Galliford Try Construction Limited

Improvement Scheme
M5 Junction 10

Environmental Setting and Site Design Report

Job No 243213

January 2026

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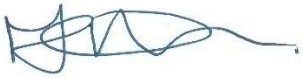

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Table of Revisions

CONTENTS

DRAWINGS

243213/D/001	Permit Boundary Plan
243213/D/002	Site Layout Plan
243213/D/003	Receptor Plan
243213/D/007A	Conceptual Site Model: Link Road
243213/D/007B	Conceptual Site Model: Gyratory
TR010063/APP/2.1	Site Location Plan
TR010063/APP/2.4	Works Plan
TR010063/APP/2.10	Engineering Section Plan
TR010063/APP/2.11	Biodiversity Sites Plan
TR010063/APP/2.12	Historic Environment Sites Plan
TR010063/APP/2.13	Environmental Master Plan

APPENDICES

Appendix A	H1 Risk Assessment (243213/RA)
Appendix B	Envirocheck Maps – in zip folder

1.0 SITE DETAILS AND ENVIRONMENTAL CONTEXT

Introduction

1.1 AA Environmental Ltd has been instructed by Galliford Try Construction Ltd (the Operator) on behalf of Gloucestershire County Council (GCC), to submit a bespoke Environmental Permit accompanied by an Environmental Setting and Design Report for the M5 Junction 10 Improvement Scheme.

1.2 An Environmental Permit for the Deposit of Waste for Recovery is being sought by the Operator which relates to the import of bulk fill mineral wastes to construct the new embankments and link road, hereafter described scheme. The application has a secondary activity to crush/screen inert wastes for use in construction.

1.3 The scheme is categorised as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. As such, an application for a Development Consent Order (DCO) is required to construct the scheme, under the Town and Country Planning Act 1990.

1.4 As of 4th June 2025, the Secretary of State for Transport has granted development consent for this application (Ref.: TR010063).

Site Location and Land Use

1.5 The site is located 8 km to the south of Tewkesbury, 6.5 km to the north west of Cheltenham, and 12 km to the north east of Gloucester. The main site is centred at Junction 10 of the M5 motorway (M5 J10), National Grid Reference SO 90464 25617. The site location is shown in Drawing TR010063/APP/2.1.

1.6 The wider site is comprised of approximately 195 hectares of land that is predominantly existing M5 motorway, both to the north and south of M5 J10, the dual carriageway of the A4019 from Cheltenham and associated junctions, slip roads and neighbouring agricultural land.

1.7 The site is predominantly rural, with the land use being mostly agricultural. The majority of residential properties and communal facilities are located towards Cheltenham, as well as the villages of Staverton, Boddington, Uckington, Elmstone Hardwick and Hayden.

1.8 Currently, there are residential properties located within the site boundary. The proposed development requires the acquisition of land outside of GCC's existing land ownership boundary to enable construction, operation and maintenance accordingly. These properties are not considered receptors. Outside of the site boundary, several residential properties are located directly adjacent to the site however they are not close to the bulk placement of engineering fill. Refer to Drawing 243213/D/003 for more details.

1.9 There are several Public Right of Way (PRoW) which run through the site, some of which will be removed and replaced as part of the proposed development. These have not been considered receptors, if removed/diverted. The Environmental Master Plan (TR010063/APP/2.13) provides a detailed outline of this.

1.10 Detailed information about the site's environmental setting, the natural and cultural heritage and the surrounding receptors are shown in the Biodiversity Sites Plan (TR010063/APP/2.11), Historic Environment Sites Plan (TR010063/APP/2.12) and Environmental Master Plan (TR010063/APP/2.13).

Historical Development

1.11 As per Atkins' Ground Investigation Report (TR010063/APP/6.15), the site has been historically used agriculturally. The route network predates the earliest mapping dated 1884. Besides the construction of the M5 motorway and minor residential development, the site and its surroundings have remained largely unchanged to present day. Cheltenham to the south east has seen significant expansion over time, with most of the remaining surrounding area retained for agricultural purposes.

Proposed Development

1.12 It is proposed that the M5 J10 is re-aligned to an all-movements junction, adding four additional slip roads and a new link road between the A4019 and B4634. The A4019 will also be widened and there will be new provisions for flood storage in the fields to the south of M5 J10. The works will take place under a deposit for recovery scheme, requiring the importation of circa 602,802 m^3 of bulk fill material. The majority of this material will be placed as part of the new link road and gyratory slip road construction.

