The processing operations involve using crushing, screening and wash plant machinery. All machines will be fitted with or used in conjunction with suitable dust suppression techniques, such as local extraction or water sprays. Machines will be also washed with fine water sprays where appropriate. The wet methods available are detailed in Section 7.3.5.

To mitigate against dust, enclosed chutes and conveyors and covered skips will be used where required. Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment will also be minimised. All plant equipment will be kept maintained to good standards.

Where practical the use of diesel or petrol-powered generators will be avoided.

7.3.5 Wet methods

An adequate water supply will be maintained on site for effective dust/particulate matter suppression/mitigation. The following wet methods will be used on site during periods of dry weather conditions:

- High-pressure water hose to the site;
- A water bowser fitted with a sprinkle bar;
- Water canon; and
- Fire engine (Photograph 6).

Whilst using wet methods onsite, runoff of water or mud will be avoided.

7.3.6 Waste management

No fires shall be held on site.

7.4 Vehicles

7.4.1 Site access

Site access is via a private access road connecting to Myers Road. The length and tarmac surfacing of this private access road is designed to ensure that no materials are deposited on the public highway. This road is of sufficient width to provide two-way working, so HGVs will not have to park on the public highway.

7.4.2 Public highway

In the interests of highway safety and to prevent mud, debris and materials getting onto the public highway, the private access road and public highway will be kept clean during operational hours; if there is an unacceptable build-up of mud/other debris on the public highway, the company will deploy a water-assisted dust sweeper.

7.4.3 Vehicle usage

To comply with Policy WCS19 of the adopted Gloucestershire Waste Core Strategy, no loaded vehicles carrying waste, or recycled or recovered material, shall enter or leave the site unsheeted, except those only carrying materials in excess of 500mm in any dimension. The throughput of material will be monitored and will not exceed 20,000 tonnes per annum. Vehicles should be evenly loaded and avoid abrupt changes in direction to reduce spillages. In addition, imposing a maximum speed limit of 15mph on surfaced roads and 10mph on un-surfaced haul roads and work areas will help mitigate dust. All haul routes will be regularly inspected for integrity and where necessary repairs to the surface will be instigated as soon as reasonably practicable.

To reduce the impact of NO₂ and PM₁₀ emissions on local air quality, no vehicles will be permitted to be parked at the entrance to the site or be left with an idling engine running. Staff shall be encouraged to use sustainable travel to get to the site (public transport, cycling, walking and car-sharing).

7.4.4 Vehicle movements

Vehicles movements will equate to approximately 25 heavy goods vehicle movements a day. This includes an allowance for 50% backhauling where lorries bringing inert waste to the site will leave with aggregate. The estimated number of heavy goods vehicles generated equates to two vehicle movements per hour.

In the interests of highway safety in accordance with Policy WCS19 of the adopted Gloucestershire Waste Core Strategy, and in the interests of the amenity of the area in accordance with 'saved' Policy 37 of the adopted Gloucestershire Waste Local Plan, all movements in and out of the site will be monitored in a site logbook. Records will contain vehicles' weight, registration number and the time and date of the movement. This log will be made available for inspection by officers of Gloucestershire County Council when requested. All records will be kept for at least 24 months.

8. Conclusion

The impact of the activities at this have been assessed using construction dust and mineral dust guidance developed by IAQM. The impact on human health and dust soiling is predicted to be not significant when the measures outlined in the Dust Management Plan (section 7) are effectively implemented.

The person(s) accountable for air quality and dust issues on site will be responsible for implementing the DMP. They will be briefed and trained appropriately, and liaise regularly with the local authorities, as and when required.

As part of the DMP, the responsible person(s) will keep a site logbook which will detail:

- All dust and air quality incidents and complaints on-site or off-site, and the measures taken to resolve the situation;
- Any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation;
- Results of daily on-site and off-site dust inspections;
- All inspections of haul routes and any subsequent repairs or actions; and
- All movements in and out of the site; records will contain vehicles' weight, registration number and the time and date of the movement.

The site logbook will be available for inspection by officers of Gloucestershire County Council when requested and there will be quarterly reporting to the Waste Planning Authority of the results of the site logbook, which includes details of site inspections.

A.1 Photographs

Photograph 1: Zap shelters



Photograph 2: Aggregate silos



Photograph 3: PCC Wall



Photograph 4: New crusher and washer



Photograph 5: Typical covered HGV transport



Photograph 6: Fire engine



Photograph 7: Wet dust suppression methods



A.2 Construction dust assessment

The dust effects have been assessed using the qualitative approach described in the latest IAQM construction dust guidance¹⁵. The guidance applies to the assessment of dust generating activities. The impacts that could arise from the site activities include:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes; and
- Elevated PM₁₀ concentrations as a result of dust generating activities on-site.

