

High Speed Rail (Crewe – Manchester) Environmental Statement

Volume 5: Map Book

Water resources and flood risk
(WR-01, WR-02, WR-03, WR-05, WR-06)

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Department
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

A report prepared for High Speed Two (HS2) Limited:

ARUP+ ERM | FOSTER + PARTNERS | JACOBS
RAMBOLL | TYPESA | COSTAIN

MWJV

Mott MacDonald | WSP

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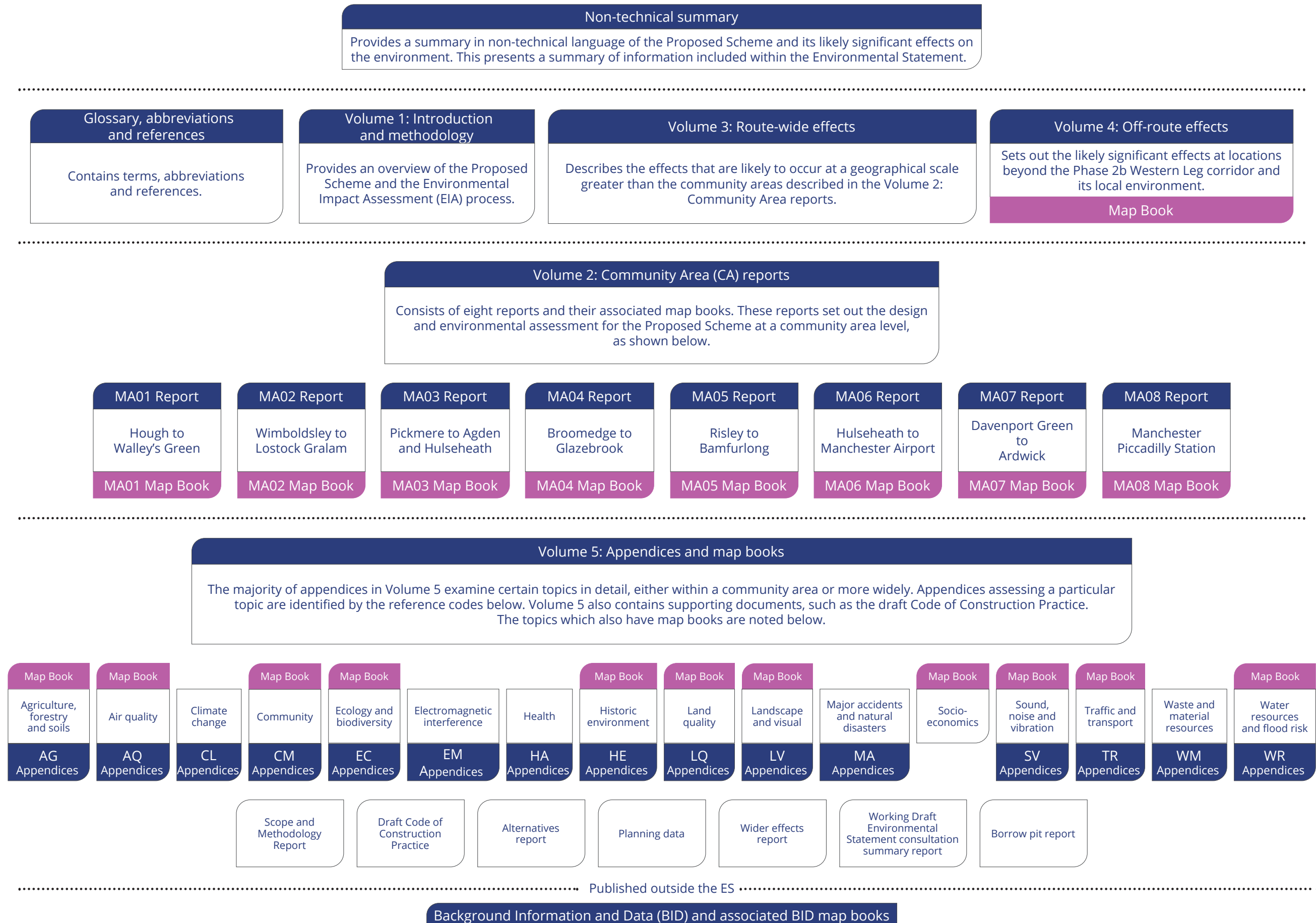
Data dictionary and definitions

Map series name	WR-01 - Surface Water Baseline	WR-02 - Groundwater Baseline	WR-03 - Water Framework Directive	WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%CC) including Climate Change Annual Probability of River Flooding	WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Map series description	This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions. The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.	These maps show geology and hydrogeological features such as aquifers and groundwater abstractions that are referred to in the Environmental Impact Assessment (EIA).	This map series shows water bodies, their Water Framework Directive current status and associated ecological features.	The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.	The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.
Community Area name					
MA01 Hough to Walley's Green	✓	✓	✓	✓	✓
MA02 Wimboldsley to Lostock Gralam	✓	✓	✓	✓	✓
MA03 Pickmere to Agden and Hulseheath	✓	✓	✓	✓	✓
MA04 Broomedge to Glazebrook	✓	✓	✓	✓	✓
MA05 Risley to Bamfurlong	✓	✓	✓	✓	✓
MA06 Hulseheath to Manchester Airport	✓	✓	✓	✓	✓
MA07 Davenport Green to Ardwick	✓	✓	✓	✓	✓
MA08 Manchester Piccadilly Station	✓	✓	✓	✓	✓
ORW1 Preston Station (PSTN)					
ORW2 Carlisle Station (CSTN)					
ORW3 Annandale Depot (ADEP)	✓	✓	✓		

Mapping explanatory notes

Structure of the HS2 Phase 2b Environmental Statement

This map book is part of the suite of documents that make up the Environmental Statement (ES) that accompanies the deposit of the High Speed Rail (Crewe – Manchester) hybrid Bill. The structure of the ES is shown in the diagram below:



Copyright statements

Copyright statements are presented in the Data dictionary and definitions section at the front of the map book, due to limited space to include this on the individual maps themselves.

Ordnance Survey data

All maps produced as part of the ES contain Ordnance Survey (OS) data. HS2 Ltd use the most up to date mapping available, where possible, supplied by the OS and as such, we cannot be held responsible for any inaccuracies within this data. As part of our licence conditions, all digital maps carry a watermark.

Chainage

Most of the maps presented as part of the ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XXX+YYY, e.g. 192+000 or 239+500.

Chainage (known as reference chainage) is referenced from Euston Station, which is 0+000, and the value presented is in metres, e.g. 192+000 refers to the point, 192,000m, or 192km, from Euston Station. Chainage values increase in intervals dependant on the map scale. For maps at 1:50,000 scale chainage is shown at 5km intervals. For maps at 1:25,000 scale chainage is shown at 2km intervals. For maps at 1:20,000, 1:10,000, 1:5,000 and 1:2,500 scales, chainage is shown at 1km intervals.

Chainage has been included on the maps as a useful tool for comparing different map sets showing the different environmental themes or engineering plans, due to map sets having different scales, and therefore, showing differing amounts of alignment on the map.

Map orientation

The majority of the maps presented in these map books are presented with the railway alignment running horizontally across the page. The direction of travel to London would be following the alignment to the left hand side of the page, and Manchester to the right.

The exception to this, are map series LV-00, LV-02, LV-07 and LV-08, which present the alignment running from bottom to top of the page. This is to allow more of the modelled outputs to be shown at the appropriate map scale. In this instance, the direction of travel to London would be to the bottom of the page, and Manchester to the top.

Map books

In total, there are 29 map books, which make up the ES, found in volume 2, volume 4 and volume 5. A list of the titles is provided below for reference.

Name	Name
Volume 2: Map book – MA01: Hough to Walley's Green	Volume 5: Map book – Agriculture (AG-01, AG02, AG-04)
Volume 2: Map book – MA02: Wimboldsley to Lostock Gralam	Volume 5: Map book – Air quality (AQ-01)
Volume 2: Map book – MA03: Pickmere to Agden and Hulseheath	Volume 5: Map book – Community (CM-01)
Volume 2: Map book – MA04: Broomedge to Glazebrook	Volume 5: Map book – Ecology and biodiversity (EC-01)
Volume 2: Map book – MA05: Risley to Bamfurlong	Volume 5: Map book – Historic Environment (HE-01, HE-02, HE-03)
Volume 2: Map book – MA06: Hulseheath to Manchester Airport	Volume 5: Map book – Land quality (LQ-01)
Volume 2: Map book – MA07: Davenport to Green Ardwick	Volume 5: Map book – MA01: Hough to Walley's Green Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 2: Map book – MA08: Manchester Piccadilly Station	Volume 5: Map book – MA02: Wimboldsley to Lostock Gralam Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 4: Map book – Off-route effects	Volume 5: Map book – MA03: Pickmere to Agden and Hulseheath Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)

Name	Name
Volume 5: Map book – MA04: Broomedge to Glazebrook Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)	Volume 5: Map book – MA05: Risley to Bamfurlong Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 5: Map book – MA06: Hulseheath to Manchester Airport Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)	Volume 5: Map book – MA07: Davenport to Green Ardwick Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 5: Map book – MA08: Manchester Piccadilly Station Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)	Volume 5: Map book – OR003 Annandale Depot Landscape and visual (LV-00, LV-02, LV-07, LV-08, LV-17)
Volume 5: Map book – Planning Data/Committed Development (CT-13)	Volume 5: Map book – Socio-economics (SE-01)
Volume 5: Map book – Sound, noise and vibration (SV-02, SV-03, SV-08, SV-09)	Volume 5: Map book – Traffic and transport (TR-01, TR-03, TR-04, TR-08)
Volume 5: Map book – Water resources and flood risk (WR-01, WR-02, WR-03, WR-05, WR-06)	

**High Speed Rail
(Crewe – Manchester)
Environmental Statement**

Data dictionary and definitions

Data dictionary and definitions

Legend features	Definition	Source	Copyright
Airport	Airport location derived from Ordnance Survey Vector map data.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
Canal	An artificial waterway constructed to allow the passage of boats or ships inland or to convey water for irrigation.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Canal tunnel	A canal tunnel is a tunnel for a canal.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Community area boundary	The Environmental Statement has been split into eight sections called Community Areas.	High Speed Two (HS2) Ltd	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
Consented discharge to groundwater	A discharge to groundwater under permit regulations (the Environmental Permitting, England and Wales Regulations, 2010 (EPR)).	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Consented discharge to surface water	A discharge to surface water e.g. a river or lake under permit regulations (the Environmental Permitting, England and Wales Regulations, 2010 (EPR)). A permit is required for the discharge of treated effluent to surface water under the Environmental Permitting (England and Wales) Regulations, 2010 (EPR).	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
County boundary	County boundaries from Ordnance Survey boundary mapping.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
Culverted watercourse	Watercourses that have been enclosed underground (culverted), these are still considered to form part of an ordinary watercourse or main river.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Depot, station, headhouse or portal building	Extends to cover operational footprint of each depot and station and the footprint of each tunnel vent shaft and headhouse at surface level. Excludes any ancillary buildings associated with these structures.	High Speed Two (HS2) Ltd	

Legend features	Definition	Source	Copyright
District/borough/Unitary authority boundary	Ordnance Survey local authority boundary mapping.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
Fluvial flood risk: Flood zone 2	National Flood Zone 2 (FZ2). Land assessed, ignoring the presence of flood defences, as having between a 1% and 0.1% annual probability of river flooding.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Fluvial flood risk: Flood zone 3	National Flood Zone 3 (FZ3). Land assessed, ignoring the presence of flood defences, as having a 1% or greater annual probability of river flooding.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Geological fault line	The surface of a fault fracture along which the rocks have been displaced. The data that comprises the geological theme of 'Linear' as depicted on the 1:50,000 published map DiGMapGB-50.	British Geological Survey (BGS)	Collins English Dictionary – Complete and Unabridged © HarperCollins Publishers 1991, 1994, 1998, 2000, 2003. Reproduced with the permission of the British Geological Survey ©NERC. All rights Reserved.
Groundwater source protection zones	Source Protection Zones (SPZs) have been defined for approximately two thousand groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps show three main zones; SPZ1 - inner, SPZ2 - outer and SPZ3 - total catchment.	Environment Agency	Contains Environment Agency information © Environment Agency and database right.
Historic flooding area	Historic Flood Map is the maximum extent of all recorded individual Historic Flood Events Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England & Wales.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Lakes & Reservoirs	A body of water such as a lake or pond forming a geographical feature. Based on Ordnance Survey Vector Map District.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
Land potentially required during construction	Boundary defining the maximum possible extent of construction works required to build HS2 as far as the current level of design allows. This only covers surface works and includes all tunnel portals, vent shafts and headhouses, but does not apply to wholly tunnelled sections or to air rights. It also encompasses associated highway, access, drainage and utility works.	High Speed Two (HS2) Ltd	

Legend features	Definition	Source	Copyright
Licensed groundwater abstraction	A groundwater abstraction licence issued by the Environment Agency, which abstracts more than 20 cubic metres a day. Excludes the precise location of public water supplies in order to comply with Security and Environmental Measures Direction 1998.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Licensed surface water abstractions	A surface water abstraction licence issued by the Environment Agency, which abstracts more than 20 cubic metres a day. Excludes the precise location of public water supplies in order to comply with Security and Environmental Measures Direction 1998.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Modelled Baseline Flood Extent 1 in 100(1%+CC) including Climate Change Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 1% in any one year under baseline conditions, with an allowance for climate change. (Also known as a 1 in 100 plus climate change annual probability).	High Speed Two (HS2) Ltd	
Modelled Baseline Flood Extent 1 in 20(5%) Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 5% in any one year under baseline conditions. (Also known as a 1 in 20 annual probability).	High Speed Two (HS2) Ltd	
Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 5% in any one year under post-development conditions. (Also known as a 1 in 20 annual probability).	High Speed Two (HS2) Ltd	
Modelled Post Development Flood Extent1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 1% in any one year under post-development conditions, with an allowance for climate change. (Also known as a 1 in 100 plus climate change annual probability).	High Speed Two (HS2) Ltd	
Open water	A body of water such as a lake or pond forming a geographical feature. Based on Ordnance Survey MasterMap data.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2020.
Risk of flooding from Surface Water	The risk of flooding from surface water that hasn't yet entered a watercourse.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Route in tunnel	Represents the proposed route of HS2, split into route on surface and tunnelled sections.	High Speed Two (HS2) Ltd	
Route on surface	Represents the proposed route of HS2, split into route on surface and tunnelled sections.	High Speed Two (HS2) Ltd	
Sites of Special Scientific Interest (SSSI)	A Site of Special Scientific Interest (SSSI) is the land notified as an SSSI under the Wildlife and Countryside Act (1981), as amended.	Natural England	© Natural England copyright. Contains Ordnance Survey data. © Crown copyright and database right 2019.

Legend features	Definition	Source	Copyright
Special Areas of Conservation (SAC)	Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended).	Natural England	© Natural England copyright. Contains Ordnance Survey data. © Crown copyright and database right 2019.
Springs	A surface expression of a groundwater body.	High Speed Two (HS2) Ltd	
Unlicensed private groundwater abstraction	A private water supply from a groundwater source, which abstracts less than 20 cubic metres a day. Local authorities currently hold a register of private water supplies. The local authorities are required in accordance with The Private Water Supplies Regulations 2009, to ensure that unlicensed abstractions meet certain quality standards.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Unlicensed private surface water abstraction	A private water supply from a surface water source, which abstracts less than 20 cubic metres a day. Local authorities currently hold a register of private water supplies. The local authorities are required in accordance with The Private Water Supplies Regulations 2009, to ensure that unlicensed abstractions meet certain quality standards.	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.
Watercourse	Any channel through which water flows, can be natural or manmade. They are split into two categories (main rivers or ordinary watercourses) in England and Wales for regulation purposes.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2019.
WFD Lakes	Data is a combination of two datasets: WFD - Lake Waterbodies. The dataset contains the extents of waterbodies identified as "lakes" under the Water Framework Directive, based on River Basin Characterisation 2 (RBC2) data and Water Framework Directive – Surface Water Classification Status and Objectives (2013).	Environment Agency	© Environment Agency copyright and/or database right 2019. All rights reserved.

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA01: Hough to Walley's Green

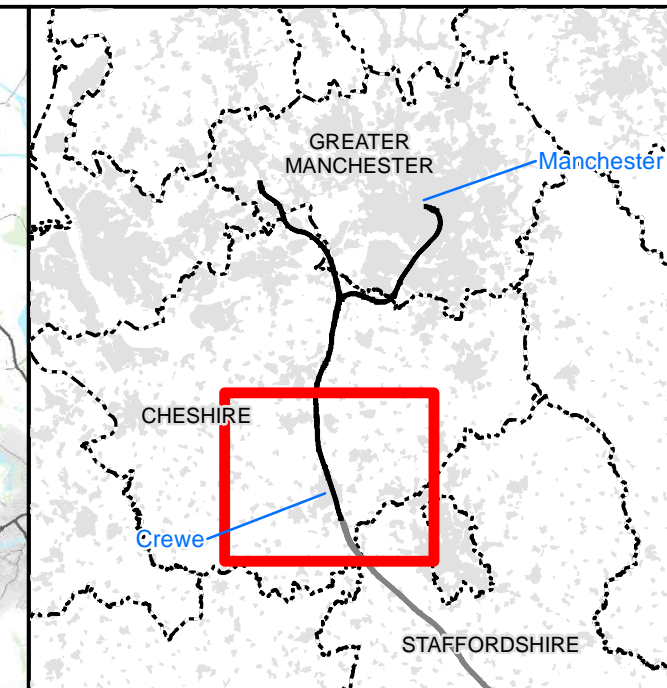
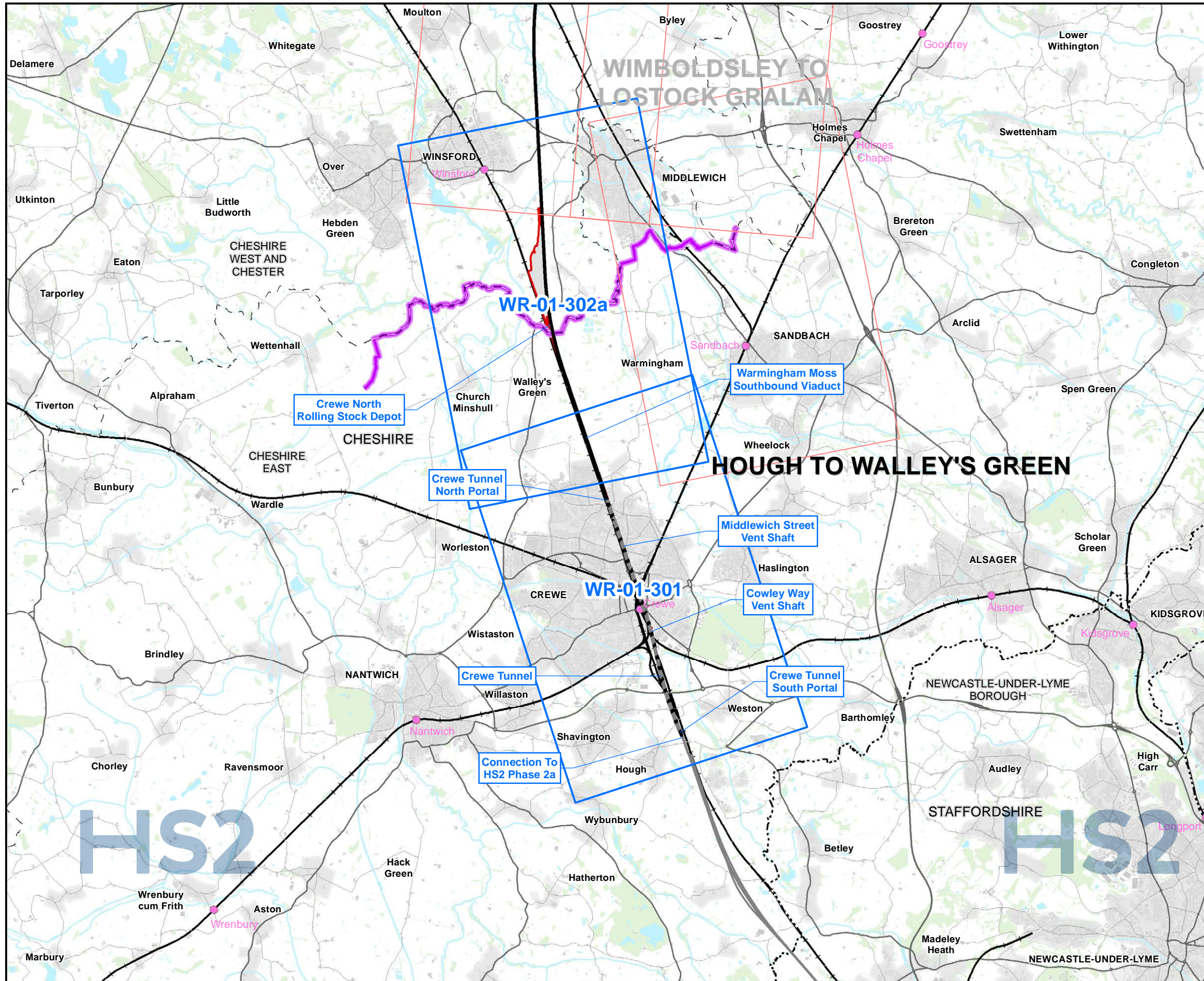
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend

Map Number	WR-01-INDEX-MA01
Map Name	Index Map of: Surface Water Baseline
	Community Area MA01: Hough to Walley's Green

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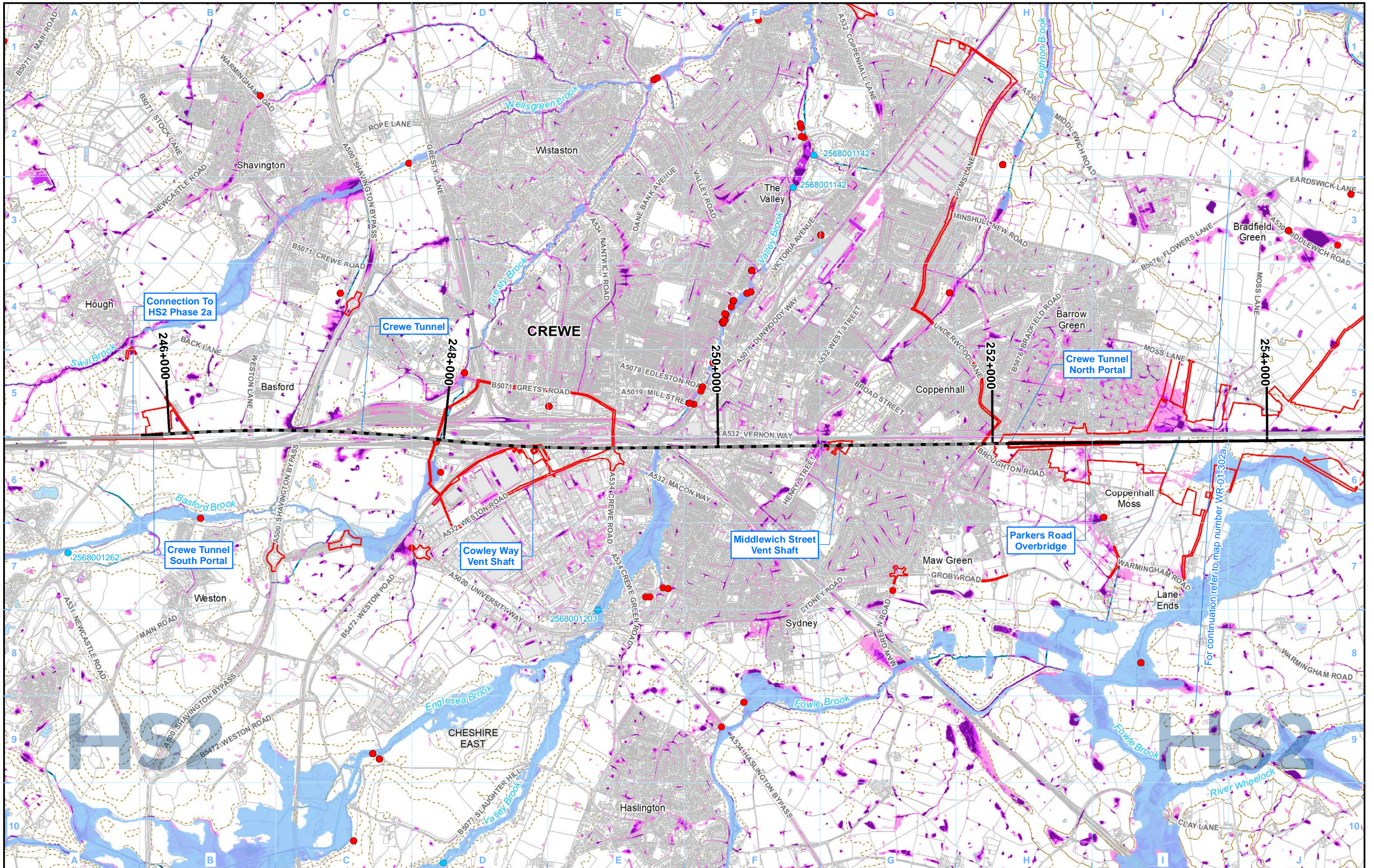
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Date: 12/08/21

Note: Not all data layers in the legend are represented on every map.



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- ✈ Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-301**

Map Name: **Surface Water Baseline**

Community Area MA01:
Hough to Walley's Green

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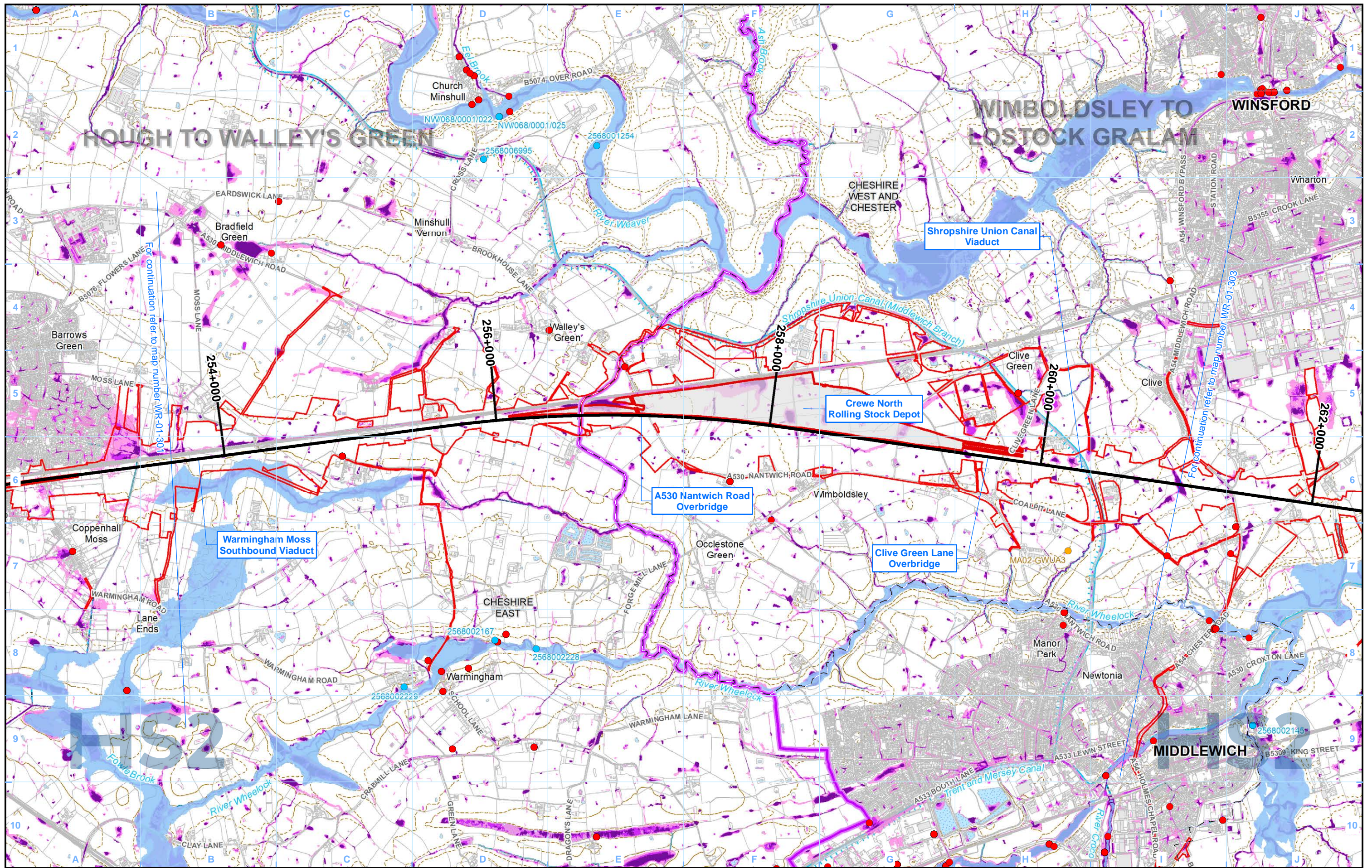
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000294-P05

Date: 12/08/21

For continuation refer to map number WR-01-302a



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

- Fluvial flood risk:**
- Flood Zone 2
 - Flood Zone 3
- Risk of Flooding from Surface Water:**
- High - chance of flooding greater than 1 in 30 (3.33%)
 - Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-302a

Map Name: Surface Water Baseline

Community Area MA01:
Hough to Walley's Green

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNESLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYLK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBYP FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GVA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SQB-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YVR-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Doc Number: 2EV01-ARP-GI-MAP-M000-000253

Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



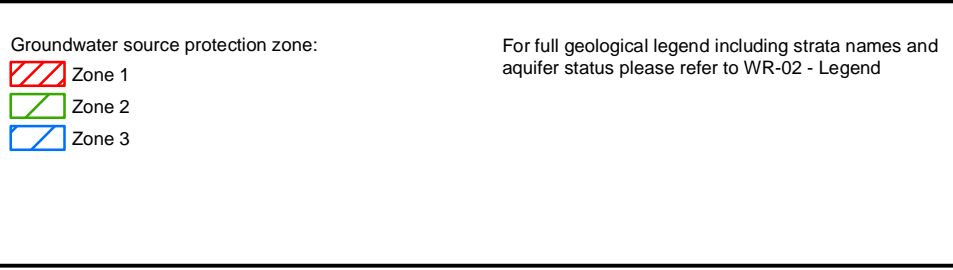
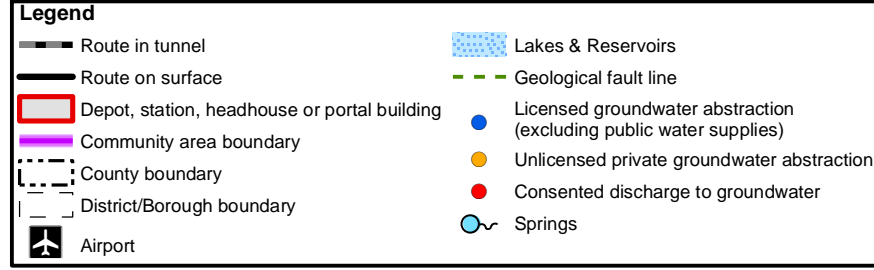
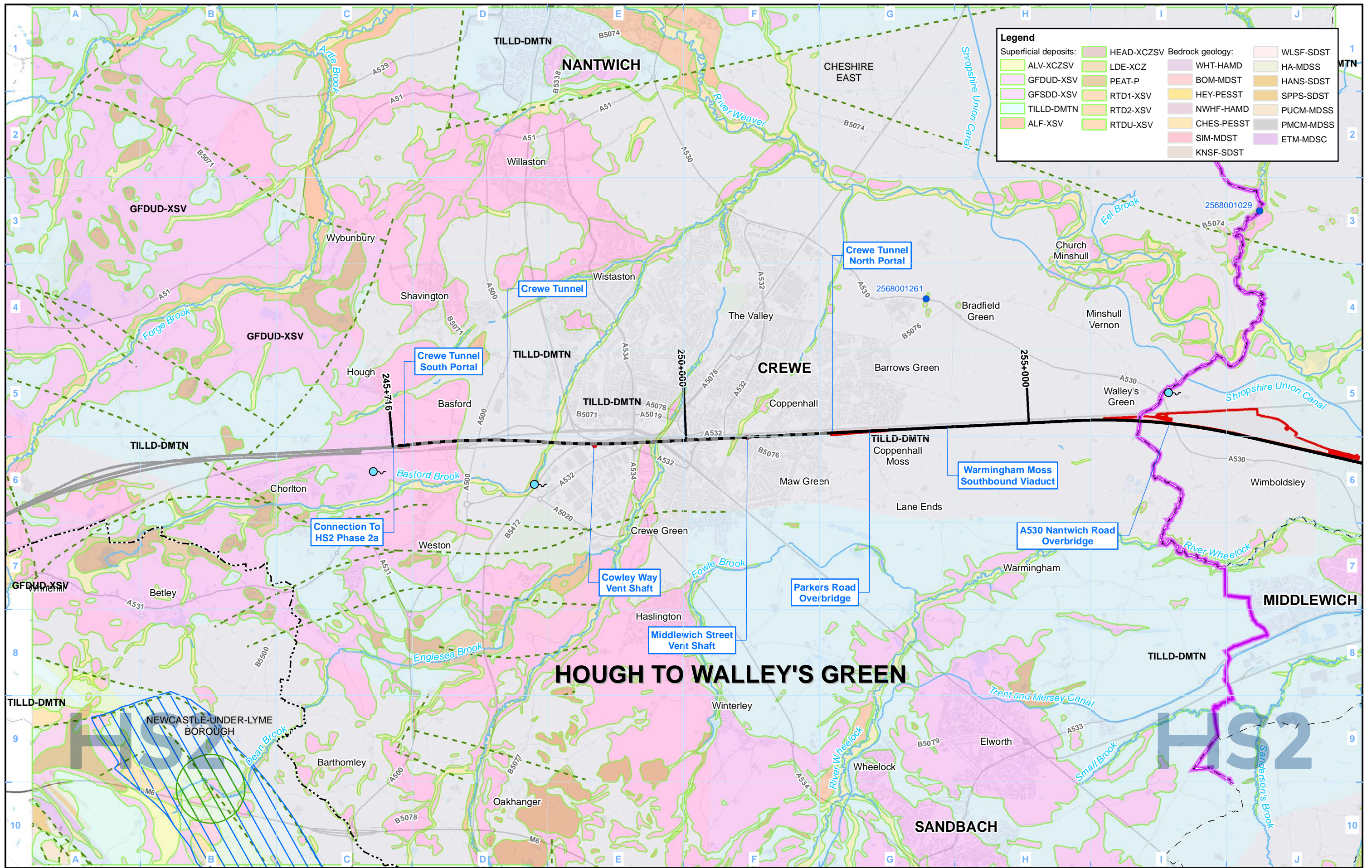
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Map Number	WR-02-301
Map Name	Groundwater Baseline
Community Area MA01: Hough to Walley's Green	

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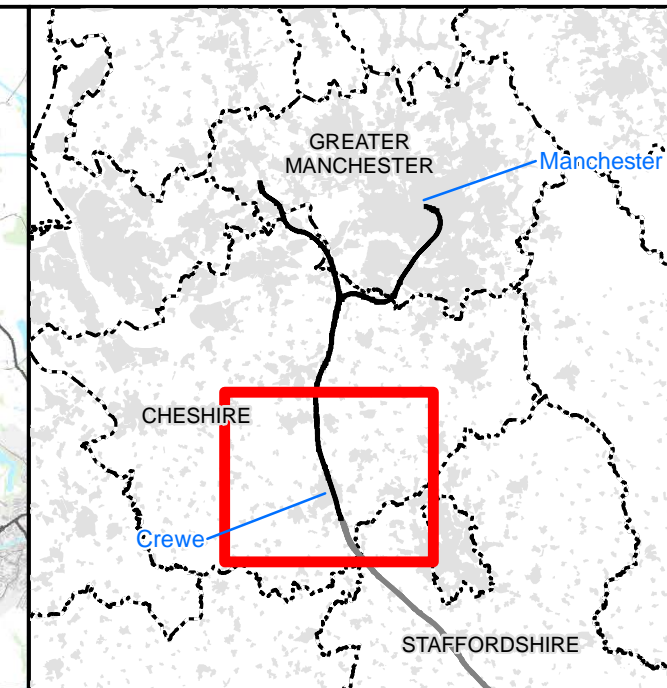
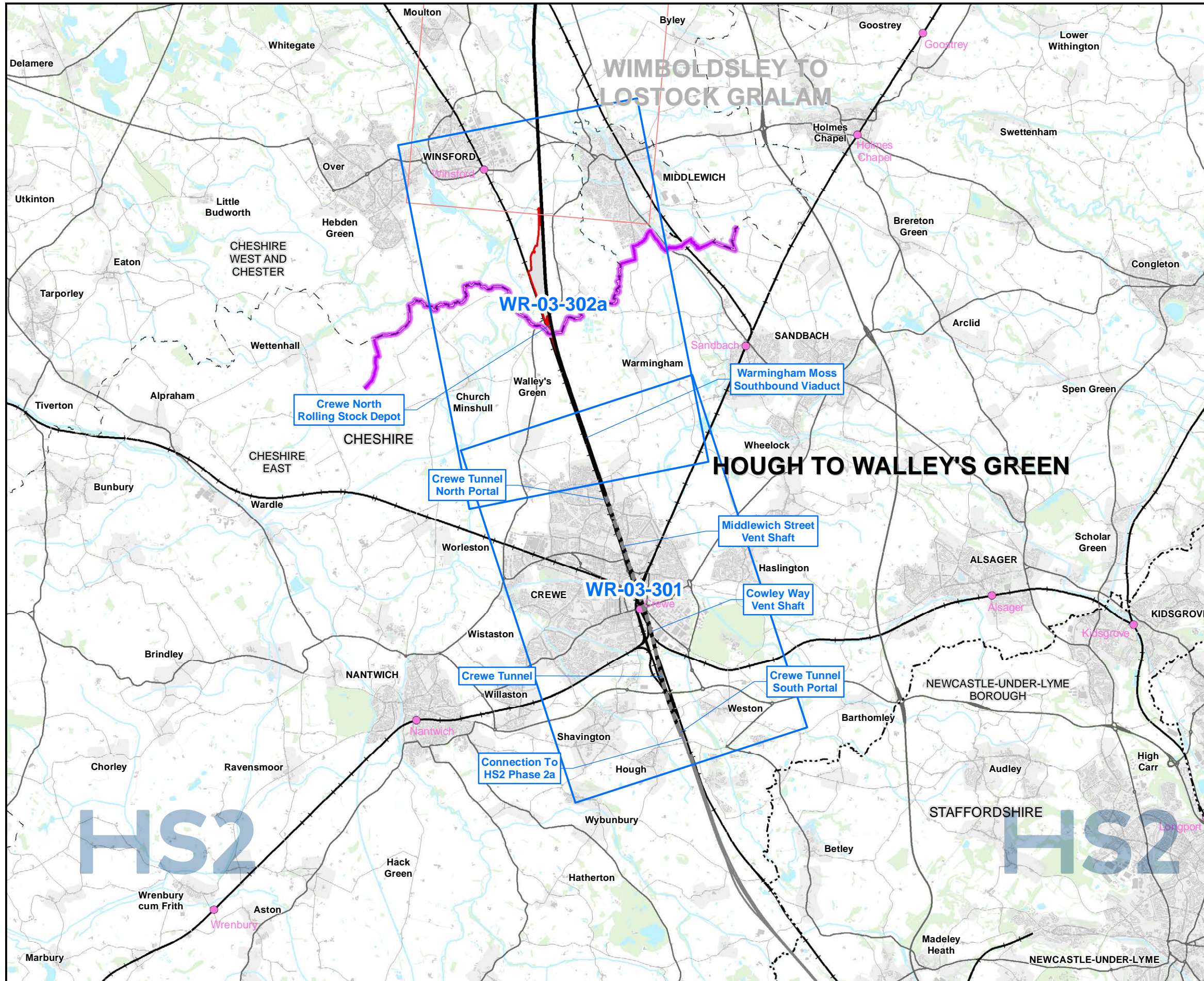
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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

Map Number	WR-03-INDEX-MA01
Map Name	Index Map of: Water Framework Directive
	Community Area MA01: Hough to Walley's Green

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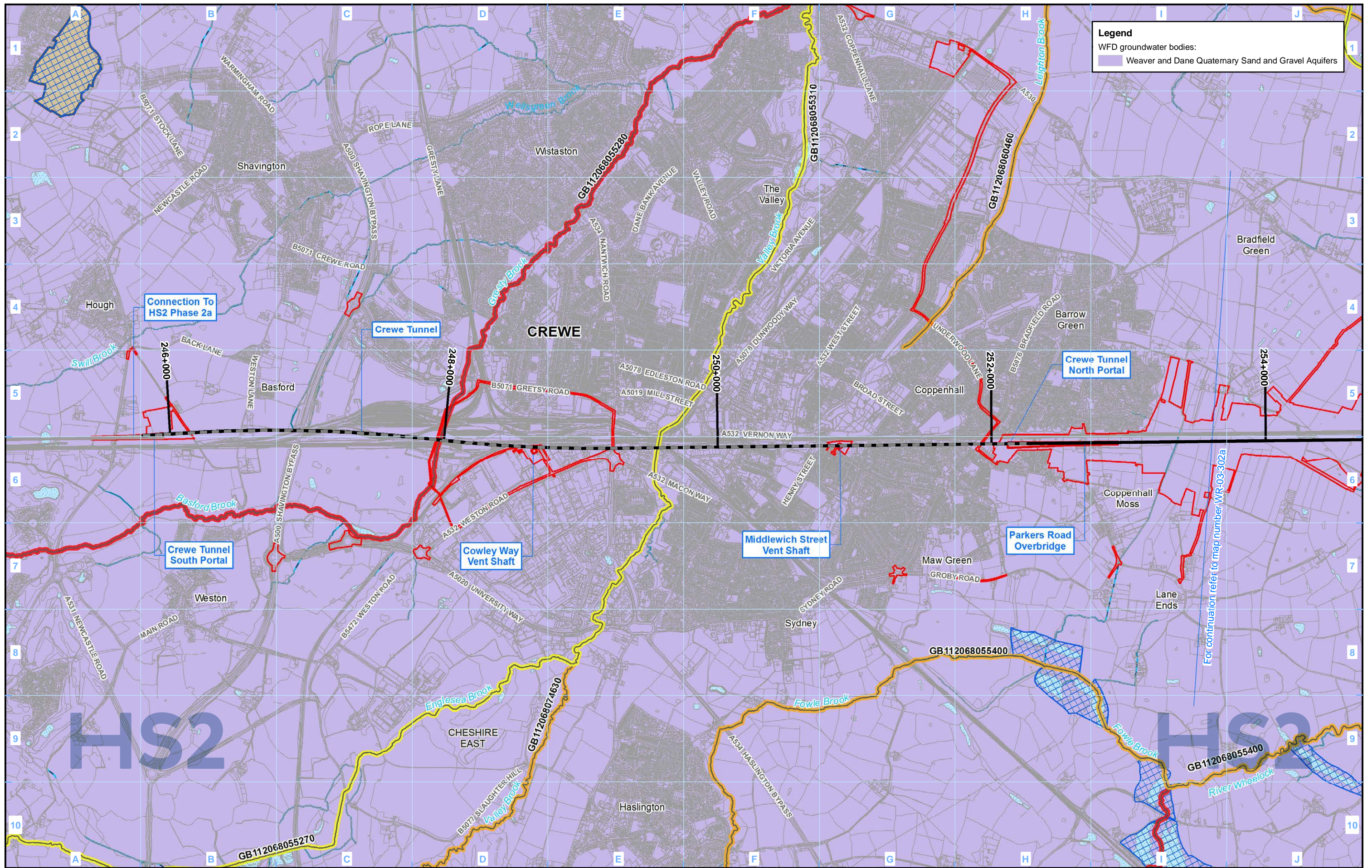
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Note: Not all data layers in the legend are represented on every map.



Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies
 Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes
 Overall Status:

- Good
- Moderate
- Poor
- Bad

Special Areas of Conservation (SAC)

- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-301
 Map Name: Water Framework Directive
 Community Area MA01: Hough to Walley's Green

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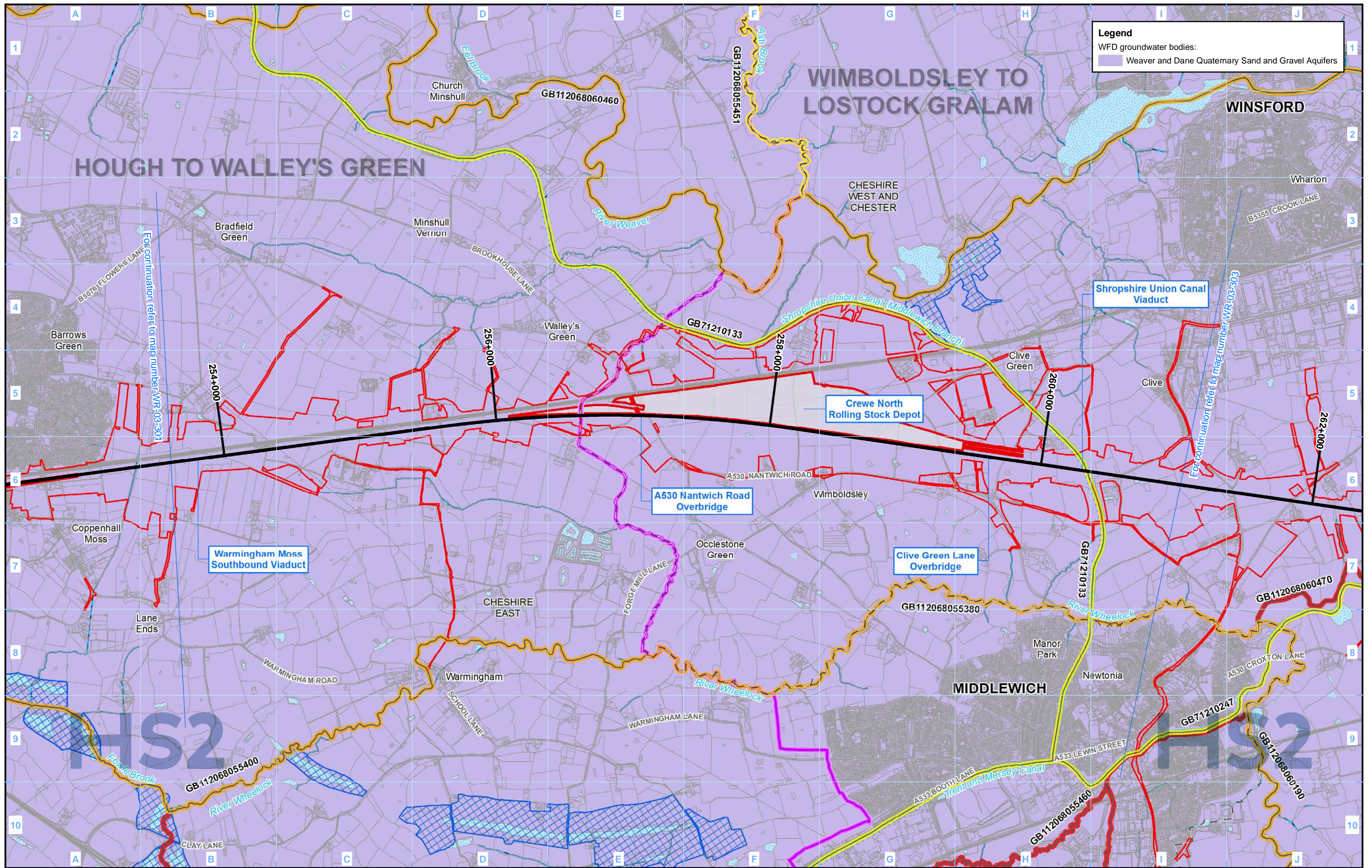
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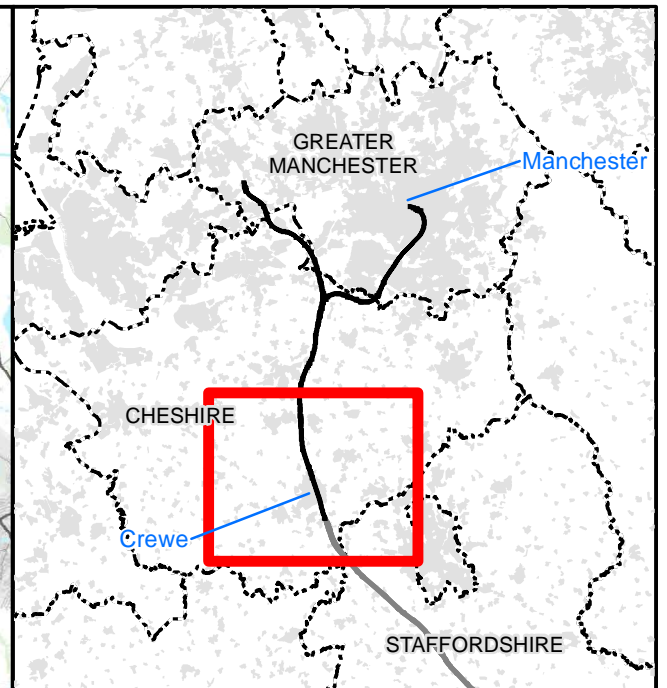
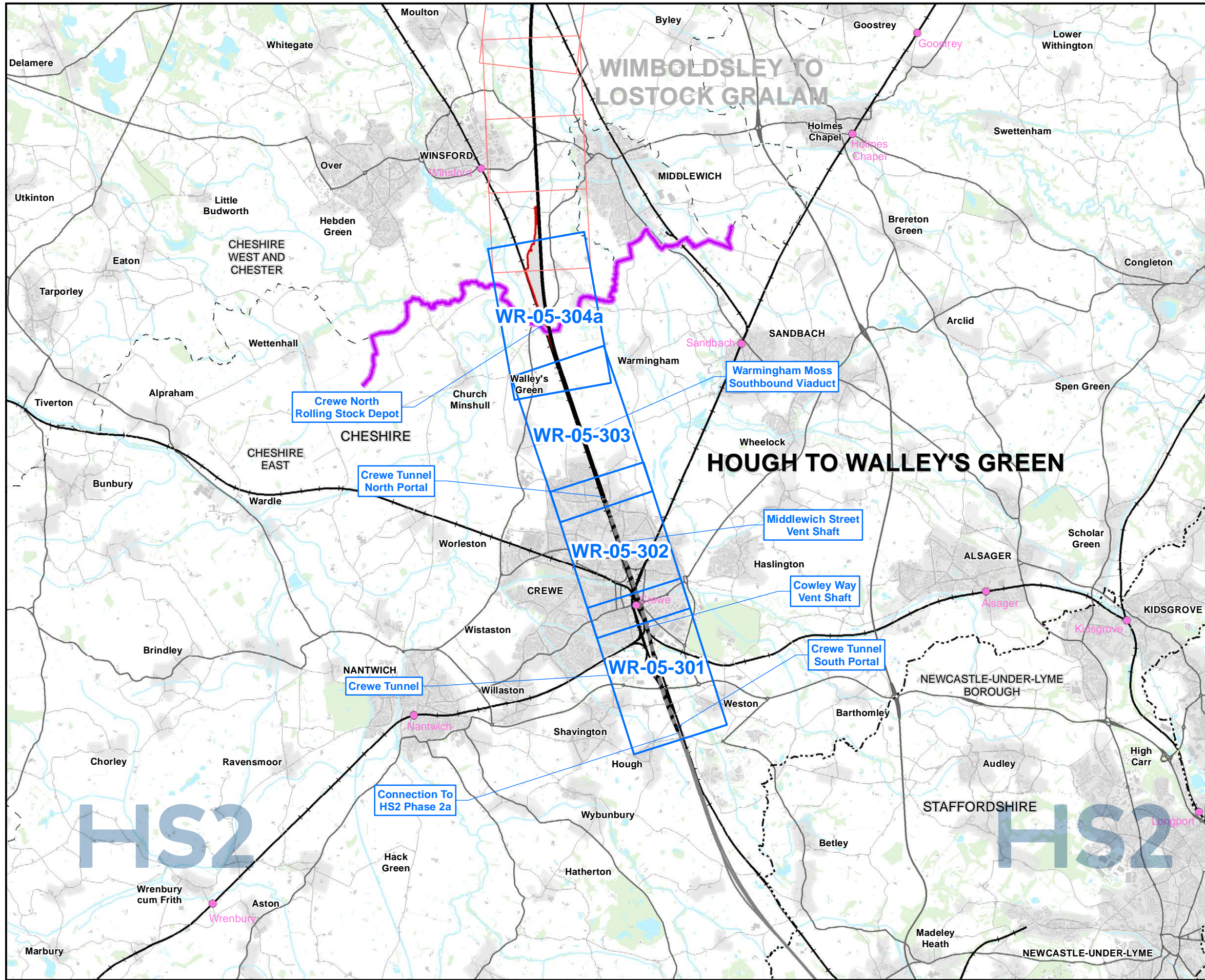
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Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

<p>Legend</p> <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI) 	<p>Map Number: WR-03-302a</p> <p>Map Name: Water Framework Directive</p> <p>Community Area MA01: Hough to Walley's Green</p>	<p>HS2</p> <p>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6QA.</p> <p>Scale at A3: 1:25,000</p> <p>© Crown copyright and database rights 2020 OS 100049190</p> <p>Doc Number: 2DE01-MWJ-EV-MAP-M000-002255-P01</p> <p>Date: 11/08/21</p>
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

Map Number	WR-05-INDEX-MA01
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 100 including Climate Change (1%+CC) Annual Probability of River Flooding Community Area MA01: Hough to Walley's Green

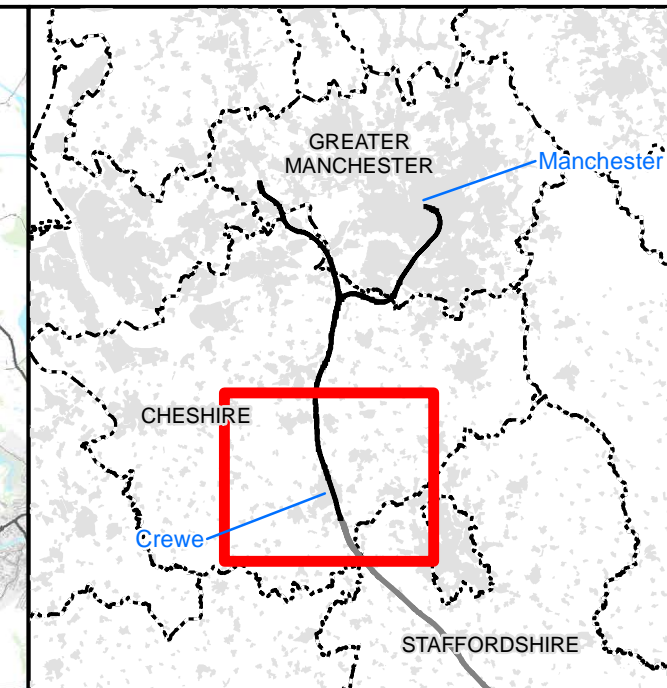
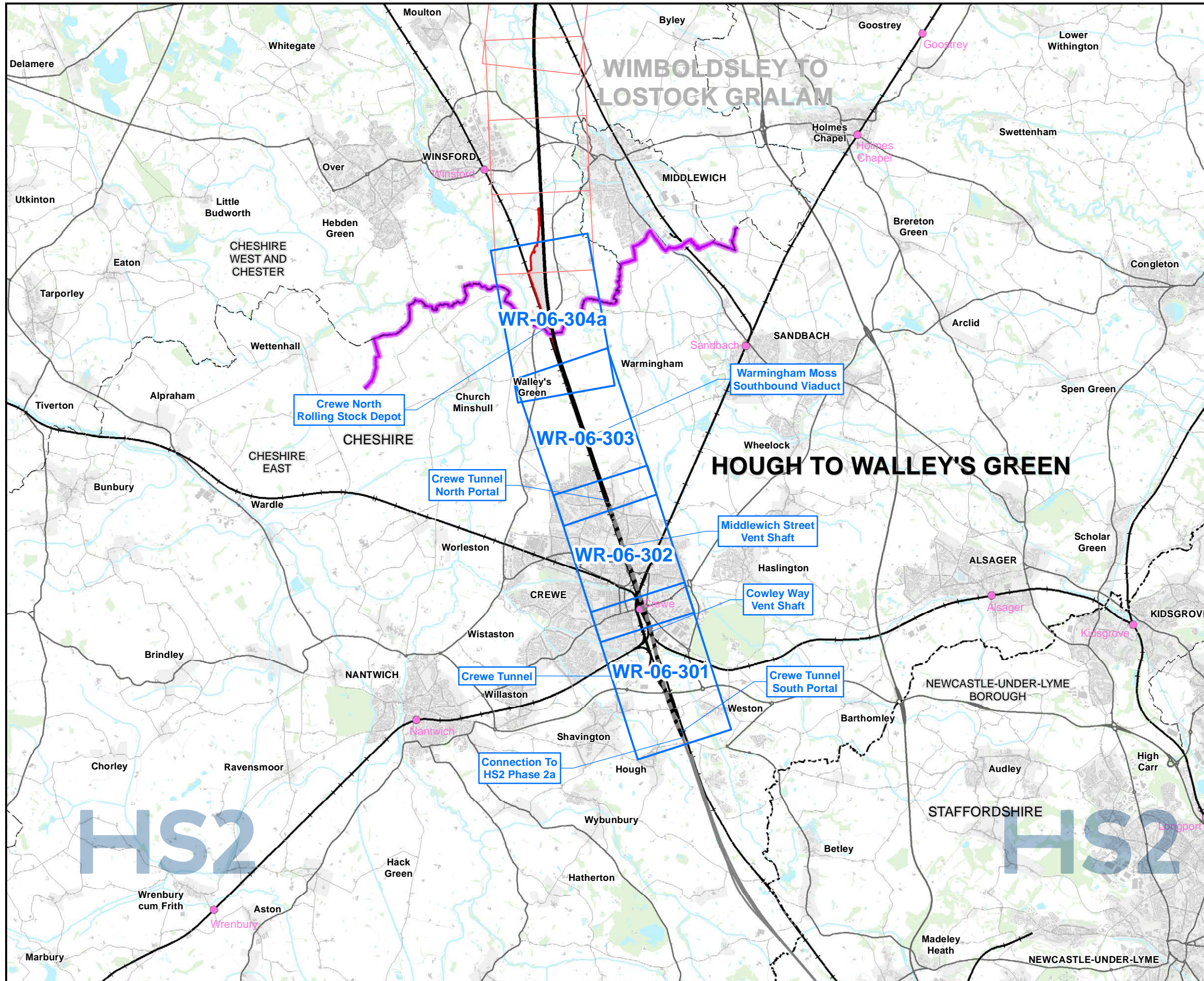
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-06-INDEX-MA01**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA01:
 Hough to Walley's Green

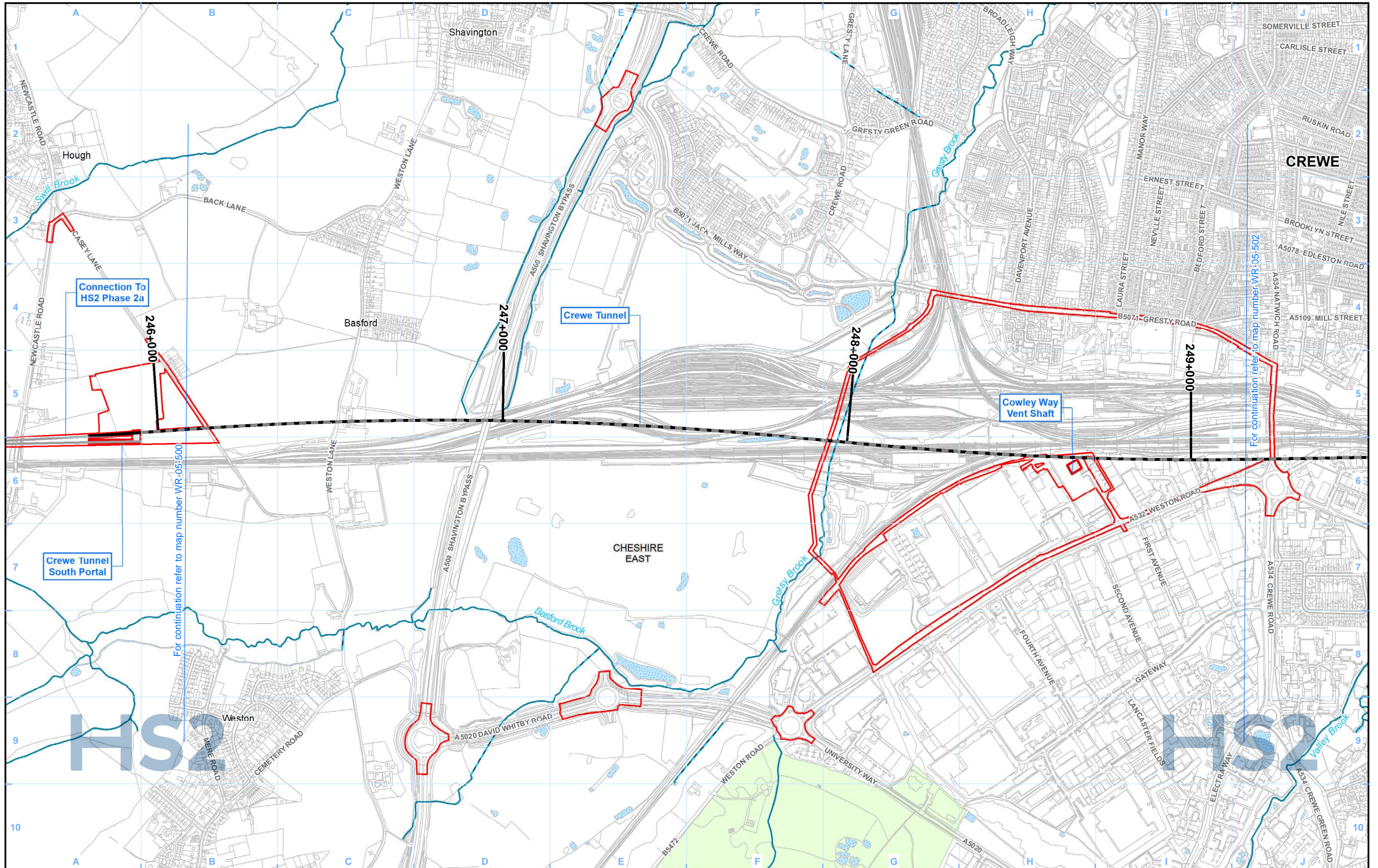
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002367-P01 **Date:** 12/10/21



For continuation refer to map number WR-05-502

For continuation refer to map number WR-05-500

Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-301
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA01: Hough to Walley's Green	