1.13 These works are required in order to reduce traffic flows within Cheltenham with the purposes of entry/exit onto the M5, and to enable the area to meet its housing and job commitments made as part of the Joint Core Strategy for the period up to 2031. The work is categorised as a Nationally Significant Infrastructure Project (NISP) under the Planning Act 2008.

1.14 The construction scheme is anticipated to commence in 2025 and programmed to last 30 months, with the scheme planned to be open for traffic in 2027.

1.15 Acceptable Class 1 and Class 2 General Engineering Fill will be imported, placed, and compacted under the Environmental Permit for the Deposit of Waste for Recovery. This will consist of inert waste materials such as subsoils, aggregates, concrete and minerals. The imported waste material will only be accepted following the principles and checks set out in the Importation Protocol (243213/IP) that details the waste acceptance criteria. The Importation Protocol will be based upon the assessment and standards in the Project Contract documents (Appendix 6/14 and 6/15) produced by the Project Designer.

1.16 The proposed design levels are shown in the Engineering Section Plan (TR010063/APP/2.10).

Site General

1.17 A number of site compounds will be used during the construction phase, e.g. site offices, welfare facilities, storage for plant and materials. The main site compound will be located to the north of and accessed from the A4019 and will operate for the duration of the construction works. This will occupy approximately 4.5 hectares of land that is currently agricultural land.

1.18 Additionally, a temporary haul road will be required along the length of the Link Road for its construction as well as the construction of the associated flood mitigation structure and the River Chelt bridge. This will also include the construction of a temporary bridge across the River Chelt, adjacent to the proposed new bridge.

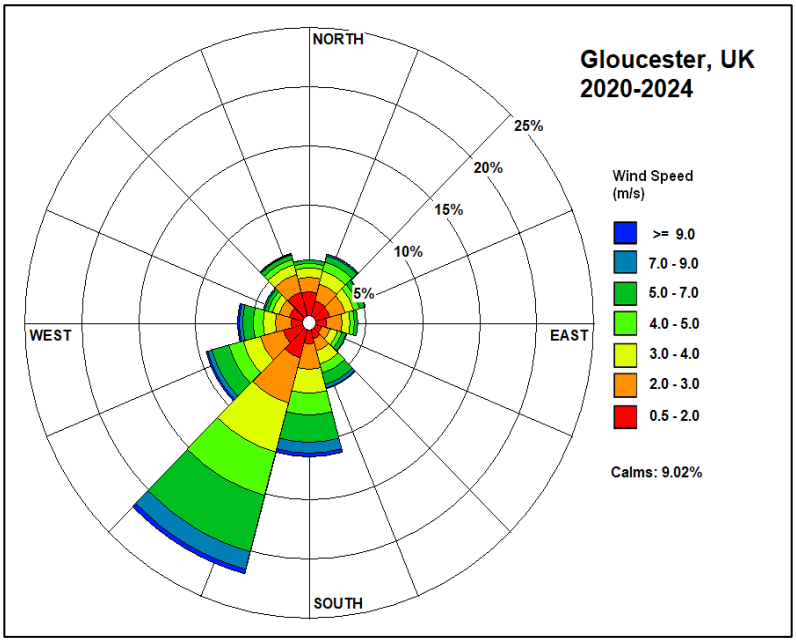
1.19 Details of the temporary site layout during the construction phase can be found on the Works Plans (TR010063/APP/2.4) and Site Layout Plan (243213/D/002).

1.20 During the construction period, the phasing of works is essential in order to keep routes open to traffic, specifically to nearby residential properties and businesses. It is noted that more land is required during the construction period than is ultimately needed when the site is open to traffic. This is to allow for site compounds, storage of materials and equipment, and temporary haul routes. It is intended to return the additional construction land to its original owners following agreed restoration works.

1.21 Road closures will be minimised, although closure of the M5 J10 northbound on-slip will take 15 months and 9 months for the southbound off-slip, with an overlap of 5 months when both slip roads will be closed.

1.22 The Importation Protocol (243213/IP) details the site acceptance procedures. Any non-conforming waste will be placed in a demarcated dedicated quarantine area. In the event there is non-conforming waste, waste will be removed by the producer or transferred to a suitably licenced facility.

Air Quality / Climate



1.23 Meteorological wind data, for five years, has been acquired. The wind data has been taken from the Met Office stations at Gloucester airport, which are located circa 4 km from the site, respectively. The prevailing wind direction is from the south west.

