

# A47 Blofield to North Burlingham Dualling

**Scheme Number: TR010040**

**Volume 6**

## **6.2 Environmental Statement Appendices** **Appendix 10.4 – Mineral Impact Assessment**

APFP Regulation 5(2)(a)

Planning Act 2008

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

December 2020

Infrastructure Planning

Planning Act 2008

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

A47 Blofield to North Burlingham  
Development Consent Order 202[x]

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**ENVIRONMENTAL STATEMENT APPENDICES**  
**Appendix 10.4 Mineral Impact Assessment**

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## Appendix 10.4 Mineral impact assessment

### 10.1. Introduction

#### Minerals safeguarding policy

##### *Legislative context*

10.1.1. A summary of the legislative context of the Proposed Scheme and the requirement for an Environmental Impact Assessment (EIA) is provided in Section 1.3 of Chapter 1 (Introduction) of this Environmental Statement (ES).

##### *National planning policy context*

10.1.2. A general summary of the national planning policy context is provided in Section 1.3.8 to 1.3.11 of Chapter 1 (Introduction) of this ES.

10.1.3. The National Policy Statements for National Networks (NNNPS) set out the need for, and Government's policies to deliver, development of nationally significant infrastructure projects on the national road and rail networks in England. This includes requirements to consider sustainability within the development.

10.1.4. Consideration of mineral resources is included in paragraph 5.169 which states 'Applicants should safeguard any mineral resources on the proposed site as far as possible' and Paragraph 5.182 which states 'Where a proposed development has an impact on a mineral safeguarding area, the Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources'.

10.1.5. The National Planning Policy Framework (NPPF) was revised in February 2019. Section 17 of the NPPF outlines the planning policy mechanisms required to facilitate the sustainable use of minerals. The NPPF states that planning policies should '*safeguard mineral resources by defining mineral safeguarding areas, and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided*' and '*set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development take place*'.

##### *Local planning policy*

10.1.6. The Norfolk Minerals and Waste Development Framework was adopted on 1 January 2010 and will run for a 17 year period until 31 December 2026 (in line with Planning Policy Statement 12: Local Spatial Planning (PPS12)).

- 10.1.7. The Minerals and Waste Development Framework comprises three mineral and waste planning policy documents and a policies map:
- Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 (adopted September 2011)
  - Minerals Site Specific Allocations Development Plan Document (adopted October 2013, amendments adopted December 2017)
  - Waste Site Specific Allocations Development Plan Document (adopted October 2013)
- 10.1.8. The purpose of the Minerals and Waste Development Framework is to provide a series of policies used to plan for mineral extraction and associated development and waste management facilities in the most sustainable way in line with the Government's sustainable development strategy in Planning Policy Statement 1: Delivering Sustainable Development (PPS1).
- 10.1.9. The Core Strategy document sets out the spatial vision for future mineral extraction and associated development through a series of strategic objectives and policies.
- 10.1.10. Norfolk County Council is preparing a Norfolk Minerals and Waste Local Plan Review to consolidate the three adopted plans which form the current Minerals and Waste Framework. This review will extend the plan period to the end of 2036. It is anticipated that the adoption of the Norfolk Minerals and Waste Local Plan Review will occur by March 2022.
- 10.1.11. The legislative and policy framework is summarised in ES Chapter 10 Section 10.3 and provided in Appendix 10.1.

