

A303 Amesbury to Berwick Down

TR010025

6.3 Environmental Statement Appendices

Appendix 5.4 Construction Air Quality and Mitigation

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009

October 2018



Table of contents

Chapter	Pages
1 Introduction	4
2 Construction Activities	4
3 Construction Site Compounds	5
4 Stockpiles	7
5 Non Road Mobile Machinery (NRMM)	9
6 Haul Routes	12
7 Demolition	12
8 Tunnelling Activities	13
9 Earthworks and Construction	13
10 Stationary Plant	14
11 Mitigation Techniques	17
12 Conclusions	21

Table of Tables

Table 5.4.1: Sensitive receptors within 200m of the Countess Interchange compound	7
Table 5.4.2: Stockpile details	7
Table 5.4.3: Sensitive receptors located within 200m of stockpiles.....	9
Table 5.4.4: NRMM compound plant list	9
Table 5.4.5: Sensitive receptors located within 200m of haul routes.....	10
Table 5.4.6: Sensitive receptors located within 200m of haul routes.....	12
Table 5.4.7: Sensitive receptors located within 200m of demolition works.....	13
Table 5.4.8: Generator details.....	16
Table 5.4.9: Standard construction mitigation measures.....	17
Table 5.4.10: Further standard construction mitigation measures.....	18

1 Introduction

- 1.1.1 This technical appendix collates construction information on the following elements of the construction phase:
- a) construction dust (e.g. tunnel portals, bridge works);
 - b) construction site compounds;
 - c) stockpiles;
 - d) non road mobile machinery (NRMM);
 - e) haul routes;
 - f) demolition; and
 - g) stationary plant.
- 1.1.2 The technical appendix also considers the risk of significant adverse air quality effects being associated with these temporary activities. The technical appendix also presents mitigation measures to minimise the risk of significant adverse air quality effects.

2 Construction Activities

- 2.1.1 During the scheme construction phase, there is the potential for temporary adverse impacts from dust emissions from construction activities at sensitive receptors within the vicinity of the construction site.
- 2.1.2 The types of activities with the potential to generate dust during the Scheme construction phase include:
- a) movement of vehicles;
 - b) enabling works (e.g. verge clearance);
 - c) earthworks;
 - d) minor demolition of underpass and a pedestrian subway;
 - e) excavation (e.g. tunnelling);
 - f) construction of retaining walls, portals and bridge works etc.;
 - g) surfacing works;
 - h) central reserve works;
 - i) installation of verge furniture and planting vegetation; and

j) stockpiling/ storage.

2.1.3 Receptors such as residential properties, hotels, schools and hospitals are considered to be sensitive to nuisance and/or health dust impacts. In addition, some designated ecological sites are considered to be potentially sensitive to dust. Where these receptors are located within 200 meters (m) of potential dust generating activities, appropriate mitigation measures would be required in order to reduce the risk of dust impacts. These mitigation measures are outlined in the Outline Environmental Management Plan (OEMP) (Appendix 2.2) and in Section 11.

2.1.4 The following human receptors are located within 200m of the scheme redline boundary:

- a) the village of Winterbourne Stoke, which includes residential properties and a pub;
- b) Northern Amesbury, which includes residential properties, Amesbury Abbey nursing home, commercial premises, office and a hotel;
- c) Countess Road, which includes residential properties and a hotel; and
- d) scattered farmhouses between Winterbourne Stoke and Amesbury.

2.1.5 The following ecological receptors are located within 200m of the scheme boundary:

- a) Yarnbury Castle Site of Special Scientific Interest (SSSI);
- b) Parsonage Down SSSI;
- c) River Till SSSI;
- d) River Avon System SSSI / Special Area of Conservation (SAC); and
- e) Salisbury Plain SSSI / Special Protection Area (SPA) / SAC.

2.1.6 The standing stones at Stonehenge are also around 200m from the redline boundary of the Scheme, close the current A303 alignment, where a unique lichen assemblage is located.