1.24 DEFRA Air Quality Management Areas (AQMAs) maps[1] indicate that the site is not within an AQMA. There is an AQMA for NO_2 on the Cheltenham High Street circa 2 km east of the site.

1.25 Any air quality effects due to construction will be temporary and could be suitably minimised by the application of standard and appropriate mitigation measures. A Dust Emissions Management Plan is included within the application.

Geology and Hydrogeology

1.26 The Ground Investigation Report (TR010063/APP/6.15, 10.7) notes that the site and the surrounding area is relatively flat, rising in easterly direction from approximately 20 to 38 m Above Ordnance Datum (AOD). The site varies from this trend where the A4019 crosses the M5 via embankments at an elevation of ca. 28 m AOD. The current topography of the site, i.e. existing ground level (m AOD), is shown in in the Engineering Section Plan (TR010063/APP/2.10).

1.27 The BGS records[2] identify two areas of artificial ground within the site boundary. One sits adjacent to the M5 northbound and the other along the A4019 into Cheltenham. The former is a raised area, according to Atkins' Ground Investigation Report (TR010063/APP/6.15, 10.7) associated with the historic Colman's Farm landfill, whereas the latter is an area that has been lowered due to man-made excavations.

1.28 Furthermore, the M5 sits across a number of superficial deposits within the site boundary, namely Alluvium (clay, silt, sand and gravel) as well as Cheltenham Sand and Gravel. Cheltenham Sand & Gravel superficial deposits run along the length of the A4019. Bedrock geology of the site records mostly Charmouth Mudstone Formation and the southern area of the M5 sits on Rugby Limestone Member (mudstone and limestone interbedded). The geology is shown in the Envirocheck maps in Appendix B.

1.29 The superficial geology, where it is Cheltenham Sand & Gravel, is designated as a Secondary A Aquifer. The bedrock geology, where it is Charmouth Sand & Gravel, is designated as a Secondary (undifferentiated) Aquifer, and where it is Rugby Limestone Member, is designated as a Secondary A Aquifer. The site investigations do not identify evidence of a viable thickness of superficial aquifer and limited groundwater. As a conservative approach, shallow groundwater has been assessed as a receptor albeit surface water is considered the main receptor.

1.30 Soilscape[3] identifies the soils along the A4019 stretch as 'freely draining lime-rich loamy soils', and in the majority of the rest of the site as 'lime-rich loamy and clayey soils with impeded drainage'. A small section of the southern M5 area is defined as 'loamy and clayey floodplain soils with naturally high groundwater'.

[1] Department for Environment Food & Rural Affairs, UK AIR AQMAs interactive map, accessed 03/07/2025
[2] BGS Geology Viewer (BETA), accessed 30/05/2025
[3] LandIS - Land Information System - Soilscapes soil types viewer, accessed 30/05/2025

1.31 The site is not located within a Groundwater Source Protection Zone, and there are no Groundwater Source Protection Zones within 1 km of the site.

1.32 There are a number of historic BGS borehole records on site. Most of these are located along the length of the M5. Refer to BGS Borehole Records[4] for further details.

Previous Site Investigation

1.33 Between June and October 2021, Geotechnical Engineering Ltd conducted a ground investigation of the site.

1.34 The ground investigation comprised 81 rotary core boreholes, 7 dynamic sampler boreholes and 88 trial pits. 15 gas/water monitoring standpipes were installed in some of the boreholes in order to provide information on groundwater levels and quality as well as gas measurements.

1.35 A total of 144 soil samples were scheduled for environmental testing. A total of 46 groundwater samples as well as surface water samples from upstream and downstream of the Rivers Chelt and Leigh Brook were analysed.

1.36 Refer to the Ground Investigation Report (TR010063/APP/6.15) for a detailed breakdown of the site's ground condition. To summarise, Topsoil, Made Ground/Embankment Fill and Superficial Deposits of Alluvium and Cheltenham Sands and Gravels overlie the (Weathered) Charmouth Mudstone Formation.

Groundwater Abstractions

1.37 There are no licensed groundwater abstraction licences within the site boundary. It notes that there are no groundwater discharge consents within the site boundary, and one active groundwater discharge consent located approximately 250 m from the M5.

1.38 Moreover, the Environmental Statement refers to a review undertaken by Tewkesbury Borough Council which identified no private water abstractions within the study area.