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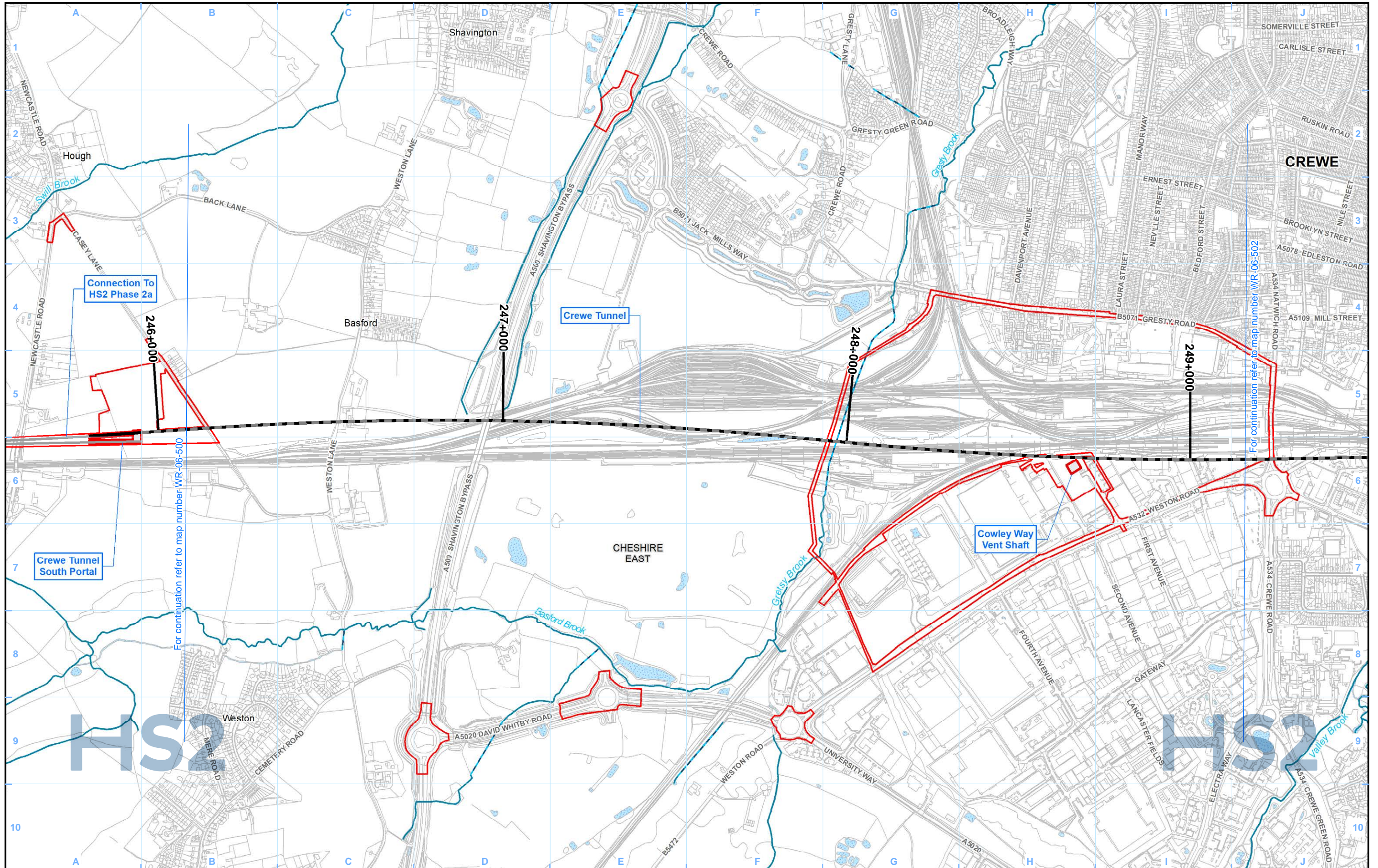
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002286-P01

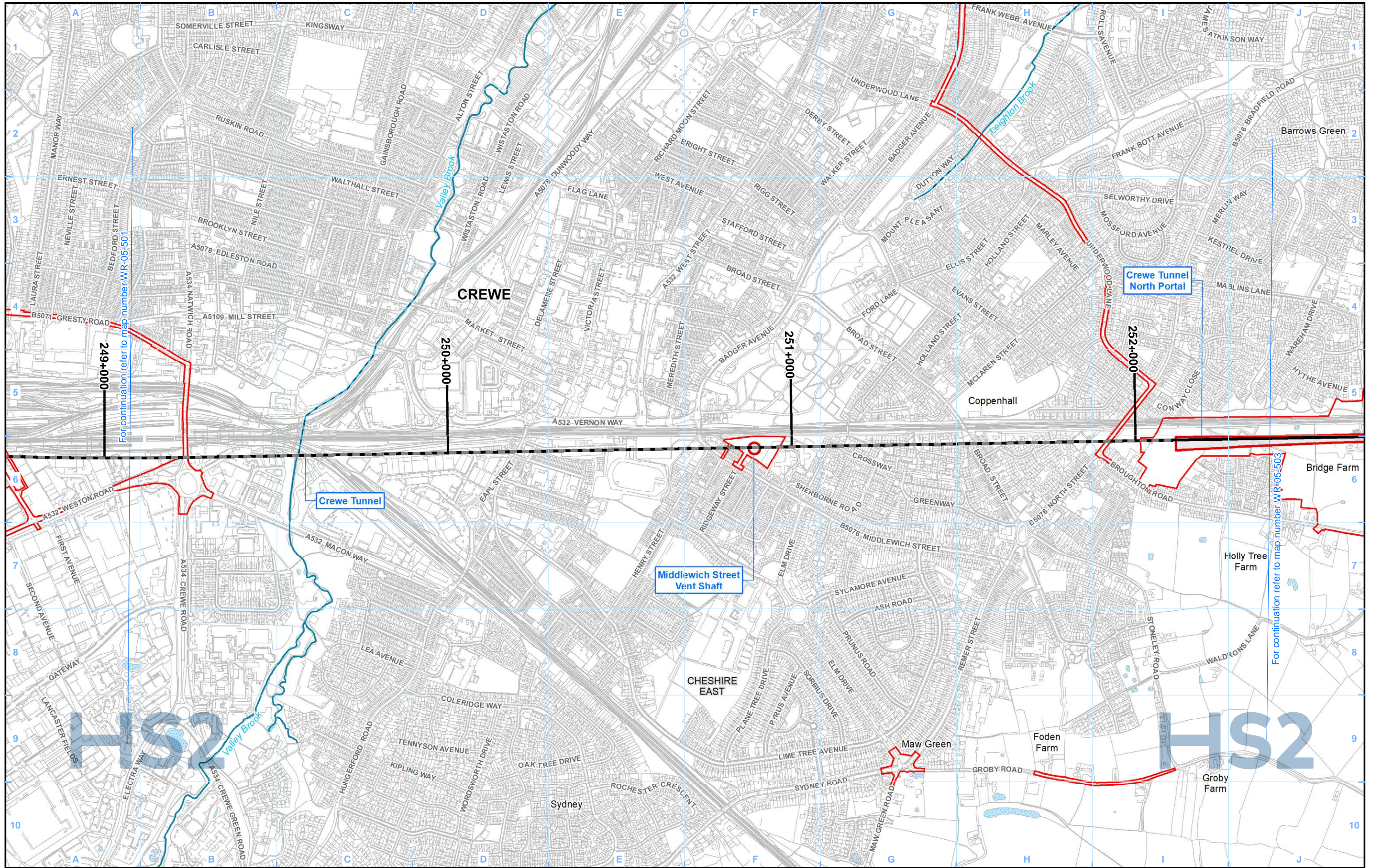
Scale at A3: 1:10,000

Metres

Date: 16/09/21



Legend <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary Watercourse Culverted watercourse Canal Canal tunnel Open water Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding 		<p>Map Number: WR-06-301</p> <p>Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding</p> <p>Community Area MA01: Hough to Walley's Green</p>	<p>HS2</p> <p>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.</p> <p>© Crown copyright and database rights 2020 OS 100049190</p> <p>Doc Number: 2DE01-MWJ-EV-MAP-M000-002332-P01</p> <p>Date: 14/10/21</p>
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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

For continuation refer to map number WR-05-501

249+000

250+000


251+000

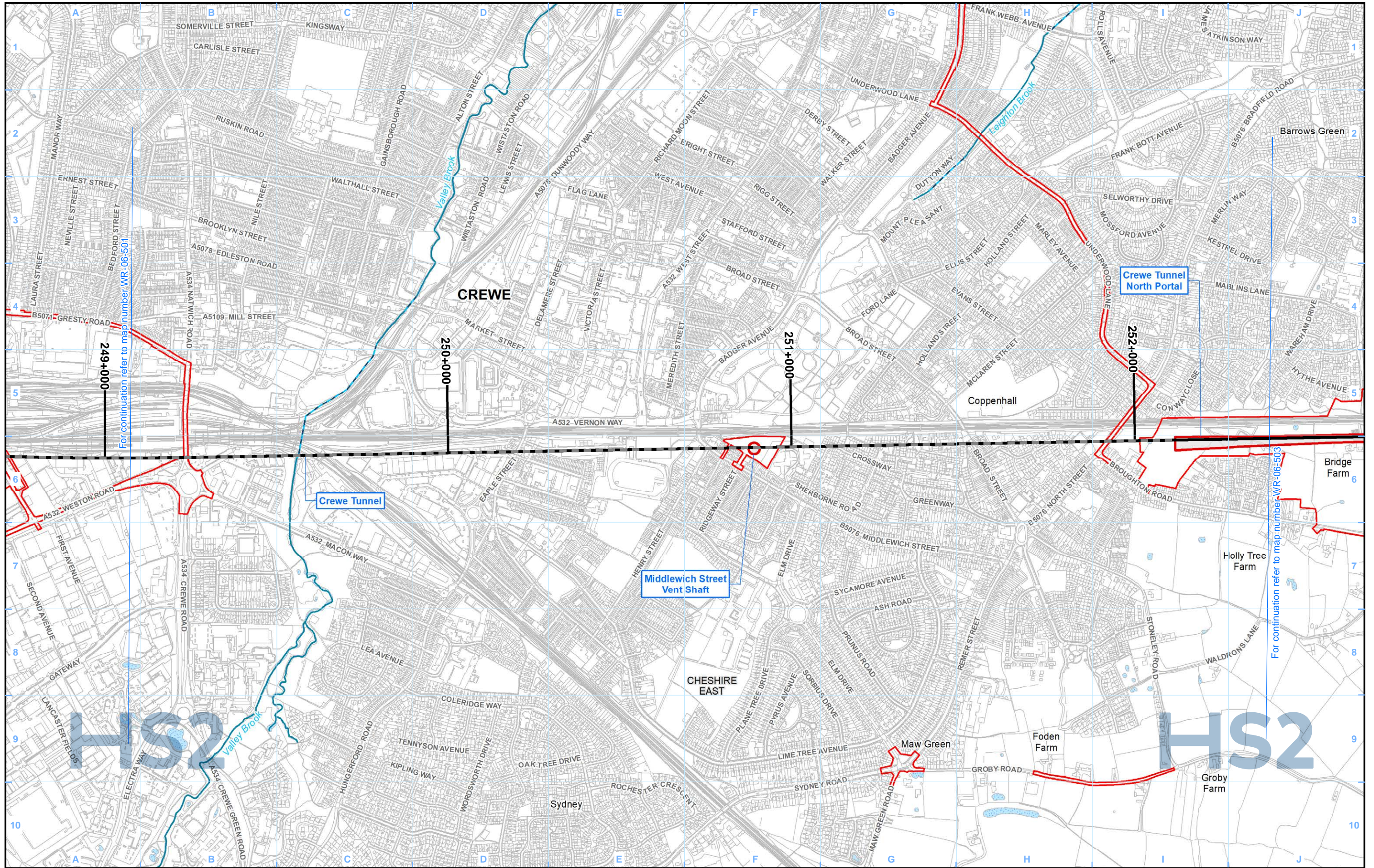
252+000

For continuation refer to map number WR-05-503

Map Number WR-05-302	HS2 Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.
Map Name Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding	Scale at A3: 1:10,000 
Community Area MA01: Hough to Walley's Green	© Crown copyright and database rights 2020 OS 100049190 Doc Number: 2DE01-MWJ-EV-MAP-M000-002287-P01 Date: 16/09/21

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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-302

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA01: Hough to Walley's Green

HS2

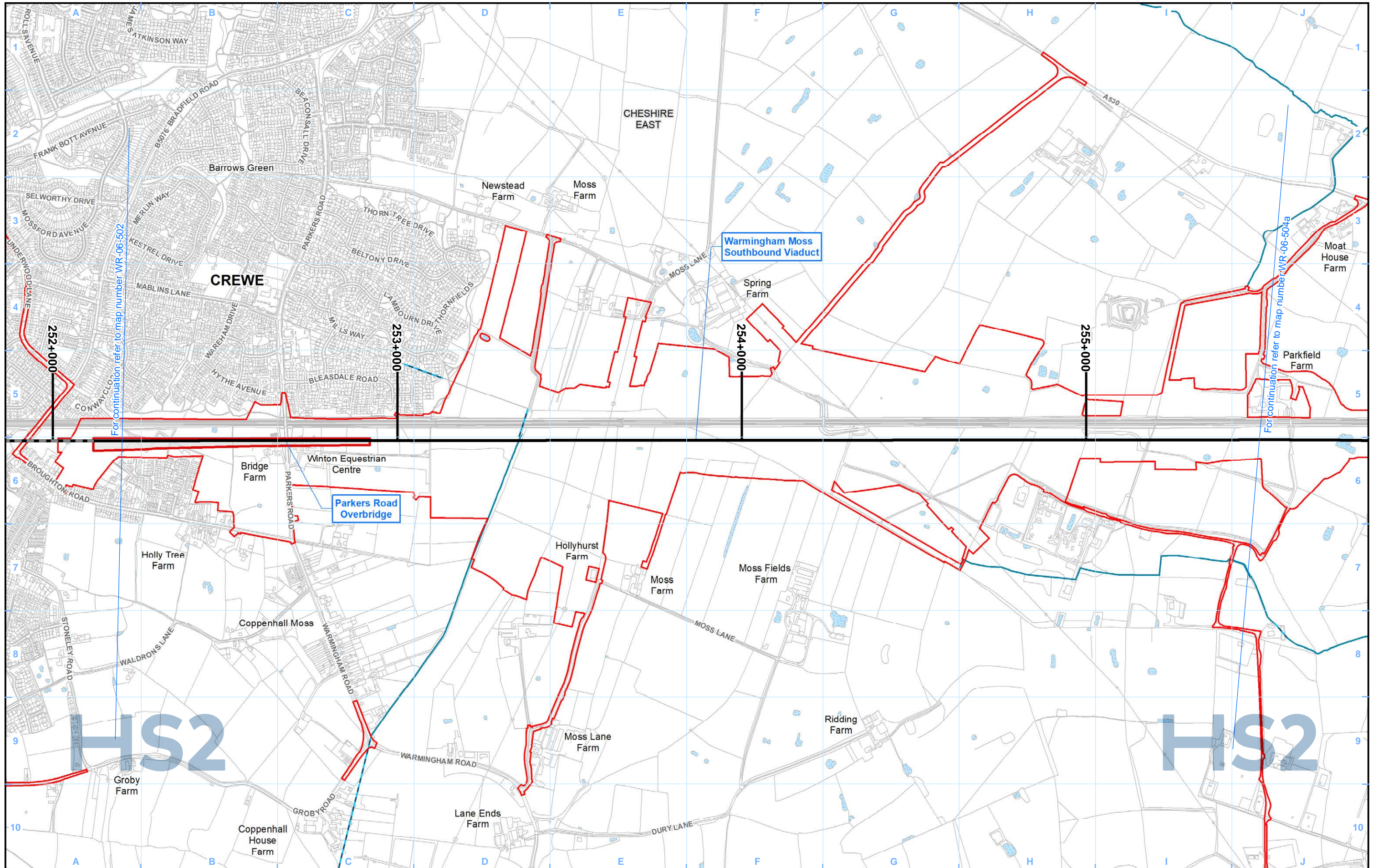
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Date: 14/10/21



Legend		

Map Number	WR-06-303
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA01: Hough to Walley's Green

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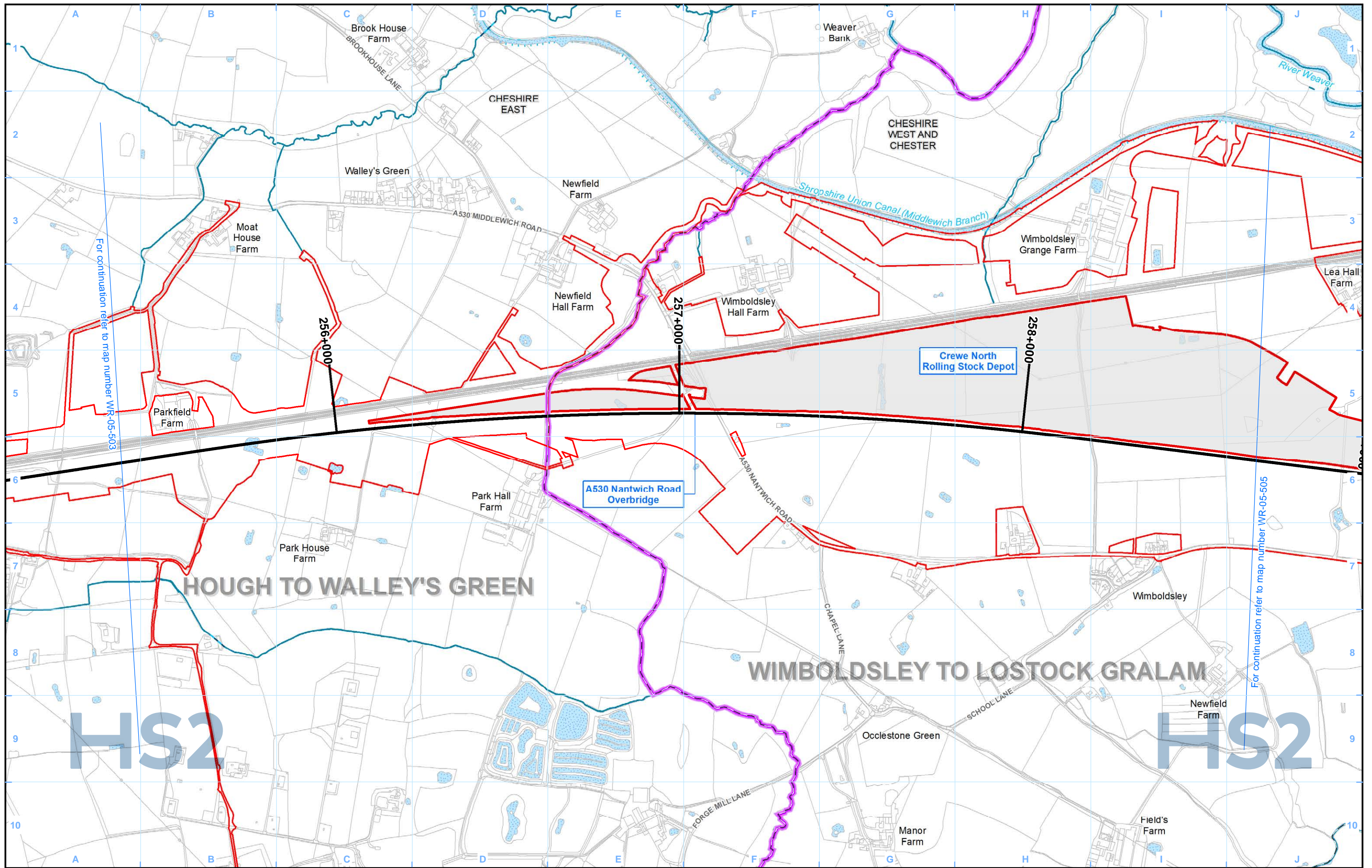
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002334-P01

Date: 14/10/21



Legend			
	Route in tunnel		Watercourse
	Route on surface		Culverted watercourse
	Depot, station, headhouse or portal building		Canal
	Land potentially required during construction		Canal tunnel
	Community area boundary		Open water
	County boundary		Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	District/Borough boundary		Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-304a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA01: Hough to Walley's Green	

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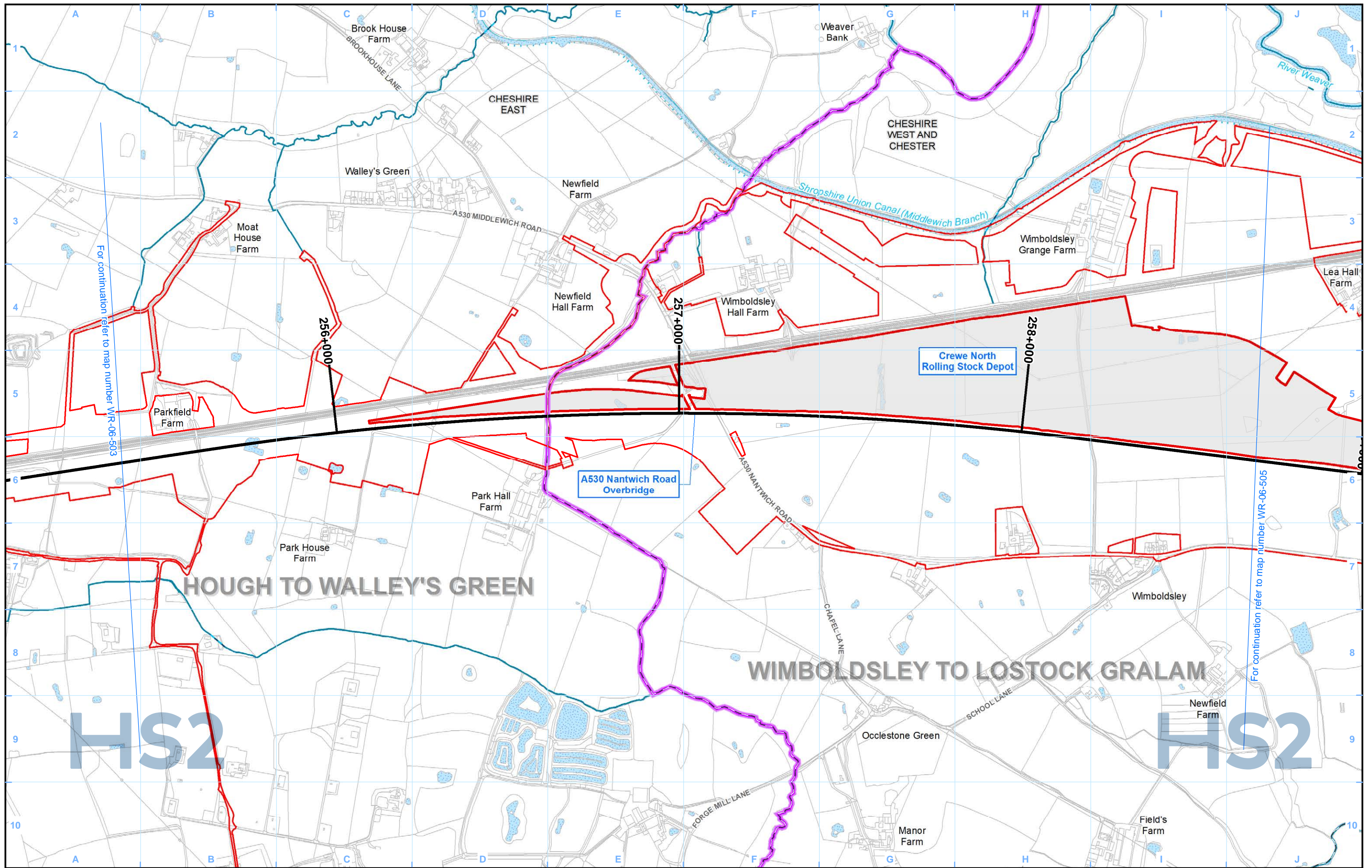
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Scale at A3: 1:10,000