3 Construction Site Compounds

3.1.1 Two main compound areas will be constructed as part of the construction programme.

3.2 Longbarrow Interchange

- 3.2.1 The site will be used for civils and other operations and include main offices, welfare, car parking, concrete batching plant, materials storage and laydown area as well as earthmoving plant servicing and wheel washing facilities.
- 3.2.2 Access into the compound will be via the A360 but as the work proceeds and the new northern Longbarrow roundabout becomes operational, the main entrance will change to this access point. On the west side, the compound will also link to the main westward haul road through the site.
- 3.2.3 The whole area will be covered in crushed concrete or stone with geotextile placed directly onto the existing topsoil.
- 3.2.4 Asphalt roadways will be laid to allow an all-weather access to each facility within the compound and these will be extended to the A360 highway.
- 3.2.5 Main services such as telephone, electricity and water will be sourced from the existing utilities but a back up generator will be required in case of a power outage.
- 3.2.6 The compound will be screened on all four sides by topsoil and/or chalk stockpiles. These will be grass seeded to reduce the visual impact and the white chalk stockpiles will be topsoiled before seeding.
- 3.2.7 The Longbarrow Interchange compound is not located within 200m of any human or ecological receptors.

3.3 Tunnel Soil Processing Compound

- 3.3.1 The purpose of this compound will be to support the tunnel soil processing activities and will include offices and welfare units, security and materials checking and limited car parking.
- 3.3.2 There are no sensitive receptors located within 200m of the tunnel soil processing compound.

3.4 Satellite compounds

- 3.4.1 In addition there will be a number of smaller satellite offices and remote mobile welfare units. A total of eight units are proposed, the largest of which will be located at the Countess Interchange. The remaining units will consist of a portacabin type unit and potentially a small car park made up of crushed stones.

3.5 Countess Site Compound

- 3.5.1 The site will consist of offices, welfare units and car parking as well as a limited amount of material storage. However, the main storage will be within the Countess roundabout area.
- 3.5.2 A large stockpile of chalk taken from the early excavations at the eastern portal will be required to be used as fill for the retained soil embankments. The stockpiles will not exceed 3m in height and be covered in topsoil and seed on its western and south western faces.
- 3.5.3 Access into the area for both the compound and soil stockpiles will be via the existing car parking area on the north side of the service area. Road access will be via the existing service area loop road.
- 3.5.4 The Countess Interchange compound is located in close proximity to residential properties and a hotel on Countess Road, which are considered sensitive to potential dust impacts (Table 5.4.1). Appropriate mitigation measures will be required at this compound to ensure potential effects are minimal. These measures are outlined in the OEMP and in Section 11.

Table 5.4.1: Sensitive receptors within 200m of the Countess Interchange compound

Receptor	Number of receptors	Approximate distance to Countess Interchange compound
Countess Farm, Countess Road, Amesbury	1	125m
Countess Road No. 13 to 19, Amesbury	7	40 to 110m
Travelodge, Amesbury	Hotel	50m
Countess Road No 19 to 51, 53, 55, 57 and 59, Amesbury	36	30 to 200m

4 Stockpiles

- 4.1.1 Eight stockpiles are proposed. Stockpiles have the potential to be a significant source of dust if mitigation is not employed. The locations and details of the stockpiles are set out in Table 5.4.2.

Table 5.4.2: Stockpile details

Stockpile	Amount of topsoil	Location	Receptors within 200m ?	Comments
1	32,000cu.m	Near Green Bridge one	No	Area is set aside for creating new chalk grassland at the end of the

Stockpile	Amount of topsoil	Location	Receptors within 200m ?	Comments
				project. All stockpiled topsoil will need to be removed to ensure the thickness does not exceed the requirements for chalk grassland
2	25,000cu.m	Near Green Bridge one	No	Area set aside for new tree planting and new PRoW. Any topsoil not required for re-use can remain to enhance depth of soil for tree planting
3	30,000cu.m	At the western satellite compound	No	Contractors compound but will also be used for stockpiling topsoil for re-use. Returned to agriculture at end of project.
4	20,000cu.m	Tunnel Soil Processing compound	No	Returned to agriculture but will serve as a screen mound for the tunnel soil processing area.
5	20,000cu.m	Longbarrow Interchange South	No	The stockpile will take the soil removed from south of the existing A303 and will be used to re-soil all the areas south of the new A303.
6	16,000cu.m	Longbarrow Interchange north	No	Used to stockpile the topsoil from the World Heritage area between the A360 and the western portal.
7	40,000cu.m (and 30,000cu.m of chalk)	Longbarrow Interchange Compound	No	Located around the main site compound to screen it from the public. Topsoil derived from the new road and tunnel soil processing area.
8	Variable quantities of topsoil and chalk	Countess Compound	Yes	Chalk taken from the eastern portal and used as fill for the retained soil embankments leading up to the Countess flyover. Stockpile covered in topsoil and seeded on its western and south western faces. The stockpile will not exceed 3 metres in height.

