

6. Historic Environment

6.1 Introduction

6.1.1

This chapter presents the preliminary assessment of the likely significant effects of the Project with respect to historic environment, including archaeology, historic landscape character and built heritage. The preliminary assessment is based on information obtained to date. It should be read in conjunction with the Project description provided in **Chapter 2: The Project** and with respect to relevant parts of the following chapters:

- **Chapter 7: Water Environment;**
- **Chapter 8: Landscape and Visual;**
- **Chapter 10: Noise and Vibration;**
- **Chapter 11: Traffic and Transport;**
- **Chapter 12: Ground Conditions;**
- **Appendix 6A Archaeological Desk Based Assessment (DBA);**
- **Appendix 6B Scoped out effects;**
- **Appendix 6C Gazetteer of Heritage Assets;** and
- **Appendix 6D Site visit photographs.**

6.1.2

This chapter describes:

- the legislation, policy and technical guidance that has informed the assessment (**Section 6.2**);
- consultation and engagement that has been undertaken to date and how comments from consultees relating to historic environment have been addressed (**Section 6.3**);
- the Study Area (**Section 6.4**);
- the methods used for baseline data gathering (**Section 6.5**);
- overall baseline (**Section 6.6**);
- embedded environmental measures relevant to historic environment (**Section 6.7**);
- the methodology applied for the assessment (**Section 6.8**);
- the scope of the assessment for historic environment (**Section 6.9**);
- the preliminary assessment of historic environment effects (**Section 6.10**);
- a summary of the preliminary significance conclusions (**Section 6.11**);
- additional measures proposed (**Section 6.12**); and

- an outline of further work to be undertaken for the Environmental Statement (ES) (**Section 6.13**).

6.1.3

This chapter and the accompanying appendices are supported by the following Figures:

- **Figure 6.1: Designated heritage assets** – showing the location of designated heritage assets within 1km of the Preliminary Order Limits;
- **Figure 6.2: Non-designated Heritage Assets and remote sensing analysis** – showing the location of features recorded on the relevant Historic Environment Records (HER), as well as additional features identified through remote sensing analysis, within 1km of the Preliminary Order Limits;
- **Figure 6.3: Historic Landscape Characterisation** – extent of historic landscape character (HLC) areas, which are used as the basis for the baseline description in the DBA;
- **Figure 6.4: Areas of High and Medium Archaeological Potential** – showing HLC areas which have been assessed in the DBA as having a High or Medium potential for archaeological remains; and
- **Figure 6.5: Archaeological Sensitivity for areas of High and Medium Archaeological Potential** – showing the sensitivity, or ‘heritage significance’, of HLC areas with High or Medium potential for archaeological remains, as described in the DBA.

Limitations and assumptions

6.1.4

The information provided in this Preliminary Environmental Information Report (PEIR) is preliminary. The final assessment of likely significant effects will be reported in the ES. The PEIR has been produced to fulfil the Applicant’s consultation duties and enable consultees to develop an informed view of the likely significant effects of the Project.

6.1.5

Historic Environment Record (HER) data was collected from the records that hold information relevant to the Project (Cheshire, Greater Manchester and Merseyside), and while all contained data on a range of heritage assets, the data structure was not uniform. Professional interpretation of the data set was applied to provide a consistent understanding of the spatial and chronological format of the data. In addition, it must be recognised that HER data is not static and is constantly being updated with new records as and when discoveries are reported, and fieldwork undertaken. Therefore, the data represents the record at a fixed point in time, when this PEIR data was sourced in February 2022.

6.1.6

A walkover survey was carried out to assess the condition of known archaeological features and to identify any previously unknown remains. This was carried out in March 2022. This represents a point-in-time condition survey. Permissions for access to land parcels could not be granted for all targeted areas: surveyors could not access the anti-aircraft gunsight (Scheduled Monument 1019531) or the Bank Quay transporter bridge (Scheduled Monument 1006768), but ground conditions were surveyed from the nearest Public Right of Way where possible, providing sufficient coverage for the purpose of this assessment.

- 6.1.7 A further survey, visiting 74 locations, was carried out to assess where impacts through change to the setting of heritage assets may arise. This was carried out in April 2022, before summer foliage could significantly affect intervisibility and involved visits to 71 heritage assets within the Study Area. Time constraints prevented all targeted areas being surveyed during this seasonal window. Two of these areas were the Warrington and St Helen's Conservation Areas within heavily urbanized contexts, where summer foliage would present less of an issue to assessing setting. A third was the Conservation Area at Ince. In total, 71 assets or asset groups were visited as part of this survey. The results of this survey have informed a preliminary assessment of where significant effects may occur; a full assessment will follow as part of the ES.
- 6.1.8 Annotated winter photoviews have been created as part of the Landscape and Visual Impact Assessment (LVIA) PEI (**Chapter 8**) for the purposes of consultation with the Local Planning Authorities (LPAs) and Historic England. Photomontages of HAGI locations will be created as part of the ES, at locations agreed with consultees.
- 6.1.9 A desk-based geoarchaeological assessment and deposit model will be undertaken and reported on in the ES. At this stage, assessment will be desk-based only; however, where possible, a geoarchaeologist will monitor project ground investigation (GI) works and an amended deposit model will be created.
- 6.1.10 The scope of a geophysical survey is yet to be defined and will be informed by the results of the DBA and geoarchaeological assessment, and through consultation with relevant stakeholders. Consequently, geophysical assessment may be undertaken in autumn and winter 2022, with the intention for results to be included within the ES.
- 6.1.11 A palaeoenvironmental survey is yet to be carried out. As with the geophysical survey, the intention is for results to be included within the ES.

6.2 Relevant Legislation, Planning Policy and Technical Guidance

- 6.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to historic environment. Further information on policies relevant to the Project is provided in **Chapter 4: Legislation and Policy Overview**.

Legislation

6.2.2 A summary of the relevant legislation is given in **Table 6.1**.

Table 6.1 Legislation relevant to the historic environment assessment

Legislation	Legislative Context
Ancient Monuments and Archaeological Areas Act 1979¹	The Ancient Monuments and Archaeological Areas Act sets out that sites considered to be of national importance are required to be compiled in a Schedule of Monuments. These sites are accorded statutory protection. The Act sets out conditions whereby Scheduled Monument Consent is required. This Act also provides for the designation of Areas of Archaeological Interest in which statutory provisions for access to construction sites for carrying out archaeological works apply.
Planning (Listed Buildings and Conservation Areas) Act 1990²	The Act covers the registration of Listed Buildings (buildings that are seen to be of special architectural or historic interest) and the designation of Conservation Areas (areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance). It sets out the conditions under which a Listed Building consent would be required. The Act sets out at Sections 66 and Section 72 the duties of Local Planning Authorities (LPAs) to give great weight to the desirability of preserving Listed Buildings and their settings and the character of Conservation Areas in planning decisions.

¹ UK Government (1979). Ancient Monuments and Archaeological Areas Act, 1979. (Online). Available at <https://www.legislation.gov.uk/ukpga/1979/46> (Accessed April 2022).

² UK Government (1990). Planning (Listed Buildings and Conservation Areas) Act, 1990. (Online). Available at <https://www.legislation.gov.uk/ukpga/1990/9/contents> (Accessed April 2022).

Legislation	Legislative Context
	The Section 66 and Section 72 duties are superseded in applications under the Planning Act 2008 by equivalent provisions in the Infrastructure Planning (Decisions) Regulations 2010 (see below).
Infrastructure Planning (Decisions) Regulations 2010³	These regulations require decision-makers to have regard to the desirability of preserving a Scheduled Monument or its setting; Listed Buildings, any features which contribute to their special interest and their settings and to have regard for the desirability of preserving the character and appearance of Conservation Areas. These duties supersede sections 66 and 72 of the Planning Act (Listed Buildings and Conservation Areas) 1990 in determining DCO applications.
Treasure Act 1996⁴	This Act defines what constitutes ‘treasure’. Any find of ‘treasure’ must be reported to the local Coroner.
Treasure (Designation) Order 2002⁵	This Order amends the statutory definition of ‘treasure’.
The Hedgerow Regulations 1997⁶	These regulations set out criteria to be used to determine the importance of hedgerows and protect important hedgerows from removal. Selection criteria include heritage-based considerations.

³ UK Government (2010). Infrastructure Planning (Decisions) Regs, 2010. (Online). Available at <https://www.legislation.gov.uk/uksi/2010/305/contents/made> (Accessed April 2022).

⁴ UK Government (1996). Treasure Act, 1996. (Online). Available at <https://www.legislation.gov.uk/ukpga/1996/24/contents> (Accessed April 2022).

⁵ UK Government (2002). Treasure (Designation) Order, 2002. (Online) Available at <https://www.legislation.gov.uk/ukdsi/2002/0110424700/contents> (Accessed April 2022).

⁶ UK Government (1997). The Hedgerow Regulations, 1997. (Online) Available at <https://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed April 2022).

Legislation	Legislative Context
Burial Act 1857⁷	It is generally an offence to remove human remains from a place of burial without a licence from the Secretary of State.
Protection of Military Remains Act 1986⁸	This Act sets out specific protections for aircraft which have crashed or vessels which have sunk or been stranded whilst in military service. It sets out a general prohibition on any disturbance or removal of such remains without a licence granted by the Secretary of State.

Planning policy

6.2.3 A summary of the relevant national and local planning policy is given in **Table 6.2**.

Table 6.2 Planning policy relevant to the historic environment assessment

Policy	Policy Context
National planning policy	
Overarching National Policy Statement for Energy (NPS EN-1)⁹	Section 5.8: NPS EN-1 requires change to the significance of heritage assets to be considered in developing an understanding of the potential effects of the Project. Further, that setting contributes to a heritage asset's significance and should be drawn into consideration of

⁷ UK Government (1857). Burial Act, 1857. (Online). Available at <https://www.legislation.gov.uk/ukpga/Vict/20-21/81/contents> (Accessed April 2022).

⁸ UK Government (1986). Protection of Military Remains, 1986. (Online). Available at <https://www.legislation.gov.uk/ukpga/1986/35/contents> (Accessed April 2022).

⁹ Department of Energy and Climate Change, (2011). Overarching National Policy Statement for Energy (EN-1) (online). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf (Accessed April 2022)

Policy	Policy Context
	baseline conditions and assessment of significance. It recommends conditions for refusal due to substantial harm and sets out criteria for this.
Draft Overarching NPS EN-1, September 2021¹⁰	Section 5.9: Reiterates the requirements of EN-1 with regards to the historic environment, with additional requirements to provide clear statements of effect pathways, consider how the scheme will make a positive impact to the historic environment, assess impacts on non-designated heritage assets, and explicitly consider different types of setting impacts. Further, in line with NPPF, it reinforces that any level of harm to a heritage asset constitutes harm.
National Planning Policy Framework (NPPF)¹¹	Section 16 of the NPPF is consistent with EN-1. Paragraphs 189 – 200 relate to the historic environment and its sustainable management with regards to proposed development. It defines heritage assets and why they should be conserved. Plans should set out a positive strategy for the historic environment, with an emphasis on enhancement. In dealing with planning applications, local authorities should require the significance of an asset to be described, including any contribution made by their setting. As a minimum, HER data should be consulted and, where there is archaeological interest, a DBA should be produced. Great weight should be given to the conservation of heritage assets, irrespective of whether potential harm amounts to substantial harm. Any harm requires clear and convincing justification. Harm to assets of the highest significance, notably Scheduled Monuments, protected wreck sites, registered battlefields, grade I and II* Listed

¹⁰ Department of Business, Energy and Industrial Strategy (2021). Draft Overarching National Policy Statement for Energy (EN-1) (online). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf (Accessed April 2022)

¹¹ Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework, (online). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf (Accessed April 2022)

Policy	Policy Context
	Buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.
Local planning policy	
Cheshire West and Chester Local Plan (Part One) Strategic Policies 2015¹²	ENV5 Historic Environment: Development should safeguard or enhance heritage assets; loss or harm to their significance should be avoided. Development which is likely to have an unavoidable significant adverse effect on heritage assets or where an asset cannot be preserved in situ should be avoided.
Cheshire East Local Plan Strategy 2017¹³	SE7 The Historic Environment: Development should seek to avoid harm to heritage assets and make a positive contribution to the character of Cheshire East's historic environment. Development that causes harm must include detail of heritage asset significance and contribution of its setting within an application. There is a presumption that heritage assets should be retained and reused. Harm to heritage assets should be outweighed by public benefits and any loss or harm should be mitigated to ensure that there is no net loss of heritage value.
Trafford Local Plan Core Strategy 2012¹⁴	R1 Historic Environment: Development must take account of surrounding building style, landscape, and historic distinctiveness. Proposals must complement and enhance the existing historic environment, particularly in relation to Conservation Areas, Listed Buildings and other

¹² Cheshire West and Chester (2015). Cheshire West and Chester Local Plan (Part One) Strategic Policies 2015 (online). Available at: https://consult.cheshirewestandchester.gov.uk/portal/cwc_idf/adopted_cwac_lp/lp_1_adopted?pointId=3252243#document-3252243 (Accessed April 2022)

¹³ Cheshire East Council, (2017). Cheshire East Local Plan Strategy 2010-2030, (online). Available at: <https://www.cheshireeast.gov.uk/pdf/planning/local-plan/local-plan-strategy-web-version-1.pdf> (Accessed April 2022)

¹⁴ Trafford Council, (2012). Trafford Local Plan Core Strategy, (online). Available at: <https://www.trafford.gov.uk/planning/strategic-planning/docs/core-strategy-adopted-final.pdf> (Accessed April 2022)

Policy	Policy Context
	identified heritage assets. Developers must identify the presence, absence, or potential for archaeological remains and set out a mitigation plan.
Warrington Local Plan Core Strategy 2014¹⁵	QE8 Historic Environment: Development proposals which affect the character and setting of all heritage assets will be required to provide supporting information proportionate to the designation of the asset. This includes an understanding of an asset's significance, the avoidance of unnecessary loss, recognition of its contribution to local character, and the provision of suitable mitigation measures.
St Helens Core Strategy 2012¹⁶	CQL4 Heritage and Landscape: Development must respect the significance and distinctiveness of the historic environment and should be sited and designed with regards to historic landscape, setting, character and context.
Halton Core Strategy 2013¹⁷	CS20 Natural and Historic Environment: The Borough's heritage assets should be conserved and enhanced, and special regard should be given to their setting. An overarching aim is to conserve and enhance local character and distinctiveness.