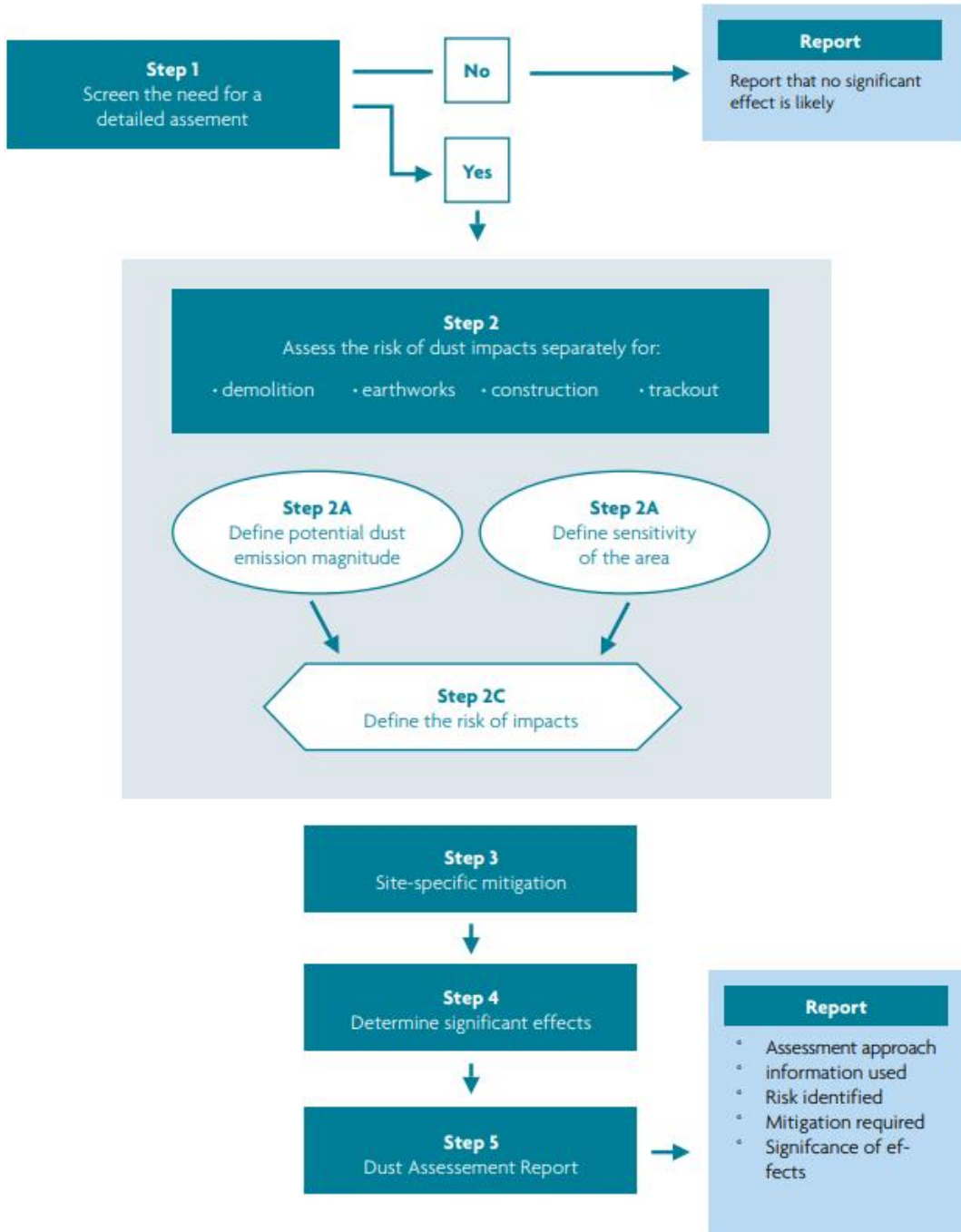
The IAQM construction dust guidance considers the potential for dust emissions from dust-generating activities, such as demolition, earthworks, construction of new structures and trackout. Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while trackout is the transport of dust and dirt from the site onto the public road network where it may be deposited and then re-suspended by vehicles using the network. This arises when vehicles leave the site with dusty materials, which may then spill onto the road, or when they travel over muddy ground on-site and then transfer dust and dirt onto the road network.

For each of these dust-generating activities, the guidance considers three separate effects: annoyance due to dust soiling; harm to ecological receptors; and the risk of health effects due to a significant increase in PM₁₀ exposure. The receptors can be human or ecological and are chosen based on their sensitivity to dust soiling and PM₁₀ exposure. Human receptors include locations where people spend time and where property may be impacted by dust. Ecological receptors include international and European designations and habitats that might be sensitive to dust.

The methodology takes into account the scale to which the above effects are likely to be generated (classed as small, medium or large), the levels of background PM₁₀ concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area. This is then taken into consideration when deriving the overall risk for the proposed development. Suitable mitigation measures, where required, are also recommended to reduce the risk of the proposed development giving rise to dust.

There are five steps in the assessment process described in the IAQM construction dust guidance. These are summarised in Figure A1 and a further description is provided in the following sections.

Figure A1: IAQM construction dust assessment methodology¹⁵



Step 1: Need for assessment

The first step is the initial screening for the need for a detailed assessment. According to the IAQM construction dust guidance, an assessment is required where there are sensitive receptors within 350m of the site boundary (for ecological receptors that is 50m) and/or within 50m of the route(s) used by the construction vehicles on the public highway and up to 500m from the site entrance(s).

Step 2: Assess risk of dust impacts

This step is split into three sections as follows:

- 2A. Define the potential dust emission magnitude;
- 2B. define the sensitivity of the area; and
- 2C. Define the risk of impacts.