4.1.2 Only one stockpile is located within 200m of sensitive receptors (Table 5.4.3). Appropriate mitigation measures will be required at this compound to ensure potential effects are minimal. These measures are outlined in the OEMP and in Section 11.

Table 5.4.3: Sensitive receptors located within 200m of stockpiles

Receptor	Number of receptors	Approximate distance to stockpile
Countess Farm, Countess Road, Amesbury	1	140m
Countess Road No. 13 to 19, Amesbury	7	50 to 150m
Travelodge, Amesbury	Hotel	60m
Countess Road No 19 to 51, 53, 55, 57 and 59, Amesbury	36	45 to 200m

5 Non Road Mobile Machinery (NRMM)

5.1.1 NRMM will be required during the construction phase; examples of which are provided below:

- a) bulldozers;
- b) excavators;
- c) delivery lorries for aggregate, cement, hardcore etc;
- d) road sweepers; and
- e) lime spreaders.

5.1.2 NRMM will operate along the proposed routes and within the construction compound sites. Information is available with regards to which NRMM are required and the duration in above document.

5.1.3 Only the compound at Countess is located within 200m of sensitive receptors and therefore the plant detailed in Table 5.4.4 has the potential to impact sensitive receptors within 200m of the compound when operational.

Table 5.4.4: NRMM compound plant list

Location	Plant list	Average daily number of each plant
Construction of all site compounds	Bulldozer D6 size	1
	Smooth Drum Self Propelled Roller	1
	Motor Grader 140 size	1
	Tractor 200Hp & Water Bowser	1
	Self propelled lime mixing machine	1

Location	Plant list	Average daily number of each plant
	Tractor 200Hp & Lime Spreader Lorry mounted lime tanker Road delivery lorry sub base Asphalt Paver Road delivery lorry asphalt Smooth drum steel or rubber roller Site Dumper 360° rubber tracked Excavator Lorry mounted road sweeper Crane	1 1 4 per hour 1 4 per hour 1 1 1 1 1
Operation of satellite compound at Countess during construction phase	Cars and vans - parked up 4X4 Vehicles - all day Waste disposal lorries Material delivery lorries	20 10 per hour 1 per hour 3 per hour

5.1.4 Appropriate mitigation measures will be required at this compound to ensure potential effects are managed appropriately. These measures are outlined in the OEMP and in Section 11.

5.1.5 NRMM Plant will also operate on the proposed route. Sensitive receptors are located within 200m of the proposed route (Table 5.4.5) and these will require mitigation through the measures in outlined in the OEMP and in Section 11.

Table 5.4.5: Sensitive receptors located within 200m of haul routes

Receptor	Number of receptors	Approximate distance to scheme redline boundary
Cherry Lodge, Winterbourne Stoke	1	12m
Cottage, Winterbourne Stoke	1	2m
Stonehenge Lodge B&B, Winterbourne Stoke	1	170m
1 High Street, Winterbourne Stoke	1	73m
1 to 6 Highdown View, Winterbourne Stoke	6	100 to 110 m
All properties on Brook Close, Winterbourne Stoke	6	130 to 200m
2 and 3 High Street, Winterbourne Stoke	2	140m
Manor House, High Street, Winterbourne Stoke	1	160m
Church Street, Winterbourne Stoke	7	170m to 200m
13 and 14 High Street, Winterbourne Stoke	2	120m
The Bell Inn, Winterbourne Stoke	Pub	125m
Foredown House, High Street, Winterbourne Stoke	1	15m
The Bungalows, High Street, Winterbourne	2	180m to 200m