Technical guidance

6.2.4 A summary of the technical guidance for historic environment is given in **Table 6.3**.

¹⁵ Warrington Borough Council, (2014). Local Plan Core Strategy, (online). Available at:

https://www.warrington.gov.uk/sites/default/files/2019-08/local_plan_core_strategy_adopted_2014.pdf (Accessed April 2022)

¹⁶ St Helens Council, (2012). St Helens Core Strategy 2012, (online). Available at: <https://www.sthelens.gov.uk/planning-building-control/planning-policy/core-strategy> (Accessed April 2022)

¹⁷ Halton Borough Council. (2013). Halton's Local Plan Core Strategy April 2013, (online). Available at:

<https://www3.halton.gov.uk/Documents/planning/planning%20policy/CoreStrategy.pdf> (Accessed April 2022)

Table 6.3 Technical guidance relevant to the historic environment assessment

Technical Guidance Document	Context
Planning Practice Guidance: Historic Environment 2019¹⁸	This guidance provides advice on the conservation and enhancement of the historic environment.
Historic England Good Practice Advice in Planning Note 2 (GPA 2): Managing Significance in decision-taking in the Historic Environment 2015¹⁹	This document provides guidance and information to assist in implementing historic environment policy and ensuring compliance with NPPF fundamentals.
Historic England Good Practice Advice in Planning Note 3 (GPA 3): The Setting of Heritage Assets 2017²⁰	Sets out guidance on managing change within the settings of heritage assets. The document sets out five steps to follow to ensure an appropriate level of assessment is achieved.
Conservation Principles, Policies and Guidance 2008²¹	Sets out principles for the assessment of heritage significance and its management.

¹⁸ UK Government (2019). Planning Practice Guidance: Historic Environment, 2019. (Online) Available at <https://www.gov.uk/guidance/conserving-and-enhancing-the-historicenvironment> (Accessed April 2022)

¹⁹ Historic England (2015). Good Practice Advice in Planning Note 2 (GPA 2): Managing Significance in decision-taking in the Historic Environment. (Online). Available at <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/> (Accessed April 2022)

²⁰ Historic England (2017). Good Practice Advice in Planning Note 3 (GPA 3): The Setting of Heritage Assets. (Online). Available at <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/> (Accessed April 2022).

²¹ Historic England (2008). Conservation Principles, Policies and Guidance. (Online) Available at <https://historicengland.org.uk/images-books/publications/conservationprinciples-sustainable-management-historic-environment/> (Accessed April 2022).

Technical Guidance Document	Context
Conservation Principles for the Sustainable Management of the Historic Environment - consultation draft 2017²²	A draft version of the revised conservation principles for the sustainable management of the historic environment. This provides updated principles for assessing and managing heritage significance. Whilst not yet adopted it represents best practice and is, therefore, considered.
Statements of Heritage Significance: Analysing Significance in Heritage Assets 2019.²³	This Historic England advice note covers the NPPF requirement for applicants for heritage and other consents to describe heritage significance to help local planning authorities to make decisions on the impact of proposals for change to heritage assets.
Chartered Institute for Archaeologists (CIfA) Standard and guidance for archaeological desk-based assessment 2017²⁴	Sets out standards to produce archaeological desk-based assessments.
CIfA Standard and guidance for commissioning work or providing consultancy advice on archaeology	Sets out standards for the provision of consultancy advice in the historic environment.

²² Historic England (2017). Conservation Principles for the Sustainable Management of the Historic Environment - consultation draft. (Online). Available at <https://historicengland.org.uk/content/docs/guidance/conservation-principles-consultation-draft-pdf/> (Accessed April 2022).

²³ Historic England (2019). Statements of Heritage Significance: Analysing Significance in Heritage Assets. (Online)) Available at <https://historicengland.org.uk/imagesbooks/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/> (Accessed April 2022).

²⁴ CIfA (2017). Standard and guidance for archaeological desk-based assessment. (Online) Available at https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf (Accessed April 2022).

Technical Guidance Document	Context
and the historic environment 2014 ²⁵	
ClfA Standard and guidance for archaeological field evaluation 2014 ²⁶	Sets out standards for archaeological evaluation.
ClfA Standard and guidance for archaeological geophysical survey 2014 ²⁷	Sets out standards for archaeological geophysical survey.

²⁵ ClfA (2014). Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment. (Online). Available at https://www.archaeologists.net/sites/default/files/ClfAS%26GCommissioning_2.pdf (Accessed April 2022).

²⁶ ClfA (2014). Standard and guidance for archaeological field evaluation. (Online). Available at https://www.archaeologists.net/sites/default/files/ClfAS%26GFieldevaluation_3.pdf (Accessed April 2022).

²⁷ ClfA (2014). Standard and guidance for archaeological geophysical survey. (Online). Available at https://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_3.pdf (Accessed April 2022).

6.3 Consultation and Engagement

Overview

- 6.3.1 The assessment has been informed by consultation responses and ongoing statutory/ technical engagement. An overview of the approach to consultation is provided in Section 3.4 of **Chapter 3: Approach to preparing the PEIR**.

Scoping opinion

- 6.3.2 A Scoping Opinion was adopted by the Secretary of State, administered by the Planning Inspectorate, on 8 March 2022. A summary of the relevant responses received in the Scoping Opinion in relation to historic environment and confirmation of how these have been addressed within the assessment to date is presented in **Table 6.4**.
- 6.3.3 The information provided in the PEIR is preliminary and not all of the Scoping Opinion comments have been addressed at this stage, however all comments will be addressed within the ES.

Table 6.4 Summary of EIA Scoping Opinion responses for historic environment

Consultee	Consideration	How Addressed in this PEIR
Planning Inspectorate	Where professional judgement is applied to scope out an effect-receptor pathway on the basis of a likely not significant impact, this should be clearly set out in the ES. Scoped out pathways must be agreed through consultation with relevant stakeholders. If agreement is not found or there is a lack of evidence to support the approach, the pathway must be included within assessment in the ES.	Where significant effects are unlikely and, therefore, it is proposed that an effect-receptor pathway is scoped out of further assessment, the rationale for this judgement has been set out in Table 6B1, Appendix 6B for comment by relevant stakeholders.
Planning Inspectorate	Operational effects should include effects to setting arising from vegetation clearance along the pipeline corridor. The ES should assess any likely significant effects.	Vegetation clearance will be limited to the working width of the pipeline, as far as possible, and reinstated following construction to reduce ecological, landscape and visual, and heritage impacts. Low-level crops and vegetation can be planted in the pipeline easement during operation. Landscaping will be used to mitigate operational effects at HAGI and block valve locations. Where historic landscape character contributes to the significance of a heritage asset any associated vegetation clearance will be assessed. If a significant effect is unlikely to arise, this assessment can be found in Table 6B1, Appendix 6B . If more information is required or if a significant effect is likely, this assessment will be presented in the ES.
Planning Inspectorate and Historic England	A desk-based geoarchaeological assessment and deposit model should be carried out ahead of any geophysical survey in order to ensure that the correct geophysical survey method is used.	A desk-based geoarchaeological assessment and deposit model have been commissioned from Oxford Archaeology North, local experts in geoarchaeological deposits. This work is ongoing, with the results to be

Consultee	Consideration	How Addressed in this PEIR
		shared with stakeholders when available and included as part of the ES.
Planning Inspectorate and Historic England	A preservation and palaeoenvironmental assessment should be carried out on any identified peat and organic-rich alluvium deposits to assess their potential for archaeological remains before any dewatering within the Study Area.	A desk study of peat deposits has been carried out and is reported in Chapter 12: Ground Conditions of the PEIR. Historic England will be invited to comment on this study. Archaeological monitoring of planned GI works will be undertaken in order to maximise recovery of archaeological information for input to an updated deposit model. Further, a preservation and palaeoenvironmental assessment will be carried out by suitably qualified experts as part of the ES.
Canal and Rivers Trust	The waterways themselves should be considered non-designated heritage assets in the assessment alongside tunnels, locks, mileposts, and bridges, many of which are designated. The Anderton Boat Lift is of particular historic significance.	The waterways and their associated designated and non-designated heritage assets will be assessed. If a significant effect is unlikely to arise, this assessment can be found in Table 6B1, Appendix 6B . If more information is required or if a significant effect is likely, this assessment will be presented in the ES.
Cheshire East	Non-designated heritage assets and previously unrecorded heritage assets should be included within assessment.	Data from Historic Environment Records and Local Lists along with features and structures identified on historic maps, aerial images, and LiDAR have been used to form the baseline in this PEIR and the DBA in Appendix 6A . This data will also inform assessment in the ES.
Cheshire East	Cumulative impacts to historic landscape and Heritage at Risk should be assessed.	Historic Landscape Character and Heritage at Risk data has been incorporated into the baseline at PEIR. This data will also inform assessment in the ES.

Consultee	Consideration	How Addressed in this PEIR
Cheshire West and Chester	Further research is needed to include non-designated heritage assets to gain full understanding of any impacts.	Non-designated heritage assets, including locally listed buildings have been included in the baseline in this PEIR and the DBA in Appendix 6A . This data will also inform assessment in the ES.
Historic England	It must be demonstrated that the Study Area is of an appropriate size to identify all potential effects. Photomontages might be used, and Historic England would welcome the opportunity to discuss potential locations for such techniques.	A Study Area of 1km from the Preliminary Order Limits was proposed and the appropriateness has been confirmed in the light of further information on the scheme design and following site visits. Photomontages will be produced as part of the ES and the location of viewpoints will be discussed with Historic England.
Historic England	The assessment should take account of the potential impact which associated activities (such as construction activity, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. Assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits and can also lead to subsidence of buildings and monuments.	Construction compounds, material storage area locations, and construction traffic routes have been included in assessment at PEIR and will be included in further assessment in the ES. See discussion of temporal scope in Section 6.3 .
Historic England	There should be some consideration of the option of preserving archaeological remains in situ, should previously unknown but significant archaeological assets be encountered during the course of construction.	Direct effects to designated heritage assets by the Project have been avoided through the review of design options by the historic environment team. Further opportunities to avoid direct effects and

Consultee	Consideration	How Addressed in this PEIR
		preserve remains in situ will be considered in the EIA process and identified within the ES.
St Helens Borough Council/Wirral Council	The revised edition (2021) of the Archaeological Regional Research Framework for North West England (2006 and 2007) should be referred to. The following resources should be consulted: The Archaeology of Mining and Quarrying in England: Resource Assessment and Research Agenda (2016); and The Coal Authority, which is the Lancashire and Liverpool Archives and the St Helens Local History Library.	The Archaeological Regional Research Framework for North West England (2006 and 2007) and The Archaeology of Mining and Quarrying in England: Resource Assessment and Research Agenda (2016) have been consulted in the appended DBA (Appendix 6A) and will be used to inform assessment of significance in the ES.
St Helens Borough Council/Wirral Council	In addition to desk- based geoarchaeological and palaeoenvironmental studies, field investigation should be carried out.	Site visits have been carried out as part of the PEI and geophysical survey will inform the ES. These, along with desk study, will feed into the design of an evaluation programme.
St Helens Borough Council/Wirral Council	Areas of medium to high potential should be agreed with the LPA Archaeologist who will be pleased to advise on the significance of predicted impacts to the archaeological resource in terms of EIA on receipt of the desk-based assessment.	The DBA has identified areas of medium and high potential. This is described in the DBA (Appendix 6A) and is mapped in Figure 6.4 . Further, the sensitivity of these areas has been assessed and is shown in Figure 6.5 . This assessment is provided at PEIR to seek agreement with the relevant LPA Archaeologists.
Trafford District Council	The following assets outside the scoping boundary should be assessed for impacts: • Willow Cottage, Grade II (NHLE 1121939) • Greenbank, Grade II (NHLE 1067940)	These assets have been assessed and can be found in Table 6B.1, Appendix 6B .

Consultee	Consideration	How Addressed in this PEIR
	- The Village Farmhouse including gatepiers, Grade II (NHLE 1337667) - Manor Farmhouse with forecourt railings and gates, Grade II (NHLE 1337640) - Orchard View, Grade II (NHLE 1099165) - The Hollies, Grade II (NHLE 1067912) - Sinderland House, Grade II (NHLE 1067911) - Barn to south-east of Birch Farmhouse, Grade II (NHLE 1101723)	
Trafford District Council	A list of all potential affected Listed Buildings should be included in the ES.	A gazetteer with this information is appended to this PEIR (Appendix 6C).
Trafford District Council	Supplementary Planning Guidance for Dunham Woodhouses Conservation Area should be considered.	SPD5.15 has been consulted as part of the PEIR. See entry for Dunham Woodhouses in Table 6B.1, Appendix 6B ²⁸ .
Trafford District Council	Dunham Massey Grade II* Registered Park and Warburton Park should be assessed for potential impacts.	These parks have been assessed for likely significant effects. The results of this assessment are presented in Table 6.12 below and Table 6B.1, Appendix 6B .

²⁸ Trafford Council (2016). SPD5.15 Dunham Woodhouses Conservation Area Supplementary Planning Document. (Online) Available at <https://www.trafford.gov.uk/planning/strategic-planning/docs/November-2016/caa-Dunham-Woodhouses-Oct-2016.pdf>. (Accessed June 2022)

Consultee	Consideration	How Addressed in this PEIR
Warrington Borough Council	Authority boundaries should be shown on maps and map scale needs to be revised to enable review by readers. Conservation Areas need to be mapped. Similarly, heritage assets should be listed by local authority within reporting.	Boundaries are shown on all figures and the gazetteer (Appendix 6C) records the local authority within which each asset falls.
Warrington Borough Council	Grappenhall Village Conservation Area should be included within assessment. To ensure accurate data, Warrington Council should be consulted for Conservation Area data along with Locally Listed Buildings data.	Grappenhall Village Conservation Area is assessed in this PEIR, see Table 6B.1, Appendix 6B. Conservation Area and Locally Listed Building data for Warrington was obtained from Cheshire Historic Environment Record (HER).

