

M3 Junction 9 Improvement

Scheme Number: TR010055

6.1 Environmental Statement Chapter 10 Material Assets and Waste

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Procedure) Regulations 2009**

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6.1 ENVIRONMENTAL STATEMENT - CHAPTER 10: MATERIAL ASSETS AND WASTE

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10 Material Assets and Waste

10.1 Introduction

10.1.1 This chapter presents the findings of the assessment of the construction of the M3 Junction 9 Improvement Scheme (hereafter referred to as the Scheme) on material assets and waste. This chapter outlines legislative, policy framework and guidance, describes the assessment methodology, study area, baseline conditions, an overview of potential impacts, mitigation measures, likely residual effects, monitoring and a summary.

10.1.2 This chapter should be read in conjunction with **Environmental Statement (ES) Figures 10.1 (Mineral Safeguarding Areas)** and **10.2 (Secondary Study Area) (Document Reference 6.2)** and **Appendix 10.1 (Mineral Safeguarding Area Assessment)** of the **ES (Document Reference 6.3)**.

10.1.3 This chapter should be read in parallel to **Chapter 15 (Cumulative Effects)** of the **ES (Document Reference 6.1)**.

10.2 Consultation

10.2.1 Consultation and engagement has informed the material assets and waste assessment. Comments and responses to the Scoping Opinion received in November 2020 are provided in **Appendix 4.2 (Scoping Comments and Responses)** of the **ES (Document Reference 6.3)** and comments and responses received during statutory consultation between May and June 2021 are provided in **Appendix K of the Consultation Report (Document Reference 5.1)**. No further consultation or engagement has informed this chapter.

10.3 Legislative, policy framework and guidance

10.3.1 This assessment has been undertaken considering current legislation, together with national, regional and local plans and policies. A list is provided below and further detail regarding National Policy can be found in the **National Policy Statement for National Networks (NPS NN) Accordance Table (Document Reference 7.2)**.

- EU Waste Framework Directive (2008/98/ES)
- The Environmental Protection Act 1990
- Environment Act 2021
- The Waste (England and Wales) Regulations 2011
- The Waste and Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations 2020
- Controlled Waste (England and Wales) Regulations 2012

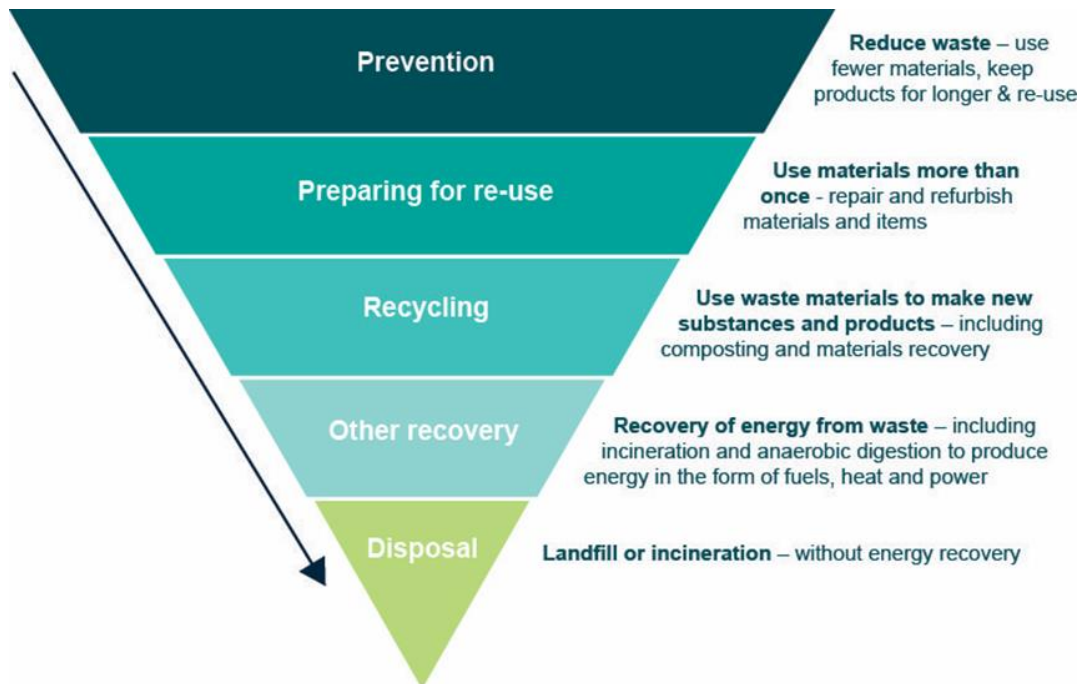
- The Hazardous Waste (England and Wales) Regulations 2005
- Environmental Permitting Regulations 2016
- National Policy Statement for National Networks (2014)
- National Planning Policy Framework (NPPF) (2021)
- National Planning Policy for Waste (2014)
- Waste Management Plan for England (2021)
- Resources and Waste Strategy (2018)
- The Waste Prevention Programme for England (2013)
- Planning Practice Guidance (online resource)
- Winchester District Local Plan Part 1 – Joint Core Strategy (2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (2017)
- South Downs Local Plan (2019)
- Hampshire Minerals and Waste Plan (2013)
- Winchester District Draft Local Plan 2018 -2038 (emerging)

10.3.2 In addition to the legislation and national and local planning policies listed above, this assessment has also been carried out in accordance with the following professional standards and guidance:

- DMRB LA 104 – Environmental Assessment and Monitoring (Highways England, 2020)
- DMRB LA 110 – Material Assets and Waste (Highways England, 2019)

10.3.3 In addition, the waste hierarchy, as mandated by the Waste (England and Wales) Regulations 2011 (Regulation 12) has informed this chapter. The waste hierarchy ranks waste management options according to what is best for the environment as illustrated in **Insert 10.1**.

Insert 10.1: The Waste Hierarchy



10.4 Assessment methodology

Scope of the assessment

10.4.1 It was agreed at scoping that although there would be some material usage during operation this would be minimal, and any effects would not be significant. As a result, chapter presents an assessment of impacts upon material assets and waste during the construction phase only. The assessment has been undertaken in accordance with the DMRB LA 110 - Material Assets and Waste (Highways England, 2019).