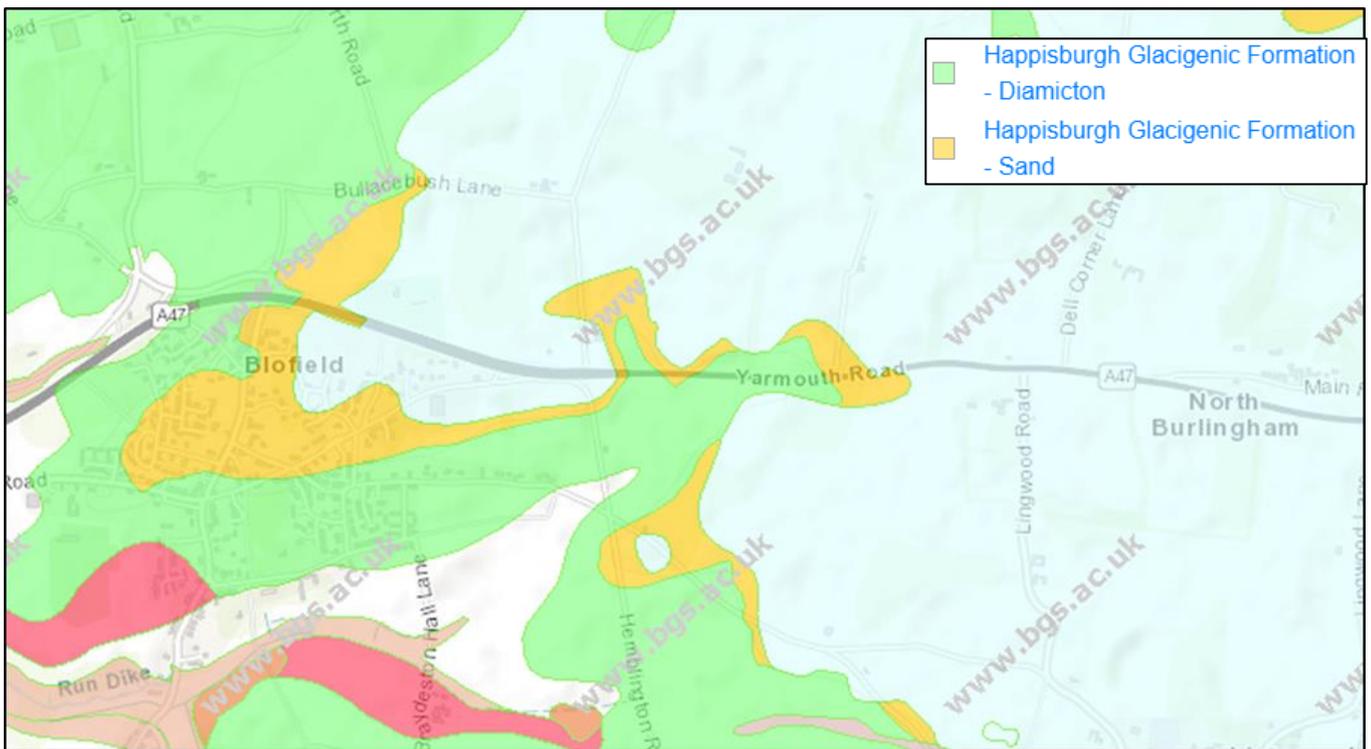
## **10.2. Need for the Proposed Scheme and further minerals assessment**

- 10.2.1. The need for the Proposed Scheme is discussed in Chapter 2 (The Proposed Scheme).
- 10.2.2. Highways England submitted the EIA Scoping Report for the Proposed Scheme to the Secretary of State in February 2018. The subsequent Scoping Opinion (**TR010040/APP/6.6**) was adopted by the Secretary of State in March 2018. Norfolk County Council were consulted as part of the EIA scoping exercise for the Proposed Scheme. Norfolk County Council identified the Proposed Scheme as being partly underlain by a mineral resource (sand and gravel) which is safeguarded as part of the Mineral and Waste Core Strategy and as such, the Council have a duty to ensure that the mineral resources are not needlessly sterilised. To determine whether the excavated minerals can be re-used on the Proposed Scheme, further minerals impact assessment was required.

- 10.2.3. Within the Scoping Opinion, the Inspectorate noted the consultation response from Norfolk County Council and stated that the extent to which the Proposed Scheme would impact mineral reserves should be assessed in the ES and that the Applicant should seek to agree the approach to the assessment.