Each of the dust-generating activities is examined and a dust emission magnitude determined depending on the scale and nature of the works (step 2A) based on the criteria shown in Table A1.

The sensitivity of the surrounding area is then determined (step 2B) for each dust effect from the above dust-generating activities, based on the proximity and number of receptors, their sensitivity to dust, the local PM₁₀ background concentrations and any other site-specific factors. Table A2 to Table A4 show the criteria for defining the sensitivity of the area to different dust effects.

The overall risk of the impacts for each activity is then determined (step 2C) prior to the application of any mitigation measures (Table A5) and an overall risk for the site derived.

Table A1: Dust emission magnitude

Dust emission magnitude		
Small	Medium	Large
Demolition		
<ul style="list-style-type: none"> • total building volume <20,000m³ • construction material with low potential for dust release (e.g. metal cladding or timber) • demolition activities <10m above ground • demolition during wetter months 	<ul style="list-style-type: none"> • total building volume 20,000 - 50,000m³ • potentially dusty construction material • demolition activities 10 - 20m above ground level 	<ul style="list-style-type: none"> • total building volume >50,000m³ • potentially dusty construction material (e.g. concrete) • on-site crushing and screening • demolition activities >20m above ground level
Earthworks		
<ul style="list-style-type: none"> • total site area <2,500m² • soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • formation of bunds <4m in height • total material moved <10,000 tonnes • earthworks during wetter months 	<ul style="list-style-type: none"> • total site area 2,500m² - 10,000m² • moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • formation of bunds 4 – 8m in height • total material moved 20,000 - 100,000 tonnes 	<ul style="list-style-type: none"> • total site area >10,000m² • potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • formation of bunds >8m in height • total material moved >100,000 tonnes
Construction		
<ul style="list-style-type: none"> • total building volume <25,000m³ • construction material with low potential for dust release (e.g. metal cladding or timber) 	<ul style="list-style-type: none"> • total building volume 25,000 - 100,000m³ • potentially dusty construction material (e.g. concrete) • on-site concrete batching 	<ul style="list-style-type: none"> • total building volume >100,000m³ • on-site concrete batching • sandblasting
Trackout		
<ul style="list-style-type: none"> • <10 HDV (>3.5t) outward movements in any one day • surface material with low potential for dust release • unpaved road length <50m 	<ul style="list-style-type: none"> • 10 – 50 HDV (>3.5t) outward movements in any one day • moderately dusty surface material (e.g. high clay content) • unpaved road length 50 – 100m; 	<ul style="list-style-type: none"> • >50 HDV (>3.5t) outward movements in any one day • potentially dusty surface material (e.g. high clay content) • unpaved road length >100m

Table A2: Sensitivity of the area to dust soiling effects

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		< 20	< 50	< 100	< 350
High	> 100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	< 10	Medium	Low	Low	Low
Medium	> 1	Medium	Low	Low	Low
Low	> 1	Low	Low	Low	Low

Table A3: Sensitivity of the area to human health impacts

Background PM ₁₀ concentrations (annual mean)	Number of receptors	Distance from the source (m)				
		< 20	< 50	< 100	< 200	< 350
High receptor sensitivity						
> 32µg/m ³	> 100	High	High	High	Medium	Low
	10 – 100			Medium	Low	
	< 10			Medium	Low	
28 – 32µg/m ³	> 100	High	High	Medium	Low	Low
	10 – 100			Medium	Low	
	< 10			Medium	Low	
24 – 28µg/m ³	> 100	High	Medium	Low	Low	Low
	10 – 100					
	< 10					
< 24µg/m ³	> 100	Medium	Low	Low	Low	Low
	10 – 100	Low				
	< 10	Low				
Medium receptor sensitivity						
> 32µg/m ³	> 10	High	Medium	Low	Low	Low
	< 10	Medium	Low			
28 – 32µg/m ³	> 10	Medium	Low	Low	Low	Low
	< 10	Low				
24 – 28µg/m ³	> 10	Low	Low	Low	Low	Low
	< 10					
< 24µg/m ³	> 10	Low	Low	Low	Low	Low
	< 10					
Low receptor sensitivity						
–	> 1	Low	Low	Low	Low	Low

Table A4: Sensitivity of the area for ecological impacts

Receptor sensitivity	Distance from the source (m)	
	< 20	< 50
High	High	Medium

Receptor sensitivity	Distance from the source (m)	
	< 20	< 50
Medium	Medium	Low
Low	Low	Low

Table A5: Risk of dust impacts

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
Demolition			
High	High risk site	Medium risk site	Medium risk site
Medium	High risk site	Medium risk site	Low risk site
Low	Medium risk site	Low risk site	Negligible
Earthworks			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Construction			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Medium risk site	Low risk site
Low	Low risk site	Low risk site	Negligible
Trackout			
High	High risk site	Medium risk site	Low risk site
Medium	Medium risk site	Low risk site	Negligible
Low	Low risk site	Low risk site	Negligible

Step 3: Determine the site-specific mitigation

Once each of the activities is assigned a risk rating, appropriate mitigation measures are identified based on recommendations in the IAQM construction dust guidance. Where the risk is negligible, no mitigation measures beyond those required as best practice are necessary.