10.4.2 For the purposes of the assessment, material assets are defined as the provision and use of material resources, including primary, secondary, recycled, and manufactured materials. This chapter also includes an assessment of the potential impacts on mineral safeguarding areas under the material assets subheadings which has been informed by **Appendix 10.1 (Mineral Safeguarding Area Assessment)** of the **ES (Document Reference 6.3)**.

10.4.3 For the purposes of the assessment waste is defined, as within the EU Waste Framework Directive (2008/98/ES) (as applied through Waste and Environmental Permitting etc (Legislative Functions and Amendment etc) (EU Exit) Regulations 2020), as “*any substance or object which the holder discards or intends or is required to discard*”.

10.4.4 The following matters have been identified and assessed within this chapter:

- The material types and quantities required for the Scheme

- Any potential impact or sterilisation of mineral resources within the Mineral Safeguarding Area, refer to **Figure 10.1 (Mineral Safeguarding Areas)** of the **ES (Document Reference 6.2)**
- The anticipated waste arisings from the Scheme. How these arisings are able to be reduced and, the quantities and type (e.g. inert / hazardous)
- The impact of these waste arisings on the identified waste management infrastructure

Study area and baseline approach

10.4.5 The study area is defined in accordance with DMRB LA 110 - Material Assets and Waste (Highways England, 2019) and outlined within **Section 10.5** (Study area). Baseline data (and identification of material assets and waste features / receptors) is outlined in **Section 10.6**. The baseline has been informed through gathering readily available desk-based information and information from the contractor (Principal Contractor).

Approach to design, mitigation and enhancement measures

10.4.6 The Scheme has been designed to avoid or reduce effects on material assets and waste. Embedded mitigation is listed within **Chapter 4 (Environmental Assessment Methodology)** of the **ES (Document Reference 6.1)**. Essential mitigation measures have been identified within this chapter. This mitigation is also included within the **first iteration Environmental Management Plan (fiEMP) (Document Reference 7.3)**.

Material assets assessment approach - overview

10.4.7 On establishing the material requirements of the Scheme, the assessment has comprised a qualitative and quantitative exercise with the use of the draft Bill of Quantities (as provided by the Scheme's Principal Contractor). This information has been used to identify:

- The types and quantities of materials required for the Scheme
- The cut and fill balance
- Details of on-site storage and stockpiling arrangements, and any supporting logistical details

10.4.8 The assessment takes into account the anticipated volume of material assets that are needed to construct the Scheme. The assessment then evaluates the impacts and identifies the effect of the Scheme.

10.4.9 Arisings (from site preparation/ remediation/ excavation/ construction activities) are likely to be varied and have been evaluated as part of the assessment of material assets, to determine the volume of excavations that can be retained for re-use or as a last resort be sent to landfill as waste.

10.4.10 Arisings that are suitable would, as a priority, be used within the Application Boundary to construct the Scheme and this assumption is embedded into the Scheme design (the cut / fill is balanced as far as possible). Any limited excess spoil generated would be removed from the site and managed with adherence to the principles of the waste hierarchy.

10.4.11 The assessment takes into account the nature of impacts (adverse/beneficial, permanent/temporary, direct/indirect) from material assets and site arisings in line with the DMRB standard.

Material assets assessment approach – magnitude of impact

10.4.12 The impacts on material assets have been assessed in accordance with **Table 10.1** below which has been taken from the DMRB LA 110 – Material Assets and Waste (Highways England, 2019).

Table 10.1: Magnitude of impacts on Material Assets

Magnitude of impact	Description
Neutral	<ul style="list-style-type: none"> • Scheme achieves >99% overall material recovery/ recycling (by weight) of non-hazardous Construction and Demolition Waste (CDW) to substitute use of primary materials; and • Aggregates required to be imported to site comprise >99% re-used/ recycled content.
Slight	<ul style="list-style-type: none"> • Scheme achieves 70-99% overall material recovery/ recycling (by weight) of non-hazardous CDW to substitute use of primary materials; and • Aggregates required to be imported to site comprise re-used/ recycled content in line with the 26% target regional target¹.
Moderate	<ul style="list-style-type: none"> • Scheme achieves <70% overall material recovery/ recycling (by weight) of non-hazardous CDW to substitute use of primary materials; and • Aggregates required to be imported to site comprise re-used/ recycled content below the 26% regional target.
Large	<ul style="list-style-type: none"> • Scheme achieves <70% overall material recovery/ recycling (by weight) of non-hazardous CDW to substitute use of primary materials; • Aggregates required to be imported to the site comprise <1% reused/ recycled content; and • Scheme sterilises >1 mineral safeguarding site and / or peat resource.
Very Large	<ul style="list-style-type: none"> • No criteria: use criteria for large categories

Waste assessment approach – overview

10.4.13 The first stage in the waste assessment comprised establishing the following:

¹ Table E/1.2 Recycled aggregate targets for England 2005-2020 (National and regional guidelines for aggregate provision published 2009) - ISBN 978-1-4098-1589-1 2009 [Ref 3.N]

- The predicted amount of waste (by weight) anticipated to be recovered and diverted from landfill either on site or off site (i.e. for use on other projects)
- Predicted types and quantities of waste arising from the Scheme (site preparation, excavation arisings and remediation) that cannot be reused within the Scheme or processed for recycling, and that would need disposal to landfill as a last resort
- Predicted details of on-site storage and segregation arrangement for waste and any supporting logistical arrangements
- Potential for generation of hazardous waste (type and quantity)

10.4.14 An assessment of the remaining landfill capacity in the south of England was then undertaken to determine the impacts of waste generated during construction.

10.4.15 The assessment considered the volume of residual waste generated by the Scheme and its potential impact on remaining landfill void capacity. This was carried out for both inert (non-hazardous) and non-inert (hazardous) waste types.

Waste assessment approach – magnitude of impact

10.4.16 The assessment considered the nature of impacts (adverse/ beneficial, permanent/ temporary, direct/indirect) from waste generated and treated/disposed of into account and for further assessment the effects on the generation of waste have been assessed in accordance with **Table 10.2** below.