Technical engagement

6.3.4

Technical engagement with consultees in relation to the historic environment is ongoing. A summary of the technical engagement undertaken to date is outlined in **Table 6.5**.

Table 6.5 Technical engagement on the environmental aspect assessment

Consultee	Consideration	How Addressed in this PEIR
Historic England	At an introductory meeting on 30 May 2022, the following was discussed: • summary of scheme; • brief description of typical changes since scoping; • scoping opinion – geoarchaeological and deposit model assessment requirement; and • setting assessment approach. It was agreed that: • the Peat Desk Study would be circulated to Historic England; • a meeting would be held with geoarchaeology team; and • the long list of heritage assets considered for assessment would be circulated to Historic England ahead of PEIR.	The Peat Desk Study is provided in Appendix 13A of this PEIR. A meeting was held on 06 July 2022 with Historic England, Wood’s Historic Environment team and the geoarchaeology team at Oxford Archaeology North. The long list of heritage assets has been provided ahead of the PEIR (email dated 19 July 2022).
Historic England	A meeting was held on the 6 July 2022 between Historic England, Oxford Archaeology North and Wood’s Historic Environment Team. The purpose of the meeting was to introduce the geoarchaeology team brought on to the Project and to	Not applicable

Consultee	Consideration	How Addressed in this PEIR
	discuss approach to the desk-based geoarchaeological assessment and deposit model. The following was discussed: • team's experience and qualifications; • Data sources, methodology, and outputs; • Monitoring of GI works and subsequent revision of deposit model; • Any need for archaeology-specific GI following revision of the deposit model; and • Schedule: draft desk-study to inform geophysical Written Scheme of Investigation in September 2022; GI to follow in September/October 2022. It was agreed that: • a further meeting would be held in September 2022 to discuss results of desk-study and the proposed geophysics WSI; and • the results of the desk-study and, if possible, the GI works monitoring, would feed into an updated baseline presented in the ES.	
Cheshire Archaeology	A meeting was held on 6 July 2022 between Mark Leah (Development Management Archaeologist and	In light of this consultation, the archaeological potential of sandy drift deposits was reviewed and,

Consultee	Consideration	How Addressed in this PEIR
Planning Advisory Service	Team Leader) and Wood's Historic Environment Team. The purpose of this meeting was to introduce the Project team, the archaeological response to the Cheshire West and Chester, Cheshire East, Warrington and Halton scoping opinions, and the approach to archaeological evaluation and consultation. Historic boundaries crossed by the Project was raised by the consultee and a description of these will be included in the ES. The higher archaeological potential of sandy drift deposits was highlighted by the consultee.	where appropriate, amended in the DBA appended to the PEIR (Appendix 6A).
Cheshire West and Chester Council	A meeting was held on 05 August 2022 between Tayler Davies (Built Environment Officer (Conservation and Design)) and Wood's Historic Environment Team. The purpose of this meeting was to introduce the Project team, the response to their scoping opinion, project design updates, and the approach to assessment and consultation. It was discussed that if impacts to both built and buried elements of an asset were likely, for example, at Vale Royal or Elton moated site, that a joint	Not applicable

Consultee	Consideration	How Addressed in this PEIR
	consultation with Mark Leah of Cheshire Archaeology Planning Advisory Service would be held.	
Greater Manchester Archaeological Advisory Service	A meeting was held on 11 July 2022 between Ben Dyson (Senior Planning Archaeologist) and Wood's Historic Environment Team. The purpose of this meeting was to introduce the Project team, the response to their scoping opinion, and the approach to archaeological evaluation and consultation.	Not applicable
Trafford Council Conservation Officer	A meeting was held on 04 August 2022 between Elisabeth Lewis (Heritage Development Officer) and Wood's Historic Environment Team. The purpose of this meeting was to introduce the Project team, the response to their scoping opinion, project design updates, and the approach to assessment and consultation. The consultee suggested that if impacts to both built and buried elements of an asset were likely, that a joint consultation with Ben Dyson of Greater Manchester Archaeological Advisory Service was held. The duration of landscape impacts from vegetation clearance was raised by the consultee. Where historic landscape character contributes to the significance of	Not applicable

Consultee	Consideration	How Addressed in this PEIR
	a heritage asset any associated vegetation clearance will be assessed in the ES if significant effects are likely.	
6.3.5	A conversation was held with Merseyside Environmental Advisory Service's Planning Archaeologist, Alison Plummer, on 04 August 2022 to discuss how their scoping opinion response has been addressed and updates to the project.	
6.3.6	Contact was made with Liz Snead, Senior Planning Officer at Warrington Borough Council, on the 02 August 2022 to identify the relevant conservation officer. The consultee informed Wood's Historic Environment Team via email on the 03 August 2022 that the conservation officer is leaving shortly, and a replacement will be recruited in the future.	
6.3.7	An email was sent to Emma Fairhurst, Conservation and Design Officer for Cheshire East, on the 01 August 2022 to set up a meeting to discuss our approach to their scoping response and updates to the project design. However, no response was received.	

Planned future engagement

- 6.3.8 Consultation with local authority Conservation Officers and Planning Archaeologists will be carried out to discuss and agree:
- potential significant effects;
 - areas of medium and high archaeological potential;
 - areas requiring further research or assessment;
 - agreement of Written Scheme of Investigations (WSIs) for planned GI works; and
 - mitigation requirements.
- 6.3.9 Further consultation with Historic England's Inspector and Science Advisor will be carried out to:
- discuss the identification of possible significant effects at PEIR stage;
 - discuss the results of the Peat Study and archaeological DBA submitted at PEIR stage;
 - discuss proposed locations for photomontages;
 - agree WSIs for planned GI works;
 - discuss the results of the geoarchaeological assessment and deposit model and the approach to any project-based coring;
 - agree a WSI for geophysical survey; and
 - agree a WSI for palaeoenvironmental study.

6.4 Study Area

Spatial scope

Data gathering spatial scope

- 6.4.1 Data was gathered for an area covering the Preliminary Order Limits, plus additional buffers as described below. This data gathering area was selected to set an appropriate assessment Study Area extending to 1km from the Preliminary Order Limits and to contextualise the historic environment.
- 6.4.2 National Heritage List for England (NHLE) data and Conservation Area data was gathered out to an additional 2km buffer from the Preliminary Order Limits, whilst for this assessment HER data was reviewed to a one km buffer from the Preliminary Order Limits. HER data was initially gathered for the larger Scoping red line boundary Study Area, which comprised a one km buffer of the Scoping red line boundary, and has been used where appropriate to contextualise this assessment.

- 6.4.3 Historic vertical aerial imagery was selected that centred immediately over the pipeline corridors, while oblique images were sourced that were within 500 metres (m) of it.
- 6.4.4 Available raw LiDAR data extending 1km from the pipeline corridor and including all land within the Preliminary Order Limits was downloaded and processed.

Assessment spatial scope

- 6.4.5 The spatial scope for assessment refined that used for data gathering, based on revisions to the Project design and following review of the data collected. Consequently, a 1km buffer of the Preliminary Order Limits has been used for the spatial scope of assessment (see **Figures 6.1 and 6.2**).
- 6.4.6 Interpretation and mapping of noteworthy features from a remote sensing analysis was carried out for all land within the Preliminary Order Limits, except for existing tracks and roads to be used for access..
- 6.4.7 Given the properties of the Project components, this spatial scope will allow assessment of all likely significant effect resulting from the Project. This includes any effects arising from impacts to the setting of heritage assets or HLC.

Temporal scope

- 6.4.8 The temporal scope of the historic environment assessment is consistent with the period over which the Project would be constructed, operated/maintained, and decommissioned as described in Chapter 2.
- 6.4.9 Disturbance of archaeological remains is likely to occur during construction phase activity. Change to HLC and setting of heritage assets through vegetation clearance is likely to also occur during construction. Change to HLC and to setting may occur during operation, through the continued presence of HAGIs in the landscape and any permanent changes to HLC. No effects from maintenance activity are anticipated. Change to HLC and setting of heritage assets through removal of HAGIs may occur during decommissioning.
- 6.4.10 Construction, operational, and decommissioning phases are scoped into the assessment, whilst maintenance is scoped out.

6.5 Data Gathering Methodology

Desk study

- 6.5.1 A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 6.6**.

Table 6.6 Data sources used to inform the historic environment assessment

Source	Date	Summary
National Heritage List for England		Identification of designated and registered heritage assets: • Scheduled Monuments; • Listed Buildings; • Registered Battlefields; • Registered Parks and Gardens; and • Protected Wrecks. Identification of Heritage at Risk.
Cheshire Historic Environment Record (HER)		Identification of: • non-designated monuments; • historic environment events; • HLC data; • Conservation Areas; and • Locally Listed Buildings
Greater Manchester HER		Identification of: • non-designated monuments²⁹; • historic environment events; • HLC data; and • Conservation Areas for Partington District.
Merseyside HER		Identification of: • non-designated monuments³⁰; • historic environment events; and • HLC data.
Historic England's Aerial Photography Archive	5 April 2022	Historic RAF vertical air photographs. Various oblique air photographs.
Google Earth and Bing satellite imagery		Identification of cropmarks relating to buried archaeological features.
Environment Agency LiDAR	10 January 2022	2017 1m DSM data for map tiles:

²⁹ Buildings recorded on the HER of equivalent significance to Cheshire HER's locally listed buildings were identified and mapped as part of the PEIR. Trafford District Council are currently creating a locally listed buildings dataset, which is due for consultation in July 2022. If possible, this dataset will be included in the ES.

³⁰ As above

Source	Date	Summary
		SJ47 SJ49 SJ57 SJ58 SJ59 SJ66 SJ67 SJ68 SJ78 SJ79
Tithe Maps	April – June 2022 (accessed through the Genealogist ³¹ and Cheshire Tithe Maps online ³²)	Tithe maps from which historic boundaries and land-use could be gleaned.
Ordnance Survey mapping (groundsure)	April-June 2022	Ordnance Survey mapping from First Edition to most up to date at the following scales: 1:1,250 1:10,000 1:10,560
Historic Ordnance Survey Maps via National Museum of Scotland	April-June 2022	Second Edition Ordnance Survey mapping.
Historic County Maps of Cheshire	April-June 2022	Historic maps of the historic county of Cheshire, providing overviews of landscape patterns from the mid-17 th century ³³ to the early 19 th century ³⁴ .

³¹ Genealogy Supplies (Jersey) Limited (2022). The Genealogist. (online) Available at: <https://www.thegenealogist.co.uk/> (Accessed May 2022).

³² Cheshire East Council (2022). Cheshire Tithe Maps. (Online) Available at <https://maps.cheshireeast.gov.uk/tithemaps/> (Accessed May 2022).

³³ Joan Blaeu (1662) 'Cestria Comitatus Palatinus (from Blaeu Atlas Maior, 1662-5, Vol.V)'. (Online) Available at: <https://maps.nls.uk/counties/cheshire.html> (Accessed May 2022).

³⁴ Andrew Bryant (1831) 'Map of the county palatine of Chester from an actual survey made in the years 1829, 1830 & 1831'. (Online) Available at: <https://maps.nls.uk/counties/cheshire.html> (Accessed May 2022).

Source	Date	Summary
1:50k British Geological Survey	April-June 2022	GIS layer file and online viewer ³⁵ containing information on: Bedrock Superficial Deposits
Soilscapes³⁶	April-June 2022	Online soils dataset covering England and Wales.
Archaeological Regional Research Framework for North West England (NWERRF) (2006 and 2007, revised 2021)³⁷	April-June 2022	Presented as Resource Assessments and a Research Agenda, with a further section focusing on overarching questions and strategies for the archaeological resource in North West England.
Archaeology of Mining and Quarrying in England: Resource Assessment and Research Agenda (2016)	April-June 2022	Used to inform discussions on the development of the salt industry at specific points in the Study Area.

Survey work

- 6.5.2 A site walkover survey was carried out between 16 and 18 March 2022. The survey visited known heritage assets that were likely to have above-ground remains, to assess condition and update baseline information, and to assess general ground conditions along the route of the scheme. The survey was carried out on foot and used digital data capture app, ArcMap Collector, along with photographs on digital SLR cameras Canon EOS4000D. The results of this survey have informed the DBA (**Appendix 6A**).
- 6.5.3 A further survey was carried out on 20 – 22 April 2022, visiting heritage assets, which may experience effects through change to their setting. Analyses were

³⁵ British Geological Survey (2022). Geology of Britain Viewer (Classic). (Online) Available at:

https://mapapps.bgs.ac.uk/geologyofbritain/home.html?_ga=2.133680398.1060654158.1616703570-1444136630.1616703570 (Accessed May 2022).

³⁶ Cranfield University (2022). Soilscapes. (Online) Available at:

<http://www.landis.org.uk/soilscapes/index.cfm> (Accessed May 2022).

³⁷ Research Frameworks (2022). The North West England Regional Research Framework. (Online) Available at: <https://researchframeworks.org/nwrf/> (Accessed May 2022).

recorded on the digital data capture app, Survey 123, along with photographs captured on digital SLR cameras Canon EOS4000D. Photographs from this survey can be found in **Appendix 6D**.

Data limitations

- 6.5.4 Limitations on the data gathered are captured in **Section 6.1, Limitations and assumptions**.

6.6 Overall Baseline

Current baseline

- 6.6.1 The topography across the Study Area varies from the intertidal mudflats and salt marsh in the West Corridor; to the expanse of flat or gently undulating farmland in the South Corridor; to the varied topography of low hills and valleys in the North and East Corridors of the Study Area. The height above sea level ranges from 13m in the west of the Study Area, to around 80m in the northern part of the Study Area, around Sutton Heath.
- 6.6.2 The agricultural landscapes within the Study Area are largely the result of post-medieval and modern enclosures but encased within these are traces of former landscapes of the medieval and earlier periods. Features associated with this have been detected as cropmarks and low earthworks on aerial photographs and LiDAR imagery respectively, and thus do not form tangible elements of the present historic landscape character.
- 6.6.3 A detailed description of the archaeological baseline is included in the DBA (**Appendix 6A**). What follows below is a summary of the character of the historic environment, both above and below ground.
- 6.6.4 HLC areas within each National Character Area (NCA) are listed in the Gazetteer (**Appendix 6C, Table 6C.11**).