Step 4: Determine any significant residual effects

Once the risk of dust impacts has been determined and the appropriate dust mitigation measures identified, the final step is to determine whether there are any residual significant effects. The IAQM construction dust guidance notes that it is anticipated that with the implementation of effective site-specific mitigation measures, the environmental effect will not be significant in most cases.

Step 5: Prepare a dust assessment report

The last step of the assessment is the preparation of a dust assessment, which is detailed in Section 3 of this report.

A.3 Mineral dust assessment

Emissions of dust and particulates from mineral extraction operations will be assessed following the relevant IAQM mineral dust guidance¹⁶. Dust arising from mineral extraction operations can be distinguished between coarser particles that can reduce amenity in the local community due to visible dust plumes and dust soiling ('disamenity dust') and smaller particles that can increase local pollutant concentrations (PM₁₀ and PM_{2.5}) which is associated with a range of health effects. Within the IAQM mineral dust guidance, an 'impact' is described as a change in suspended particulate matter concentration or dust deposition and an 'effect' is described as the consequence of an impact to disamenity or health effects. The main impacts that may arise during mineral activities are:

- dust accumulation, resulting in soiling of surfaces and disamenity;
- visible dust plumes; and
- elevated concentrations of particulate matter.

The IAQM mineral dust guidance considers the potential for emissions from dust-generating activities, such as preparation of the land, extraction, processing, handling and transportation of extracted material.

The assessment will be undertaken using the source-pathway-receptor approach described in the IAQM mineral dust guidance. This is a concept whereby a hypothetical relationship is applied between the source of the pollutant, the pathway by which exposure may occur and the receptor that could be adversely affected.

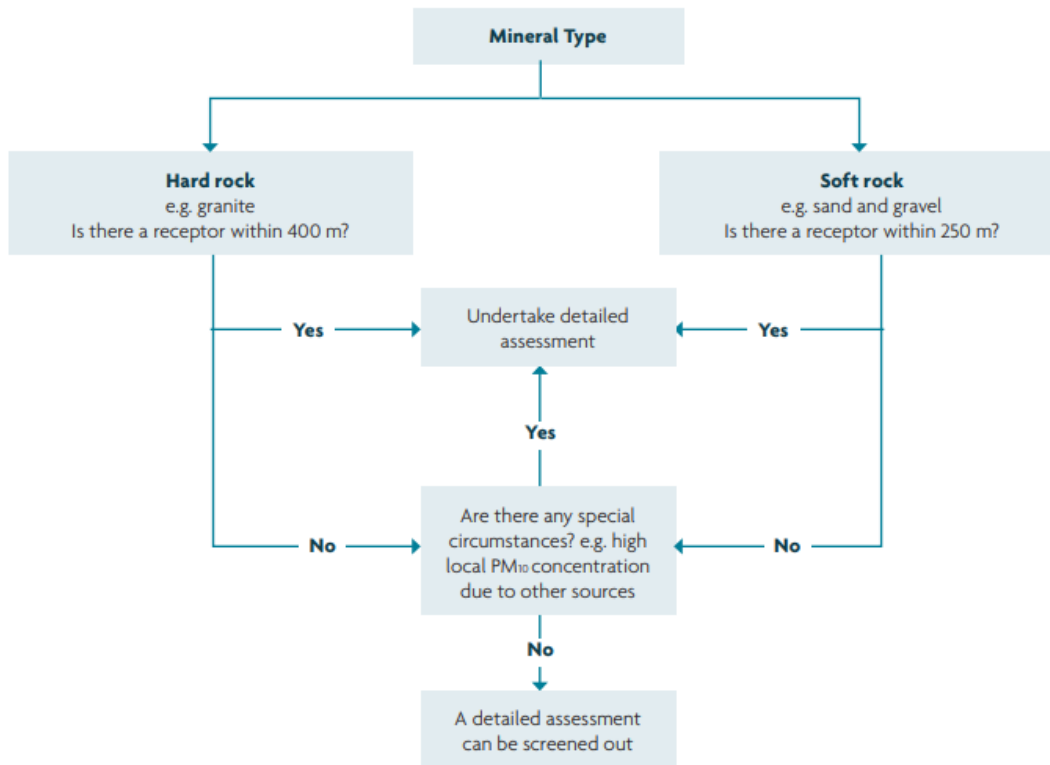
The methodology takes into account the effectiveness of the pathway and the scale of the source to derive the risk of dust impacts at individual receptors. This is then combined with the sensitivity of each receptor to derive the likely magnitude of the effect that will be experienced. A consideration is then given to the overall effects from dust deposition from each mineral extraction site.

For the assessment of suspended particulate matter, consideration needs to be given to the existing background PM₁₀ concentrations in the area. The process contribution from the mineral extraction activities is then estimated at each receptor and an overall PM₁₀ impact for the area is derived.

A.3.1 Initial screening

The initial screening for a detailed assessment is described in this section. The IAQM mineral dust guidance suggests where there are sensitive receptors within 1km of dust generating activities, an assessment of PM₁₀ concentrations will be required. Where there are sensitive receptors within 250m (soft rock) or 400m (hard rock) of extraction activities, an assessment of disamenity dust will be required. The screening flow chart shown in Figure B1 can be used to determine if a detailed assessment is required. The screening includes analysis of mineral type, the local PM₁₀ background concentrations and the proximity of receptors.