Receptor	Number of receptors	Approximate distance to scheme redline boundary
Stoke		
Cleve View, Winterbourne Stoke	4	100m
Hill Farm Cottages, Winterbourne Stoke	4	15 to 60m
Hill Farm Bungalow, Winterbourne Stoke	1	80m
Oatlands Bungalow, Winterbourne Stoke	3	10m
Druid Head Farm, Winterbourne Stoke	1	10m
Chapels Lane, Berwick St James	3	100 to 120m
Chain Hill, Berwick St James	4	<5m
Berwick Road, Berwick St James	10	20 to 200m
Warminster Road, Berwick St James	19	10m
Over Street, Berwick St James	2	<5m
Pelican Inn, Warminster Road, Berwick St James	Pub	<5m
Custodian Cottages, Amesbury	3	80m
Stoke Farm Cottages, Amesbury	2	180 to 200m
Bowles Hatches, Amesbury	1	30m
Diana's House, Abbey Mews, Amesbury	1	15m
Abbey News, Amesbury	unknown (Flats)	120m
Countess Road (south of RLB), Amesbury	20	20m
Carleton Place, Amesbury	10	100m
Countess Court, Amesbury	19	160m
The Cloisters, London Road, Amesbury	unknown (Flats)	175m
Lords Croft, Amesbury	5	145m to 190m
London Road, Amesbury	32	170 to 200m
The Old Dairy, Amesbury	14	150m to 200m
Beacon Close, Amesbury	29	60 to 160m
Ratfyn Road, Amesbury	13	10 to 200m
Oak Place, Amesbury	10	150 to 190m
Holiday Inn, Amesbury	Hotel	55m
New Barn Cottages, Amesbury	3	40m
Ratfyn Farm Bungalows, Amesbury	2	25m
Ratfyn Farm Cottages, Amesbury	3	45m
Countess Farm, Countess Road, Amesbury	1	1m
Countess Road No. 13 to 19, Amesbury	7	1m
Travelodge, Countess Road, Amesbury	Hotel	1m
Countess Road No 19 to 51, 53, 55, 57 and 59, Amesbury	36	1 to 200m

6 Haul Routes

6.1.1 Haul routes are expected to be located at the following locations:

- a) adjacent to the proposed route, to the north of Winterbourne Stoke, to the Longbarrow compound and Tunnel Soil Processing compound; and
- b) to the north of Amesbury, from the tunnel to near the Countess Roundabout.

6.1.2 The haul routes may be used by NRMM (as described above) as well as HGVs.

6.1.3 The haul routes are within 200m of the receptors in Table 5.4.6.

Table 5.4.6: Sensitive receptors located within 200m of haul routes

Receptor	Number of receptors	Approximate distance to haul routes
Foredown House, High Street, Winterbourne Stoke	1	185m
Bowles Hatches, Amesbury	1	100m
The Old Dairy, Amesbury	14	190 to 200m
Beacon Close, Amesbury	29	90 to 200m
Ratfyn Road, Amesbury	13	50 to 200m
Oat Place, Amesbury	10	180 to 200m
Ratfyn Farm Bungalow, Amesbury	2	130m
Countess Farm, Countess Road, Amesbury	1	70m
Countess Road No. 13 to 19, Amesbury	7	100 to 200m
Travelodge, Countess Road, Amesbury	Hotel	100m

6.1.4 Also the haul routes are within 200m of the River Till and River Avon River Systems which are designed as SSSIs, with the River Avon River System also designated as an SAC.

6.1.5 It is not expected, based on discussions with the project team, that more than 200 HGV trips per day for more than 6 months will travel along the haul routes. Therefore, significant changes in emissions are not expected along these haul routes.

7 Demolition

7.1.1 The following minor demolition works are proposed as part of the scheme:

- a) existing underpass; and

- b) existing pedestrian subway located on the eastern side of the Countess Roundabout.

7.1.2 Sensitive receptors are located within 200m of the proposed demolition works and therefore will require mitigation as outlined in the OEMP and Section 11. These receptors are identified in Table 5.4.7.

Table 5.4.7: Sensitive receptors located within 200m of demolition works

Receptor	Number of receptors	Approximate distance to demolition works
Countess Farm, Countess Road, Amesbury	1	100m
Countess Road No. 13 to 19, Amesbury	7	140 to 200m
Travelodge, Countess Road, Amesbury	Hotel	70m

8 Tunnelling Activities

- 8.1.1 Tunnelling activities have the potential to cause emissions of dust and use of NRMM.
- 8.1.2 The method of construction used for the tunnel will be a combination of techniques consisting of a Tunnel Boring Machine (TBM) and Slurry Treatment Plant (STP) for the soil recovery and separation process. It is anticipated that material excavated from the tunnel will be extracted at the western portal for both tunnel bores and transported to the STP within the Longbarrow compound by an enclosed pipe for treatment. It is also expected that segments for the tunnel lining will be transported from the Segment Lining Production Plant (SLPP) at Longbarrow compound to the western tunnel portal. The exact method of construction used will be finalised once a contractor has been appointed.
- 8.1.3 The Tunnel Boring Machinery (TBM) will not cause combustion emissions to air as these will be powered by mains electricity.
- 8.1.4 Dust emissions have the potential to affect sensitive receptors, but none are located within 200m of works and so these emissions will be managed by standard mitigation set out in the OEMP.