West Corridor and Runcorn Spur

- 6.6.5 The West Corridor, including its options and the Runcorn Spur, falls within the NCAs of Mersey Valley and Shropshire, Cheshire and Staffordshire Plain (the NCAs which fall within the current study are described in the **DBA (Appendix 6A, Table 4.1)**). The landscape in this corridor consists of riverine and marsh on the south banks of the river Mersey which rise to arable and pastoral agricultural land punctuated by small villages and towns, some of which have seen extensive development related to industrial activity.
- 6.6.6 Archaeological investigations along this corridor have revealed evidence for human activity dating from early prehistory to the early modern period, including Mesolithic flint scatters, Bronze Age barrows, late prehistoric or Romano-British settlement and field systems, medieval villages and open fields, post medieval enclosure and industrial development associated with the development of canals and the expansion of industrial towns.

HPP HAGI

- 6.6.7 This HAGI is located within the Stanlow Refinery. There is **negligible** potential for archaeological remains at this site due to extensive modern disturbance associated with the construction and operation of the refinery.

Rocksavage HAGIs

- 6.6.8 There are three options identified for the location of the Rocksavage HAGI: Option RSH1, RSH2 and RSH3.
- 6.6.9 The RSH1 HAGI is situated within agricultural fields which are a result of reclamation of marshland in the 19th century. Archaeological potential is assessed as **high** for the presence of archaeological artefacts and ecofacts within underlying peat deposits. Any remains of this nature would carry **medium** sensitivity as assets of regional importance.
- 6.6.10 The RSH2 and RSH3 HAGI's are located within an area of former industrial activity which is currently occupied by woodland and scrub. Archaeological potential is assessed as **negligible** in this location.

Runcorn HAGI

- 6.6.11 This HAGI is located within former industrial activity, including the site of a former canal deposit dump. Part of the area was also used as a lagoon in the 20th century. As a result of disturbance associated with industrial activity the archaeological potential for this area is assessed as **negligible**.

North Corridor and Warrington and St Helens Spurs

- 6.6.12 The North Corridor, including its options and the Warrington and St Helens Spurs, is located partly in the NCAs of Mersey Valley, Shropshire, Cheshire and Staffordshire Plain and Lancashire Coal Measures. Much of the Corridor traverses agricultural land which is bisected by historic canals and railways, and modern motorways. Notable exceptions to this landscape type are St Helens and Warrington, towns which saw significant expansion from the 19th century onwards. The current agricultural landscape is broadly a result of post medieval enclosure of former medieval open fields and common grazing grounds, traces of which are evidenced through ridge and furrow, historic field names, and the presence of settlements with origins in at least the medieval period. Medieval moated sites represent high status residences and a degree of social hierarchy in the landscape during this time. Activity in the Roman period is evidenced through the substantial settlement at Wilderspool, along the former route of the River Mersey. A probable Roman road is roughly aligned with the route of the modern A56, which is believed to have connected the settlement at Wilderspool with Chester. Other Roman roads are implied in this corridor but are less well attested. Cropmark evidence of late prehistoric or Romano-British settlements and landscapes suggest at least parts of this corridor were settled from the prehistoric period onwards.

Higher Walton HAGIs

- 6.6.13 There are two options identified for the location of the Higher Walton HAGI: HWH1 and HWH2.
- 6.6.14 The HWH1 HAGI is located within an area of former sand quarrying which is now part of the Moore nature reserve. The archaeological potential for this area assessed as **negligible** due to extensive ground disturbance.
- 6.6.15 The HWH2 HAGI is located within an area of reinstated former quarrying. As a result of extensive ground disturbance, the archaeological potential for this area is assessed as **negligible**.

Clock Face HAGI

- 6.6.16 This HAGI is located within agricultural land enclosed in the post medieval period. There is **high** potential for the survival of boundaries dating from the prehistoric through to the post medieval period. Any which are found to be pre-medieval in date would carry **medium** sensitivity as assets of regional importance.

St Helen's HAGI

- 6.6.17 This HAGI is situated in an area of industrial and commercial development. Due to extensive ground disturbance associated with this, the archaeological potential in this area is assessed as **negligible**.

East Corridor and Warburton and Partington Spurs

- 6.6.18 The East Corridor, including the Warburton and Partington Spurs, falls within the NCA of Mersey Valley and the Shropshire, Cheshire and Staffordshire Plain. Land use in this corridor is largely agricultural and interspersed with historic farms dating from around the 18th and 19th centuries. The development of land tenure in the post medieval period is further evidenced in the estates of Arley Hall and Dunham Massey, both of which had connecting villages built for workers of the estates. The pattern of enclosed fields is bisected by historic canals/railways and the M6 motorway. Settlements with origins in at least the medieval period are located along the periphery of the Study Area in this corridor, around which the traces of former medieval open fields have been identified within the current pattern. Recorded evidence of prehistoric activity is scarce in this corridor but implied through the scheduled upstanding remains of a round barrow, cropmarks which may relate to late prehistoric or Romano-British fieldscapes, and peat layers within Carrington Moss and Sink Moss which may hold archaeological artefacts and ecofacts.

East Block Valves

- 6.6.19 There are three options under consideration as the locations for a Block Valve between the Central Hub HAGI and the Warburton HAGI: EBV1, EBV2, EBV3.
- 6.6.20 The EBV1 Block Valve is located within agricultural land enclosed in the post-medieval period. There is **high** potential for the buried remains of former ridge and furrow and boundaries which would carry **low** sensitivity as assets of local importance.

- 6.6.21 The EBV2 and EBV3 Block Valves are located in agricultural land enclosed in the post-medieval period with some boundary loss occurring in the 20th century. There is **high** potential for the buried remains of ridge and furrow and relict boundaries which would carry **low** sensitivity as assets of local importance.

Warburton HAGI

- 6.6.22 This HAGI is situated in agricultural land enclosed in the post medieval period. There is **high** potential for the buried remains of prehistoric or Romano-British settlement and land-use which would take the form of ditches and pits. These would be of **medium** sensitivity as assets of regional importance. There is also **high** potential for upstanding and buried remains of removed post medieval boundaries which would be of **low** sensitivity as assets of local importance.

Partington HAGI

- 6.6.23 This HAGI is located in an area of existing and former gas works. As a result of extensive ground disturbance associated with former industrial use, the archaeological potential for this area is assessed as **negligible**.

South Corridor and Northwich Spur

- 6.6.24 The South Corridor, including its options and the Northwich Spur, falls within the Shropshire, Cheshire and Staffordshire Plain NCA. It mostly traverses enclosed agricultural fields interspersed with farms dating to around the 18th and 19th centuries, and historic settlements with origins in at least the medieval period. Concentrations of historic industrial activity can be found around Anderton and Winnington, and south of Moulton in the form of former and current salt works. These are closely tied with the construction of the Trent and Mersey Canal and the Weaver Navigation. Traces of a former medieval landscape can be seen in the presence of historic villages and evidence for associated open fields is located within this corridor. Most of the evidence for prehistoric activity exists in the form of artefacts found by chance, with the exceptions of cropmarks of possible settlement and landscapes, which are recorded intermittently along this corridor, and the site of a scheduled Bronze Age round barrow which sits in isolation as a recorded feature of this type.

South Block Valves

- 6.6.25 There are three options under consideration as the locations for a Block Valve between the Central Hub HAGI and the HSF: SBV1, SBV2, SBV3, SBV4, SBV5:
- 6.6.26 The SBV1 Block Valve is located in an area of former quarrying which is now open ground. The archaeological potential at this location is assessed as **negligible** due to extensive ground disturbance.
- 6.6.27 The SBV2 Block Valve and SBV3 Block Valve are situated in agricultural land enclosed in the post-medieval period. There is **high** potential for the buried remains of former boundaries removed in the 20th century. Any remains of this nature would carry **low** sensitivity as assets of local importance.

- 6.6.28 The SBV4 Block Valve is located in agricultural land enclosed in the post-medieval period with some boundary loss occurring in the 20th century. There is **high** potential for the buried and upstanding remains of former fishponds associated with Earnslow Grange, along with the buried remains of former boundaries. Any remains of this nature would carry **low** sensitivity as assets of local importance.
- 6.6.29 The SBV5 Block Valve is situated in agricultural land enclosed in the post-medieval period with some boundary loss occurring during the 20th century. There is **high** potential for the buried remains of former boundaries which would carry **low** sensitivity as assets of local importance.

Hydrogen Storage Facility

- 6.6.30 This HAGI is located within agricultural land enclosed in the post medieval period. There is **high** potential for upstanding and buried remains of post medieval field boundaries. These would be of **low** sensitivity as assets of local importance.

Central Hub HAGIs

- 6.6.31 There are two options for the Central Hub HAGI: CHH1 and CHH2.
- 6.6.32 The CHH1 and CHH2 HAGIs are located within agricultural fields enclosed during the post medieval period. The archaeological potential for these locations is assessed as **high** for buried remains associated with medieval and post medieval ridge and furrow and relict boundaries. These would carry **low** sensitivity as assets of local importance.

Future baseline

- 6.6.33 It might reasonably be expected that large parts of the Study Area that comprise arable land would experience some degradation of any extant earthworks and shallowly buried archaeological deposits through continued agricultural activity. Urban development, particularly around Runcorn, Widnes, Northwich, and the western suburbs of Greater Manchester would also alter the baseline.
- 6.6.34 The future baseline will be revisited in light of proposals that emerge or are identified on a project-wide basis during the course of the EIA.

6.7 Embedded Environmental Measures

- 6.7.1 As part of the Project design process, designated heritage assets were included in optioneering for the pipeline route. As a result, direct impacts to designated heritage assets have been avoided. The exception to this may be any dewatering impacts or disturbance to buried remains outside of designated areas but associated with them; these are listed in **Table 6.12** and will be assessed in the ES.
- 6.7.2 A similar exercise was undertaken to assess HAGI locations and options for avoidance and minimisation of impacts to the historic environment.
- 6.7.3 As part of the Project design process, a number of embedded environmental measures are proposed to reduce the potential for impacts on the historic

environment. **Table 6.7** outlines how these embedded measures will influence the historic environment assessment.

Table 6.7 Summary of embedded environmental measures

Embedded Measures	Compliance Mechanism
Construction phase	
Selection of pipeline routes and consideration of HAGI location options has been undertaken to avoid or minimise, as far as possible, identified areas of greater sensitivity.	Location and design of project components and limits of deviation are controlled by the DCO.
Programme of archaeological evaluation (trial trenching) and mitigation. The overarching research aims and approach to evaluation and mitigation will be set out in an Overarching WSI to be agreed with consultees and submitted as part of the DCO application. The delivery of this agreed programme of works would be secured through a DCO Requirement and would be subject to detailed WSI or method statements.	DCO requirement.
Construction routes to use existing access, as far as possible, to minimise disturbance or compaction of archaeological remains and to reduce perceptual change within the setting of heritage assets and impacts to HLC.	Outline Code of Construction Practice (CoCP) secured via DCO requirement.
Trackway would be used for access, where areas of archaeological potential have been identified, to avoid or minimise disturbance or compaction of archaeological remains.	Outline CoCP secured via DCO requirement.
Temporary accesses would be removed and reinstated following the completion of the construction works.	Outline CoCP secured via DCO requirement.
Avoidance of Conservation Areas within settlements by HGV construction routes, where possible.	Outline CoCP
The Project design has been optimised to minimise the removal of hedgerows and trees to accommodate the siting and working areas associated with the HAGI/ Block Valve installations, construction compounds and material storage areas. Localised losses of hedgerows and trees related to the pipeline corridor, temporary/permanent access and associated visibility splays have been minimised and will be refined by the	Location and design of project components and limits of deviation are controlled by the DCO.

Embedded Measures	Compliance Mechanism
BS 5837 (2012) arboricultural surveys and ecological surveys currently underway.	
The removal of trees from within the avenue to Sutton Hall (Grade I Listed Building: 1253572) would be minimised as far as possible. Where mature sycamores are required to be removed they would be replanted with specimens as similar to the extant trees as possible, i.e., species, age and size.	Outline CoCP secured via DCO requirement.
The Grade II listed boundary stone (1329857) is located in the verge of the A49 on the north side of Whitleybrook Bridge. The stone will be protected on site and marked up on plans to increase awareness of position.	Outline CoCP secured via DCO requirement.
The use of the Trent and Mersey Canal Bridge Number 211 (Listed Building (Grade II): 1139147) for construction plant movements will be subject to agreement with the Canal and Rivers Trust with regards a maximum load and size to avoid potential impacts to this Grade II listed structure.	Outline CoCP secured via DCO requirement.
Operation phase	
Any sections of hedgerow and trees that are removed would be reinstated following construction. Above the pipeline, appropriate low-level species would be selected to avoid damage to the buried pipe, whilst also reducing effects to the historic environment through promoting legibility of HLC.	Outline CoCP secured via DCO requirement.
Consideration of permanent low-level earthworks and/or tree/shrub planting to screen views of HAGIs and Block Valve installations. Details to be confirmed in the ES.	Outline CoCP

6.8 Methodology for PEIR Assessment

Introduction

- 6.8.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 4: Approach to preparing the PEIR**, and specifically in **Sections 4.7 to 4.10**. However, whilst this has informed the approach that has been used in this historic environment assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this historic environment assessment.

Assessment of effects and determining significance/sensitivity

6.8.2 The significance or sensitivity of a heritage asset is the product of the value it holds for this and future generations as a result of its historic, archaeological, architectural, or artistic interests:

- Historical Interest – through association with past events or past people; or where a heritage asset is illustrative of a particular asset type, theme, or period;
- Archaeological Interest – through the potential to hold evidence about the past that can be retrieved through specialist investigation; and
- Architectural/Artistic Interest – through value derived from contemporary appreciation of a heritage asset's aesthetics.