### **10.3. Mineral resources**

- 10.3.1. The BGS 1:50,000 scale geological map indicates that sections of the Proposed Scheme are underlain by superficial deposits of sands attributed to the HGF (Figure 10.1), also referred to as the granular HGF. The sand is typically described as being yellowish brown and yellowish orange in colour, stratified and exhibiting a range of bedding structures.
- 10.3.2. The granular HGF has been designated as a mineral safeguarding area (MSA) as part of the adopted Norfolk Minerals and Waste Development Framework (Figure 10.2).
- 10.3.3. The inclusion of land in a MSA does not necessarily mean that planning permission would be granted for mineral extraction and there may be sound planning reasons why proposals would be rejected. Designation of these areas is intended to ensure that mineral interests are taken into account at the appropriate time.
- 10.3.4. For example, circumstances may arise where it may appropriate to undertake mineral extraction in advance of development. MPS1 (paragraph 13) states that planning authorities should encourage the prior extraction of minerals, where practicable, if it is necessary for non-mineral development to take place in MSAs.



(British Geological Survey materials © UKRI [2020])

Figure 10.1 50,000 scale geological map

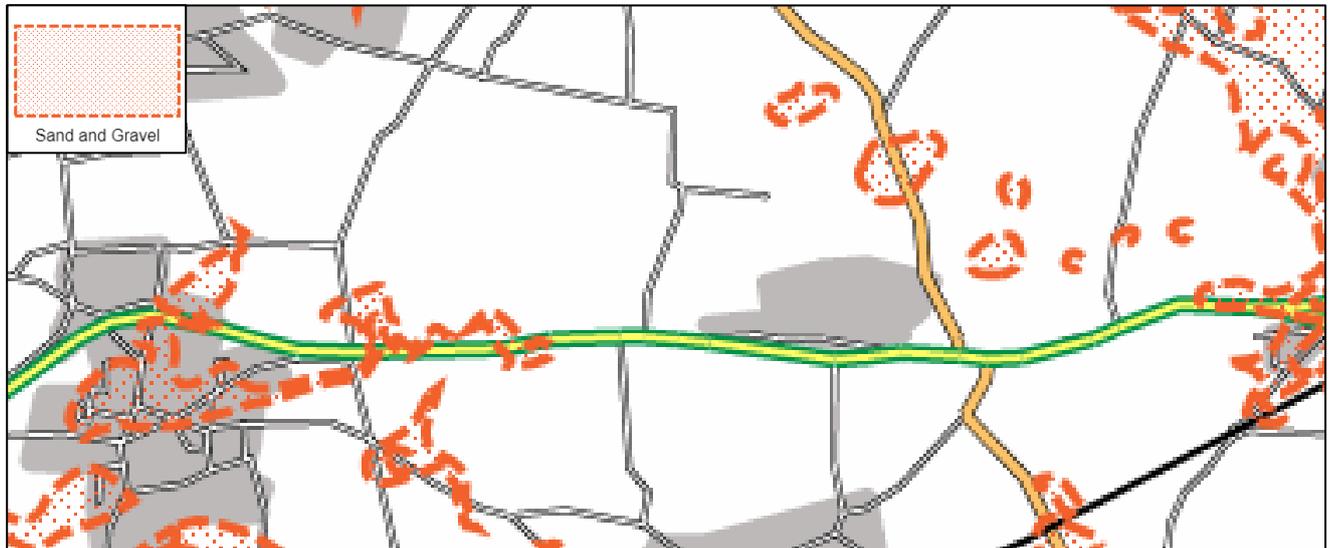


Figure 10.2 Norfolk County Council safeguarded mineral resources map

10.3.5. The most recent ground investigation for the Proposed Scheme was undertaken by BWB Consulting Ltd between 13 August and 20 September 2018. Further details on the ground investigation are included in the A47 Blofield to Burlingham Ground Investigation Report 2020 (GIR) (Sweco 2020).

10.3.6. Section 4 of the GIR presents a summary of the ground conditions across the Proposed Scheme. Geological long sections are provided in Appendix A of the

GIR (Drawings HE551490-GTY-VGT-000-DR-VG-30001 to HE551490-GTY-VGT-000-DR-VG-30006).