9 Earthworks and Construction

- 9.1.1 Earthworks and Construction works will be undertaken throughout the site boundary.

- 9.1.2 The main areas of works at Countess Roundabout to elevate the A303 mainline through the junction have been identified in the Demolition and Construction Compounds sections.
- 9.1.3 Other main earthworks and construction work includes the construction of the River Till Crossing and the new Longbarrow Junction and the earthworks north of Winterbourne Stoke, but these works are largely located away from sensitive receptors, with the exception of the River Till SSSI which is crossed by the River Till Crossing and any works that are within 200m of the Parsonage Down SSSI.
- 9.1.4 Standard mitigation measures will be required along the majority of the scheme route, with further standard measures (Table 5.4.10) at Countess Roundabout and around the River Till and within 200m of Parsonage Down SSSI in the western portion of the scheme.

10 Stationary Plant

- 10.1.1 A plant list has been developed for the scheme, which includes both stationary plant and NRMM. The full plant list is included in Appendix 9.2 of the Noise and Vibration assessment.
- 10.1.2 Of the stationary plant listed only concrete batching plant and small generators are considered to have the potential to result in air quality impacts.

10.2 Concrete Batching Plant

- 10.2.1 A 'remote' concrete batching plant will be sited at the Longbarrow Interchange Compound during the construction phase. Unless, appropriately mitigated, concrete batching plants have the potential to be significant dust sources. However, the Longbarrow interchange compound is not located within 200m of sensitive human receptors and so with appropriate mitigation (Table 5.4.10) significant air quality effects are not anticipated.

10.3 Small Generators

- 10.3.1 Small generators are expected to be located at the main compounds as well as at the satellite sites to provide an on-site power supply. Three small generators will be required at the following compound sites; Longbarrow, West B3038 and Countess. The small generators would be required during the early stages of construction, until the mains supply is connected. Additional power would be required during heavy operations (e.g. Tunnel Boring Machinery) at these sites, for which the power supply from the

proposed generators would be insufficient. It is understood that these activities would not be undertaken until the mains power is connected.

- 10.3.2 At the satellite sites, it is unknown if or when suitable mains supply would be available and therefore it is assumed as a worst case that the small generators would be used continuously at these sites.
- 10.3.3 Table 5.4.8, provides information with regards to each generator, including its size, operating hours, duration and distance to nearest receptor.
- 10.3.4 At all sites, it is anticipated that 100Kva generators will be utilised. These generators equate to an output of approximately 80Kw. These generators are located at least 0.25km from the nearest sensitive receptor.
- 10.3.5 The exception to this is at the Longbarrow Interchange compound, where a slightly larger generator will be required. The nearest receptor to this site is 1.1km away.
- 10.3.6 There is currently no statutory guidance or criteria as to when an air quality assessment is required to determine the potential effects from generators. Professional judgement is used, taking into consideration the generator specifications and proximity of sensitive receptors.
- 10.3.7 It is not considered necessary to model the 100kva generators due to their size and their potential air quality impacts are considered to be minimal. However, the generators should be positioned as far away as practical away from the nearest receptors as outlined in Section 11.
- 10.3.8 The larger generator required at the Longbarrow compound site does have the potential to result in air quality impacts in the immediate surrounding area. However, as the nearest receptor is 1.1km away it is very unlikely to notably affect concentrations at this distance from the source and therefore a quantitative assessment is not considered necessary and significant air quality effects are not anticipated.

Table 5.4.8: Generator details

Location	Generator size	Fuel	Operating hours			Litres/hour			Duration	Approximate distance to nearest receptor		
			Hours/day @60% load	Hours/day @60% load	Hours/day @60% load	100% load	60% load	20% load		Long term objective	Short term objective	
Main compound (Longbarrow)	600Kva	Diesel	16		8	130	78	26	28 months / 852 days	1.1km	1.1km	
West B3083	100Kva		12		12	16.2	7.8	3.2	69 months / 2099 days	1.1km	0.45km	
Countess Compounds										0.25km	0.15km	
Green bridge 1										41 weeks / 287 days	0.5km	1.3km
Green Bridge 2										35 weeks / 245 days	0.5km	0.2km
Green bridge 3										70 weeks / 490 days	0.9km	0.3km
Green Bridge 4										41 weeks / 287 days	1.75km	1km
B3083 Underpass										26 weeks / 182 days	0.5km	0.3km
River Till Crossing										82 weeks / 574 days	0.3km	0.2km
Temporary Bridge 1										5 weeks / 35 days	0.25km	0.2km
Temporary Bridge 2										8 weeks / 56 days	Location unknown	Location unknown
Countess Beams and Deck										10 weeks / 70 days	0.25km	0.35km