6.8.3 National Policy Statement (NPS) EN-1⁹ notes that setting contributes to a heritage asset's significance but does not provide an explicit definition of setting. Setting is defined in the NPPF¹¹ and GPA3²⁰ as:

“The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate an asset, or may be neutral.”

6.8.4 For the purposes of this historic environment assessment, the heritage significance of an asset will be assigned to one of four classes, with reference to the heritage interests described above and professional judgement informed by policy and guidance. In particular, NPS EN-1⁹ distinguishes between the heritage significance of designated and non-designated assets.

6.8.5 To align with other workstreams in this assessment, heritage significance is referred to as a receptor's sensitivity in **Table 6.8**.

Table 6.8 Classification of sensitivity of receptors

Sensitivity	Criteria	Receptor Type
High	Assets of national importance, which have significance for an outstanding level of historic, archaeological, architectural, and/or artistic interest.	Designated heritage assets, or non-designated heritage assets of demonstrable equivalence, of national importance.
Medium	The sensitivity of these assets will largely be dependent upon their current setting and their character. Asset has significance for a high level of historic, archaeological, architectural and/or artistic interest.	Non-designated heritage assets of regional importance.
Low	Assets of local interest, which have significance for elements of historic,	Non-designated heritage assets of local importance.

Sensitivity	Criteria	Receptor Type
	archaeological, architectural and/or artistic interest.	
Negligible	Due to its nature of form/condition/survival, cannot be considered as an asset.	Non-extant HER record.

Assessment of magnitude of change

- 6.8.6 Magnitude of change is a measure of the extent to which the heritage significance or sensitivity of an asset is affected, which can be influenced by several factors:
- the permanence of the impact (temporary, permanent, or reversible);
 - physical changes caused by the impact (positive or negative); and
 - the extent of the asset or its setting that would be affected and contribution of that part to significance.
- 6.8.7 In respect of buried archaeological deposits, where no remains are visible above ground, change would arise from direct disturbance or removal of archaeological material resulting in the loss of archaeological interest. In certain instances, elements of architectural and historic interest can also be affected. Direct loss, damage or alteration of a structure would primarily affect architectural interest, although historic and archaeological interests may also be affected.
- 6.8.8 The effects of change in the setting of a heritage asset depends on the contribution of setting to the sensitivity of the asset, and assessments must be, by their nature, specific to the individual assets being considered. Significance and sensitivity are qualitative measures of value, and any assessments of effect will be drawn from professional judgement exercised within a context defined by statute, policy and guidance.
- 6.8.9 All assessments will be presented as a narrative, setting out the nature and extent of the change to an asset's interests arising from the Project, the permanence of change and the impact, whether positive or negative, of those changes, before assigning those changes to a magnitude of change as set out in **Table 6.9**.
- 6.8.10 Change can be beneficial or adverse. NPS EN-1⁹ expects developers to make, where possible, a positive contribution or beneficial impact to the historic environment.

Table 6.9 Classification of magnitude of change

Change	Criteria Adverse	Criteria Beneficial
High	Loss of significance resulting from irreversible total or substantial demolition or disturbance of a heritage asset or from the total disassociation of an asset from its setting.	Sympathetic restoration of an at-risk or otherwise degraded heritage asset and/or its setting. Bringing an at-risk heritage asset into sustainable use, with robust long-term management secured.
Medium	Loss of significance arising from partial disturbance or inappropriate alteration of asset which will adversely affect its importance. Change to the key characteristics of an asset's setting, which gives rise to lasting harm to the significance of the asset, but which still allows its historic, archaeological, architectural, and/or artistic interest to be appreciated.	Appropriate stabilisation and/or enhancement of a heritage asset and/or its setting that better reveal the significance of the asset or contribute to a long-term sustainable use or management regime.
Low	Minor alteration to, or alteration of, an asset, which presents minimal change to significance, including minor and/or short term or reversible change to setting which does not affect key characteristics and in which the historical context remains substantially intact.	Minor enhancements to an asset and or its setting, which better reveal its significance or contribute to its sustainable use and management.
Negligible	Very minor alteration to an asset that does not affect its significance in any discernible way, including very minor and/or short-term or reversible change to setting that does not affect significance.	Very minor enhancement to an asset which presents minimal beneficial change to significance.

Assessment of significance of effect

- 6.8.11 The classification of the significance of an effect is judged by the relationship of the magnitude of change to the assessed heritage significance (sensitivity) of an asset (see **Table 6.10**).

- 6.8.12 As a rule, major and moderate effects are considered to be significant whilst minor and negligible effects are considered not significant. However, professional judgement is applied, and this may be amended as appropriate.
- 6.8.13 All assessments will be presented as narrative descriptions that set out the significance of a heritage asset, including, where appropriate, the contribution of its setting to significance, anticipated magnitude of change to significance and a resulting significance of effect.

Table 6.10 Classification of effect

Sensitivity	Magnitude of Change			
	High	Medium	Low	Negligible
High	Major (significant)	Major (significant)	Moderate (potentially significant)	Minor (not significant)
Medium	Major (significant)	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)
Low	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)	Negligible (not significant)
Negligible	Minor (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)

Assessment of harm and substantial harm

- 6.8.14 Harm and substantial harm are distinguished in NPS EN-1⁹. For this assessment, adverse change of negligible to medium magnitude to a designated asset or a non-designated asset of equivalent sensitivity would normally be considered as harm, while a high magnitude of adverse change would normally be considered substantial harm. This follows the case of *Hall vs City of Bradford* 2019 that determined that even a negligible magnitude of change to a designated heritage asset would constitute harm³⁸. The fact that the harm may be limited or negligible will contribute to the weight to be afforded to it as part of the planning balance as recognised in Paragraph 5.8.15 in NPS EN-1⁹.
- 6.8.15 Professional judgment will be applied to the case of each individual asset and comments on the magnitude of any harm arising will be noted in the narrative of each assessment.

³⁸ Royal Courts of Justice (2019). Neutral Citation Number: (2019) EWHC 2899 (Admin). (Online). Available at: <https://www.kingschambers.com/assets/files/News/James%20Hall%20v%20City%20of%20Bradford.pdf> (Accessed 17 June 2022).

6.9 Scope of the Assessment

The Project

- 6.9.1 A detailed description of the Project can be found in **Chapter 2: The Project**. Summarised below are those elements that are likely to have an impact on the historic environment.
- 6.9.2 The Project comprises up to 125km of new pipeline, 10 HAGI locations and two Block Valve locations. The pipeline is arranged around a central hub connecting four main pipeline corridors: the West, East, North and South Corridors. Branching from each corridor are smaller pipeline spurs connecting to end users.
- 6.9.3 The pipe trench to be excavated would vary in width, with typical depths of approximately 2.5m for the largest diameter pipes. Some crossings e.g. streams may require excavations to greater depths. Temporary working widths, comprising the trench area, pipe string, laydown and equipment areas, and access tracks are likely to range between 22m and 36m. A permanent easement is required, which will vary in width depending on the diameter of the pipeline. At this PEI stage, there are a number of options for the pipeline route which are remain under consideration; these are all included within this historic environment assessment. In addition, the pipeline centreline is illustrative, and the final route could vary within the Preliminary Order Limits.
- 6.9.4 The preliminary assessment of impacts to buried archaeological remains, as described in the DBA (**Appendix 6A**), therefore considers that ground disturbance could occur any part of the Preliminary Order Limits. Impacts likely to arise through change within the setting of heritage assets or to HLC have also been considered taking account of the flexibility and retained options within the Preliminary Order Limits.
- 6.9.5 HAGI locations are likely to range between 0.5ha and 2.0ha in area and up to 3m in height, while some elements including fencing and lighting may vary as described in **Chapter 2: The Project**. Block Valves would be housed in a compound up to 0.5ha in area.
- 6.9.6 Temporary construction compounds and material storage area locations would vary in area but would not exceed 6m and 4m in height, respectively.
- 6.9.7 Construction accesses and the need for improvements at these points e.g., visibility splays, bellmouths and widening, will be subject to further design. The location and size of these is to be confirmed but will lie within the Preliminary Order Limits.
- 6.9.8 The requirements for vegetation clearance would be location specific and are to be confirmed. A key consideration would be to retain and protect sensitive areas, including habitats and vegetation, where practicable. Vegetation would be reinstated following the construction phase. Within the pipeline easement the intention is to reinstate with low-lying vegetation or crop. Detail of this reinstatement will depend on the exact location and the specific vegetation to be cleared and is yet to be confirmed.

- 6.9.9 Information regarding duration of construction activity can be found in **Chapter 2: The Project, Section 2.5: Construction**.
- 6.9.10 For the purposes of this assessment, all construction activity is classed as short-term and temporary. Once a section has been prepared, pipeline installation would typically advance at 500m to 1km per day, following site preparation and pipeline fabrication. More congested areas, or where pipe diameters are larger, would progress more slowly, at a rate of tens of metres per day. It is expected that each corridor would take 12 – 18 months to construct. Construction of a HAGI typically takes six to 12 months, and a Block Valve would typically take up to four months.

Potential receptors

- 6.9.11 Heritage assets may be subject to potential effects resulting from physical disturbance or from effects arising from change within the setting of a heritage asset.
- 6.9.12 Direct effects are those which result from physical damage or disturbance which leads to a loss of sensitivity. It is only those assets that might be physically disturbed by the Project and associated enabling works, including:
- intrusive surveys;
 - the pipeline working width, including crossings;
 - the footprint of the above-ground elements;
 - temporary construction compounds; and
 - access route visibility splays, bellmouths, culverts, and localised sections of widening within the Preliminary Order Limits.
- 6.9.13 Direct effects outside the Preliminary Order Limits may arise from hydrological change caused by the construction of the pipeline that results in degradation of buried waterlogged remains.
- 6.9.14 A DBA (**Appendix 6A**) has been undertaken to assess the potential for heritage assets to be present throughout the Preliminary Order Limits. Conclusions from the DBA are predictive, and there are some cases where the potential presence of heritage assets or their significance remains difficult to state with confidence.
- 6.9.15 A review of heritage assets within the Study Area has been completed in order to identify those which may be affected as a result of changes to their setting. Assets have been reviewed in light of the available design information on the Project and following site visits in order to identify those which may be subject to significant effects, taking account of:
- distance to the asset;
 - topography;
 - relationship to other assets;
 - changes resulting from noise, dust, vibration, and severance; and
 - duration of any effect.

6.9.16 The principal historic environment receptors that have been identified as being potentially subject to effects are summarised in **Table 6.11**.

Table 6.11 Historic environment receptors subject to potential significant effects

Receptor	Reason for Consideration
Buried archaeological remains	Potentially direct effects arising from the construction of the Project could include the disturbance or removal of archaeological remains by intrusive groundworks, including field survey, and the disturbance or dewatering of deposits of palaeoecological or geoarchaeological interest.
Built heritage assets	Potentially direct effects arising from use of historic bridges on construction routes. Potential effects arising from the operation of the Project could include change to setting (and consequently change to the character of Conservation Areas) resulting from visibility of HAGIs and Block Valve compounds, in views of and from heritage assets. Given the short-term and temporary nature of construction-related impacts³⁹, no significant effects arising from change within the setting of heritage assets are anticipated during the construction phase. These effects are scoped out of further assessment. An exception to this is where HLC contributes to significance – see below.
Historic Landscape Character	Change may arise to historic landscape character in areas of construction as a result of the loss or modification of landscape features, the introduction of new features, or a change to the perception of the use or appearance of parts of the landscape. Where not reinstated, these effects may persist into the operational phase.

Potential significant effects

6.9.17 In line with the EIA Regulations 2017 and as set out in Scoping, only those impacts where there is a risk of a likely significant effect, or where there is currently insufficient information to make an assessment of likely impact, will be taken forward for assessment in the ES.

6.9.18 A crossing schedule is shown in **Appendix 2A** and **Figure 2.1** and details of these crossing techniques can be found in **Chapter 2: The Project**. Open cut crossings

³⁹ See **Section 2.5 Construction**, in **Chapter 2: The Project**

would remove all archaeological deposits within the excavated area during the construction phase, whilst ground disturbance for trenchless crossings would be limited to the entry and exit pits. The pipeline would be below-ground, avoiding operational impacts to the setting of heritage assets and HLC.

- 6.9.19 The locations where road widening is required to allow for the turning of construction vehicles was not available at the time of writing the PEIR and will be assessed in the ES. It is not possible, therefore, to identify affected receptors within the Preliminary Order Limits. For the purpose of this preliminary assessment, these effects are considered as potentially significant. Impacts associated with this construction activity might include:
- permanent impacts to buried archaeological remains; and
 - temporary or permanent impacts to HLC or within the setting of heritage assets, depending on reinstatement plans.
- 6.9.20 The following section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-receptor pathway will not lead to a significant impact with regards to the EIA Regulations 2017 the pathway is scoped out from assessment.
- 6.9.21 The effects on historic environment receptors which have the potential to be significant or where more information is required to carry out an assessment and have, therefore, been taken forward for detailed assessment in the ES are summarised in **Table 6.12**.
- 6.9.22 Where a piece of infrastructure does not appear in this table it has been scoped out for potential significant effects on the historic environment.