Table 10.2: Magnitude of impacts from waste

Magnitude of impact	Description
Neutral	<ul style="list-style-type: none"> • No reduction or alteration in the capacity of waste infrastructure at a regional scale.
Slight	<ul style="list-style-type: none"> • ≤ 1% reduction or alteration in the regional capacity of landfill; and • Waste infrastructure has sufficient capacity to accommodate waste the Scheme, without compromising the integrity of the receiving infrastructure (design life or capacity) within the region.
Moderate	<ul style="list-style-type: none"> • >1% reduction or alteration in the regional capacity of landfill as a result of accommodating the waste from the Scheme; and

Magnitude of impact	Description
	<ul style="list-style-type: none"> 1-50% of project waste requires disposal outside of the region.
Large	<ul style="list-style-type: none"> >1% reduction in the regional capacity of landfill as a result of accommodating waste from the Scheme; and >50% of the Scheme's waste requires disposal outside of the region.
Very Large	<ul style="list-style-type: none"> >1% reduction or alteration in national capacity of waste landfill, as a result of accommodating waste from the Scheme; or Construction of new (permanent) waste infrastructure is required to accommodate waste from the Scheme.

Source: DMRB LA 110 – Material assets and waste (Standards for Highways, 2019)

Material assets and waste – significance of effect

10.4.17 Significance of effects on material assets and waste is reported in accordance with the criteria set out in the DMRB LA 110 – Material Assets and Waste (Highways England, 2019) guidance and **Table 10.3** below.

Table 10.3: Significance criteria for material assets and waste

Significance	Description
Not significant	Material assets <ul style="list-style-type: none"> Category description met for neutral or slight effect Waste <ul style="list-style-type: none"> Category description met for neutral or slight effect
Significant	Material assets <ul style="list-style-type: none"> Category description met for moderate or large effect Waste <ul style="list-style-type: none"> Category description met for moderate, large or very large effect

Reasonable worse case parameters for assessment

10.4.18 An assessment has been conducted within the Limits of Deviation (LoD) outlined within **Chapter 2 (The Scheme and its Surroundings)** of the **ES (Document Reference 6.1)**. The vertical and lateral LoD for the Scheme have

been reviewed with respect to sensitive receptors identified within this Chapter. Although spoil production may be increased if the LoD are maximised to their full extent, this would not affect the conclusions of the assessment reported in this chapter. A realistic worst-case scenario has been adopted within this chapter based on the preliminary design.

Assessment assumptions and limitations

10.4.19 The assessment is based on material and waste quantities from the draft Bill of Quantities provided by the Principal Contractor and was the most accurate information available at the time of preparing this assessment.

10.4.20 It is assumed that materials use and waste generation would be spread equally across the construction period.

10.4.21 Material quantities have been converted into tonnes using conversion rates as stated.

10.4.22 The information presented in this chapter is based on the preliminary design.

10.4.23 Detailed information relating to the sources of construction materials, and the likely level of recycled content is not available at this stage of the Scheme. Therefore, the assessment has not considered:

- Information on materials that contain secondary / recycled content – although it has been assumed at this stage worst case it would be 0%
- Information on any known sustainability credentials of materials to be consumed
- The type and volume of secondary materials that would be obtained from off-site sources for use on the Scheme

10.4.24 Despite the information above not being available at this stage it is considered the assessment undertaken is robust and considers a realistic worst-case scenario to ensure that the outcomes are conservative in their conclusions.

10.5 Study area

10.5.1 The study areas are defined with reference to DMRB LA 110 – Material Assets and Waste (Highways England, 2019). The assessment defines two geographically different study areas, used to examine the use of primary/ secondary/ recycled/ manufactured materials and the generation and management of waste.

Study Area 1

10.5.2 The first study area comprises all land contained within the Application Boundary, within which materials would be used and waste generated and managed (including areas identified for temporary use). Temporary use

includes temporary storage areas for soils and other materials, construction compounds, haulage roads and land for temporary construction site drainage.

Study Area 2

10.5.3 Study area 2 has been defined using professional judgement as being sufficient to identify:

- Suitable recovery and waste management facilities that could accept arisings and/or waste generated by the Scheme
- Feasible sources and availability of construction materials

10.5.4 Study area two (refer to **Figure 10.2 (Secondary Study Area)** of the **ES (Document Reference 6.2)**) comprises the south of England (inclusive of both the south-east and the south-west). This is in line with DMRB LA 110 – Material Assets and Waste (Highways England, 2019) guidance with consideration of the proximity principle and value for money. In the context of this chapter, the south of England comprises Berkshire, Oxfordshire, Buckinghamshire, East Sussex, West Sussex, Hampshire, Surrey, Kent, Bristol, Cornwall, Dorset, Devon, Gloucestershire, Somerset and Wiltshire.

10.6 Baseline conditions

10.6.1 The baseline conditions are the latest reported regional landfill capacity and the regional construction material provision, based on the most recently published sources of information. There is no information available on future waste infrastructure capacity or materials usage, and hence the baseline scenario uses most up to date data available.

10.6.2 The receptor types likely to be at risk of impact under this topic heading are presented in **Table 10.4** below.

Table 10.4: Material Assets and Waste Receptors

Receptor	Description
Material resources	<p>Primary materials and non-renewable resources should – in accordance with the principles of resource efficiency and the waste hierarchy – be protected wherever possible.</p> <p>The consumption of primary material depletes natural resources which in turn degrades the natural environment. Mechanisms to reduce the volume of primary materials consumed and increase sustainability benefits of materials used, should be deployed across a project lifecycle.</p>

Receptor	Description
Mineral Safeguarding Areas	Any mineral safeguarding areas and peat resources located in the study area one could be potentially at risk of being sterilised.
Waste Management Capacity	Waste needs to be managed appropriately to limit the impact on waste management capacity in a region. Also, landfill capacity is an increasingly scarce (sensitive) resource in England. Where potential exists to reduce the generation of waste and use best practice methods to divert it from landfill, associated opportunities should be taken.

Material Assets

Availability of construction materials in the south of England

10.6.3 **Table 10.5** below provides a summary of the availability of the main construction materials in the south of England required to deliver typical highways schemes.