- 10.3.7. The HGF, where encountered, was recorded as soft to firm orangish-brown slightly gravelly sandy to very sandy clay and yellowish orangish-brown gravelly slightly clayey fine to coarse sand with some subangular to subrounded flints. Some dark mottling, bands of coarse orange sand and lenses were recorded. The upper horizons of the HGF predominantly consisted of sands recorded between 17m and 22m above ordnance datum (AOD) with a thickness of between 0m (absent) and 10m.
- 10.3.8. Depending on the local topography and ground levels, the HGF is typically overlain by some 5m (in some instances up to 7m or 8m) thickness of rocks of the Lowestoft Formation which forms an extensive sheet of chalky till, together with outwash sands and gravels, silts and clays across parts of Norfolk. The Lowestoft Formation is not included within any designated MSAs proximate to the route of the Proposed Scheme.

## **10.4. Practicability and environmental acceptability for the extraction of mineral reserves and infrastructure**

### **Prior extraction**

- 10.4.1. Paragraph 143 of the NPPF requires Local Plans to:

*‘Set out policies to encourage the prior extraction of minerals, where practicable and environmentally feasible, if it is necessary for non-mineral development to take place’*

- 10.4.2. Prior extraction is the process by which mineral is won from a site prior to non-mineral development taking place. This can take place at a number of different scales, which would depend on the size of the Proposed Scheme, the depth of mineral, the type and quality of the mineral, and the nature of the proposed development. For example, it may take the form of a materials management plan (MMP) which will form part of the principal contractor’s environmental management plan (EMP).
- 10.4.3. Constraints to prior extraction of mineral resources include:
- existing landscape features
  - designated habitats and species
  - sites of archaeological significance
  - historic buildings and their settings
  - existing sensitives developments (including residential properties)

- 10.4.4. To determine whether the above constraints would inhibit the practical prior extraction of the granular HGF, a desktop study was undertaken using geographic information system (GIS) mapping produced for the Proposed Scheme.
- 10.4.5. The main points arising from the assessment of environmental constraints are as follows:

*Within the redline boundary*

- No significant environmental constraints would preclude the prior extraction of the granular HGF within the Proposed Scheme redline boundary.
- The safeguarded granular HGF intersects the Proposed Scheme in the footprint of the existing A47 road infrastructure. This precludes prior extraction as the carriageway will be in use during the offline construction works and will be retained or amalgamated into the Proposed Scheme.
- Safeguarded granular HGF deposits are located in the vicinity of the proposed Yarmouth Junction. It is anticipated that these deposits will be excavated at the topographic low point of the Proposed Scheme. These materials will be excavated along the mainline (1m deep road box) and along embankments for ground improvement and drainage installation (Drawing HE551490-GTY-VGT-000-DR-VG-30001). The remainder of the safeguarded HGF deposits that intersect with the proposed Yarmouth Junction (off the existing A47 carriageway) are not anticipated to require excavation as part of the Proposed Scheme.
- It may not be considered viable to prior excavate the granular deposits of HGF that may remain unexcavated during construction as the sideroad geological long section (sheet 1 of 2) contained within the GIR suggests the depth of the deposits is highly variable with a thickness of less than 5m and the proportion of overburden (topsoil) is occasionally greater than a 1:1 ratio suggesting it may not be economically viable to prior-extract. Additionally, there is a requirement to increase the design levels in this location and would therefore require the import of materials. Prior extraction of the granular HGF would increase the total volume of imported materials required (Drawing HE551490-GTY-VGT-000-DR-VG-30005).
- Safeguarded deposits recorded at the intersection of Lingwood Road and Hemblington Road extend north eastwards into the Proposed Scheme's redline boundary. These deposits are unlikely to be excavated during the works. Although restricted by existing residential receptors, it is not considered likely that the Proposed Scheme would further constrain future extraction in this location.
- Safeguarded HGF deposits from Ch. 1500 to Ch. 1900 will not be excavated as part of the works. Limited ground investigation within this general location identifies HGF within a few metres of the existing ground level (Drawing HE551490-GTY-VGT-000-DR-VG-30002) but the potential thickness of the deposit is unknown in this location. The mapped deposit is considered

limited in spatial extent. It is unlikely that prior-excitation of these materials would be suitable due to the close proximity of the existing A47 carriageway and presence of residential properties within 150m of the eastern extent of the safeguarded deposit. Therefore, the area of available extraction to avoid these receptors is further limited.