Table 6.12 Historic environment receptors scoped in for further assessment

Receptor	Potential Significant Effects
Project-wide	
Buried Archaeological Remains	
Ridge and furrow and removed post medieval boundaries	Remains of buried and upstanding ridge and furrow and removed post medieval boundaries are common throughout parts of the Study Area which are currently in agricultural use. These have been identified as cropmarks on aerial photographs and satellite imagery, and as low earthworks on LiDAR imagery. Areas containing high potential for these features are detailed in Appendix 6A . Ground disturbance during the construction phase would result in the loss of or disturbance to remains of ridge and furrow and former boundaries within the

Receptor	Potential Significant Effects
	directly affected areas inside the Preliminary Order Limits.
Late prehistoric/Romano-British settlements and field systems	The buried remains of probable settlement and land-use dating to the late prehistoric or Romano-British periods have been identified as cropmarks in various portions of agricultural land of the Study Area. Areas containing high potential for features of this type are detailed in Appendix 6A . Ground disturbance during the construction phase would result in the loss of or disturbance to such remains within directly affected areas inside the Preliminary Order Limits.
Buried remains of prehistoric mortuary monuments	The buried remains of prehistoric round barrows are recorded in agricultural land between the villages of Sutton Weaver and Aston and have been identified as cropmarks on aerial photographs and satellite imagery. Further discussion can be found in Appendix 6A . Ground disturbance during the construction phase would result in the loss of or disturbance to such remains within directly affected areas inside the Preliminary Order Limits.
Remains of structures relating to former industrial use including former salt works	Remains of this type are likely to comprise footings and foundations in areas of former industrial use such as the salt works which stood at Bostock and Moulton Hall, detailed in Appendix 6A . Ground disturbance during the construction phase would result in the loss of or disturbance to such remains within directly affected areas inside the Preliminary Order Limits.
Artefacts and ecofacts within peat layers	Archaeological artefacts and ecofacts are recorded in peatland contexts which occur in various parts of the Study Area, such as Ince Marshes and Carrington Moss, detailed in Appendix 6A . Artefacts may comprise stone tools of early prehistoric date, and ecofacts may include preserved charred grains relating to prehistoric activity. Ground disturbance during the construction phase would result in the loss of or disturbance to such remains within directly affected areas inside the Preliminary Order Limits and possibly outside this area through the effects of dewatering.

Receptor	Potential Significant Effects
West Corridor	
Moated site, fishpond and connecting channel, Elton Scheduled Monument: 1012122	Potential effect to buried and waterlogged archaeological remains from dewatering during the excavation of the pipe trench.
Sutton Hall Grade I Listed Building (1253572) and associated feeding trough and barn Listed buildings: 1253572 (Grade I); and 1253612, 1261738 (Grade II)	Potential effect on HLC and, consequently, the setting of the Listed Buildings, as a result of the open cut pipeline crossing the main approach to the heritage asset, a tree-lined avenue, requiring removal of vegetation. Potential for direct effects from loss of or disturbance buried features associated with the hall.
Dutton Lodge Farmhouse and Dutton Park Listed Building (Grade II): 1139142 DCH10136	Potential effect on HLC and, consequently, the setting of the Listed Building and locally Listed Building, as a result of vegetation clearance within the former parkland.
Severn Vyrnwy Aqueduct (MCH10449)	Potential direct effect to historic buried aqueduct as a result of the excavation of the pipeline.
Trent and Mersey Canal Bridge number 211 Listed Building (Grade II): 1139147	Potential damage to listed bridge on an unadopted farm track through its use as part of an onsite construction route.
HPP HAGI	
Thornton-le-Moors Conservation Area Listed Buildings: 1330242 (Grade I); and 1330241, 1145887, 1130655, 1130652, 1330240, 1130651, 1130653, 1130654 (all Grade II)	Potential effect on the setting of the Conservation Area as a result of the presence of the HPP HAGI.
Moated site, fishpond and connecting channel, Elton	Potential effect on the setting of the Scheduled Monument as a result of the presence of the HPP HAGI.

Receptor	Potential Significant Effects
Scheduled Monument: 1012122	
Runcorn HAGI and Rocksavage HAGIs (RSH1 and RSH2)	
Weaver Navigation, historic waterway and associated structures.	Potential effect on the setting of the Weaver Navigation and its associated heritage assets as a result of the presence of the HAGI locations.
Listed Buildings: 1261700, 1391821, 1391821, 1253269, 1261905	
Locally Listed Building: DCH10616	
RSH1 Buried Archaeological Remains	Archaeological potential is assessed as high for the presence of archaeological artefacts and ecofacts within underlying peat deposits. Any remains of this nature would carry medium sensitivity as assets of regional importance
South corridor	
Hefferston Grange	Possible effects arising from change to HLC from vegetation clearance.
Listed Buildings: 1287121 (Grade II*); and 1228557, 1228558 (Grade II), respectively	
Locally Listed Buildings: DCH10683, DCH10682	
Gorstage Hall	Possible effects arising from change to HLC from vegetation clearance.
Listed Building (Grade II): 1287118	
Whatcroft Hall	Potential effect on HLC and, consequently, the setting of the Listed Building and locally Listed Building, as a result of vegetation clearance for temporary construction works within the grounds of the Hall and use of the Hall's main access as a construction route. Further, direct effects from loss of or disturbance to buried archaeological remains associated with the Hall may arise.
Listed Buildings: 1138463 (Grade II*)	
Locally Listed Buildings: DCH10092	

Receptor	Potential Significant Effects
Bostock Green Conservation Area Listed Buildings: 1138416 (Grade II*); 1330203, 1330205, 1138419, 1138417, 1330204, 1330205, 1338420, 1330206, 1160422, 1310575 (all Grade II) Locally Listed Buildings: DCH9943, DCH9923, DCH9945, DCH9927, DCH9936, DCH9926, DCH9938, DCH9939, DCH9928, DCH9929, DCH9932, DCH9930, DCH9933, DCH9934, DCH9935, DCH9937, DCH9931, DCH9936	Potential effect on HLC and, therefore, the setting of the Conservation Area and associated heritage assets as a result of vegetation clearance for the open cut crossing of the pipeline to cross the tree-lined London Road, which links the village to Bostock Hall and is locally designated as a Conservation Area.
South corridor, Option SP1	
Sandiway Bank Farmhouse Listed Building (Grade II): 1228575 Locally Listed Building: DCH10751	Potential effect to HLC and, consequently, on the setting of the Listed Building and locally Listed Building, as a result of vegetation clearance for the adjacent temporary works. No significant operational effects from the South Block Valve Option 3 (SBV3) although changes to the setting are anticipated as historic interest drawn from the agricultural landscape would still be appreciable, despite views of the Block Valve.
Earnslow Grange and Estate Cottages Locally Listed Buildings: DCH10749 and DCH10750	Potential effect to HLC and, consequently, on the setting of the locally Listed Buildings, as a result of vegetation clearance for the adjacent temporary works No significant operational effects from the South Block Valve Option 3 (SBV3) through change to setting are anticipated as historic interest drawn from the agricultural landscape would still be appreciable, despite views of the Block Valve.
South corridor, Option SP2	
Vale Royal Locks and associated structures	Located within the Preliminary Order Limits. Whilst direct effects to the lock structures will be avoided,

Receptor	Potential Significant Effects
Listed Buildings (Grade II): 1138433, 1330209, 1139183, 1160896, 1160887	construction activity may affect associated buried remains.
Vale Royal Scheduled Monument: 1016862 Listed Buildings: 1160862 (Grade II*); and 1160929, 1139181, 1160875, 1139182, 1139184 (all Grade II)	The Preliminary Order Limits for options SP2, SP3, and SP4, pass along the boundary and/or across the historic estate of Vale Royal monastery. There is the potential for direct effects to buried archaeological remains associated with the former monastic estate if the parkland is traversed by the pipeline. Further, there is the potential for effects to HLC and, consequently, setting to arise from vegetation clearance.
Locally Listed Buildings: DCH10762, DCH10763	
Bowl barrow 160m north-east of Moultonbank Farm Scheduled Monument: 1011123	Three northern pipeline options pass within 100m of barrow, with direct effects possible through disturbance to associated buried remains. Remains of demonstrable quality or associated with a Scheduled Monument are treated with the same level of protection.
South corridor, Option SP3	
Vale Royal	See above
South corridor, Option SP4	
Bradford Mill House Listed Building (Grade II): 1139178	Potential direct effect to associated buried remains as a result of the crossing of millstream.
Hydrogen Storage Facility (HSF) HAGI	
Brook House Farm House Listed Building (Grade II): 1160385	Potential effects on the setting of the Listed Building as a result of the HSF HAGI ~0.5km distant.
Drakelow Hall moated site Scheduled Monument: 1020100	Potential effects on the setting of the Scheduled Monument as a result of the operation of the HSF HAGI ~0.5km distant.

Receptor	Potential Significant Effects
Northwich Spur	
Uplands Farmhouse Listed Building (Grade II): 1329874 Site of former British Company's Works	Potential direct effects from loss of or disturbance to buried remains associated with the former industrial site from ground disturbance during construction.
Winnington Works Listed Buildings: Grade I Winnington Hall (1310245); and 1161131, 1139114, 1432698 (all Grade II) Locally Listed Buildings: DCH10841, DCH9714, DCH10558, DCH10557, DCH9809	Potential direct effects from loss of or disturbance to buried remains associated with the development of the Site, particularly relating to the post-medieval country house and the later industrial site, including workers housing.
East Corridor	
Bowl barrow 120m east of Village Lane Scheduled Monument: 1011166	The scheduled barrow lies approximately 150m from the centreline of pipeline. There is the potential for remains associated with this site to extend beyond the scheduled area and to be disturbed or removed by the construction of the pipeline.
South Block Valve Option 1 (SBV1)	
Swineyard Hall Scheduled Monument: 1009585 Listed Building (Grade II*): 1115517	Potential effects on the setting of the Listed Building as a result of the South Block Valve Option 1 (SBV1) installation ~0.5km from the asset.
Warburton HAGI	
Dunham Woodhouses Conservation Area Listed Buildings (Grade II):	There is the potential for an effect to arise during the operation of the Warburton HAGI, c.0.3km west, through change within the setting of these heritage assets. This would be reduced by intervening landscape features, but further assessment

Receptor	Potential Significant Effects
1067912, 1337667, 1337640, 1099165, 1067940, 1121939, 1067912 HER entry: MGM8844	alongside LVIA specialists is required to determine magnitude of change. No change to the key relationship with Dunham Massey Park, as defined by the Supplementary Planning Document, is anticipated and appreciation of architectural interests should be unaffected. Change to traffic caused by the proposed use of the B5160 as a construction route is unlikely to result in a significant effect as its use would be short-term and temporary.
Dunham Massey HER entries: MGM8749, MGM8746, MGM8750, MGM8744, MGM8743, MGM8745, MGM8838, MGM9091, MGM9092, MGM9044	Potential effect on the setting of the non-designated heritage assets as a result of the operation of Warburton HAGI.
Buried Archaeological Remains	There is high potential for the buried remains of prehistoric or Romano-British settlement and land-use which would take the form of ditches and pits. These would be of medium sensitivity as assets of regional importance.
North Corridor	
Daresbury Hall Listed Building (Grade II*): 1330337	Two pipeline options are being considered either side of the Hall. Both would affect approaches to the Hall and would cross the Hall's former estate. As a result, there is the potential for an effect on the Hall's HLC and, consequently, the setting of the Listed Building and associated heritage assets from vegetation clearance.
Roman settlement at Wilderspool Scheduled Monument: 1006769	Potential direct effects to the Scheduled Monument through loss of or disturbance to remains associated with the scheduled site due to ground disturbance in the construction phase on Gainsborough Road and Loushers Lane.
Heavy Anti-aircraft gunsite, near Cuerdley Scheduled Monument: 1019531	There is the potential for remains associated with this site to extend beyond the scheduled area and to be disturbed or removed by the construction of the pipeline.

Receptor	Potential Significant Effects
	Furthermore, there is a potential effect on the setting of the Scheduled Monument as a result of adjacent temporary works on the A5080.
St Anne's Well, near Rainhill Scheduled Monument: 1019449	There is the potential for direct effects arising from dewatering during the construction of the pipeline and railway crossing, approximately 30m to the east of the well.
Clock Face HAGI	
Buried Archaeological Remains	There is high potential for the survival of boundaries dating from the prehistoric through to the post medieval period. Any which are found to be pre-medieval in date would carry medium sensitivity as assets of regional importance.
Clock Face Spur	
Micklehead Green Moated Site Scheduled Monument: 1012329	There is the potential for direct effects arising from dewatering and the disturbance of associated archaeological remains during the construction of the Clock Face spur pipeline, approximately 5m to the north-west of the scheduled area.
Higher Walton HAGIs, Options HWH1 and HWH2	
Manchester Ship Canal MCH24520 Listed Buildings (Grade II): 1135930, 1330358	Potential effects on the setting of the Canal as a result of the operation of the HAGIs on the north bank of the Canal.

Elements scoped out of further assessment

- 6.9.23 The short-term and temporary nature of the construction phase and the proposed method of construction, as detailed in **Chapter 2: The Project** and in **The Project** section above, means it is unlikely that significant effects resulting from impacts to the settings of built heritage will arise from the construction of the Pipeline. Magnitude of change within the setting of such heritage assets is likely to be negligible and, even when affecting an asset of high sensitivity, this would result in a not significant effect. Assets where setting is likely to be only affected by construction activity are, therefore, scoped out of further assessment.
- 6.9.24 Additionally, where the distance involved or existing intervening features are likely to prevent a magnitude of change greater than negligible within the setting of

heritage assets from operational elements of the Project (i.e., HAGI and Block Valve locations), these are also scoped out.

- 6.9.25 The receptors/effects detailed in **Table 6B.1 (Appendix 6B)** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant.

6.10 Preliminary Assessment of Possible Significant Historic Environment Effects

Construction Phase

Disturbance of buried archaeological remains

- 6.10.1 The DBA has identified and mapped the potential for buried archaeological remains across the Study Area (**Appendix 6A: Figures 6.4 and 6.5**). The Project is likely to remove all archaeological deposits within the footprint of the pipeline trench or trenchless crossing options. Near-surface remains, surviving below the plough soil, and earthworks may additionally be disturbed within construction areas and at locations where roads need widening to allow turning of construction vehicles through levelling or compaction. To mitigate effects arising from this, a programme of archaeological investigation will be agreed with consultees and set out within an Overarching Written Scheme of Investigation (WSI). Following mitigation, impacts to buried archaeological remains are likely to result in a low magnitude of change. Thus, a low magnitude of change to heritage assets of low – medium sensitivity could result in a minor adverse effect which would not be significant.
- 6.10.2 Whilst the Project avoids direct impacts within designated areas through careful design, there is the potential for the loss of archaeological interest to remains associated with designated heritage assets, but outside the designated areas. In these instances, where an association with the designated asset can be demonstrated, buried archaeological remains can be of high sensitivity. There is the potential for this to impact buried archaeological remains associated with:
- Sutton Hall (Grade I Listed Building: 1253572);
 - Vale Royal Locks and associated structures (Grade II Listed Buildings: 1138433, 1330209, 1139183, 1160896, 1160887);
 - Vale Royal (Scheduled Monument: 1016862) and associated historic estate;
 - Bowl barrow 160m north-east of Moultonbank Farm (Scheduled Monument: 1011123);
 - Whatcroft Hall (Grade II* Listed Building: 1138463);
 - Winnington Hall (Grade I Listed Building: 1310245) and assets associated with Winnington Works;
 - Bowl barrow 120m east of Village Lane (Scheduled Monument: 1011166);
 - Daresbury Hall (Grade II* Listed Building: 1330337);

- Roman settlement at Wilderspool (Scheduled Monument: 1006769);
- Heavy Anti-aircraft gunsite, near Cuerdley (Scheduled Monument: 1019531); and
- Micklehead Green moated site (Scheduled Monument: 1012329).