Date: 16/09/21



For continuation refer to map number WR-06-503

For continuation refer to map number WR-06-505

- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

HOUGH TO WALLEY'S GREEN

WIMBOLDSLEY TO LOSTOCK GRALAM

Map Number: WR-06-304a

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA01: Hough to Walley's Green

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Date: 14/10/21

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA02: Wimboldsley to Lostock Gralam

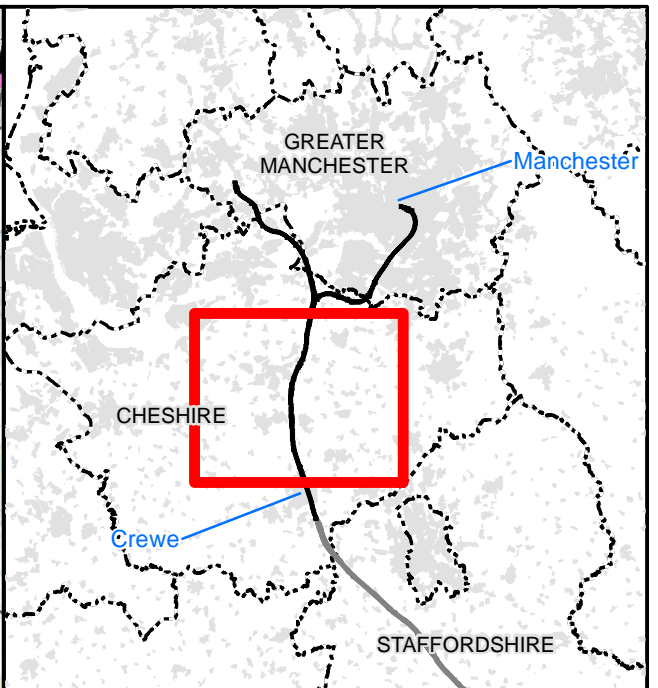
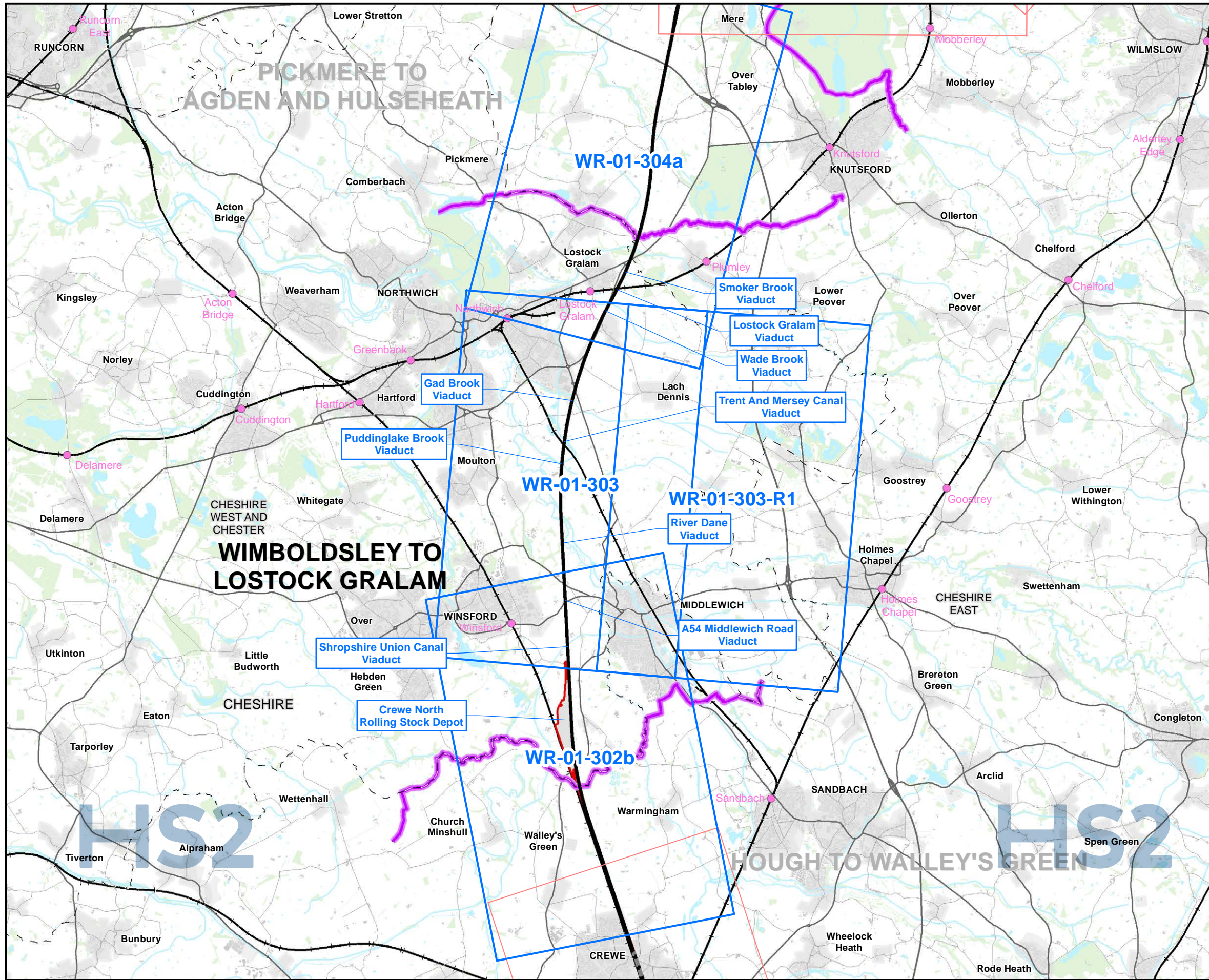
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-01-INDEX-MA02
Map Name	Index Map of: Surface Water Baseline
	Community Area MA02: Wimboldsley to Lostock Gralam

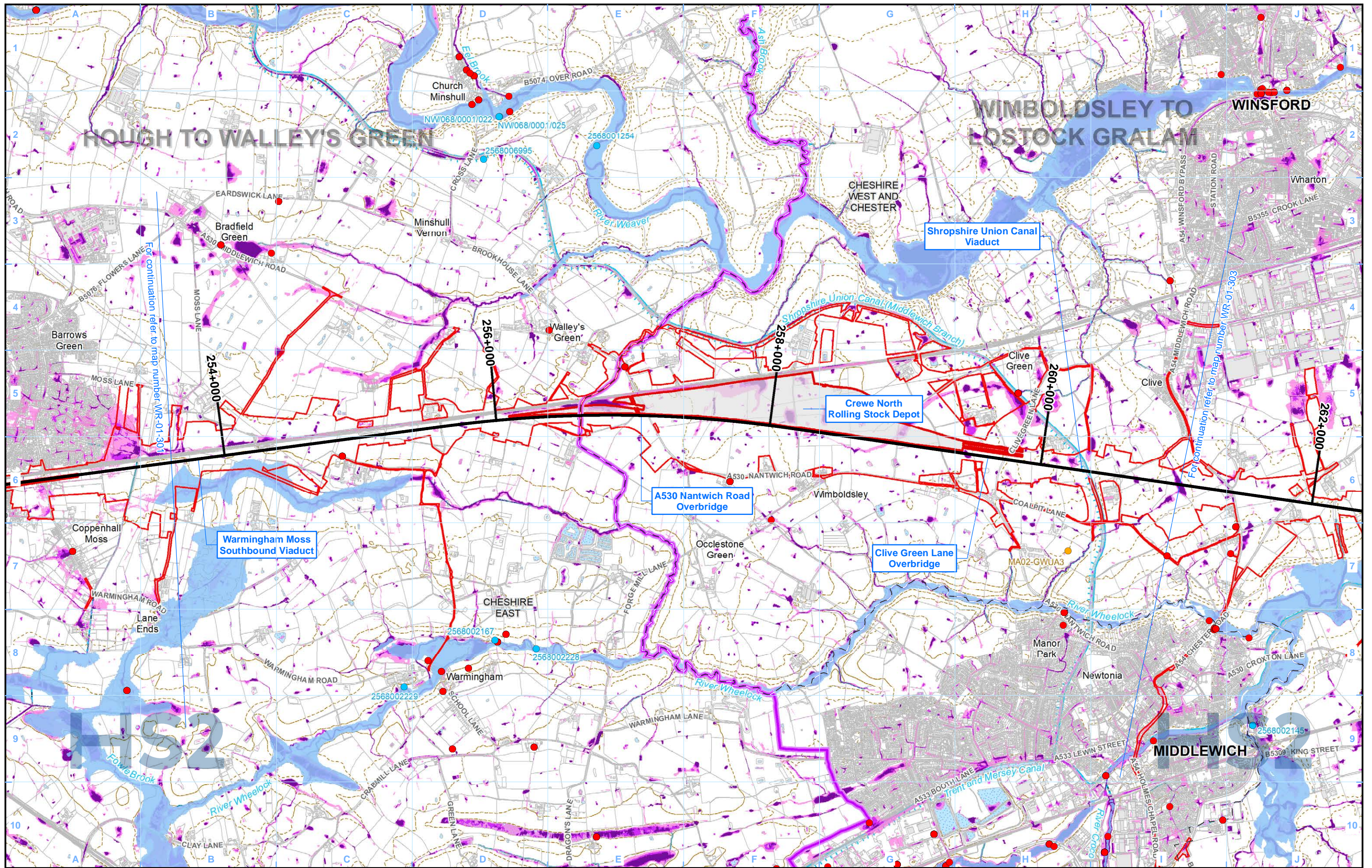
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Legend		
	Licensed surface water abstraction (excluding public water supplies)	
	Unlicensed private surface water abstraction	
	Consented discharge to surface water	
	Airport	
	Watercourse	
	Culverted watercourse	
	Canal	
	Canal tunnel	
	Lakes & Reservoirs	
	Historic flooding area	
	Fluvial flood risk:	
	Risk of Flooding from Surface Water:	
	Flood Zone 2	High - chance of flooding greater than 1 in 30 (3.33%)
	Flood Zone 3	Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
		Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number	WR-01-302b
Map Name	Surface Water Baseline
Community Area MA02: Wimboldsley to Lostock Gralam	

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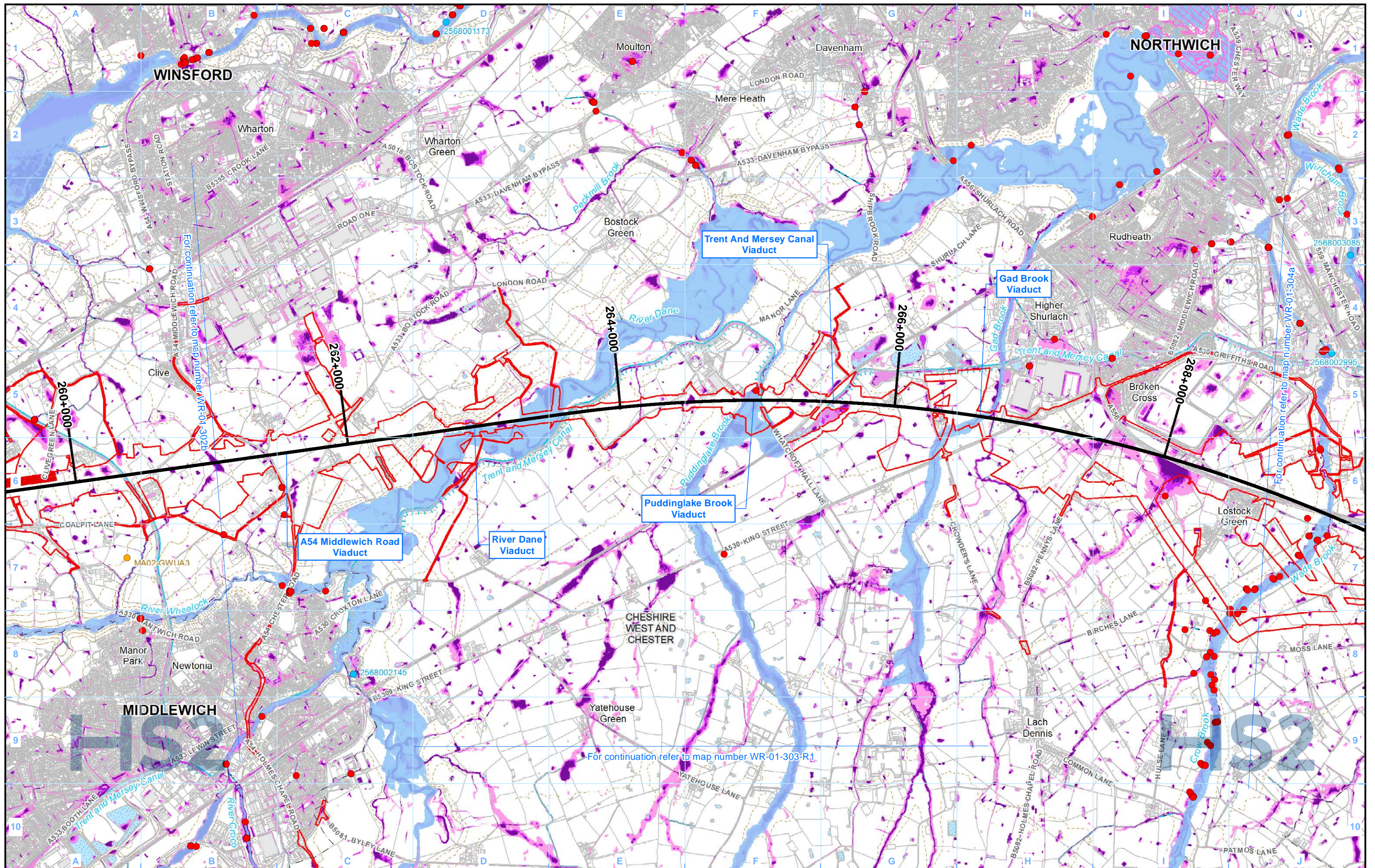
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Scale at A3: 1:25,000

Metres

Date: 12/08/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area
- Fluvial flood risk: Flood Zone 2
- Fluvial flood risk: Flood Zone 3
- Risk of Flooding from Surface Water: High - chance of flooding greater than 1 in 30 (3.33%)
- Risk of Flooding from Surface Water: Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Risk of Flooding from Surface Water: Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-303**

Map Name: **Surface Water Baseline**

Community Area MA02:
Wimboldsley to Lostock Gralam

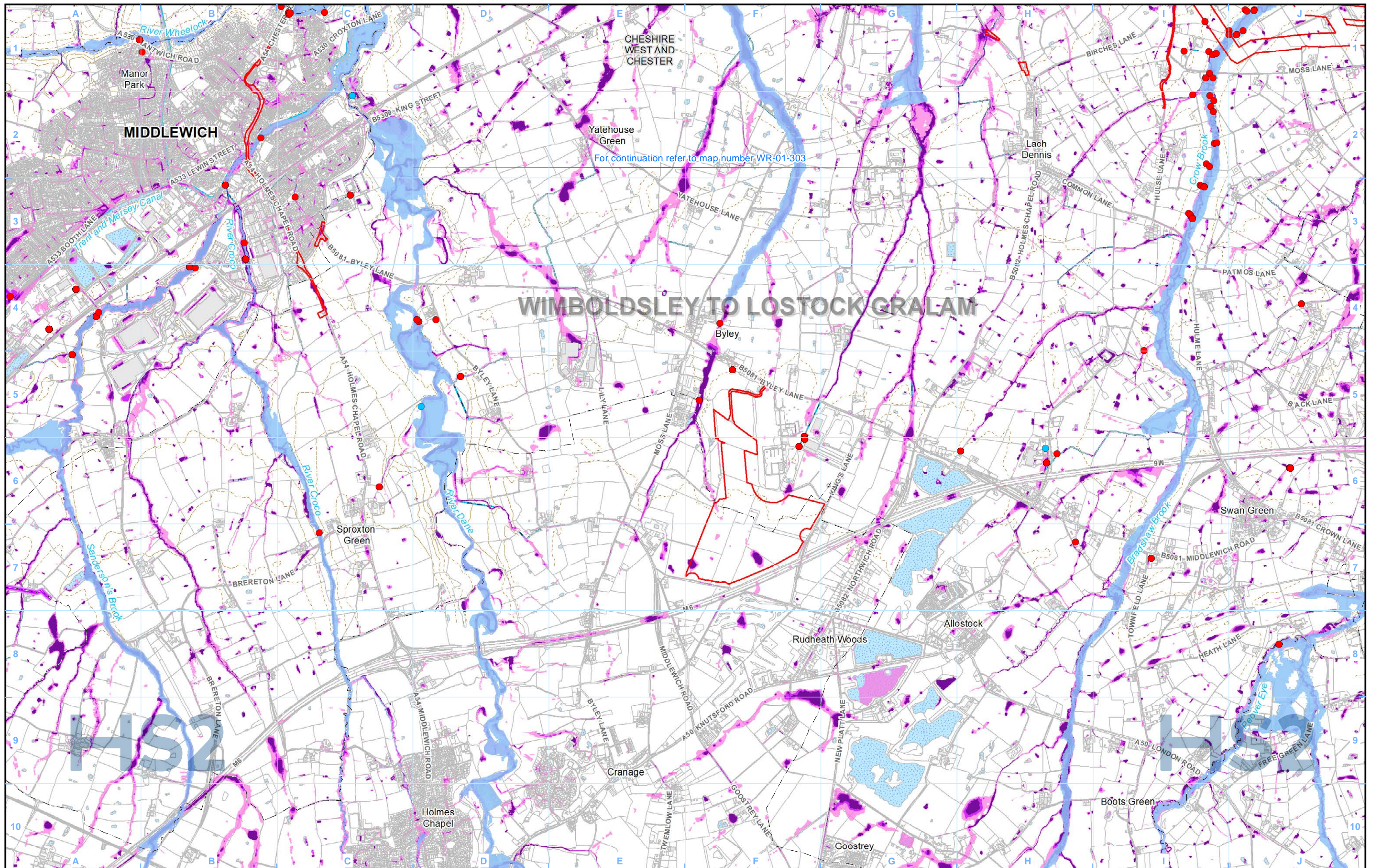
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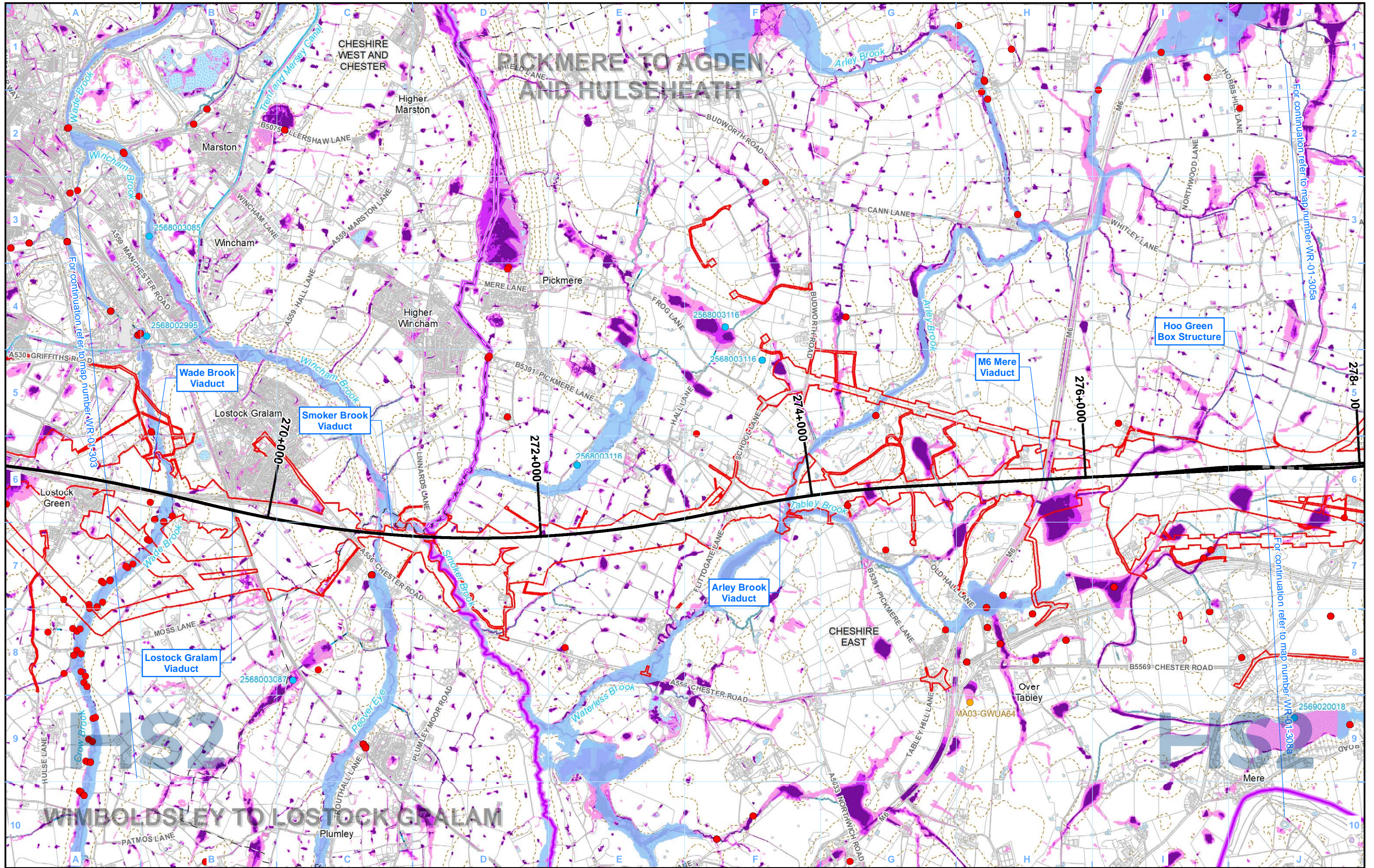
Date: 12/08/21