11 Mitigation Techniques

11.1.1 The construction and operation activities outlined in this appendix would be mitigated using standard mitigation measures along the entire scheme route, at all construction compounds and for all works. These standard mitigation measures are presented in Table 5.4.9.

Table 5.4.9: Standard construction mitigation measures

Mitigation	Mitigation measures
Mitigation for all site: dust management	Develop and implement a series of dust management measures and monitoring measures. The level of detail would include as a minimum the measures set out in this table. Monitoring may include monitoring of dust deposition, dust flux, real-time PM ₁₀ continuous monitoring and/ or visual inspections.
	Monitoring
	Undertake periodic on-site inspections, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority etc. when asked.
	Preparing and maintaining the site
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
	Keep site fencing, barriers and scaffolding clean using wet methods where there is the risk of dust accumulation.
	Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
	Operating vehicle/machinery and sustainable travel
	Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided).
	Ensure all vehicles (HDVs and mobile plant) switch off engines when stationary or not in use - no idling vehicles.
	All construction plant would use fuel equivalent to ultra-low sulphur diesel (ULSD) where possible.
	Operations
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Measures specific to demolition	See Table 5.4.10
Measures specific to surfacing works	Surfacing equipment (e.g. planer) only to be operated with any manufacturers dust abatement measures in place.

Mitigation	Mitigation measures
Measures specific to construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Measures specific to trackout	Use water-assisted dust sweeper(s) on access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Record all inspections of haul routes and any subsequent action in a site log book.

11.1.2 Where standard mitigation measures may not be sufficient to minimise emissions of dust and plant emissions alone, further standard mitigation measures are proposed and these further standard measures are presented in Table 5.4.10.

Table 5.4.10: Further standard construction mitigation measures

Mitigation	Mitigation measures
Mitigation for all sites: communication	During the Scheme construction phase appropriate mechanisms to communicate with local residents would be set up to highlight potential periods of disruption (e.g. web-based, newsletters, newspapers, radio announcements etc.). This will include the appointment of a Community Relations Manager (CRM) responsible for leading engagement with affected communities. An information web-page would be provided and kept up-to-date on the Highways England website to reflect construction and community liaison requirements. It is envisaged that the web-page would provide up-to-date information on the progress of the construction works, areas affected by construction, mitigation in place to reduce adverse effects, information regarding planned construction works (including any proposed works outside normal hours, diversion routes etc.) and works recently completed. The communication strategy would minimise the likelihood of complaints. Residents would be provided with a point of contact, the CRM, for any queries or complaints. In addition, the Highways England Customer Contact Centre (HECCC) will also be available to deal with queries from the public. This includes an information line staffed by Highways England 24/7. A complaint management system will be in place, in line with systems used by Highways England on other major infrastructure projects. Any dust complaints will be investigated and appropriate action taken as required. The complainant will be provided with a response outlining the results of the investigation and any action taken.
Mitigation for all site: dust	Site management

Mitigation	Mitigation measures
management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority etc. as soon as reasonably practicable.
	Record any exceptional incidents that cause dust and/ or air emissions, either onsite or offsite, and the action taken to resolve the situation in the log book.
	If applicable, hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. In particular, it is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.
	Monitoring
	Carry out regular site inspections to monitor the effectiveness of mitigation measures, record inspection results, and make an inspection log available to the local authority etc. promptly upon request.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Undertake dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring for higher risk activities. Wherever possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences on an area of the scheme.
	Preparing and maintaining the site
	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
	Erect solid screens or barriers around particularly dusty activities or the site boundary that are at least as high as any stockpiles on site for higher risk areas.
	Avoid site runoff of water or mud.
	Operating vehicles, machinery and sustainable travel
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
	Where stationary generators are required ensure these are sited as far from sensitive receptors as possible.
Operate stationary generators within manufacturer guidelines, under optimum load for periods of operation and regularly service equipment to maintain efficient operation.	
Manage the sustainable delivery of goods and materials through careful programming of delivery.	
Implement a travel plan that supports and encourages sustainable travel (e.g. public transport, cycling, walking,	