6.10.3 In a worst-case scenario, where ground disturbance involves the total removal of archaeological features or deposits, this could amount to a high magnitude of change. However, the narrow linear nature of the Project (as described in **The Project and Chapter 2** and varying between 22m and 36m wide) and the nature of likely archaeological remains identified in the DBA (Appendix 6A), means it is more likely that remains, such as widespread potential for field systems, would be partially disturbed, which would result in a medium or lower magnitude of change. This impact would be mitigated through an agreed programme of archaeological investigation, which may reduce the residual change to a low magnitude. However, a low magnitude of change to an asset of high sensitivity could still result in a moderate adverse effect which could, depending on the asset and according to professional judgement, be significant.

6.10.4 The excavation of the pipeline trench and trenchless crossing options have the potential to affect the local water table. This may result in dewatering which could affect heritage assets outside of the Preliminary Order Limits. At worst, and without mitigation, this could represent a high magnitude of change. However, following an agreed programme of archaeological investigation, a residual low magnitude of change is anticipated. This would result in a moderate adverse effect which could, depending on the asset and according to professional judgement, be significant.

6.10.5 Heritage assets sensitive to dewatering are those where waterlogged conditions are likely to preserve buried organic matter or where surface water contributes to the significance of an asset, for example a moat. The below assets will be assessed for their risk of dewatering in the ES:

- Moated site, fishpond and connecting channel, Elton (Scheduled Monument: 1012122) ~75m from the Preliminary Order Limits;
- St Anne's Well, near Rainhill (Scheduled Monument: 1019449) ~32m from the Preliminary Order Limits; and
- Micklehead Green moated site (Scheduled Monument: 1012329) ~ five metres from the Preliminary Order Limits.

Disturbance of built heritage

6.10.6 There is the potential for direct effects to the fabric of the Grade II Listed Bridge, Trent and Mersey Canal Bridge number 211 (1139147), from its use as part of an on-site construction route. The Bridge is on an unadopted track passing through agricultural fields to buildings on the River Weaver. Use of the listed bridge by construction traffic would be limited to vehicles of a size and weight that would cause no direct adverse effects to their fabric.

Historic Landscape Character and change to setting

6.10.7

Further refinement of the design is required to determine the potential extent of vegetation clearance and reinstatement in this section to assess impacts to HLC, and therefore the setting of Sutton Hall (Grade I Listed Building (1253572)). The Project West Corridor cuts across the sycamore tree-lined main avenue to the heritage asset; the removal of mature trees, estimated at 50 years old, would be minimised as far as possible and confined to the working width area, which has a maximum width of 33m. It is anticipated that the historic avenue will remain legible in the landscape during construction, with mature trees, the driveway and fencing remaining. The extent of this legibility during construction will be confirmed at the ES stage as part of the Arboriculture Impact Assessment which will identify the extent of vegetation clearance. Following construction, reinstatement with trees appropriate to the avenue would be provided, but this would likely be with younger specimens which would leave a gap in the avenue as they matured. Furthermore, the pipeline easement would not be replanted with trees. The avenue and main entrance would still be clearly legible in this landscape, however, with the aforementioned other features of the avenue remaining. Following reinstatement there would, therefore, likely be a residual effect to sensitivity; this would be of a negligible magnitude as the avenue would be clearly legible in the landscape and would reduce to none as the trees outside the easement matured. The Hall is of high sensitivity and, therefore, a minor adverse effect could arise, which would not be significant.

6.10.8

Subject to the extent of vegetation clearance required during the construction phase and identified in the Arboriculture Impact Assessment, along with detail of outline reinstatement plans provided in the ES, there is potential for impacts to HLC and the related settings of heritage assets which draw significance from the historic character of the landscape. Reinstatement within construction compounds and the working width is anticipated; however detail of the reinstatement strategy across the pipeline's easement needs to be confirmed. If the easement is not replanted, HLC would still be legible, and a negligible magnitude of change might be expected. At worst, where related to a designated heritage asset, this could represent a minor adverse effect to a heritage asset of high sensitivity, which would not be significant. Assets identified within **Table 6.12** which may be affected through changes to their surrounding HLC and that require further assessment are listed below by project component and with their distance from the Preliminary Order Limits:

- West Corridor:
 - ▶ Dutton Park Farm (DCH10136) ~60m; and
 - ▶ Dutton Lodge Farmhouse (Grade II Listed Building (1139142) ~0.25km.
- South Corridor:
 - ▶ Hefferston Grange (Grade II* Listed Building (1287121)) ~0.16km;
 - ▶ Gorstage Hall (Grade II Listed Building (1287118) ~0.25km;
 - ▶ Whatcroft Hall (Grade II* Listed Building (1138463) ~0.13km; and

- ▶ Bostock Green Conservation Area and associated heritage assets, with the Conservation Area crossed by the Preliminary Order Limits.
- South Corridor SP1 Option:
 - ▶ Sandiway Bank Farmhouse (Grade II Listed Building (1228575)) ~73m; and
 - ▶ Earnslow Grange and estate cottages (DCH10749 and DCH10750) ~60m.
- South Corridor SP2 Option:
 - ▶ Vale Royal Scheduled Monument and associated monuments (1016862) ~39m.
- North Corridor:
 - ▶ Daresbury Hall (Grade II Listed Building (1330337)) ~0.13km.

Operational phase

Historic Landscape Character and change to setting

- 6.10.9 There is the potential for effects to Thornton-le-Moors Conservation Area, its associated heritage assets, and the scheduled moat at Elton (1012122) from the presence of the HPP HAGI in their setting. At this stage, information on the design of the HPP HAGI and the screening that would be provided e.g., through planting is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening is provided, mature trees along the A5117 would prevent all but glimpsed and incidental views of the HAGI from the assets. Further, surrounding buildings on the north and east of the village would screen views from all but Thornton Hall and Barn. Magnitude of change is anticipated to be negligible, which, to heritage assets of high sensitivity, could represent a minor adverse effect. This would not be significant.
- 6.10.10 There is the potential for effects to the Weaver Navigation historic waterway and associated heritage assets from the presence of the Runcorn HAGI and the three Rocksavage HAGI Options (RSH1, RSH2, RSH3) in their setting. At this stage, information on the design of the HAGIs and the screening that would be provided, e.g., through planting, is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening is provided, there would be clear views of the HAGI compounds from the waterway. The significance of these heritage assets is drawn from their historic and architectural interests. These interests comprise the fabric of the Canal and its associated infrastructure, the relationship between the waterway, its associated structures and linked communities, and the historic development of the area as indicated by the construction and use of the Canal. The HAGIs on land adjacent to but beyond the Canal's infrastructure would not affect these interests. No effect is anticipated.
- 6.10.11 There is the potential for effects to the Grade II Listed Brook House Farmhouse (1160385) and the scheduled moated site at Drakelow Hall (1020100) through change to their setting from the introduction of the HSF HAGI into agricultural

fields approximately 0.5km distant. The field within which the HSF HAGI is located is likely of some antiquity, given its form and the maturity of trees in its boundaries. Whilst in leaf, these trees will likely screen most views of the HSF HAGI from the designated assets. At this stage, information on the design of the HSF HAGI and the screening that would be provided, e.g., through planting, is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening were provided and some vegetation clearance of the historic, mature trees was required, this could represent a low magnitude of change to assets of high sensitivity. This would represent a moderate adverse effect which could be significant.

- 6.10.12 There is the potential for effects to the scheduled Swineyard Hall moated site (1009585) and Grade II* Listed Swineyard Hall (1115517) through change to their setting from the introduction of a Block Valve (EBV1) approximately 0.6km distant. Despite the distance, there are few intervening features between the assets and the Block Valve option. At this stage, information on the design of the EBV1 and the screening that would be provided, e.g., through planting, is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, with no screening, a negligible magnitude of change might be expected to assets of high sensitivity. This would lead to a minor effect, which would not be significant. No potential significant effects from the East Block Valve Options EBV2 and EBV3 are anticipated.
- 6.10.13 There is potential for effects to the Conservation Area and associated heritage assets of Dunham Woodhouses from the introduction of the Warburton HAGI approximately 0.28km west. At this stage, information on the design of the Warburton HAGI and the screening that would be provided e.g., through planting is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening is provided, mature trees along Barns Lane and the Trans Pennine Trail would prevent all but glimpsed and incidental views of the HAGI from these assets. Magnitude of change is anticipated to be negligible, which, to heritage assets of high sensitivity, could represent a minor adverse effect. This would not be significant.
- 6.10.14 There is potential for effects to the non-designated historic farms and cottages in Dunham Massey (MGM8749, MGM8746, MGM8750, MGM8744 MGM8743, MGM8745, MGM8838, MGM9091, MGM9092, MGM9044) from the introduction of the Warburton HAGI as close as 15m from the assets. At this stage, information on the design of the Warburton HAGI and the screening that would be provided e.g., through planting is not available to assess the magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening is provided, there would be clear views of the HAGI from these assets and from approaches to these assets. This would represent a medium magnitude of change to assets of low sensitivity. This could represent a minor adverse effect which would not be significant.
- 6.10.15 There is potential for effects to the Manchester Ship Canal, a non-designated historic waterway, from the introduction of either of the two Higher Walton HAGI

Options, HWH1 or HWH2 on its northern bank. More information is needed regarding project screening to assess magnitude of change. This information will be provided in the Landscape Mitigation Plan produced for the ES. At worst, if no screening is provided, there would be intermittent, clear views of the HAGI compounds from the Waterway. The significance or sensitivity of this heritage asset is drawn from its historic and architectural interests. These interests comprise the fabric of the Canal and its associated infrastructure, the relationship between the Waterway, its associated structures and linked communities, and the historic development of the area as indicated by the construction and use of the Canal. The HAGIs would be on land adjacent to but beyond the Canal's infrastructure and would not affect these interests. No effect is anticipated.

Decommissioning phase

- 6.10.16 The elements of the decommissioning phase that have the potential to affect the historic environment are:
- the removal of HAGIs and Block Valves; and
 - temporary decommissioning activity to remove the HAGI and Block Valves and to infill all rail, road and watercourse crossings.
- 6.10.17 The duration of activity to decommission components of the Project would not exceed construction phase activity. Following decommissioning activity, land would be restored to former use, and temporary accesses and compounds would be reinstated. Impacts to the setting of heritage assets or HLC would be short-term and temporary, and no significant effects are anticipated.
- 6.10.18 The removal of above ground elements of the Project could have negligible to minor beneficial effects to receptors, including HLC, through the removal of these elements from their setting. This would not represent a significant effect.
- 6.10.19 The pipeline would likely be left in situ and no effects to heritage assets would arise from this.

6.11 Preliminary Significance Conclusions

- 6.11.1 A summary of the results of the preliminary historic environment assessment of possible significant effects is provided in **Table 6.13**.

Table 6.13 Preliminary summary of significance of effects

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Ridge and furrow and removed post medieval boundaries Disturbance of archaeological remains through removal	Low	Low	Not significant	Removal of archaeological remains within the working width of the pipeline or in areas of road widening. The narrow width of these excavations is unlikely to totally remove these features, leaving most of the field systems they are part of in situ. At worst, this would represent a medium magnitude of change, which would be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated.
Late prehistoric/Romano-British settlements and field systems Disturbance of archaeological remains through removal	Low - Medium	Low	Not significant	Removal of archaeological remains within the working width of the pipeline or in areas of road widening. The narrow width of these excavations is unlikely to totally remove these features, leaving most of the field systems or settlements they are part of in situ. There is the possibility of removing individual features, but archaeological interest would remain. At worst, this would represent a medium magnitude of change, which would be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated.

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				Some features may be of regional importance and, therefore, medium sensitivity, particularly, newly identified settlements.
Buried remains of prehistoric mortuary monuments Disturbance of archaeological remains through removal	Medium - High	Low	Significant	Removal of archaeological remains within the working width of the pipeline or in areas of road widening. Despite the narrow width of these excavations there is the possibility of removing these features entirely as this asset type can occur as isolated examples. At worst, this would represent a high magnitude of change, which would be mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Some features may be of regional importance and, therefore, medium sensitivity; however, some may be of national importance where they are associated with a scheduled barrow.
Disturbance of archaeological remains through compaction	Medium - High	Low	Significant	Some compaction of archaeological remains within construction compounds and material storage areas may occur; however, this would be reduced by use of trackway and micro-siting. At worst this would represent a low magnitude of change.

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Remains of structures relating to former industrial use including former salt works Disturbance of archaeological remains through removal	Low - Medium	Low	Not Significant	Removal of archaeological remains within areas of road widening associated with accesses. The narrow and very localised nature of these excavations is unlikely to totally remove these features, leaving most of the industrial works they are part of in situ. At worst, this would represent a low magnitude of change, which would be further mitigated through a programme of archaeological investigation. Post medieval and modern features are likely to be of local significance; however, any much rarer medieval (or even earlier) remains may be of regional significance, which would represent medium heritage sensitivity.
Artefacts and ecofacts within peat layers Disturbance of archaeological remains through removal	Medium - High	Low	Significant	Removal of archaeological remains within the working width of the pipeline or in areas of road widening. The narrow width of these excavations is unlikely to totally remove these deposits, leaving most of the former land surface deposits they are part of in situ. At worst, this would represent a medium magnitude of change, which would be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated.