10.6.4 The baseline target for alternative aggregates (which comprises both secondary aggregates and recycled aggregates) are set out within the DMRB LA 110 – Material Assets and Waste (Highways England, 2019) Table E/1.2.

10.6.5 The relevant target for the Scheme is 26% (South-East target) being the higher of the two regions covered by the study area 2.

Table 10.5: Materials reserves and sales in the South of England 2018/19

Material Type		South east of England	South west of England	South of England Total
Aggregate	Sand and gravel reserves	72.4 million tonnes	27.8 million tonnes	100.2 million tonnes
	Sand and gravel sales 2019	16.1 million tonnes	3.0 million tonnes	19.3 million tonnes
	Permitted crushed rock reserves	32.9 million tonnes	837.5 million tonnes	870.4 million tonnes
	Permitted crushed rock sales 2019	8.6 million tonnes	27.0 million tonnes	35 million tonnes
Recycled and secondary aggregate sales		4.6 million tonnes	2.7 million tonnes	7.3 million tonnes
Concrete – sales 2019		2.4 million m ³	1.3 million m ³	3.7 million m ³
Asphalt – sales 2019		1.9 million tonnes	2.2 million tonnes	4.1 million tonnes

Mineral Safeguarding Area

10.6.6 Mineral Safeguarding Areas are set out within the Hampshire Minerals and Waste Plan (2013). Relevant to the Scheme is a single Mineral Safeguarding Area for sand and gravel deposits which overlaps the Application Boundary. The location of the sand and gravel Mineral Safeguarding Area is presented on **Figure 10.1 (Mineral Safeguarding Area)** of the **ES (Document Reference 6.2)**.

10.6.7 The Mineral Safeguarding Area stretches from the centre of Winchester, follows the River Itchen northward, turns east to cross the A34 and the M3 just north of Junction 9.

Waste

Transfer, treatment and metal recycling in England and the south of England

10.6.8 Defra’s Waste Management Plan for England (2020) data (**Table 10.6**) shows that within England, the recovery rate for non-hazardous construction and demolition arisings has not fallen below 92% since 2010. The EU target was for the UK to exceed 70% by 2020.

Table 10.6: Non-hazardous construction and demolition arisings recovery in England, 2010-18

Year	Generation (Mt)	Recovery (Mt)	Recovery rate (%)
2010	53.6	49.4	92.2%
2011	54.9	50.8	92.5%
2012	50.5	46.4	92.0%
2013	51.7	47.6	92.0%
2014	55.9	51.7	92.4%
2015	57.7	53.3	92.3%
2016	59.6	55.0	92.1%
2017	62.2	57.9	93.1%
2018	61.4	57.5	93.8%

10.6.9 Baseline information consists of the current capacity of the waste infrastructure in the waste disposal authority (Hampshire), and in the wider south east and south west planning regions.

10.6.10 Information on baseline waste conditions has been collected from sources including local planning documents published by Hampshire Council and data on waste facility capacity published by the Environment Agency.

10.6.11 At the end of 2019, there were noted as being 12 licensed landfill facilities in Hampshire, but with 8 of those showing no further capacity. The 4 remaining licensed landfill sites in Hampshire have been recorded as having 3.2M m³ of remaining capacity (see **Table 10.7**).

Table 10.7: Hampshire landfill inputs and capacity 2019

Landfill type	Inputs ('000 tonnes)	Capacity '000 m ³ (2019)
Hazardous (merchant and restricted)	-	-
Inert	122	2,438
Non-hazardous (including stable hazardous waste cells)	340	781
Total	462	3,219

10.6.12 **Table 10.8** illustrates the remaining landfill capacity within the south of England.

Table 10.8: South of England landfill inputs and capacity 2019

Landfill type	Inputs ('000 tonnes)	Capacity '000 m ³ (2019)
Hazardous (merchant and restricted)	104	1,673
Inert	5,466	40,020
Non-hazardous (including stable hazardous waste cells)	7,895	50,334
Total	13,465	92,027

Baseline evolution

Material assets

10.6.13 The availability of material resources such as sand and gravel, and crushed rock is not expected to change in the future. **Table 10.5** illustrates the regional reserves available. Additionally with the emphasis moving forwards to reuse and recycle materials (and adherence to the Waste Hierarchy) wherever possible this would further work towards preserving the stocks of virgin materials.

10.6.14 The designation of the Mineral Safeguarding Area is not likely to change in the future with the current Hampshire Minerals and Waste Plan covering the period up to 2030.