Figure B1: IAQM mineral dust assessment screening flow chart¹⁶



If a detailed assessment is required, then the detailed methodology in Section B1.2 and B1.3 should be used to determine the overall disamenity dust impacts and health effects respectively.

A.3.2 Disamenity dust impacts

Step 1: Describe the site characteristics

The first step of the assessment is to understand the site itself and its locality. The following details about the site should be described to help determine the residual source emissions in step 3:

- extent of site including site boundary;
- existing site operations; scale and duration of operations;
- type and location of processing activities, including secondary processing (e.g. concrete batching);
- method/s of working and/or materials handling;
- location/s of storage areas and stockpiles;
- location/s and number of access routes and haul roads; and
- mineral type and characteristics (size, moisture content, friability, colour, and opacity).

Step 2: Describe the baseline conditions and proximity of dust sensitive receptors

The following information regarding the local area should be determined to help undertake the assessment:

- Background PM₁₀ concentrations provided by Defra, and, if available, relevant local monitoring data;
- The location and nature of dust sensitive receptors. The guidance details two types of relevant receptors that will be taken into account in the assessment – human and ecological receptors. Receptors should be selected from all directions surrounding the site; and
- Any natural or existing mitigating features such as topography and areas of vegetative screening.

Step 3: Estimate residual source emissions

The next step uses the data gathered in step 1 to estimate the residual source emissions for the following activities:

- Site preparation and restoration;
- Mineral extraction;
- Materials handling;
- On-site transportation;
- Minerals processing;
- Stockpiles and exposed surfaces; and
- Off-site transportation.

For each activity listed, the IAQM mineral dust guidance (Appendix A.3) provides examples for the different magnitudes.

Step 4: Assess pathway effectiveness

To assess the pathway effectiveness at each receptor within the 250m distance band has been assessed separately, taking into account the frequency of winds likely to impact the receptor.

Meteorological data is filtered to identify the percentage of time for dry days when the wind direction could carry dust from the site to each receptor, and this value is classified as: infrequent, moderately frequent, frequent or very frequent using criteria classified by the IAQM construction dust guidance.

The frequency of potentially dusty winds and the distance category, classified as: close, intermediate or distant, are then used to identify the pathway effectiveness for each receptor.

Step 5: Estimate risk of dust impacts

The next step requires each selected receptor to be assessed for dust impact risk. Table B1 shows how the residual source emissions and the pathway effectiveness can be combined to estimate the risk of dust impacts at individual receptors.

Table B1: Estimation of dust risk impact

		Residual source emissions		
		Small	Medium	Large
Pathway effectiveness	Highly effective	Low risk	Medium risk	High risk
	Moderately effective	Negligible risk	Low risk	Medium risk
	Ineffective	Negligible risk	Negligible risk	Low risk

Step 6: Estimate likely magnitude of effect

The likely dust impact risk predicted at each representative receptor then needs to be considered together with the sensitivity of that receptor, to give the likely magnitude of the effect that will be experienced. The magnitude of the likely effect from dust deposition at individual, selected receptors, can be used to estimate the overall effect from dust deposition on the surrounding area, taking into account the different magnitude of effects at different receptors, and the number of receptors that experience these different effects.

Table B2: Descriptors for magnitude of dust effects

		Receptor sensitivity		
		Low	Medium	High
Dust risk impact	High risk	Slight adverse	Moderate adverse	Substantially adverse
	Medium risk	Negligible	Slight adverse	Moderate adverse
	Low risk	Negligible	Negligible	Slight adverse
	Negligible risk	Negligible	Negligible	Negligible

A.3.3 Human health effects

Step 1: Determine the existing background concentration of PM₁₀

Existing background PM₁₀ concentrations can be taken from publicly available data or site-specific monitoring. If the long-term background PM₁₀ concentration is less than 17µg/m³ there is little risk that the Process Contribution (PC) would lead to an exceedance of the annual-mean objective and there is no need for further consideration in most cases.

Step 2: Estimate the process contribution of PM₁₀ from site activities at the sensitive receptors

In many cases, the process contribution of PM₁₀ from the site can be estimated using published estimates from this type of activity, as detailed in Appendix 5 of the IAQM mineral dust guidance.

Step 3: Calculate the total predicted environmental concentration

The total predicted concentration at the site can be calculated by adding the existing background concentration of PM₁₀ to the process contribution of PM₁₀ from site activities.

Step 4: Compare the predicted environmental concentration with the annual mean objective for PM₁₀

The total predicted concentration from should then be compared to the annual mean objective for PM₁₀, which is 40µg/m³.