Landfill Sites

1.39 There are three historical landfill sites within 1 km of the site boundary, as per Atkins' Ground Investigation Report (TR010063/APP/6.15). They are situated at the following locations:

- 90 m north of the site boundary, adjacent to the M5 northbound (Coleman's Farm landfill);
- 180 m south east of the site boundary, adjacent to the A4019 (Violet Villa); and
- 940 m south of the A4019 at Arle.

1.40 According to the Ground Investigation Report, no currently active landfill sites are located within 1 km of the site boundary.

Hydrology

1.41 The site lies within the River Chelt flood plain and is intersected by multiple watercourses, e.g. Hatherley Brook, River Chelt, Leigh Brook and River Swilgate. The majority of the site sits within Flood Zones 2 and 3 (medium to high probability of flooding) however there are areas in Flood Zone 1. The surface water courses are shown on the Permit Boundary Plan 243213/D/001.

1.42 The site is situated in the Severn River Basin District. The site is dissected by several surface water courses. A network of drains criss-crosses the site boundary area.

[4] Borehole records - British Geological Survey, accessed 30/05/2025

1.43 There are two public surface water abstraction licences within the study area operated by Corilla. It also refers to a review by Tewkesbury Borough Council which suggests there are no private surface water abstractions within the study area.

1.44 There is a spring (NGR SO 91661 24606), located on superficial alluvium deposits, that supplies Uckington Moat. The report notes that the moat 'also receives inflow from overland drains and surface run off'.

1.45 The current drainage design consists of eight drainage catchments that all discharge to either the River Chelt or Leigh Brook. The scheme's drainage design will consist of nine drainage catchments that all discharge into either the River Chelt or Leigh Brook. It is concluded that the scheme will not have any significant effects on the surface water quality of the River Chelt or Leigh Brook when operational. A Permit to discharge temporary surface water during construction will be sought as part of the Enabling Works.

1.46 As part of the aforementioned Ground Investigation in 2021, upstream and downstream surface water samples were collected and analysed. None of the analysed contaminants exceeded the EQS (Environmental Quality Standards) screening criteria.

Noise

1.47 Due to the nature of the development, i.e. construction on an existing motorway and road network, the site is characterised by a relatively high noise baseline. Whilst the site surroundings are predominantly rural and agricultural, there are residential receptors located throughout.

1.48 Baseline noise levels at key receptor locations were calculated at between 55-70 dB (daytime and evening) and 50-70 dB (night-time). Potential proposed construction noise calculations were based on DEFRA strategic noise mapping from 2017, predicted 'do minimum opening year' for 2027, and baseline monitoring in 2021. Sources considered were construction plant, compounds and construction traffic on haul roads. Noise controls and mitigation form part of the project's Contract documents.

Environmental Setting & Cultural and Natural Heritage

1.49 There are no statutory land-based designated sites on or within 1 km of the site. This includes any of the following:

- Special Areas of Conservation (SAC);
- Areas of Outstanding Natural Beauty (AONB);
- National Parks;
- Marine Conservation Zones;
- Sites of Special Scientific Interest (SSSI);
- Local Nature Reserves (LNR);
- Special Protection Areas; and
- Ramsar Sites.

1.50 The nearest statutory designated site is Coombe Hill Canal SSSI, located circa 1.6 km to the west of the site boundary. Badgeworth SSSI is situated circa 2 km to the south of the site boundary and Turvey's Piece SSSI is located circa 3 km to the west of the site boundary. Griffiths Avenue LNR is situated circa 2 km to the south east of the site.

1.51 There are no statutory designated sites within 1 km of the site, but there are a number of priority habitats at the site boundary and within 1 km, as shown on drawing 243213/D/003.

1.52 For detailed information please refer to Drawings 243213/D/003, and TR010063/APP/2.11, TR010063/APP/2.12.

1.53 There are 73 listed buildings within 1 km of the site boundary. For detailed information please refer to the Historic Environment Sites Plan (TR010063/APP/2.12).

1.54 There are two scheduled monuments within 1 km of the site boundary. The nearest one is 'Moat House', directly adjacent to the south of the site. The 'Churchyard Cross in St John The Baptist's Churchyard' is located approximately 1 km to the west of the site. For detailed information please refer to the Historic Environment Sites Plan (TR010063/APP/2.12).