Waste

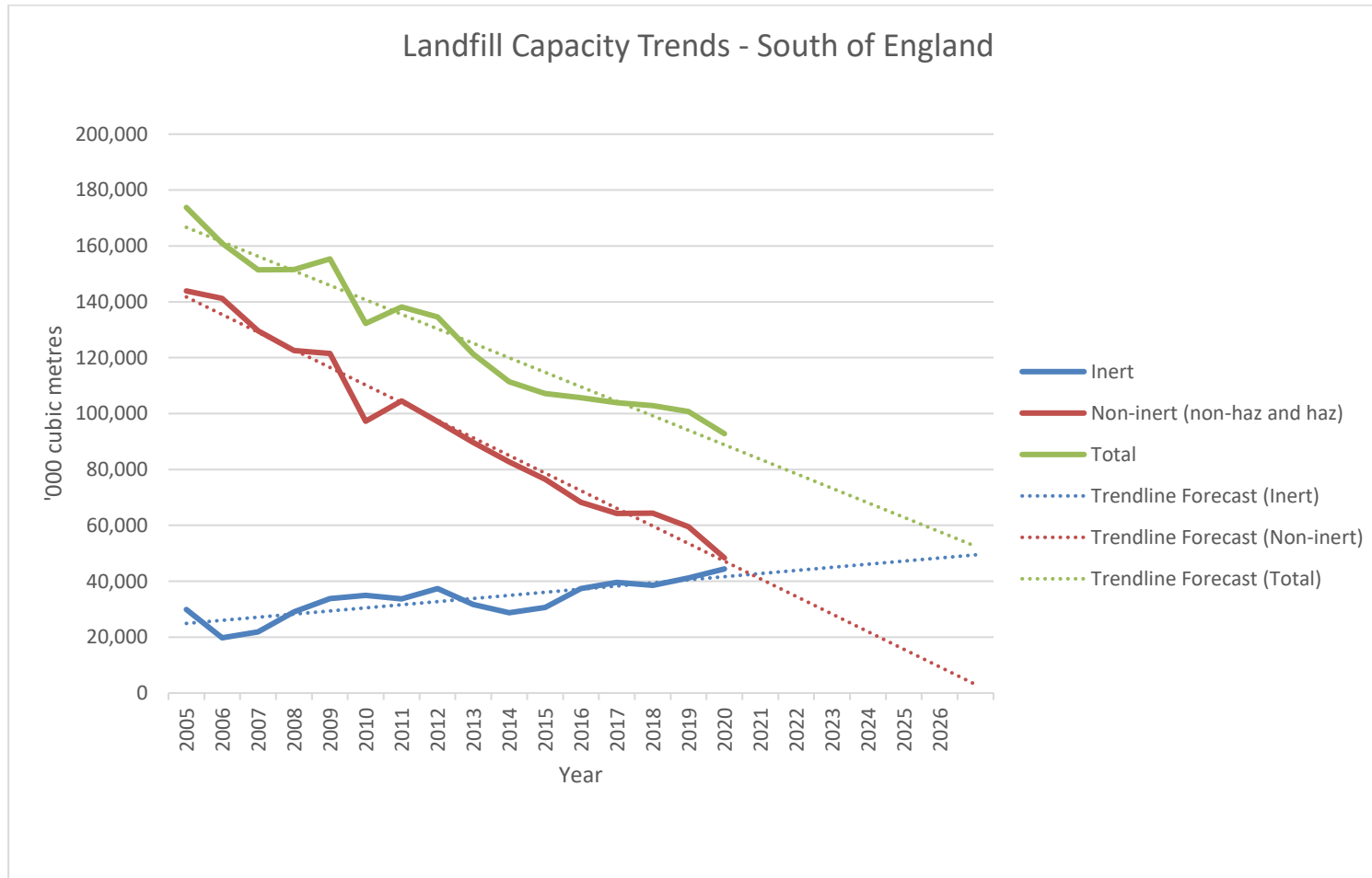
10.6.15 **Insert 10.2** illustrates the trendline for landfill capacity utilising the reported data from 2005 onwards. This enables us to predict the evolution of the baseline without the inclusion of the Scheme.

10.6.16 The trendlines provide us with anticipated landfill capacities up to and including for 2026. The expected void capacities for 2026 are noted in **Table 10.9**.

Table 10.9: Expected landfill void capacity for the south of England 2026 (,000 cubic metres)

Inert	Non-inert (non hazardous and hazardous)	Total
49,457	3,073	52,530

Insert 10.2: Baseline evolution of south of England landfill capacity



10.6.17 **Appendix 15.1 (Long List of Cumulative Developments)** of the **ES (Document Reference 6.3)** provides a full list of schemes which have been identified as being likely to be in operation prior to the construction of the Scheme. These schemes form part of the future baseline scenario and have been taken into account in the assessment of likely significant effects from the Scheme (construction) presented in this chapter.

10.7 Potential impacts

10.7.1 Prior to the implementation of mitigation, the Scheme has the potential to have material assets and waste impacts during construction, both beneficial and adverse.

10.7.2 **Table 10.10** summarises the types of materials that would be used and wastes that may be generated.

Table 10.10: Types of material use and waste generation

Scheme Activity	Material resources required for the Scheme	Waste arisings from the Scheme
Site remediation / preparation / earthworks	<ul style="list-style-type: none"> • Fill materials for construction purposes • Primary and secondary / recycled aggregates for ground stabilisation • Stripped topsoil and subsoil 	<ul style="list-style-type: none"> • Surplus excavated materials • Stripped topsoil and subsoil • Contaminated soils • Site clearance, green waste arisings • Excavated material • Existing highway infrastructure and technology as removed by excavation works
Demolition	<ul style="list-style-type: none"> • Materials are not required for demolition works 	<ul style="list-style-type: none"> • Waste arisings from demolition of existing bridge structures
Site construction	<ul style="list-style-type: none"> • Construction materials including: • Concrete 	<ul style="list-style-type: none"> • Packaging from materials delivered to site

Scheme Activity	Material resources required for the Scheme	Waste arisings from the Scheme
	<ul style="list-style-type: none"> • Asphalt and bituminous material • Cement bound granular material • Well graded granular material • Precast concrete kerb • Timber • Plywood • Cementitious grout • Reinforcing steel • Reinforcing fabric • Geotextile • Geo-composite drainage system • Pipe bedding aggregate • Filter drain material 	<ul style="list-style-type: none"> • Excess and broken / damaged construction materials • Waste oils from construction materials • Sewage waste • Construction worker wastes (excluding sewage) which is addressed through the Consents and Agreement Position Statement (Document Reference 3.3)

Construction (including site preparation)

Material Assets

10.7.3 During the construction phase of the Scheme material resources would be consumed. Where these are primary materials, associated indirect impact could include the release of greenhouse gas emissions, water consumption and scarcity, environmental degradation and pollution, and nuisance to communities (visual, noise, dust).

10.7.4 Construction would result in a range of materials being required to facilitate the Scheme construction. This would include bulk materials for earthworks, road paving materials, including sub-base and bituminous products and other general construction materials. All resulting in a potential adverse impact through the depletion of finite material resource reserves.

Mineral Safeguarding Area

10.7.5 It would be inappropriate to extract the underlying mineral prior to the Proposed Scheme being implemented. However, anything raised incidental to construction of the Scheme would be used where possible.

Waste

10.7.6 The generation and management of waste resulting from construction of the Scheme and demolition of existing bridge structures could impact on the remaining landfill void capacity. Disposal to landfill would also have other associated indirect impacts including the release of greenhouse gases, emissions, environmental pollution and potential nuisance to communities (visual, noise, dust).

10.7.7 The likely waste streams generated would include broken out concrete, cut steel and road surface planings (which may contain coal tar), possible hazardous or contaminated material and other construction wastes.