Step 5: Determine the overall PM₁₀ impact on the surrounding area

The significance of the overall PM₁₀ impact on the surrounding area (i.e. whether it is “significant” or “not significant”) is determined using professional judgement

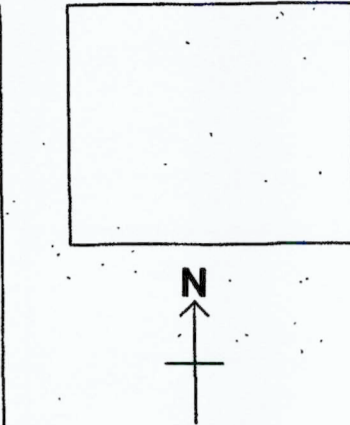
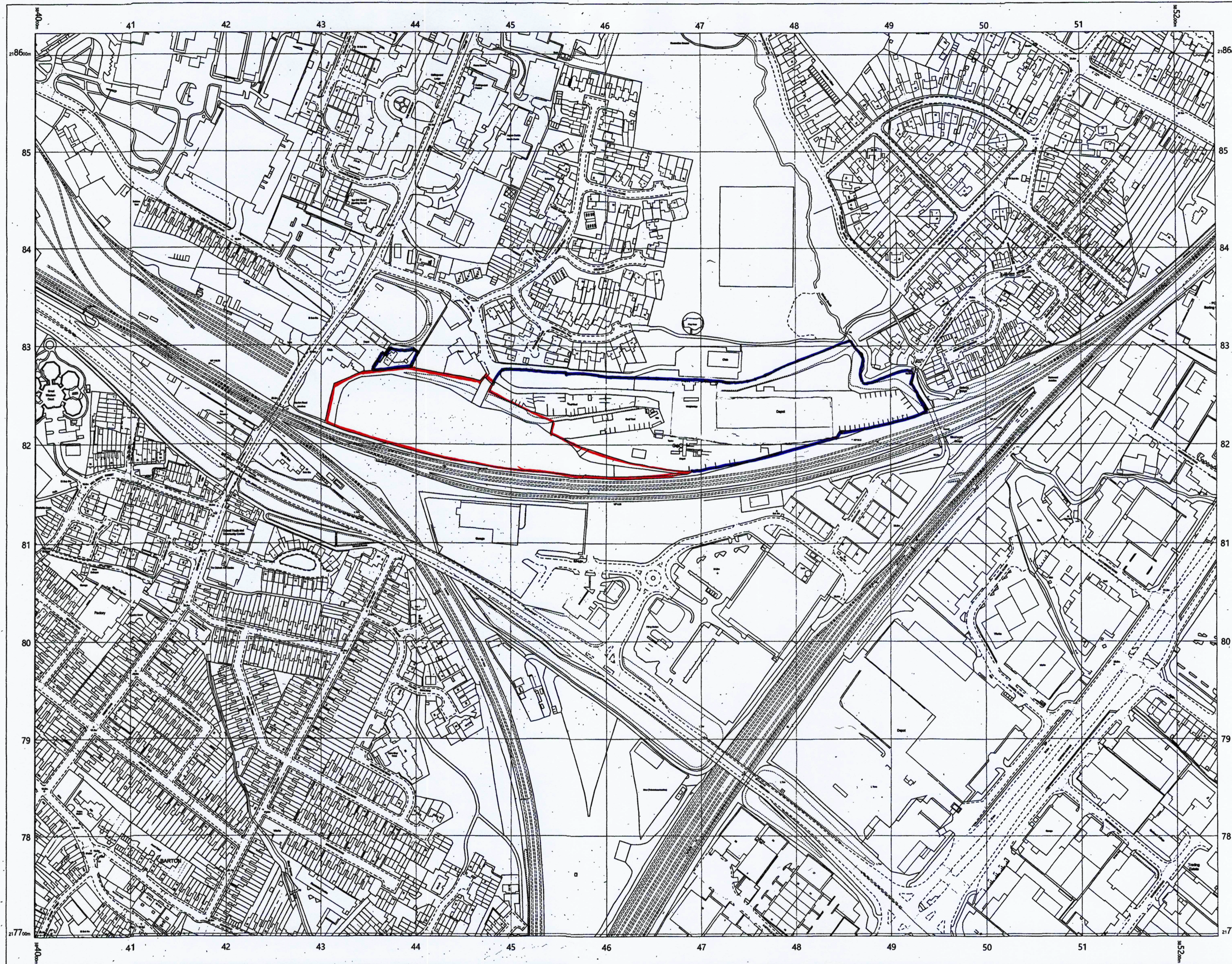
A.3.4 Conclusion on the significance of residual dust effects


The overall disamenity dust impact and, where required, the ecological and health effects will have been determined. From this, a conclusion must be reached on the likely significance of the air quality effects collectively.

A.3.5 Mitigation measures

When undertaking the assessment of mineral dust impacts the mitigation measures detailed within this dust management plan will be applied. Should further mitigation measures be necessary, these will be formulated taking into consideration the measures detailed in the IAQM mineral dust guidance and best practice.

A.4 Site location for planning



OS MasterMap 1:250/2500/10000 scale
 Wednesday, November 6, 2019 10:21
 JEW-00839314
 maps.johnnewright.com
 1:2500 scale print at A2, Centre: 384621 E,
 218160 N
 © Crown Copyright Ordnance Survey. Licence
 no. 100025568

 printroom@kmrapro.com
 Tel: 01452 385600

NB: APPLICATION SITE EDGED IN RED
 OTHER LAND IN THE APPLICANTS OWNERSHIP EDGED IN BLUE

NOTES:
 All dimensions must be checked on site and not
 scaled from this drawing.