- Sporadic deposits of granular HGF were encountered outside of the mineral safeguarding areas. These deposits were typically found at depth, with significant volumes of overburden (cohesive HGF and Lowestoft Formation). With the exception of excavations described along the mainline and embankments in the vicinity of the Yarmouth Junction, there is little excavation proposed for the remainder of the Proposed Scheme. It is unlikely to be economically viable to excavate the sporadic deposits due to the depth of overburden.

#### *Outside the redline boundary*

- Safeguarded deposits of HGF are also located beneath the urban development of Blofield, to the south west of the Proposed Scheme. Due to the built-up nature of this location further extraction would likely be restricted to small-scale excavation during new development.
- Safeguarded deposits to the east of Plantation Road (adjacent to the north of the present A47 road infrastructure) fall outside of the Proposed Scheme's redline boundary and would consequently not be extracted as part of the Proposed Scheme. Although restricted by Plantation Park (commercial properties) and existing road infrastructure, it is not considered likely that the Proposed Scheme would further constrain future extraction of deposits in this location.
- Safeguarded deposits in the vicinity of High Noon Lane would remain unaffected by the Proposed Scheme. Although restricted by High Noon Lane and existing residential receptors (Sparrow Hall Bungalow) it is not considered likely that the Proposed Scheme would otherwise constrain future extraction of deposits in this location.
- Safeguarded deposits adjacent to the north of the existing A47 carriageway between Ch. 1300 and 1550 would remain unaffected by the Proposed Scheme. Although restricted by the unnamed track and agricultural and or residential buildings (Plantation Farm and Jary's Farm), it is not considered likely that the Proposed Scheme would constrain future extraction in this location.

#### *Summary*

- 10.4.6. In summary, there are no significant environmental constraints to the prior excavation of mineral resources within the Proposed Scheme's redline boundary. However, mapped safeguarded deposits attributed to the HGF are widely dispersed and considered small in spatial extent. Prior extraction would therefore require excavation of a number of discrete areas of mineral deposits restricted in size and depth. Where deposits are known to be present, they predominantly

intersect the existing A47 carriageway which would not be suitable for prior-extraction.

- 10.4.7. Safeguarded deposits are present along the mainline and localised embankments and would be excavated during the construction of Proposed Scheme (proposed Yarmouth Junction). Further safeguarded deposits are located off the mainline at the proposed Yarmouth Junction. These deposits would not be excavated as part of the works in this location. Conversely, there will be a requirement to import materials as part of the construction of the junction. The sideroad geological long section HE551490-GTY-VGT-000-DR-VG-30005 suggests the depth of the deposits in this location is highly variable with a thickness of less than 5m. Where the safeguarded HGF deposits extend beyond the Proposed Scheme's redline boundary extraction is unlikely to be constrained by the construction of the Proposed Scheme. Conversely, future extraction may benefit from the proposed improvements to the road network.

## **10.5. Mineral infrastructure sites**

- 10.5.1. The mineral impact assessment also considers the constraints the Proposed Scheme may place on existing and proposed mineral extraction and mineral infrastructure sites.
- 10.5.2. The Norfolk County Council Adopted Revised Policies Map identifies:
- Existing mineral extraction sites and mineral infrastructure
  - Existing mineral sites and mineral infrastructure consultation area
  - Mineral extraction site specific allocation or consultation area for mineral site specific allocations and their indicative access routes.
- 10.5.3. There are no such designated sites in proximity to the Proposed Scheme therefore it is concluded that the Proposed Scheme would not unduly restrict existing and proposed mineral operations within the county.

## **10.6. Policy CS16 Test: Safeguarding mineral and waste sites and mineral resources**

- 10.6.1. This section examines the degree to which the Proposed Scheme satisfies the test set out in Policy CS16 of the Norfolk Minerals and Waste Development Framework Core Strategy and Minerals and Waste Development Management Policies Development Plan Document (2010-2026 (published 2011)).
- 10.6.2. Policy CS16 states that Norfolk County Council will safeguard existing, permitted and allocated mineral extraction and associated development, which is currently active, has planning permission and is an allocated site.