10.8 Design, mitigation and enhancement measures

10.8.1 Mitigation measures incorporated into the design of the Scheme are reported as embedded mitigation in **Chapter 4 (Environmental Assessment Methodology)** of the **ES (Document Reference 6.1)**, those relevant to material assets and waste are included below. This section also outlines essential mitigation required. Essential mitigation is outlined within the **fiEMP (Document Reference 7.3)**. Prior to the implementation of mitigation, the Scheme has the potential to have material assets and waste impacts during construction.

Embedded mitigation

Construction (including site preparation)

10.8.2 The Scheme has been designed, to avoid and prevent adverse environmental effects resulting from Material Assets and Waste impacts through the process of design development and consideration of good design principles.

10.8.3 Embedded mitigation measures for Material Assets and Waste impacts are reported as part of the Scheme description in **Chapter 4 (Environmental Assessment Methodology)** of the **ES (Document Reference 6.1)**.

10.8.4 A number of standard mitigation measures have been embedded within the Scheme to limit material and waste impacts of the Scheme.

Material Assets

10.8.5 Most non-contaminated site arisings generated during site preparation and construction (including any surplus from materials required to deliver the Scheme) would have the potential for diversion from landfill and be re-used on site where possible. In particular, bulk materials for earthworks, road paving

materials, steel, concrete, bricks, aggregate, timber, and cabling would be readily recoverable.

10.8.6 Mitigation includes the processing of excavated materials for incorporation into the permanent works.

10.8.7 The re-use of and processing of excavated earthworks materials would be employed wherever possible to minimise the amount of surplus materials and import of primary aggregate materials.

10.8.8 Within the embedded mitigation are design measures that are adopted by the Scheme. These are set out in **Table 10.11**.

Table 10.11: Design measures mitigating material assets

Project activity	Mitigation measures	Lifecycle stages
Material resources	Design for resource optimisation: simplifying layout and form, using standard sizes, balancing cut and fill	Design
	Design for the future: considering how materials can be designed to be more easily adapted over an asset's lifetime, during operational maintenance, and how through decommissioning, deconstruction and demounting of elements can be maximised at end-of-first-life	Design
	Design for the use of recycled materials and/or sustainable features in materials: where practicable to reduce environmental impacts during the operation and maintenance of the Scheme	Design

Waste

10.8.9 Embedded mitigation involves project design principles adopted to avoid or prevent adverse impacts related to waste generation.

10.8.10 Within the embedded mitigation are multiple design and other measures would be adopted by the Scheme. These are set out in **Table 10.12**.

Table 10.12: Design and other mitigation measures addressing waste

Project activity	Mitigation measures	Lifecycle stages
Production and management of waste	Designing the Scheme to ensure the cut and fill is balanced as far as possible.	Design

Essential mitigation

Construction (including site preparation)

Material Assets

10.8.11 Materials imported to construct the Scheme would be sourced with consideration to both best value and the proximity of the supply.

10.8.12 Within the essential mitigation are multiple measures that would be adopted by the Scheme. These are set out in **Table 10.13** and outlined within the **fiEMP (Document Reference 7.3)**.

Table 10.13: Measures mitigating material assets

Project activity	Mitigation measures	Lifecycle stages
Material resources	Identification and specification of materials that can be acquired responsibly, in accordance with BES 6001 (Responsible Sourcing of Construction Products)	Design, construction
	Maximising the use of renewable materials and materials with recycled or secondary content, and setting material balance as a goal	Design
	Off-site construction: maximising the use of pre-fabricated structures and components	Design
	Plan for recovery and re-use: identifying, securing and using materials at their highest value, whether they already exist on site, or are sourced from other locations	Design
	Identify opportunities to minimise the export and import of materials from the Application Boundary	Design, construction
	Identify areas for stockpiling and storing arisings in a manner minimising quality degradation and leachate, and damage and loss	Design, construction
	Making sure potential arisings and waste are properly characterised before or during detailed design, to maximise the potential for highest value reuse	Design
	Implement a Materials Management Plan in accordance with the CL:AIRE Definition of Waste: Code of Practice	Design, construction

Waste

10.8.13 Mitigation during construction would be managed through the implementation of a Site Waste Management Plan (SWMP). An outline SWMP has been

developed and is appended to the **fiEMP (Document Reference 7.3)**. The final SWMP would be developed by the Contractor prior to construction commencing and include as appropriate plans for managing any hazardous waste that may arise during construction. The SWMP would aim to ensure that the waste produced during the construction phase of the Scheme are dealt with in accordance with the duty of care provisions in the Environmental Protection Act 1990.

- 10.8.14 The adoption of the principles of the waste management hierarchy would be implemented throughout, with the Principal Contractor committed to achieve a diversion from landfill rate of 95% - this is also outlined within the **fiEMP (Document Reference 7.3)**.
- 10.8.15 Should hazardous waste be encountered during construction, this would be handled at storage compounds within the Application Boundary, prior to transfer to external waste management sites.
- 10.8.16 Non-hazardous materials would be segregated and appropriately re-distributed to alternative projects or re-distributed to waste management facilities.
- 10.8.17 Within the essential mitigation are multiple measures that would be adopted by the Scheme. These are set out in **Table 10.14** and outlined within the **fiEMP (Document Reference 7.3)**.

Table 10.14: Other measures mitigating waste

Project activity	Mitigation measures	Lifecycle stages
Production and management of waste	Engage early with contractors to identify possible mitigation measures, and to identify opportunities to reduce waste through collaboration and regional synergies.	Design, Procurement
	Working to a proximity principle: ensuring arisings generated are handled, stored, managed and re-used or recycled at one of the nearest appropriate installations. The contractor is committed to achieving 95% of non-hazardous waste diverted from landfill. Hazardous waste where possible would look to be 'cleaned' and recycled dependent on the chemical analysis and costs, prior to disposal.	Design, construction
	Capture information and data on waste sent to landfill, by developing a Site Waste Management Plan and a Materials Management Plan.	Design

Project activity	Mitigation measures	Lifecycle stages
	Capture information and data on site arisings recovered and diverted from landfill, by developing a Design Site Waste Management Plan.	Design

Enhancements

10.8.18 Enhancement is defined by DMRB LA 104 - Environmental Assessment and Monitoring (Highways England, 2020) as “a measure that is over and above what is required to mitigate the adverse effects of a project”.