Mitigation	Mitigation measures
	<p>and car-sharing).</p> <p>Operations</p> <p>Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction (e.g. suitable local exhaust ventilation systems).</p> <p>Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.</p> <p>Use enclosed chutes and conveyors and covered skips.</p> <p>Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.</p> <p>Waste management</p> <p>Avoid bonfires and burning of waste materials.</p>
Measures specific to demolition	<p>Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.</p> <p>Avoid explosive blasting where possible, using appropriate manual or mechanical alternatives.</p> <p>Comply with measures set out in any Asbestos Management Plan if one is required.</p>
Measures specific to earthworks	<p>Re-vegetate earthworks and exposed areas/ soil stockpiles to stabilise surfaces as soon as practicable.</p> <p>Use hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.</p> <p>Where possible, only remove the cover in small areas during work and not all at once.</p>
Measures specific to construction	<p>Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.</p> <p>For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.</p> <p>For cement batching plants enclose as much of the plant as possible to minimise emissions of dust during preparation and identify measures to minimise emissions at loading points (e.g. pre-mixing).</p>
Measures specific to trackout	<p>Maintain and inspect on-site haul routes for integrity and operate a programme of routing maintenance and where necessary carry out repairs to the surface as soon as reasonably practicable.</p> <p>Install hard surfaced haul routes if possible, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and are regularly</p>

Mitigation	Mitigation measures
	cleaned.
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
	In locations without hard standing it may be necessary to clean the vehicle bodies in addition to wheels.
	Access gates to be located at least 10m from receptors where possible.

12 Conclusions

12.1.1 There is potential for temporary adverse impacts from dust emissions to occur at sensitive receptors located close to the Scheme during the construction works.

12.1.2 The following sensitive receptors are located within 200m of the redline boundary of the scheme:

- a) the village of Winterbourne Stoke, which includes residential properties and a pub;
- b) Northern Amesbury, which includes residential properties, Amesbury Abbey Nursing Home, commercial premises, office and a hotel;
- c) Countess Road, which includes residential properties and a hotel;
- d) scattered farmhouses between Winterbourne Stoke and Amesbury.

12.1.3 The following designated ecological receptors are located within 200m of the redline boundary of the scheme:

- a) Yarnbury Castle SSSI;
- b) Parsonage Down SSSI;
- c) River Till SSSI;
- d) River Avon System SSSI / SAC; and
- e) Salisbury Plain SSSI / SPA / SAC.

12.1.4 The standing stones at Stonehenge are also around 200m from the redline boundary of the Scheme, close the current A303 alignment, where a unique lichen assemblage is located.

12.1.5 The locations listed above could be affected by construction dust emissions. However, the specific activities that are most likely to generate dust and have receptors within 200m of are as follows:

- a) stockpiling, construction and minor demolition potentially affecting residential properties along Countess Road, Countess Farm, the nearby Travelodge and the River Avon SSSI/SAC;
- b) haul routes potentially affecting Foredown House at Winterbourne Stoke, residential locations in Amesbury and the Travelodge at Amesbury; and
- c) earthworks and construction work close to the River Till and Parsonage Down SSSIs.

- 12.1.6 Site specific mitigation measures may be necessary to avoid significant temporary effects on air quality for these activities and locations, in addition to standard mitigation measures. These measures are outlined in the OEMP and Section 11. Adoption of such measures would minimise the risk of significant adverse dust effects.
- 12.1.7 Specific further standard mitigation is not considered to be required for the standing stones at Stonehenge as these are located over 1.5km from any potentially notable dusty activities (e.g. tunnelling activities and portal construction) and these will still be controlled through the application of standard mitigation measures.
- 12.1.8 Other emissions associated with the construction phase such as mobile or stationary plant are also not expected to cause a significant air quality effect at receptors. This is because these emissions will be controlled through mitigation measures provided in Section 11 and as included in the OEMP.

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

© Crown copyright 2018.
You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence: visit www.nationalarchives.gov.uk/doc/open-government-licence/ write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email psi@nationalarchives.gsi.gov.uk.

This document is also available on our website at www.gov.uk/highways

If you have any enquiries about this document email info@a303stonehenge.co.uk or call **0300 123 5000**.*

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.
These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363