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				Palaeoenvironmental remains are likely to be of at least regional significance; however, depending on age, their character, and quality this may rise to national significance, which would represent a high heritage sensitivity.
Disturbance of archaeological remains through compaction	Medium - High	Low	Significant	Some compaction of remains and, consequently, some dewatering of deposits may occur within areas of construction; however, this would be reduced by use of trackway and through careful micro-siting. At worst this would represent a low magnitude of change, which could be further mitigated through a programme of archaeological investigation.
Earthworks Levelling of upstanding earthworks	Low	Low-Medium	Not significant	Levelling of earthworks within construction compounds, material storage areas, on access routes, and areas of road widening. This may involve disturbance to numerous former boundaries and areas of ridge and furrow, which survive as very low earthworks throughout the Study Area and have been recorded and discussed in Appendix 6A (DBA) as well as disturbance to:

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				- Broad ridge/furrow and a mill race associated with Sutton Mill (MCH8258) - Unrecorded blocks of broad and narrow ridge and furrow south of the A556 and west of the Grand Junction Railway Levelling of individual earthworks for access purposes is likely to amount to a low level of change. More widespread levelling within construction areas or multiple small interventions to one landscape feature may result in a medium magnitude of change. Through micro-siting elements within construction areas, use of trackway, and avoiding levelling where possible it is not anticipated that earthworks of whole landscape features. Where levelling was required, a programme of archaeological recording would be undertaken.
Trent and Mersey Canal Bridge number 211 Listed Building (Grade II): 1139147	High	None	Not significant	A proposed construction route would only use the listed bridge if further assessment could demonstrate that no effect to sensitivity would occur.

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Sutton Hall (Grade I Listed Building: 1253572)				
Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the former parkland they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the Hall, sensitivity would likely be low-medium.
Change to HLC/setting through removal of section of historic tree-lined avenue	High	Negligible	Not significant	Removal of mature sycamore trees forming part of the tree-lined avenue on the main entrance to the Hall, would affect HLC and the setting of the asset. Outside the easement, reinstatement with trees appropriate to the avenue would be provided but this would likely be with younger specimens. Following reinstatement there would likely be a residual effect to sensitivity; this would be of a negligible magnitude as the avenue and main

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				entrance would be clearly legible in the landscape and would reduce to none as the trees matured.
Vale Royal (Scheduled Monument: 1016862) Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the former parkland and monastic estate they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the estate, sensitivity would likely be low-medium.
Bowl barrow 160m north-east of Moultonbank Farm (Scheduled Monument: 1011123) Disturbance of associated archaeological remains	High	Low	Significant	Removal of, as yet unknown, archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. Despite the narrow width of these excavations there is the possibility of removing these remains entirely as this asset type could feasibly lie entirely within the excavated trench area. At worst, this would represent a high magnitude of change,

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the estate, sensitivity would likely be low-medium.
Whatcroft Hall (Grade II* Listed Building: 1138463) Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the former parkland they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the Hall, sensitivity would likely be low-medium.
Winnington Hall (Grade I Listed Building: 1310245) and designated and non-designated assets associated with Winnington Works	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the former estate and industrial site they are part

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Disturbance of associated archaeological remains				of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the Hall or Winnington Works, sensitivity would likely be low-medium.
Bowl barrow 120m east of Village Lane (Scheduled Monument: 1011166) Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. Despite the narrow width of these excavations there is the possibility of removing these remains entirely as this asset type could feasibly lie entirely within the excavated trench area. At worst, this would represent a high magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the estate, sensitivity would likely be low-medium.
Daresbury Hall (Grade II* Listed Building: 1330337)	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline.

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Disturbance of associated archaeological remains				The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the former parkland they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the Hall, sensitivity would likely be low-medium.
Roman settlement at Wilderspool (Scheduled Monument: 1006769) Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the Roman settlement they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the settlement, sensitivity would likely be low-medium.
Heavy Anti-aircraft gunsite, near Cuerdley	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
(Scheduled Monument: 1019531) Disturbance of associated archaeological remains				sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the gunsite they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the gunsite, sensitivity would likely be low-medium.
Micklehead Green moated site (Scheduled Monument: 1012329) Disturbance of associated archaeological remains	High	Low	Significant	Removal of as yet unknown archaeological remains that may be associated with, but outside the designated area of, a receptor of high sensitivity within the working width of the pipeline. The narrow width of these excavations is unlikely to totally remove associated deposits, leaving most of the landscape they are part of in situ. At worst, this would represent a medium magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated. Furthermore, if remains are not associated with the moated site, sensitivity would likely be low-medium.

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Dewatering of waterlogged remains	High	Low	Significant	Dewatering of waterlogged remains in the moat through the excavation of a trench in the area of the scheduled site. At worst, this could result in a high magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated.
Moated site, fishpond and connecting channel, Elton (Scheduled Monument: 1012122) Dewatering of waterlogged remains	High	Low	Significant	Dewatering of waterlogged remains in the moat, fishpond, and channel through the excavation of a trench in the area of the scheduled site. At worst, this could result in a high magnitude of change, which could be further mitigated through a programme of archaeological investigation with a residual low magnitude of change anticipated.
Impacts to setting from operation of HPP HAGI	High	Negligible	Not significant	Glimpsed and incidental views of the HAGI from the designated asset. At worst, without project screening of the HAGI, this could represent a negligible magnitude of change.
St Anne's Well, near Rainhill (Scheduled Monument: 1019449)	High	Low	Significant	Dewatering of waterlogged remains and the drying out of the well through the excavation of a trench in the area of the scheduled site. At worst, this could result in a high magnitude of change, which could be further mitigated through a programme of

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Dewatering of waterlogged remains and loss of water contributing to its sensitivity.				archaeological investigation with a residual low magnitude of change anticipated
Historic Landscape Character Effects to HLC and the related setting of heritage assets through vegetation clearance in the construction phase	–High (only where associated with a designated heritage asset)	Negligible	Not significant	It is proposed in Chapter 2 that vegetation cleared within works areas will be replanted. However, there is not yet detail on this replanting and reinstatement within the pipeline's easement, which is still to be agreed. Despite this, legibility of the landscape's historic character is expected to endure. At worst, if the easement was not replanted, this could represent a negligible magnitude of change to both HLC and to interests drawn from the landscape setting of built heritage assets. These assets are listed below: • Dutton Park (DCH10136); • Dutton Lodge Farmhouse (Grade II Listed Building (1139142) • Hefferston Grange (Grade II* Listed Building (1287121)); • Gorstage Hall (Grade II Listed Building (1287118); and

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
				• Whatcroft Hall (Grade II* Listed Building (1138463)) • Bostock Green Conservation Area and associated heritage assets • Sandiway Bank Farmhouse (Grade II Listed Building (1228575)); • Earnslow Grange and estate cottages (DCH10749 and DCH10750); • Vale Royal Scheduled Monument and associated monuments (1016862) • Daresbury Hall (Grade II Listed Building (1330337))
Thornton-le-Moors Conservation Area Listed Buildings: 1330242 (Grade I); and 1330241, 1145887, 1130655, 1130652, 1330240, 1130651,	High	Negligible	Not significant	Glimpsed and incidental views of the HPP HAGI from the designated assets. At worst, without project screening of the HAGI, this could represent a negligible magnitude of change.

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
1130653, 1130654 (all Grade II)				
Impacts to setting from operation of HPP HAGI				
Weaver Navigation	High	None	Not significant	At worst, if no screening is provided, there would be clear views of the Runcorn HAGI and Rocksavage HAGI Option (RSH1, RSH2, RSH3) compounds from the Waterway. However, visibility of the HAGIs would not affect heritage interests of the asset and no effect is anticipated.
Listed Buildings (Grade II): 1261700, 1391821, 1391821, 1253269, 1261905				
Locally Listed Building: DCH10616				
Impacts to setting from operation of Runcorn and RSH1 HAGIs				
Brook House Farm House	High	Low	Significant	At worst, if no project screening were provided and some vegetation clearance of the historic, mature trees was required, this could represent a low magnitude of change to assets of high sensitivity.
Listed Building (Grade II): 1160385				

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
Impacts to setting from operation of the HSF HAGI				
Drakelow Hall Scheduled Monument: 1020100 Impacts to setting from operation of the HSF HAGI	High	Low	Significant	At worst, if no project screening were provided and some vegetation clearance of the historic, mature trees was required, this could represent a low magnitude of change to assets of high sensitivity.
Swineyard Hall scheduled moated site (1009585) and Grade II* Listed Swineyard Hall (1115517) Impacts to setting from operation of the EBV1 Block Valve.	High	Negligible	Not Significant	At worst, with no project screening the East Block Valve Option 1 (EBV1) may be visible from the assets at a distance across agricultural fields. A negligible magnitude of change might be expected to assets of high sensitivity.
Dunham Woodhouses Conservation Area and	High	Negligible	Not Significant	At worst, if no project screening is provided, mature trees along Barns Lane and the Trans Pennine Trail would prevent all but glimpsed and incidental views of the Warburton HAGI from these

Receptor and Summary of Predicted Effects	Sensitivity/Importance/Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
associated heritage assets Listed Buildings (Grade II): 1067912, 1337667, 1337640, 1099165, 1067940, 1121939, 1067912 HER entry: MGM8844 Impacts to setting from operation of Warburton HAGI.				assets. Magnitude of change is anticipated to be negligible.
Dunham Massey non-designated historic farms and houses HER entries: MGM8749, MGM8746, MGM8750, MGM8744, MGM8743, MGM8745,	Low	Medium	Not significant	At worst, if no screening is provided, there would be clear views of the Warburton HAGI from these assets and from approaches to these assets. This could represent a medium magnitude of change.

Receptor and Summary of Predicted Effects	Sensitivity/ Importance/ Value of Receptor ¹	Magnitude of Change ²	Significance ³	Summary Rationale
MGM8838, MGM9091, MGM9092, MGM9044 Impacts to setting from operation of Warburton HAGI.				
Manchester Ship Canal, non-designated heritage asset Impacts to setting from operation of HWH2 HAGI.	Medium	None	Not significant	At worst, if no screening is provided, there would be clear views of the Higher Walton HAGI Options 1 and 2 (HWH1 and HWH2) compounds from the Waterway. However, visibility of the HAGIs would not affect heritage interests of the asset and no effect is anticipated.

1. The sensitivity of a receptor is defined using the criteria set out in **Section 6.8** and is defined as negligible, low, medium, or high.
2. The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in **Section 6.8** and is defined as negligible, low, medium, or high.
3. The significance of the environmental effects is based on the combination of the sensitivity of a receptor and the magnitude of change and is expressed as major/moderate (significant) or minor/negligible (not significant), subject to the evaluation methodology outlined in **Section 6.8**.

6.12 Additional Measures

- 6.12.1 The assessment set out above has concluded that it will be necessary to implement additional measures. These have been identified and would be in addition to those embedded measures outlined and assessed in **Section 6.7**. **Table 6.14** outlines how these additional measures will influence the historic environment assessment.

Table 6.14 Summary of the additional environmental measures

Receptor	Potential Changes and Effects	Additional Measures	Compliance Mechanism
Construction			
Earthworks	Removal of earthworks to facilitate construction activity.	Micrositing of components within construction areas to avoid levelling where possible	Outline CoCP
Operation			
Historic Landscape Character	Operational effects to HLC (and built heritage assets where HLC contributes to setting) through loss of vegetation	Reinstatement of appropriate species, not just in the working width and construction compounds, but may also include along accesses and in the pipeline easement	Landscape scheme secured in the DCO
Built Heritage assets	Operational effects to the setting of heritage assets through visibility of above ground structures	Use of Project screening to reduce visibility of structures, where practicable.	Landscape scheme secured in the DCO

6.13 Further Work to be Undertaken

- 6.13.1 The information provided in this PEIR is preliminary, the final assessment of likely significant effects will be reported in the ES. This section describes the further work to be undertaken to support the historic environment assessment presented in the ES.

Baseline

- 6.13.2 Further site survey is required to understand any likely changes within the setting of heritage assets not visited ahead of the PEIR, principally those assets around Ince Conservation Area.

- 6.13.3 The following additional baseline characterisation will be undertaken ahead of the ES and will feed into the baseline and assessment presented in that report:
- geoarchaeological desk-based assessment and deposit model;
 - palaeoenvironmental assessment;
 - monitoring and sampling of project GI works by a regional archaeological specialist to update deposit model; and
 - geophysical survey.
- 6.13.4 The scope of geoarchaeological and palaeoenvironmental assessment would be agreed with Historic England's Science Advisor and local authority archaeologists.
- 6.13.5 The extent and nature of the geophysical survey will be determined by the results of the archaeological DBA and the geoarchaeological assessment. A WSI for the geophysical survey would be produced and agreed with Historic England and local authority archaeologists. The aim of the survey would be to determine the presence and extent of any archaeological features and their likely nature. This would inform recommendations for project options, micro-siting within construction areas, and use of trackway.

Assessment

- 6.13.6 Further assessment to be carried out includes:
- assessment of the magnitude of change to HLC and within the setting of heritage assets that may be affected by components of the Project still open to options. In particular, this relates to vegetation clearance and reinstatement;
 - assessment of impacts arising from road widening required during construction;
 - assessment of dewatering risks; to be carried out with input from hydrogeology experts;
 - assessment of impact to geoarchaeological and palaeoenvironmental deposits;
 - assessment of Zones of Theoretical Visibility and photomontages to understand operational impacts within the setting of heritage assets; and
 - assessment of impacts arising to buried archaeological remains and earthworks in construction areas following options for micro-siting to avoid impacts.
- 6.13.7 A cumulative effects assessment (CEA) will be undertaken for the Project which considers the combined impacts with other developments on the same single receptor or resource (inter-project effects). The detailed method to be followed in identifying and assessing potential cumulative effects is set out in **Section 3.9 of Chapter 3: Approach to Preparing the PEIR**.

Environmental measures

6.13.8

Further consultation with relevant statutory consultees would be undertaken to define the scope and extents of the environmental measures set out in the assessment above.

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