For continuation refer to map number WR-01-303

WIMBOLDSLEY TO LOSTOCK GRALAM

Legend <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 		<ul style="list-style-type: none"> Licensed surface water abstraction (excluding public water supplies) Unlicensed private surface water abstraction Consented discharge to surface water Airport 		<ul style="list-style-type: none"> Watercourse Culverted watercourse Canal Canal tunnel Lakes & Reservoirs Historic flooding area 		Fluvial flood risk: <ul style="list-style-type: none"> Flood Zone 2 Flood Zone 3 		Risk of Flooding from Surface Water: <ul style="list-style-type: none"> High - chance of flooding greater than 1 in 30 (3.33%) Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%) Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%) 	
Map Number WR-01-303-R1		Map Name Surface Water Baseline		Community Area MA02: Wimboldsley to Lostock Gralam		HS2 <small>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6QA.</small>		Scale at A3: 1:25,000 	
Doc Number: 2DE01-MWJ-EV-MAP-M000-002403-P05		Date: 12/08/21				<small>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</small>			



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-304a

Map Name: Surface Water Baseline

Community Area MA02: Wimboldsley to Lostock Gralam

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Date: 12/08/21

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0 250 500 750 1,000 Metres

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYLK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GVA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SQB-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YVR-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



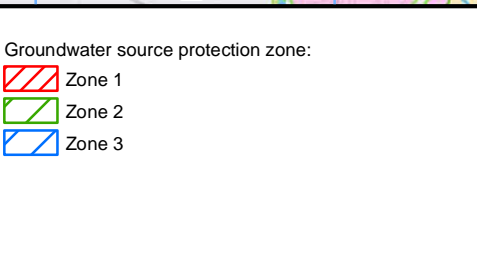
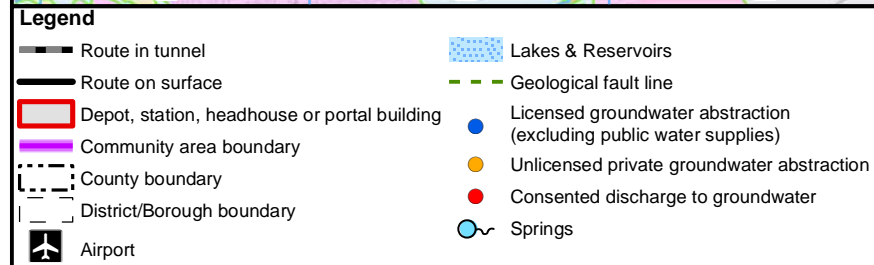
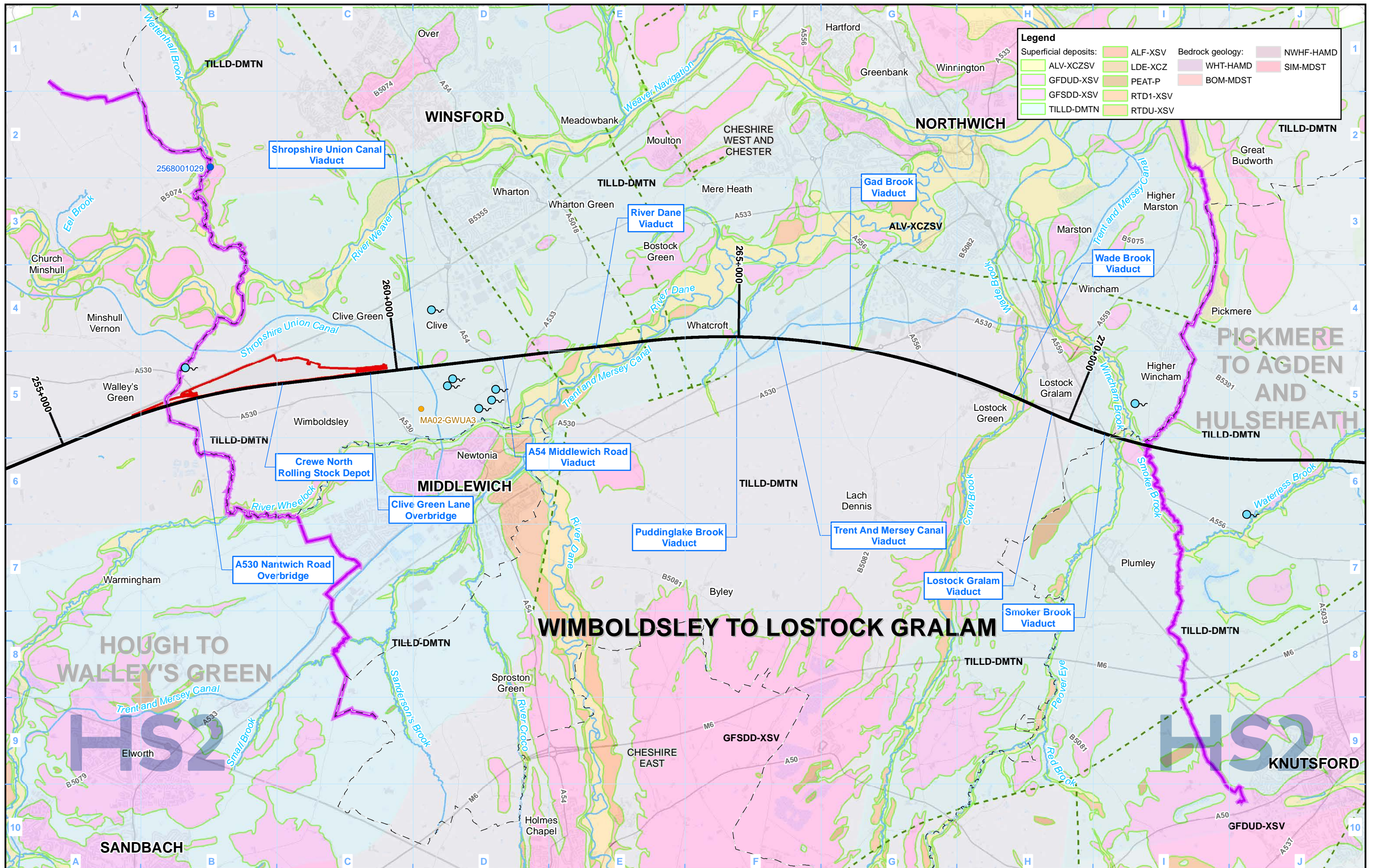
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For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

Map Number	WR-02-302
Map Name	Groundwater Baseline
	Community Area MA02: Wimboldsley to Lostock Gralam

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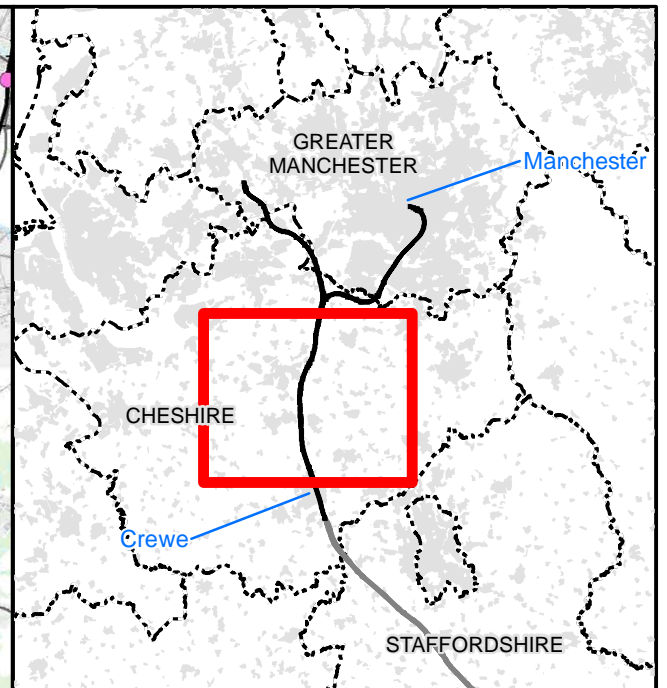
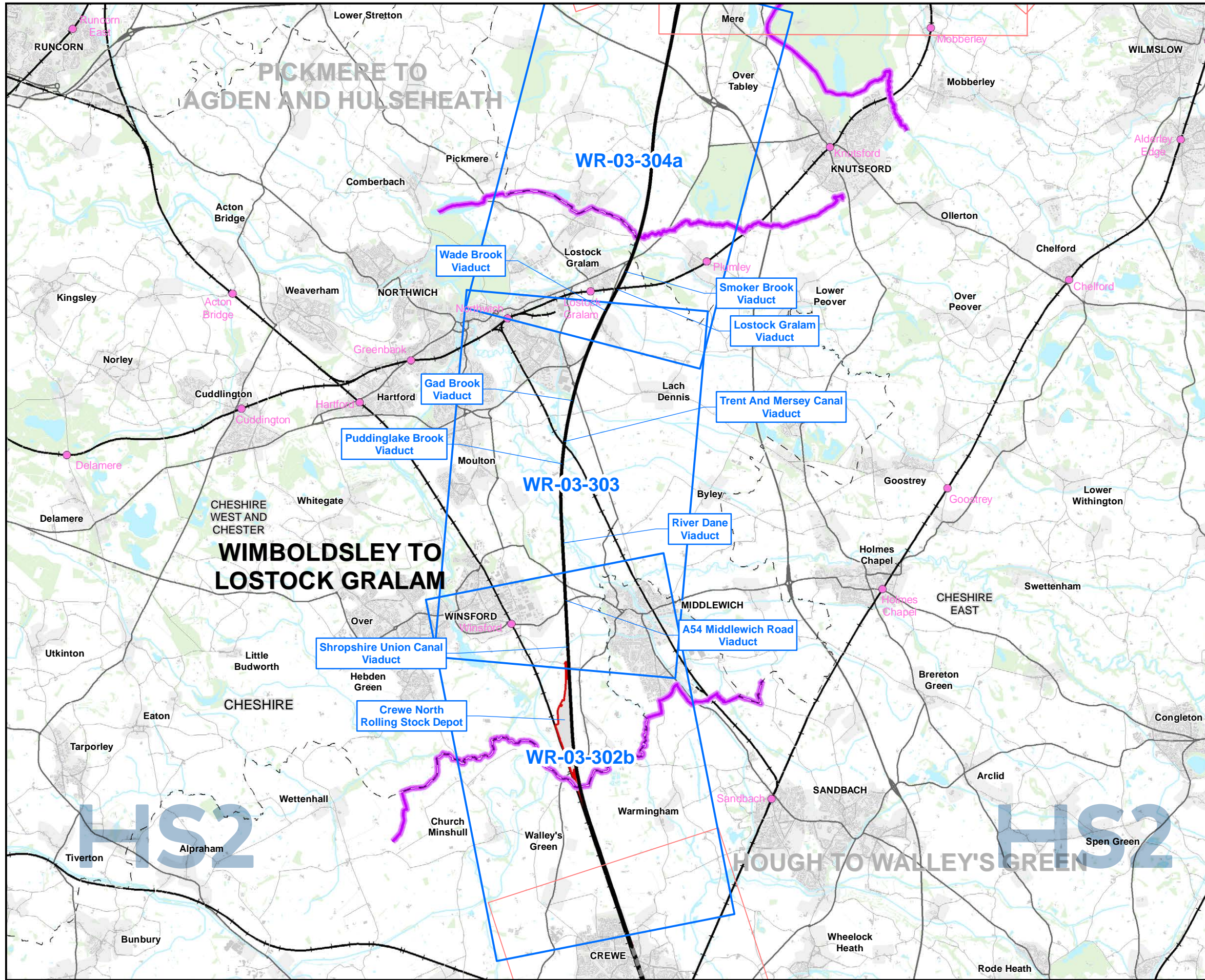
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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number WR-03-INDEX-MA02

Map Name
**Index Map of:
 Water Framework Directive**

Community Area MA02:
 Wimboldsley to Lostock Gralam

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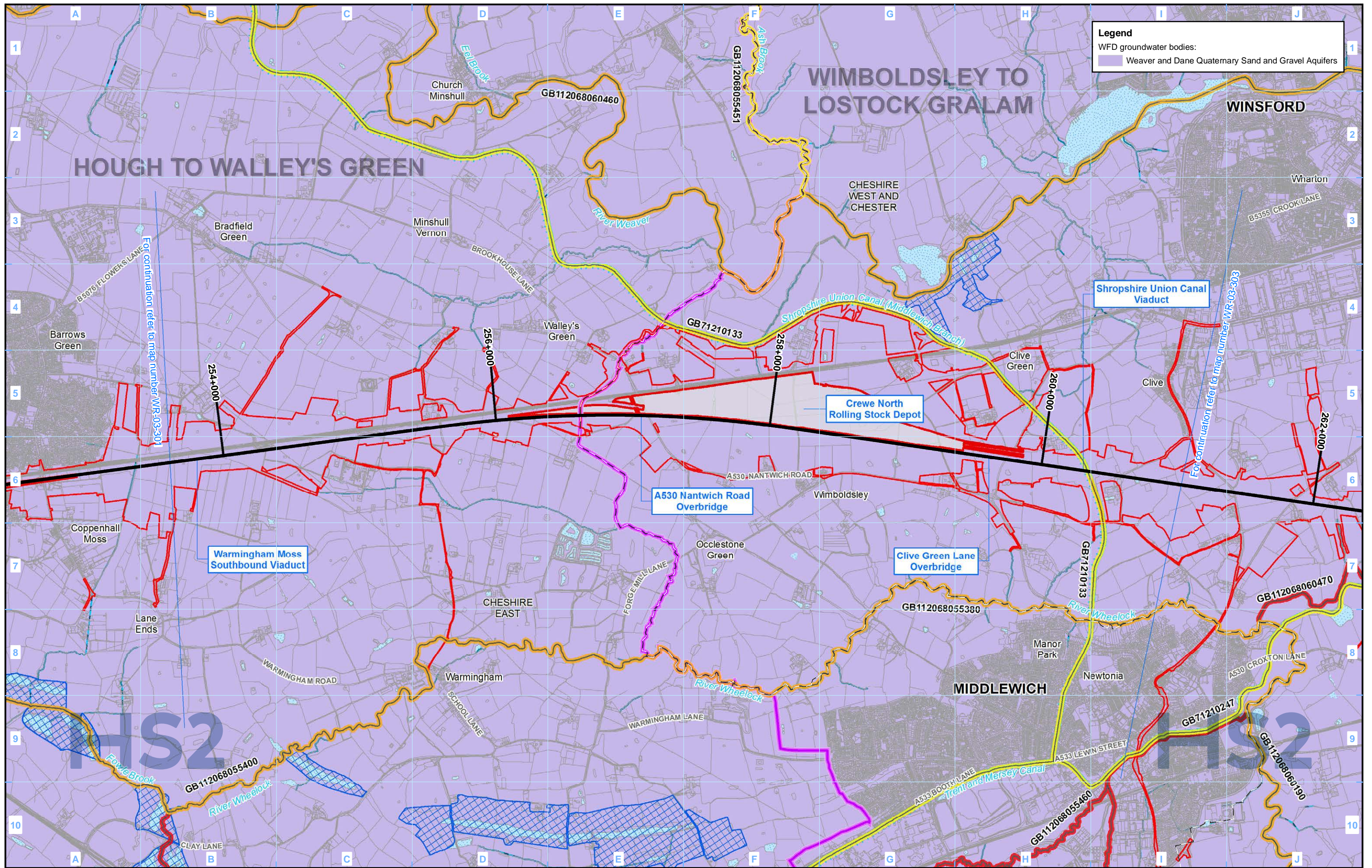
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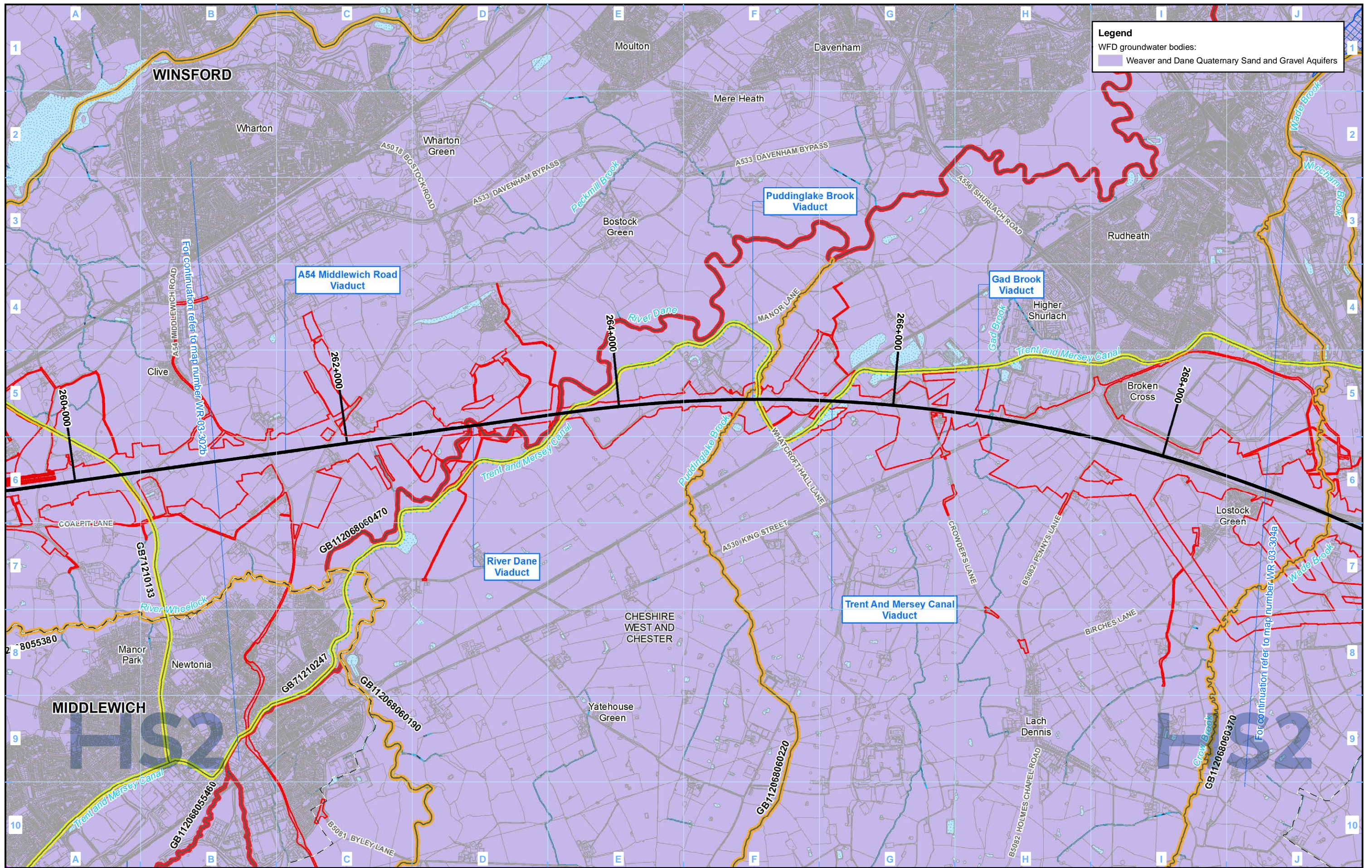
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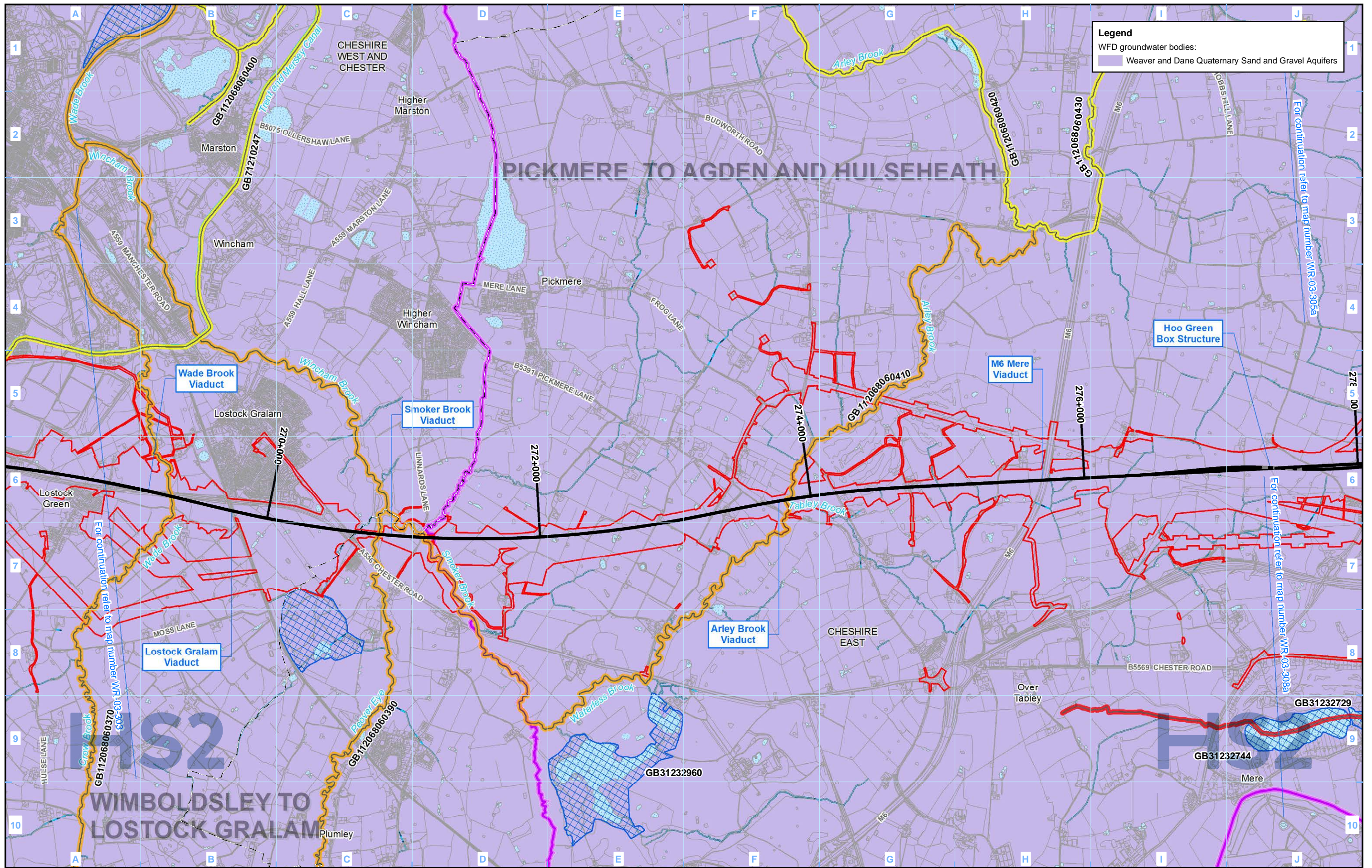
Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