- 10.6.3. Norfolk County Council will oppose development proposals which would prevent or prejudice the use of safeguarded sites unless suitable alternative provision is made. The Policy cites paragraph 13 of Minerals Policy Statement 1: planning and minerals which '*cautions against proven mineral resources being 'needlessly' sterilised by non-mineral development*'.
- 10.6.4. Although no further definition of 'needlessly sterilised' is provided within the Council's Norfolk Minerals and Waste Development Framework, it can be assumed that this would include excavation and disposal of the safeguarded mineral resource, reduced access to safeguarded resources through development, proximal sterilisation and encroachment of existing development onto safeguarded resources.

#### *Re-use suitability assessment*

- 10.6.5. To determine whether the HGF is suitable for re-use within the Proposed Scheme, the material has been compared to the geotechnical parameters provided within Table 6/2 of the Manual of Contract Document for Highway Works: Vol 1: Specification for Highway Works Series 600.
- 10.6.6. It is anticipated that the HGF will be exposed in the topographic low point of the Proposed Scheme between mainline Ch. 1+000 to 1+450m.
- 10.6.7. Particle size distribution testing (PSD) of this material indicates that it would classify as a Class 2A/B material as the percentage passing the 63 microns sieve is predominantly less than 15%.

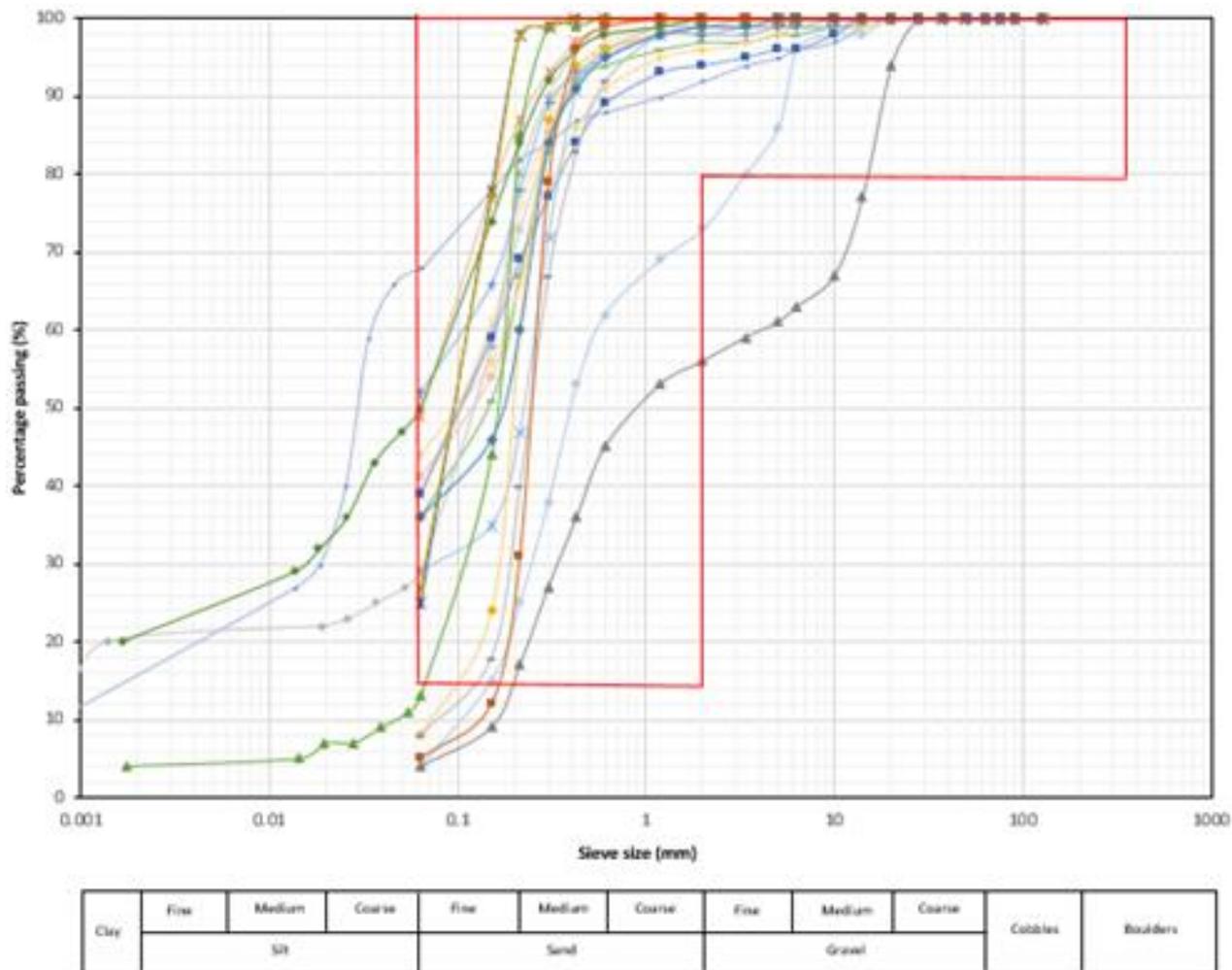


Figure 10.3 PSD distribution of the granular Happisburgh Glacigenic Formation.

10.6.8. It is anticipated that approximately 22,404m<sup>3</sup> of the granular HGF will be excavated during the construction of the Proposed Scheme through:

- excavation of the mainline 1m deep road box (including pavement and capping layers) (9,450m<sup>3</sup>)
- excavation under S01 approach embankments to carry out ground improvement and installation of drainage layer (11,317m<sup>3</sup> south embankment and 1637m<sup>3</sup> north embankment)

10.6.9. A full assessment of re-use potential has not been undertaken and the reusability of material will depend on strength, moisture content and condition upon excavation and the feasibility to treat the material. However, as the Proposed Scheme has a significant earthworks material deficit, any opportunity to re-use this material in the works will be exploited and as much material as possible will be re-used as general embankment fill (Class 2A / 2B) or alternatively for landscaping.