10.8.19 No enhancements in relation to material assets and waste are anticipated.

10.9 Assessment of likely significant effects

10.9.1 This assessment focuses on the potential likely significant effects arising from construction in the form of depletion of natural resources, potential sterilisation of a Mineral Safeguarding Area, the generation and management of waste on site, potential impacts on the available landfill void capacity, and the alignment of the Scheme with the legislative and policy framework for sustainable development, material resources and waste.

Material requirements

10.9.2 The estimated main types and quantities of materials anticipated to be used during construction are shown in **Table 10.15**.

10.9.3 Ready mixed concrete is converted to tonnes using a density conversion rate of 2,450 kg/m³.

Table 10.15: Estimated main types and quantities of materials used during construction

Materials	Quantity (T)
Concrete (ready mixed)	45,590
Concrete (precast)	2,230
Steel	4,561
Bituminous material	32,811
Topsoil, chalk, stone, sand, clay and gravel	664,800

Materials	Quantity (T)
Fill, aggregate and sand	275,080
Total	1,025,072

10.9.4 There is estimated to be 384,800m³ of excavated material, at least 83% (664,800t) of which is expected to be reused on the Scheme (the Scheme has been designed to ensure the cut and fill is balanced as far as possible). The material would be a mixture predominantly of topsoil, chalk and other naturally occurring materials. This equates to the 664,800 tonnes in **Table 10.15**, at a density conversion rate of 2,080 kg/m³. This is the minimum raised material to be reused within the Application Boundary for landscaping purposes (refer to **Figure 2.3 (Environmental Masterplan)** of the **ES (Document Reference 6.2)**) and to facilitate the construction of the Scheme.

Assessment of material assets

Overall material recovery

10.9.5 The Principal Contractor has committed to achieve a 95% recovery / recycling rate (by weight) for all non-hazardous construction waste generated by the Scheme. This would be recognised as a realistic and achievable target for a Scheme of this nature.

10.9.6 Given the worst-case scenario whereby 65,000m³ (135,200 tonnes) of the excavated material is required to be disposed of via landfill, together with the remaining 5% of all other materials (18,014 tonnes), the recovery / recycling rate would be 85% which remains within the rate of 70-99% of non-hazardous CDW.

10.9.7 Impacts on overall material recovery are therefore predicted to be **slight adverse** and **not significant**.

Use of recycled material

10.9.8 The main materials that would be required on site for construction of the Scheme are listed in **Table 10.15**.

10.9.9 In line with the DMRB standard, the measure for dictating the significance of the environmental impacts relating to the use of material resources, is the percentage of material recovery/ recycling by weight, that would replace the use of primary materials.

10.9.10 The Principal Contractor would look to use imported recycled materials where possible during construction, however this would depend on availability at the time of construction (this is outlined within the **fiEMP (Document Reference 7.3)**). As a result, and in order to ensure assessment of the worst case scenario,

this assessment assumes 0% recycled content for the materials that have yet to be sourced.

10.9.11 The excavated material from within the Application Boundary that would be reused for construction of the Scheme is the 664,800t of topsoil, chalk, stone, sand, clay and gravel. As a percentage of the overall construction material requirement (1,025,072) this represents 65%. This exceeds the regional target of 26%.

10.9.12 Impacts on use of non-recycled material are therefore predicted to be **slight adverse** and **not significant**.

Mineral Safeguarding Assessment

10.9.13 Paragraph 5.169 of the National Policy Statement for National Networks (NPS NN, 2014) states that '*applicants should safeguard any mineral resources on the proposed site as far as possible*'.

Paragraph 5.182 goes on to say that '*Where a proposed development has an impact on a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources*'.

10.9.14 **Figure 10.1: Mineral Safeguarding Area** of the **ES (Document Reference 6.2)** presents the Application Boundary and its relationship with the relevant Mineral Safeguarding Area. It shows that the key areas for consideration are focussed to the north of Junction 9, extending along both the M3 and A34. The land uses of the Scheme intended for these areas are also shown together with the Mineral Safeguarding Area.

10.9.15 At this scale of mapping, **Figure 10.1 (Mineral Safeguarding Area)** of the **ES (Document Reference 6.2)** shows that most of the Permanent/Temporary Highway Land Take of the Scheme (identified by the blue hatch) would align with, or alongside, the existing road network. There are some sections of the Scheme that extend beyond the edges of public highway. These are the construction compound illustrated in **Figure 2.1 (Preliminary Construction Plan)** of the **ES (Document Reference 6.2)**, and areas of environmental mitigation in **Figure 2.2 (General Arrangement)** of the **ES (Document Reference 6.2)**.

10.9.16 The construction compound and areas of environmental mitigation are also unlikely to result in mineral sterilisation due to their location, within the strategic road corridor and at the periphery of any practicable mineral working area.

10.9.17 In addition, all of these areas lie within the South Downs National Park. National Parks benefit from protection in planning policy generally, and in relation to minerals the National Planning Policy Framework (July 2021, as amended) states:

'When determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy. In considering proposals for mineral extraction, minerals planning authorities should:

- as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, scheduled monuments and conservation areas ...' (paragraph 211)*

10.9.18 Paragraph 6.88 of the Hampshire MWP states:

'Hampshire is currently able to meet its aggregate supply needs in accordance with national planning policy, from sites outside of the National Parks. It is therefore highly unlikely that further local land-won extraction in Hampshire's two National Parks will be granted planning permission, if more sustainable options for extraction outside of the designated areas are available. However, it is important to acknowledge that there are sand and gravel resources located in or in close proximity to the National Park boundaries (136). In particular, the South Downs National Park has important resources of soft sand and silica sand which are both considered to be a scarce resource within the Plan area. However, mineral development should only take place in designated areas such as Hampshire's National Parks, in exceptional circumstances and should not compromise the reasons for the National Park designation. This is considered in more detail in the section on 'Landscape and countryside.'

10.9.19 Policy 4 of the Hampshire MWP makes clear that 'Major minerals and waste development will not be permitted in the New Forest or South Downs National Parks, or in the North Wessex Downs, the Cranborne Chase and West Wiltshire Downs, and Chichester Harbour Areas of Outstanding Natural Beauty (AONBs), except in exceptional circumstances.'