Surface Water Management

1.55 Surface Water Management will be managed in line with the site's Construction Environmental Management Plan (CEMP). The site plans will cover containing and managing surface water during construction and controls undertaken in line with good construction management practice. A separate Discharge Permit application (EPR/PP3723MX) is currently in with the Environment Agency for discharge of surface water during the construction phase.

Gas Monitoring

1.56 As part of the 2021 Ground Investigation, 15 gas/water monitoring standpipes were installed in boreholes to assess ground gas levels (as well as groundwater level and quality data).

1.57 The risk from ground gas at and surrounding the site is considered very low in the Ground Investigation Report (TR010063/APP/6.15). All proposed infill is above ground and the source will be subsoils and inerts only and therefore very low gas potential.

2.0 SOURCE PATHWAY LINKAGES AND CONCEPTUAL MODEL

2.1 Human Health / Loss of Amenity – Noise and Vibration: The works involve the importation and placement of suitable material consisting of inert construction and demolition subsoil arisings, which will involve the following plant: tipper lorries, bulldozers and excavators. The nearest sensitive receptors are the residential properties located directly adjacent to the site as well as users of the public right of ways in the locality. No activities will take place outside of approved working hours. The operations have been assessed under an approved (by the local Authority) noise and vibration assessment as part of the Environmental Statement (TR010063/APP/6.4, Chapter 6). The activities are a temporary construction development and not permanent. No further requirements are necessary.

2.2 Human Health / Natural Heritage / Loss of Amenity – Dust and Mud: The works involve the importation and placement of suitable material, which will involve tipper lorries, bulldozers and excavators. The nearest sensitive receptors are the residential properties located directly adjacent to the site as well as users of the public right of ways in the locality. Without suitable working controls the works may potentially cause fugitive dust emissions, mud deposition on the road and a loss of amenity and potential nuisance to surrounding sensitive receptors. The site will maintain an internal haul route, and wheel wash at the site. A Dust Emissions Management Plan sets out the dust controls.

2.3 Cultural Heritage and Natural Heritage – Direct and Indirect impact: There are no statutory designated sites within 1 km of the site. The presence of a variety of protected/priority species within and surrounding the scheme has been confirmed. Chapters 7 (Biodiversity, TR010063/APP/6.5) and 11 (Cultural Heritage, TR010063/APP/6.9) of the Environmental Statement detail mitigation and ongoing controls that will be implemented and managed under the DCO conditions.

2.4 Controlled Waters – Pollution: The import of potentially contaminated materials or spillages of oils and hydrocarbons creates a risk of potential pollutants entering the surface water or passively draining to underlying shallow groundwater. There is no direct discharge into shallow groundwater. A spill response and accident prevention plan will form part of the site's specific Construction Environmental Management Plan (CEMP). The implementation of the Importation Protocol (243213/IP) will ensure only acceptable fill material is imported. The Importation Protocol will be based upon the assessment and standards in the Project Contract documents (Appendix 6/14 and 6/15). These standards have been based upon Atkins Controlled Waters Risk Assessment. The waste acceptance thresholds in Appendix 6/14 are based upon surface water Environmental Quality Standards and Drinking Water Standards. Furthermore, only natural subsoils will be placed within 10 m of the River Chelt and within the Flood Zone 3 (plus climate change allowance) level. This will act

as an attenuation layer. This is shown in Conceptual Site Model drawings 243213/D/007A and 007B. Due to the proposed permitted waste streams to be imported and importation controls to be applied, it is assessed that the fill material will pose a low risk to the controlled water environment. Surface water will be managed in accordance with construction best practice. A routine monitoring regime will be developed for monitoring of the shallow groundwater, Leigh Brook and River Chelt during placement of soils and for one year post-placement.

2.5 Ground Gas: Given the development will be constructed using inert materials with a low organic content, the risk posed by the generation of ground gases is not considered significant and monitoring is not proposed. Following the construction phase, the site will return to a fully operational road network. The risk grom ground gas at and surrounding the site is considered very low.

2.6 Stability: The final land use is not at risk of the impacts of stability. Given the accepted waste types are limited to mineral / aggregate only, the risk of instability is not considered significant. The works will be in accordance with an approved design. The Operator will use well known earthworks compaction techniques to ensure material is suitably compacted during landfilling. During construction, earthworks will be kept at safe angles of repose. No further stability risk assessment is considered necessary.

2.7 The H1 Risk Assessment is attached in Appendix A. A Site Condition Report detailing the current baseline conditions is submitted with the application.

DRAWINGS

APPENDIX A

APPENDIX B