### *Design, mitigation and enhancement measures*

- 10.6.10. The Proposed Scheme has been designed to avoid and minimise the impacts on material resources through the process of the assessment of alternatives and ‘embedded’ mitigation as defined in DMRB LA 104 (Environmental Assessment and Monitoring). Design measures integrated into the Proposed Scheme for the purpose of minimising the environmental effects is reported in Chapter 2 (The Proposed Scheme) of the ES.
- 10.6.11. Section 10.9 of the ES Chapter 10 reports on ‘essential’ mitigation required in addition to embedded mitigation to reduce and offset likely significant adverse environmental effects
- 10.6.12. The following essential mitigation has been outlined to ensure that excavation material attributed to the HGF is not ‘needlessly sterilised’:
- In accordance with the EU Waste Framework Directive 2008/98/EC ‘waste hierarchy’, the Proposed Scheme aims to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly disposal to landfill.
  - Design for re-use and recovery by identifying, securing and using materials that already exist on the Proposed Scheme.
  - Design for materials optimisation by simplifying the layout and form to minimise material use and balancing cut and fill.
- 10.6.13. In accordance with DMRB LA 120 (Environmental Management Plan) an EMP has been prepared parallel to the development of the Proposed Scheme design and construction methodologies. Measures and procedures within the EMP (**TR010040/APP/7.7**) include design, construction and operational mitigation, which have been developed in-line with the requirements arising from this ES.
- 10.6.14. The principal contractor will update the EMP (Second Iteration EMP) prior to commencement of works based on the First Iteration EMP. As part of this, the principal contractor will be required to generate a MMP.
- 10.6.15. The MMP will be developed in accordance with the *CL:AIRE Definition of Waste Code of Practice (DoW CoP), Version 2, 2011*. This approach offers the most effective method of ensuring materials can be re-used on or off the Proposed Scheme. The MMP will detail the procedures and measures to be implemented to classify, track, store, re-use and dispose of all excavated materials encountered during the construction phase.
- 10.6.16. In addition to the mitigation outlined in ES Chapter 10, Section 10.9 outlines potential enhancement measures to be incorporated into the Proposed Scheme including re-use of suitable surplus material outside of the Proposed Scheme’s

redline boundary. Examples include the use of suitable surplus materials in engineered noise and landscaping bunding and on local projects such as fenland restoration that are concurrent to the construction phase of the Proposed Scheme.