A	Date	Revisions

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Client
ALLSTONE

Job Title
**LAND OFF MYERS ROAD,
 GLOUCESTER.**

Drawing Title
SITE LOCATION PLAN

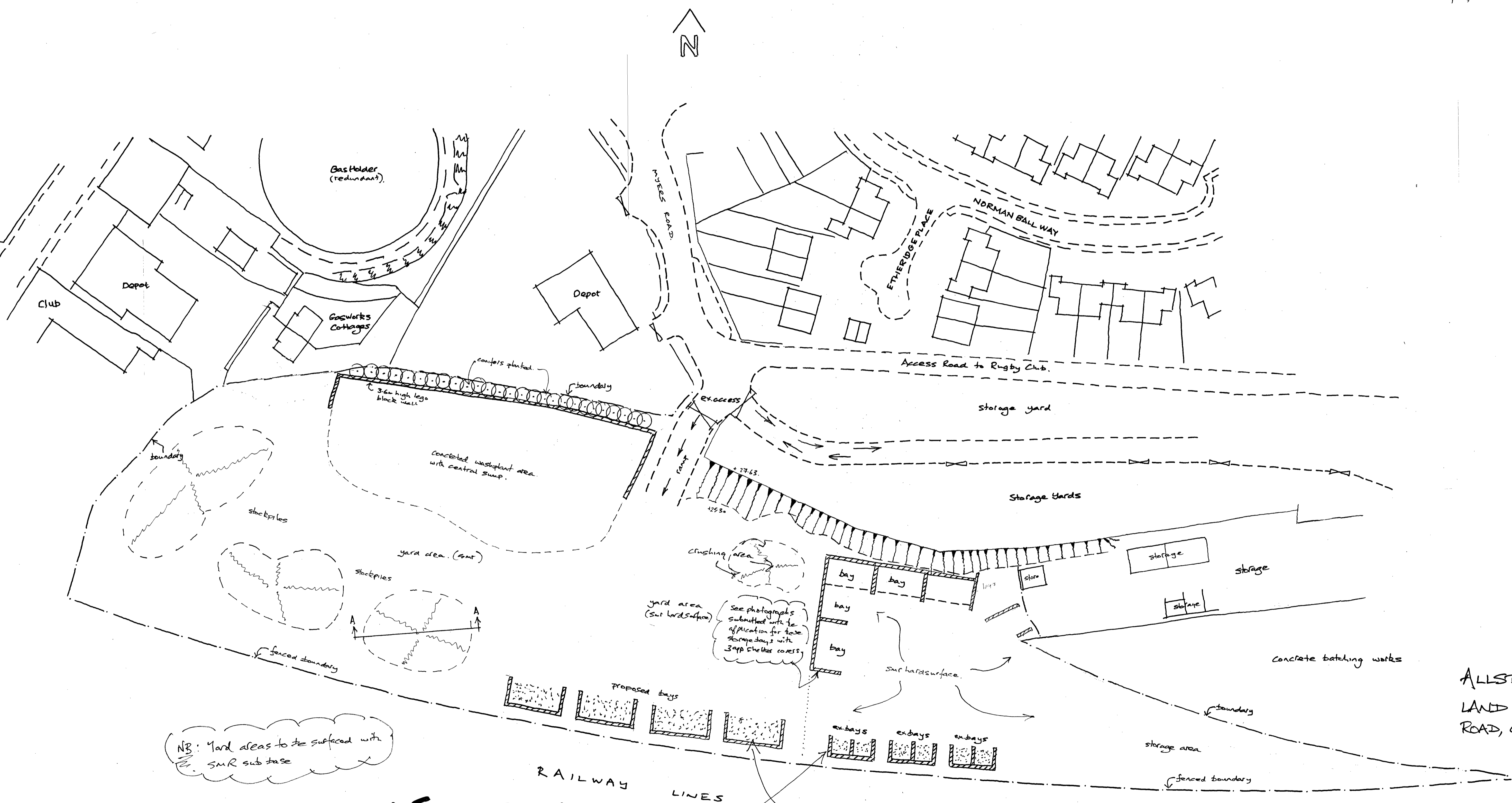
Scale **1:2500**

Date **APRIL 2022** Drawn by

Drg No. **ASG/001/2022** Rev.