<p>Legend</p> <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies</p> <p>Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes</p> <p>Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI)
<p>Map Number: WR-03-302b</p> <p>Map Name: Water Framework Directive</p>		<p>Community Area MA02: Wimboldsley to Lostock Gralam</p>		
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Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

<p>Legend</p> <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI) 	<p>Map Number: WR-03-303</p> <p>Map Name: Water Framework Directive</p> <p>Community Area MA02: Wimboldsley to Lostock Gralam</p>	<p>HS2</p> <p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6QA.</p> <p>© Crown copyright and database rights 2020 OS 100049190</p> <p>Doc Number: 2DE01-MWJ-EV-MAP-M000-002258-P01</p> <p>Date: 11/08/21</p> <p>Scale at A3: 1:25,000</p> <p>Metres</p>
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Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

WFD Surface Water Bodies
 Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes
 Overall Status:

- Good
- Moderate
- Poor
- Bad

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

Map Number: WR-03-304a
 Map Name: Water Framework Directive
 Community Area MA02:
 Wimboldsley to Lostock Gralam

HS2

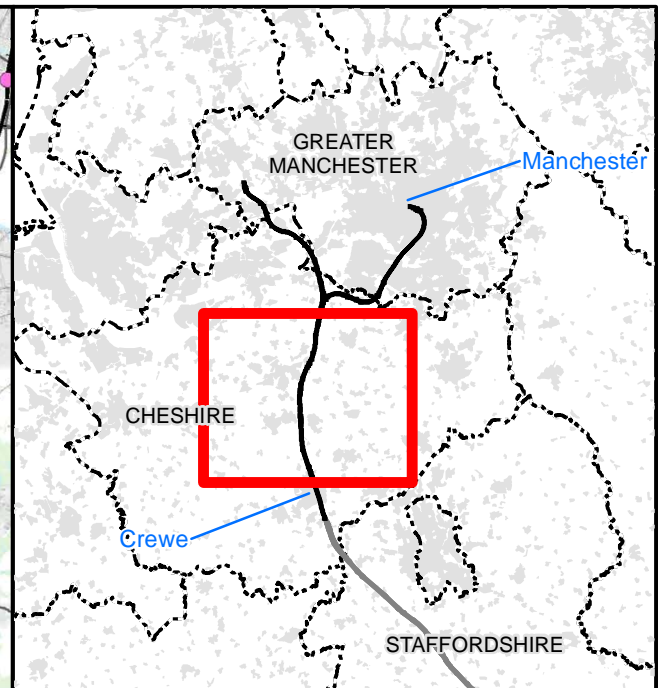
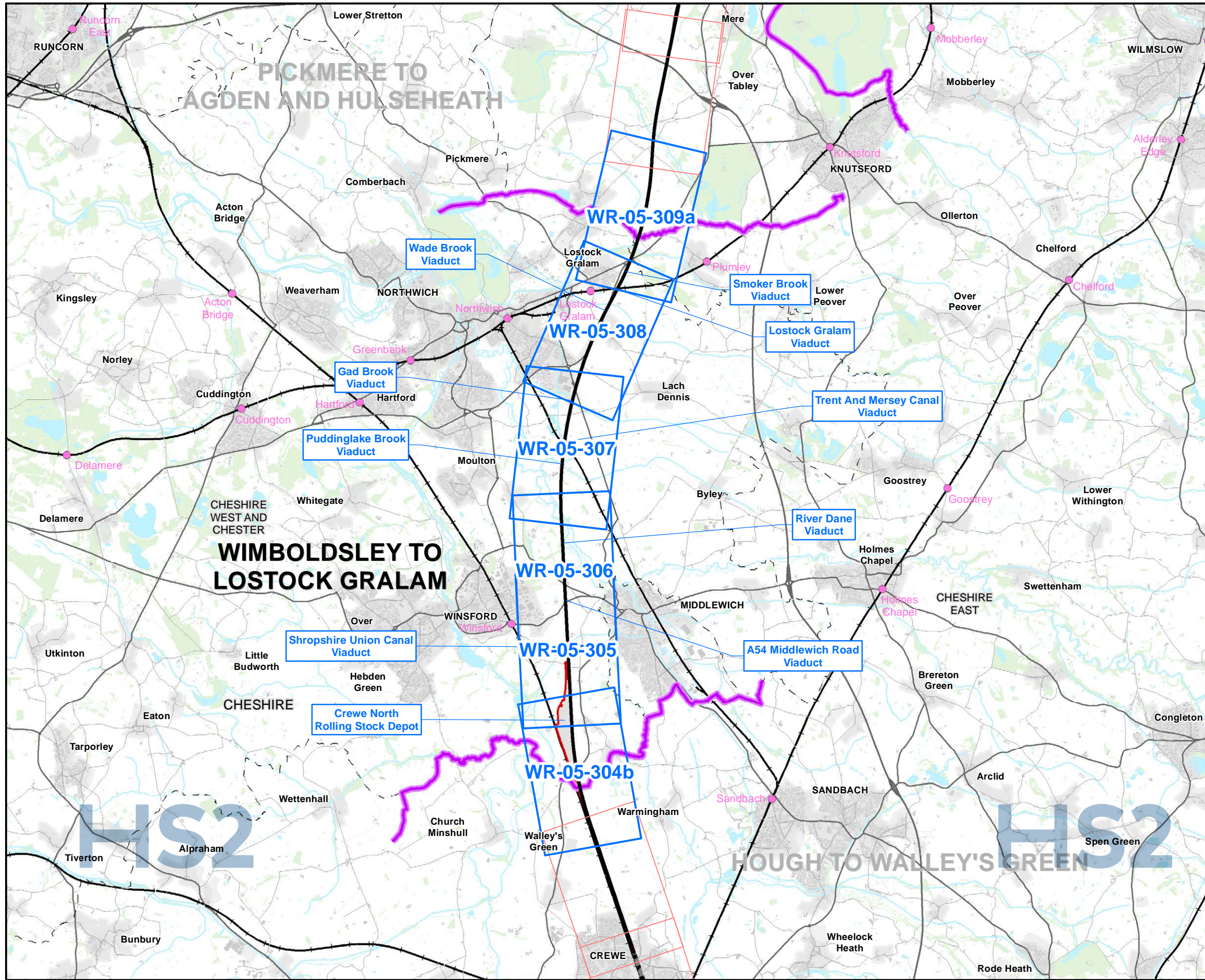
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 Date: 11/08/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-05-INDEX-MA02**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 100 including Climate Change (1%+CC)
 Annual Probability of River Flooding

Community Area MA02:
 Wimboldsley to Lostock Gralam

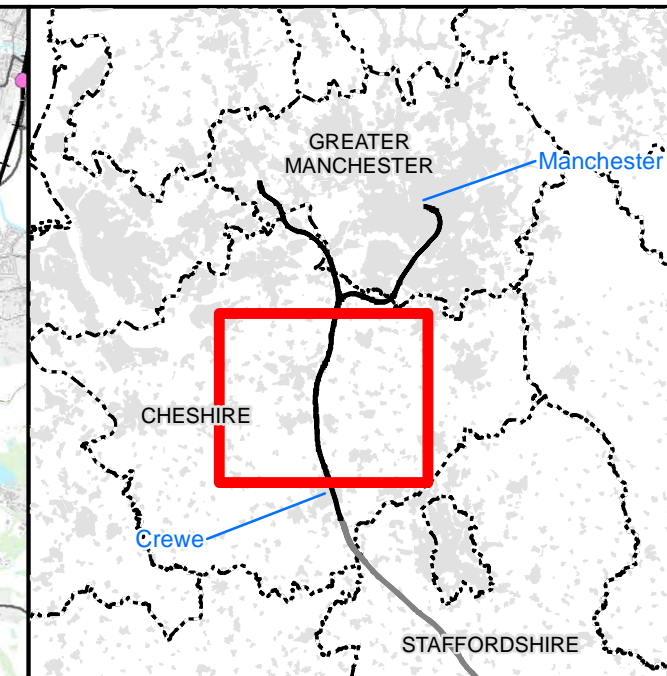
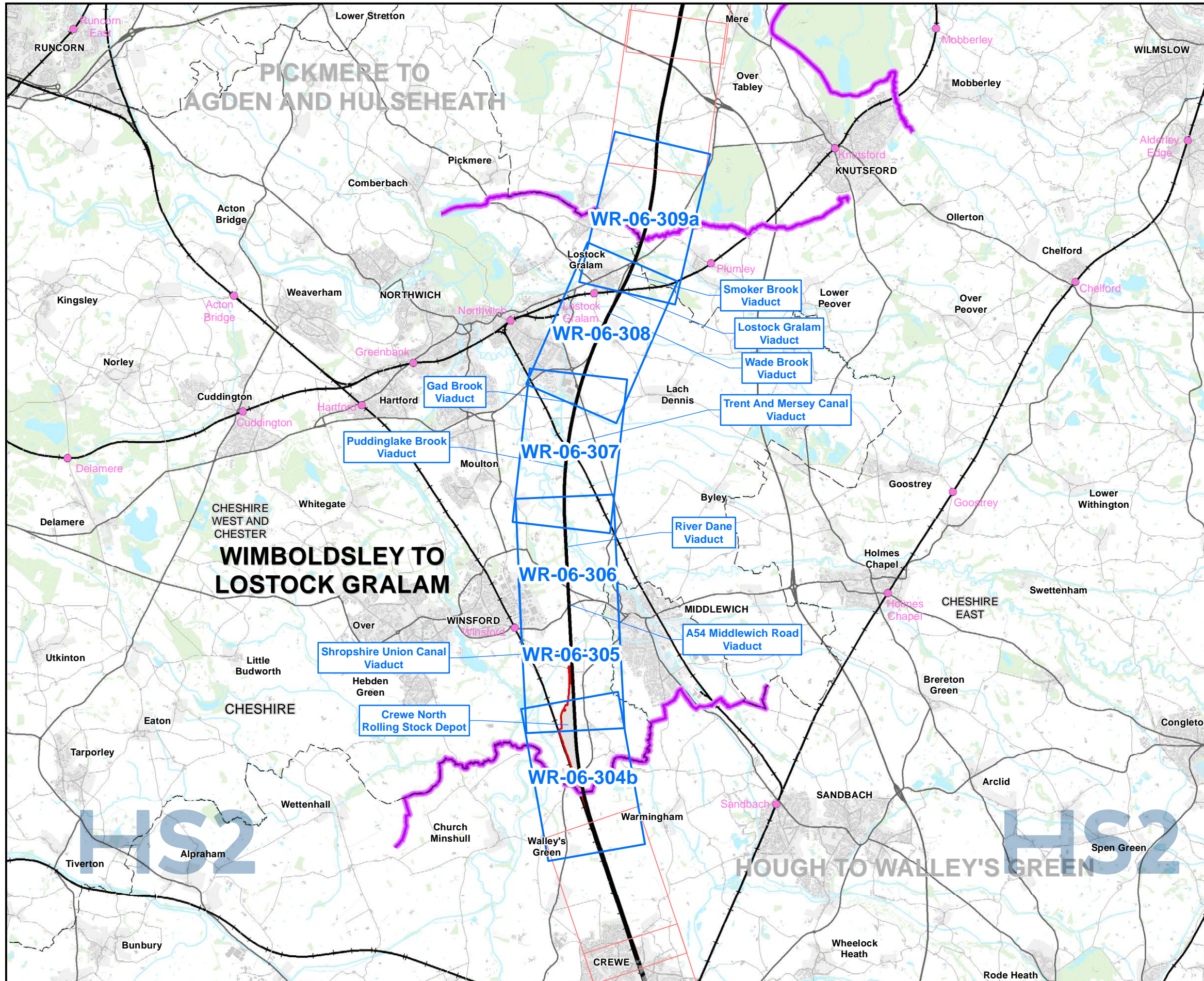
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002322-P01 Date: 07/10/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number	WR-06-INDEX-MA02
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA02: Wimboldsley to Lostock Gralam

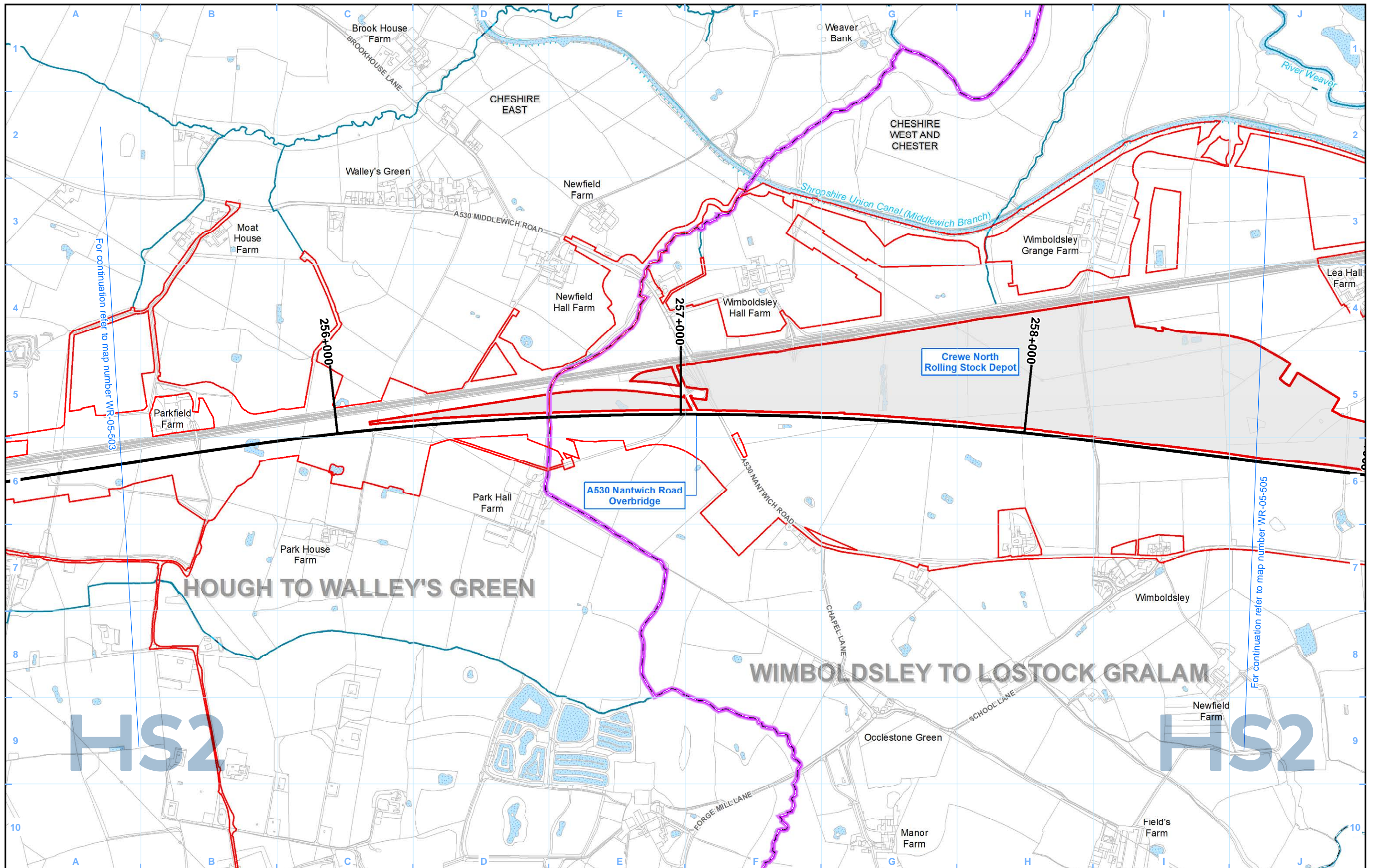
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002368-P01 Date: 12/10/21



Legend			
	Route in tunnel		Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Route on surface		Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Depot, station, headhouse or portal building		Canal
	Land potentially required during construction		Canal tunnel
	Community area boundary		Open water
	County boundary		
	District/Borough boundary		

Map Number	WR-05-304b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Community Area MA02: Wimboldsley to Lostock Gralam

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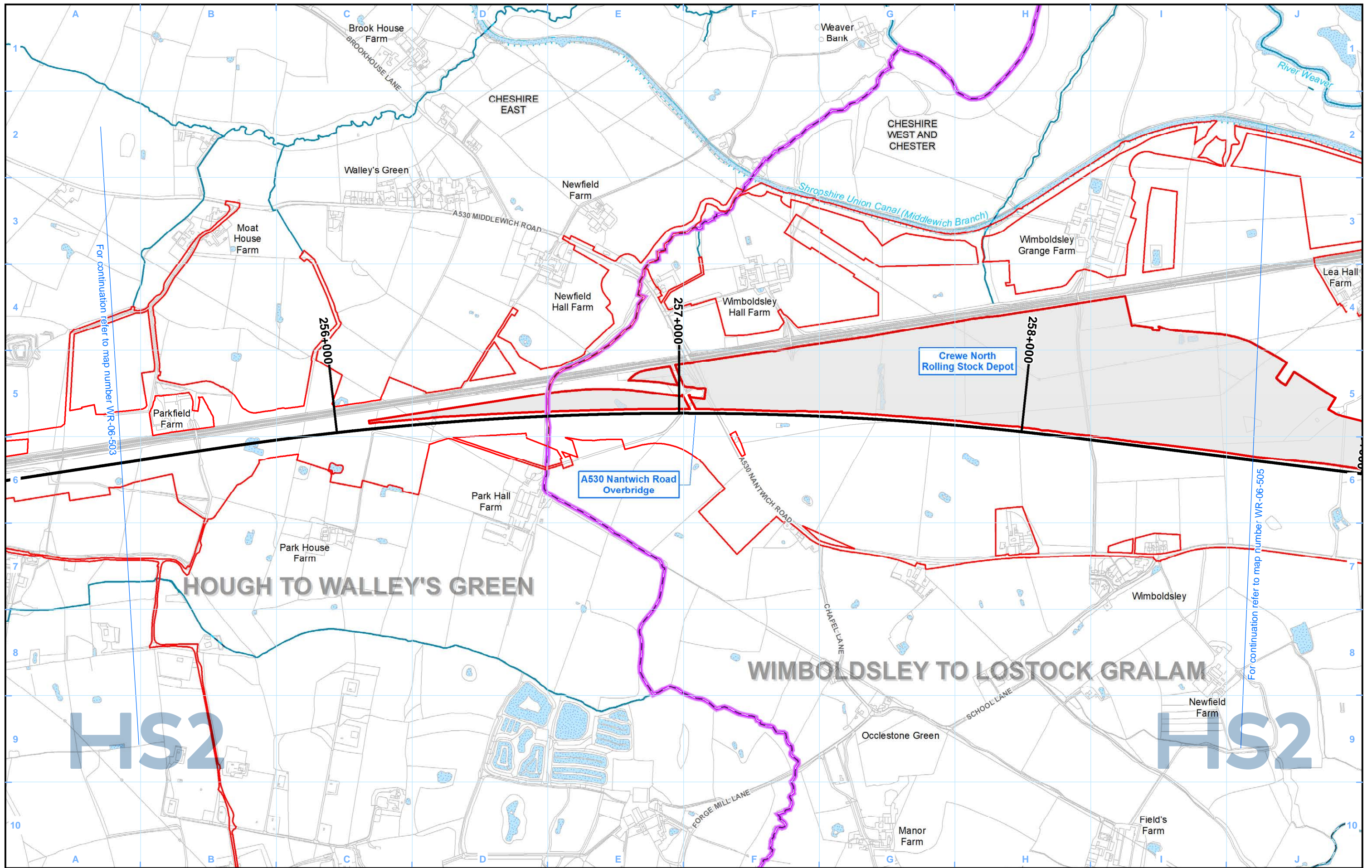
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Scale at A3: 1:10,000