## 10.7. Conclusions

- 10.7.1. Under its Roads Investment Strategy, the Applicant, Highways England, has identified that there is a requirement to improve transport infrastructure along an approximately 2.6km section of the A47 between Blofield and North Burlingham. The proposed upgrade is part of the wider programme of A47 corridor improvement programme required to improve connectivity and stimulate growing economic activity between Norwich and Great Yarmouth.
- 10.7.2. The single carriageway section of the A47 from Blofield to North Burlingham acts as a bottleneck resulting in congestion, particularly at peak times and leads to longer and unreliable journey times.
- 10.7.3. The proposals would create a new dual carriageway that would relieve congestion, provide extra road space, improve safety and help provide a free-flowing network.
- 10.7.4. Due consideration of the environmental impacts of the Proposed Scheme in the context of applicable National and local planning policy confirms that there is a clear need for the Proposed Scheme to proceed.
- 10.7.5. The Norfolk Minerals and Waste Development Framework identifies the presence of Minerals Safeguarding Areas which intersect the Proposed Scheme in the footprint of the existing A47 road infrastructure. In these instances, mineral resources are sterilised by the existing development, whilst prior extraction is prohibited as the carriageway will be in use during the offline construction works and will be retained or amalgamated into the Proposed Scheme.
- 10.7.6. However, for some parts of the Proposed Scheme, the opportunity is presented to undertake prior excavation of the granular HGF designated as a MSA. The intention is to use excavated materials within the Proposed Scheme in accordance with the wider measures developed to avoid and minimise the impacts on material resources through the process of the assessment of alternatives and 'embedded' mitigation.
- 10.7.7. Where deposits of safeguarded minerals are present outside of the area of the DCO the Proposed Scheme is not considered likely to further constrain future extraction of deposits.

10.7.8. The Proposed Scheme has a significant earthworks material deficit, hence, any opportunity to re-use this material in the works will be exploited and as much material as possible will be re-used. This approach is in accordance with the European Union (EU) Waste Framework Directive 2008/98/EC “Waste Hierarchy” and is considered to present an appropriate means of ensuring proven mineral resources are not ‘needlessly’ sterilised by non-mineral development.

## 10.8. References

- Department for Transport (2014) National Policy Statement for National Networks (NPSNN). Available online at: <https://www.gov.uk/government/publications/national-policy-statement-for-national-networks>
- Norfolk County Council (2016) Norfolk Minerals and Waste Development Framework (September 2016). Available online at: <https://www.norfolk.gov.uk/mineralsandwastelocalplanreview>
- Norfolk County Council (2011) Norfolk Core Strategy and Minerals and Waste Development Management Plan 2010-2026 (September 2011). Available online at: <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/minerals-and-waste-planning-policies/adopted-policy-documents>
- Norfolk County Council (2013) The Waste Site Specific Allocations Development Plan (adopted October 2013). Available online at: <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/minerals-and-waste-planning-policies/adopted-policy-documents>
- Sweco (2020). A47 Blofield to Burlingham - Ground Investigation Report (Document Ref: HE551490-GTY-HGT-000-RP-CE-30001). HAGDMS ref: 10191.
- Norfolk County Council Mineral Safeguarding Area Mapping (Accessed August 2020). Available online at: <https://norfolk.opus4.co.uk/planning/localplan/maps/norfolk-minerals#/x:599779/y:312750/z:0/b:15/o:1157,o:1165,o:1252>
- Highways England (2019) Design Manual for Roads and Bridges DMRB LA 104 (Environmental Assessment and Monitoring). Available online at: <https://www.standardsforhighways.co.uk/ha/standards/>
- Highways England (2019) Design Manual for Roads and Bridges LA 120 (Environmental Management Plan). Available online at: <https://www.standardsforhighways.co.uk/ha/standards/>
- CL:AIRE (2011) Definition of Waste Code of Practice, Version 2, 2011 CL:AIRE Code of Practice (March 2011). Available online at: <https://www.claire.co.uk/component/phocadownload/category/8-initiatives?download=212:definition-of-waste-development-industry-code-of-practice>