A.5 Site layout for planning

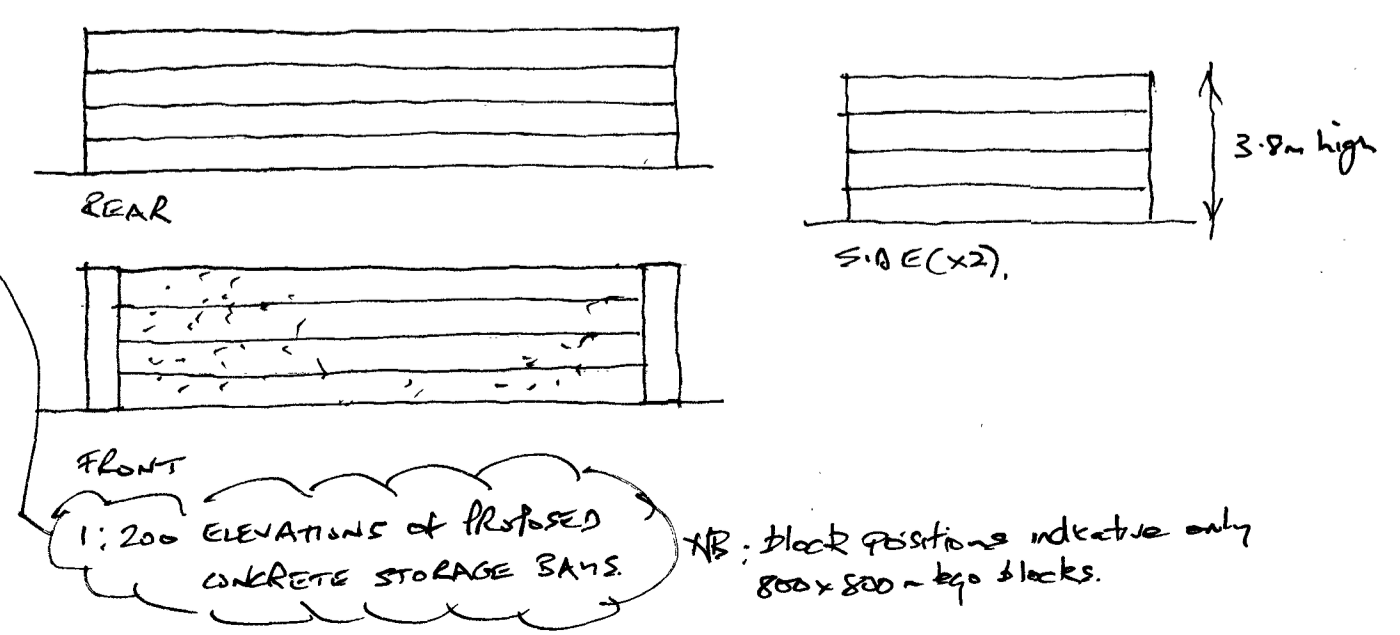
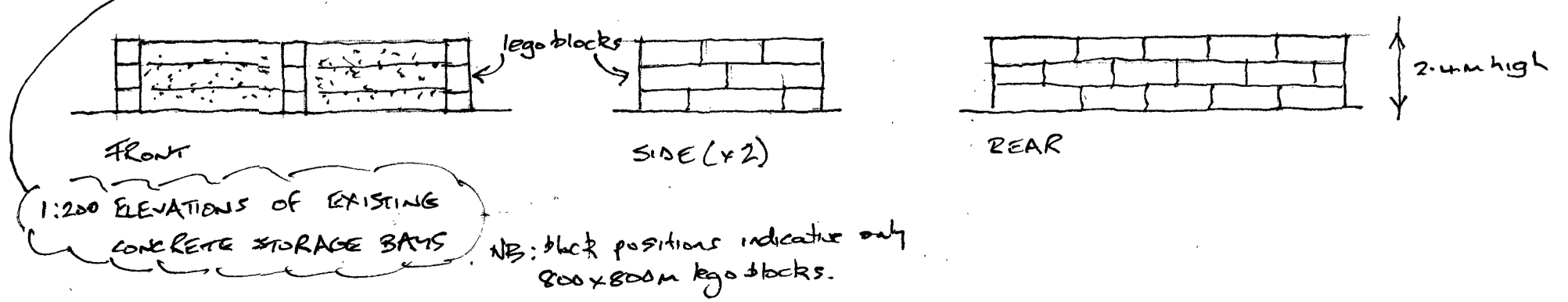
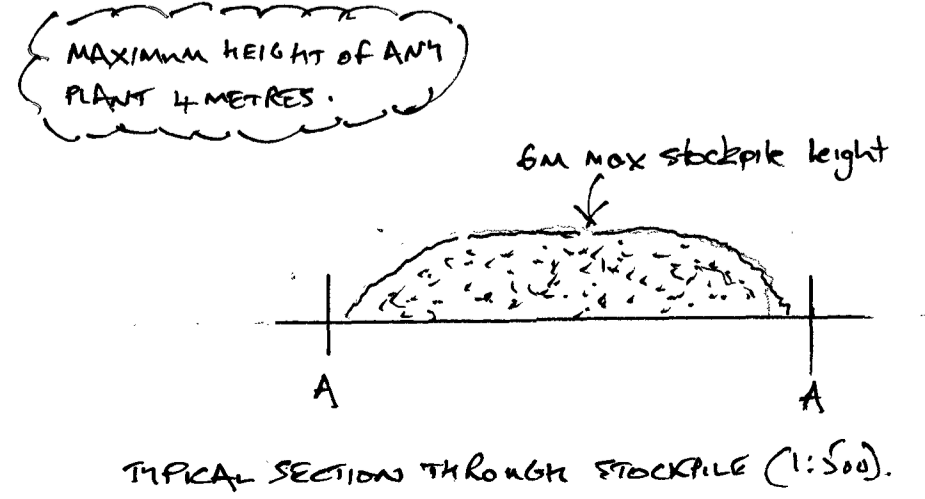
NB: This plan has been prepared for Town & Country planning purposes only.



ALLSTONE
LAND OF MYERS
ROAD, GLOUCESTER.

NB: Yard areas to be surfaced with SMR sub base

1:500 SITE LAYOUT



SITE LAYOUT PLAN
(including additional elevational detail of existing & proposed bays)

1:500
APRIL 2022
ASG/002/2022