10.9.20 It is clear that mineral extraction in these areas would not comply with policy seeking to protect and conserve the National Park.

10.9.21A **Ground Investigation Report (Document Reference 7.11)** was commissioned in relation to the Scheme. The primary aim of the **Ground Investigation Report (Document Reference 7.11)** is to establish ground conditions to inform the works proposed, it was not produced to analyse the mineral resource available. The **Ground Investigation Report (Document Reference 7.11)** does contain geological investigation reports from: Window Samples to 7m, Dynamic Sample deep boreholes between 15-30m, and Trial Pits of up to 4m. The results of these are published in detail in the **Ground Investigation Report (Document Reference 7.11)** along with geotechnical laboratory testing findings.

10.9.22 In none of the samples was sand and/or gravel found to be the primary mineral present, instead identifying that there is a greater proportion of chalk and clay. The Mineral Safeguarding Area policy identifies that the sand and gravel in this location is likely to be superficial, and therefore it is not unexpected that they are not the primary material in the sample results. In most of the borehole logs

sand and/or gravel was observed at some level in the sample. There has been no analysis of the quality or quantity of the mineral available in the Development area.

10.9.23 The parts of the Scheme which lie within the Mineral Safeguarding Area boundary are predominantly existing highway land and the remaining land is sufficiently close to the highway that extraction of minerals in those areas would be inappropriate. An area of the Scheme is outside of current highway land and is between the A33/A34 and the M3 and will deliver a Haul Road. The nearest ground investigation was DS203 carried out to a depth of 7m. The engineers log records that the sample produced silt and chalk, no sand and gravel deposit was recorded in that location. Therefore, it is unlikely that a significant volume of mineral will be sterilized by the Scheme and parts a-c of the policy are satisfied. In addition, the Scheme is a nationally significant infrastructure project, the merits of which significantly outweigh the very limited effect on the relevant Mineral Safeguarding Area in accordance with part d of the mineral safeguarding policy.

10.9.24 The Scheme is therefore considered to have a **negligible impact** on sterilization of mineral resources, which is **not significant**.

Waste

10.9.25 An assessment of the remaining landfill capacity in the south of England is presented in **Table 10.8**. This has been used together with the estimated waste volumes expected to be generated (**Table 10.16**) to determine the Scheme's impact on regional landfill void capacity. This has been completed for inert and non-inert non-hazardous waste types.

10.9.26 The estimated main types and quantities of waste generated during construction and the potential recovery rates are shown in **Table 10.16**.

10.9.27 These estimated quantities have been provided by the Principal Contractor through the Resource List (Highways England, 2021).

Table 10.16: Estimated quantities of waste

Material	Quantity (m ³)	Recovery Rate (%)	Quantity Recovered (m ³)	Quantity for Disposal (m ³)
Inert	105,000	95%	99,750	5,250
Inert Excavated waste to landfill	65,000	0%	0	65,000
Concrete	2,500	95%	2,375	125
Mixed construction waste	400	95%	380	20

Material	Quantity (m ³)	Recovery Rate (%)	Quantity Recovered (m ³)	Quantity for Disposal (m ³)
Sub Total	172,900		102,505	70,395

10.9.28 It is anticipated that the majority of the excavated material that is generated by construction would be reused within the Application Boundary. **Table 10.17** does however include the possibility of up to 65,000m³ (135,200t) (included in inert waste) of spoil arising during construction which would need to be disposed of outside the Application Boundary to landfill.

10.9.29 The estimated recovery rates are set out in line with committed landfill diversion targets of the Scheme.

Table 10.17: Resultant reduction in regional landfill void capacities

Waste Type	Quantity of Waste disposal (m ³)	of for Regional Capacity (m ³)	Landfill	Reduction in Landfill Capacity (%)	in Void
Inert	70,395	40,020,000		0.2	
Non-Inert	0	50,334,000		0	
Hazardous	0	1,673,000		0	

10.9.30 With 70,395m³ of anticipated inert construction waste (following mitigation), and a void capacity of 40,020,000m³, the construction stage of the Scheme would contribute to a 0.2% reduction in inert landfill void capacity.

10.9.31 The construction stage for inert waste expected to be generated presents a slight adverse effect which is not significant.

10.9.32 Any hazardous waste encountered during construction is expected to be minimal. It would be managed and treated in line with agreed protocols and is therefore assumed that with regard to hazardous waste and the reported hazardous landfill capacity of nearly 1.7M m³.

10.9.33 The construction stage for hazardous waste is therefore considered to have a negligible impact on landfill void capacity, which is not significant.

10.10 Monitoring

10.10.1 No significant effects have been predicted. Therefore, no monitoring is proposed.

10.11 Summary

- 10.11.1A material and waste assessment has been undertaken for the Scheme in accordance with the DMRB LA 110 – Material Assets and Waste (Highways England, 2019). It should be noted that the Scheme has been designed with a cut / fill balance.
- 10.11.2 During construction, the amount overall material recovery is estimated to have a **slight** adverse effect and is therefore **not significant**.
- 10.11.3 The assessment for the use of recycled material records that the worst-case scenario whereby 65,000m³ of excavated waste is disposed of in landfill achieves a 65% rate of reuse, therefore exceeding the regional target of 26%. This is recorded as a **slight** adverse effect and is **not significant**.
- 10.11.4 The Scheme is a non-minerals development proposed to be located partially within an Mineral Safeguarding Area. Local policy identifies that highways developments would be exempt from the Mineral Safeguarding Area. However, notwithstanding that, the assessment demonstrates that, the potential for sterilisation is very low, and therefore **not significant**.
- 10.11.5 The estimated levels of waste generation would result in a 0.2% reduction in inert landfill void capacity. This presents a **slight** adverse effect which is **not significant**.
- 10.11.6 Any hazardous waste encountered during construction would be minimal and managed / treated in line with standard control measures and the Site Waste Management Plan (a draft Site Waste Management Plan has been included within the **fiEMP (Document Reference 7.3)**). The construction stage for hazardous waste is therefore considered to have a **negligible impact** on landfill void capacity, which is **not significant**.