Metres

Date: 16/09/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-304b

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

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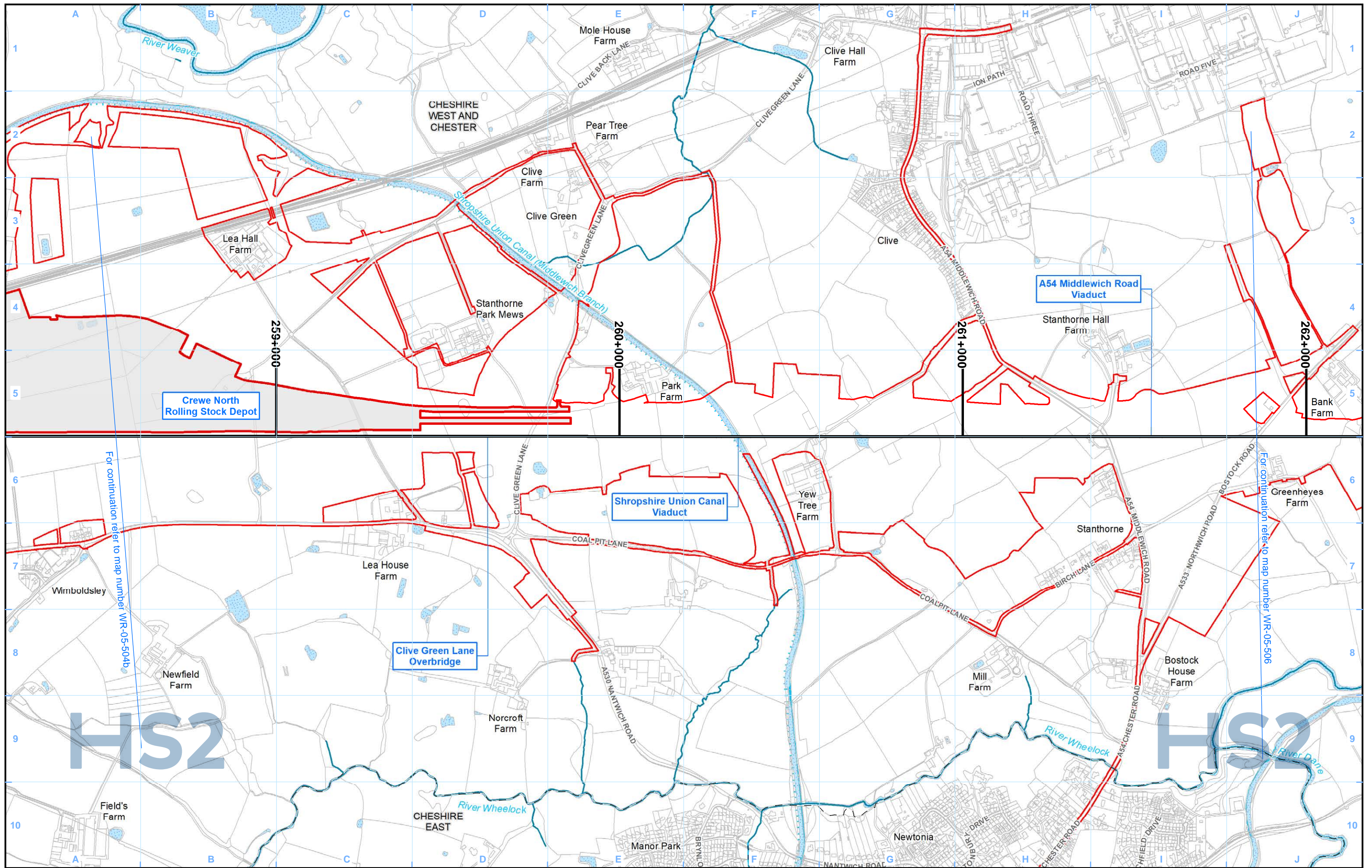
Scale at A3: 1:10,000

0 100 200 300 400 Metres

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For continuation refer to map number WR-06-503

For continuation refer to map number WR-06-505



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: WR-05-305

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

HS2

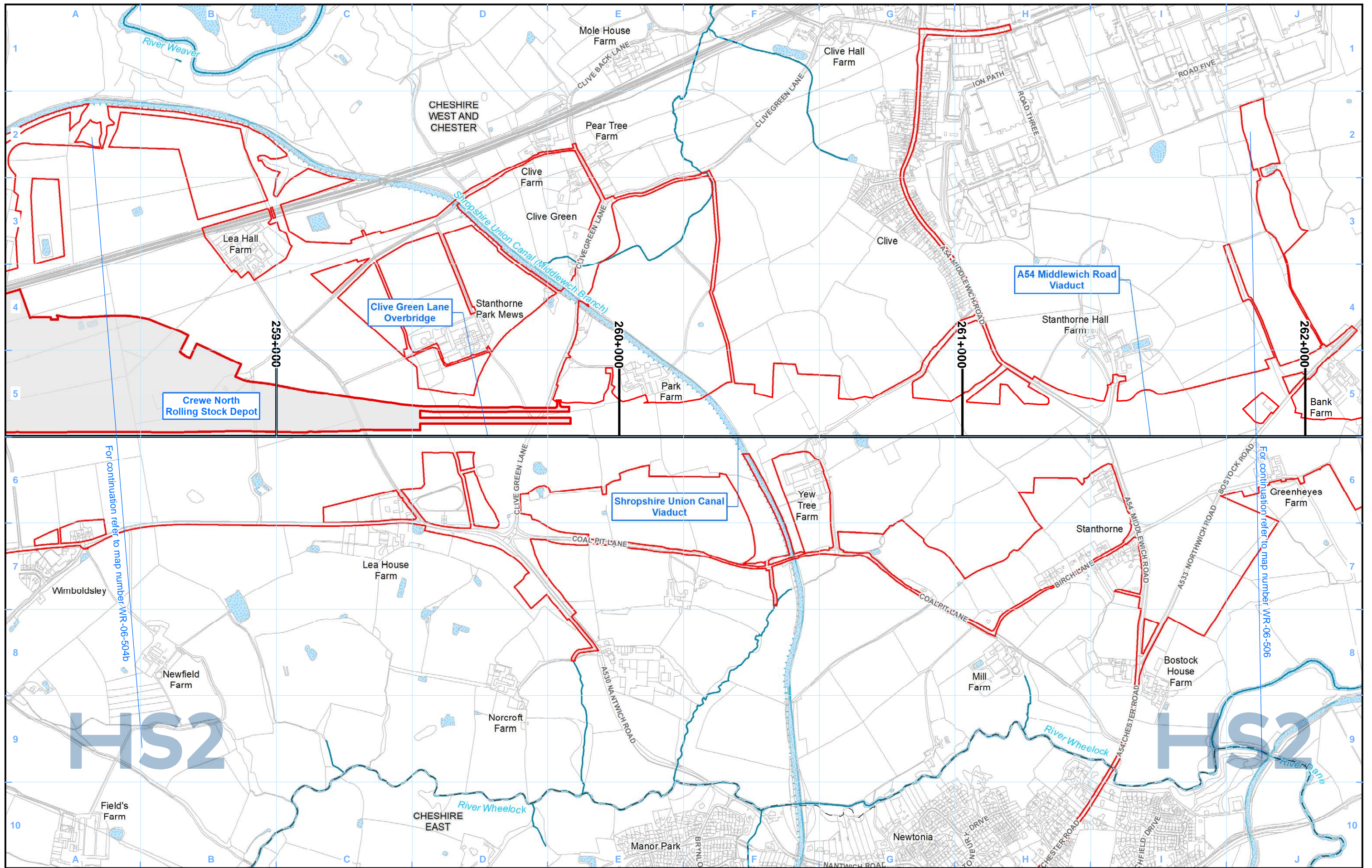
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002291-P01

Date: 16/09/21



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	Canal tunnel
Land potentially required during construction	Open water	
Community area boundary		
County boundary		
District/Borough boundary		

Map Number: WR-06-305

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

Map Number: WR-06-305

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

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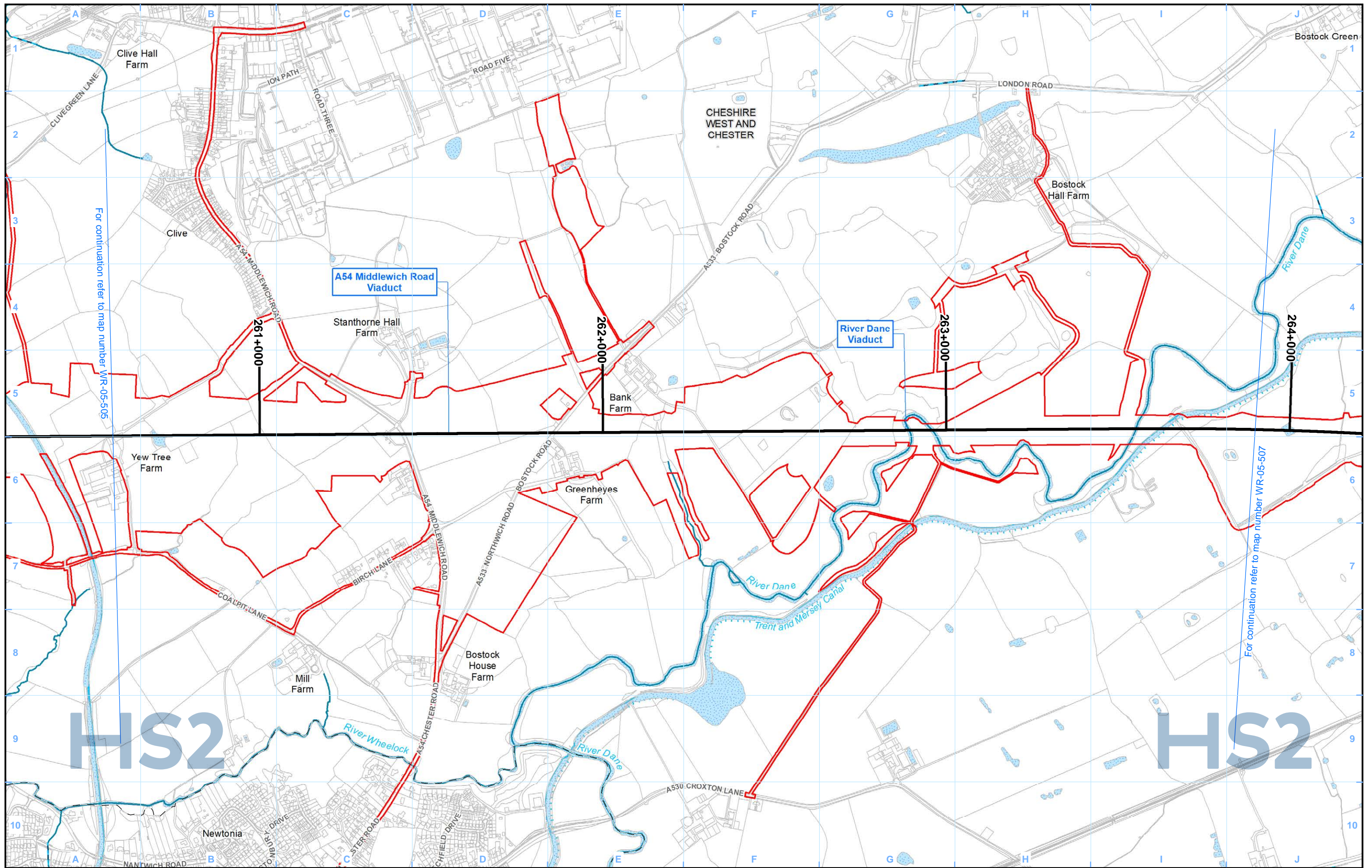
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002337-P01

Date: 14/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-306**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA02:
Wimboldsley to Lostock Gralam

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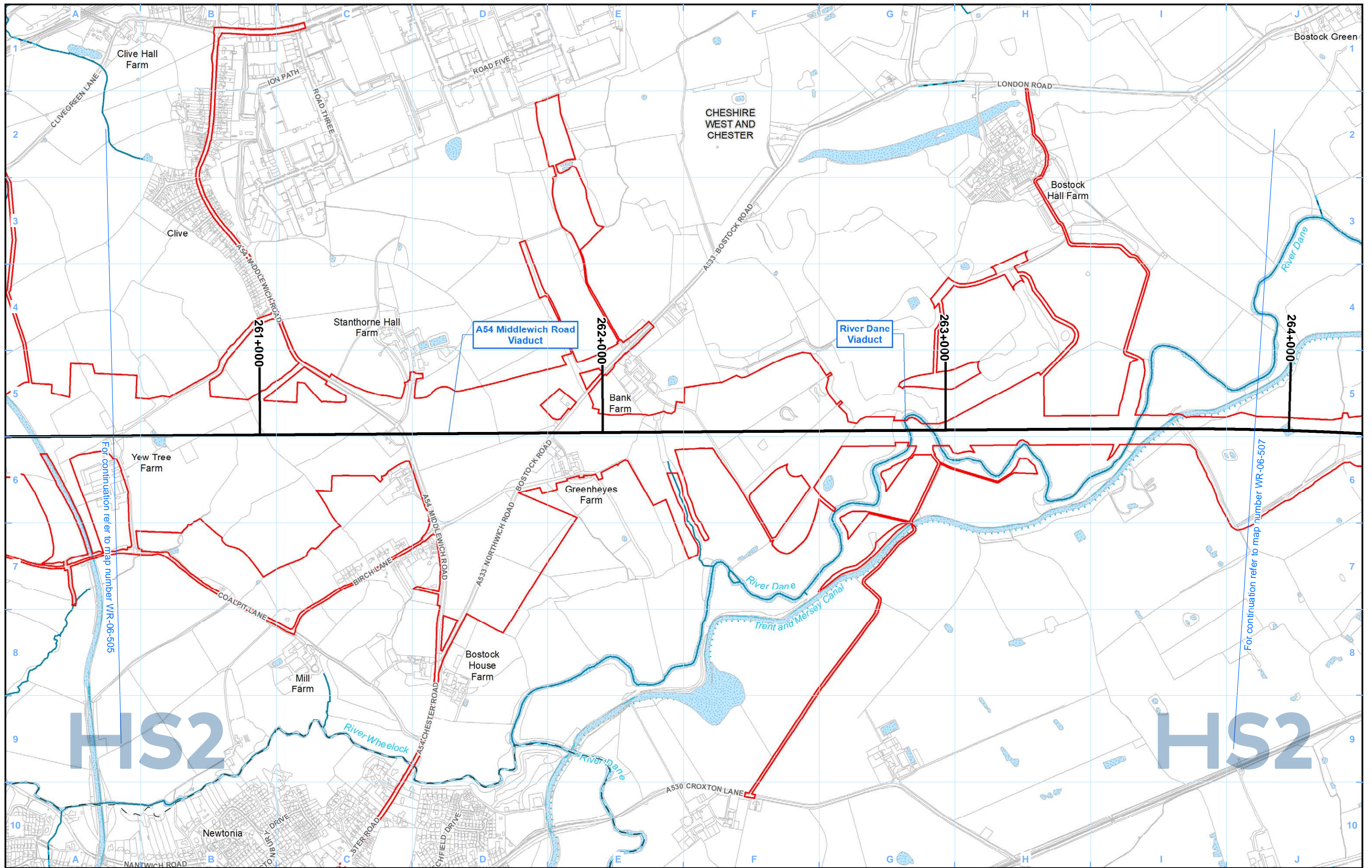
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002292-P01

Date: 16/09/21

For continuation refer to map number WR-05-505

For continuation refer to map number WR-05-507



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-306**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA02: **Wimboldsley to Lostock Gralam**

HS2

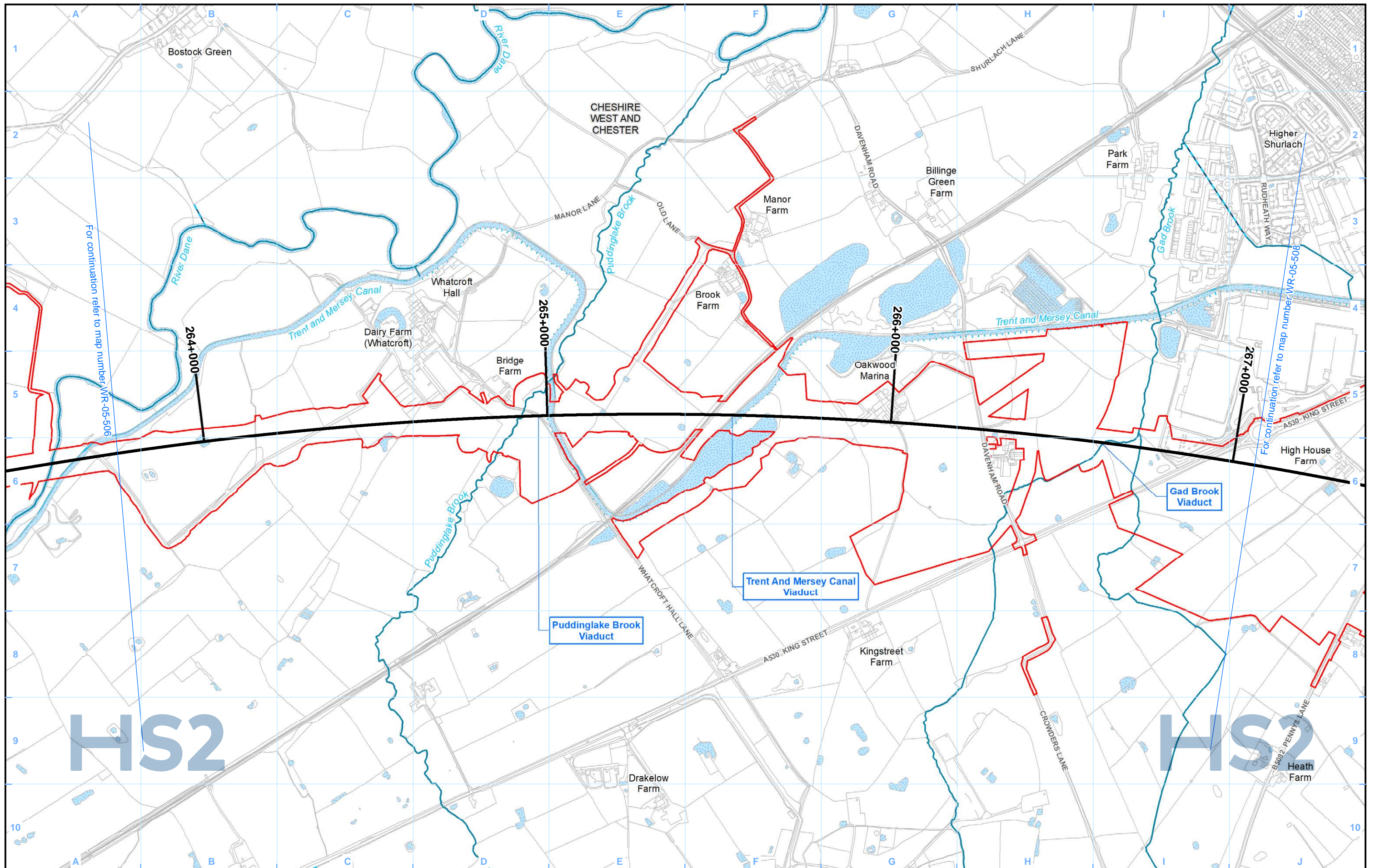
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002338-P01

Date: 14/10/21



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	Open water
Land potentially required during construction	Canal tunnel	
Community area boundary		
County boundary		
District/Borough boundary		

Map Number	WR-05-307
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Community Area MA02: Wimboldsley to Lostock Gralam

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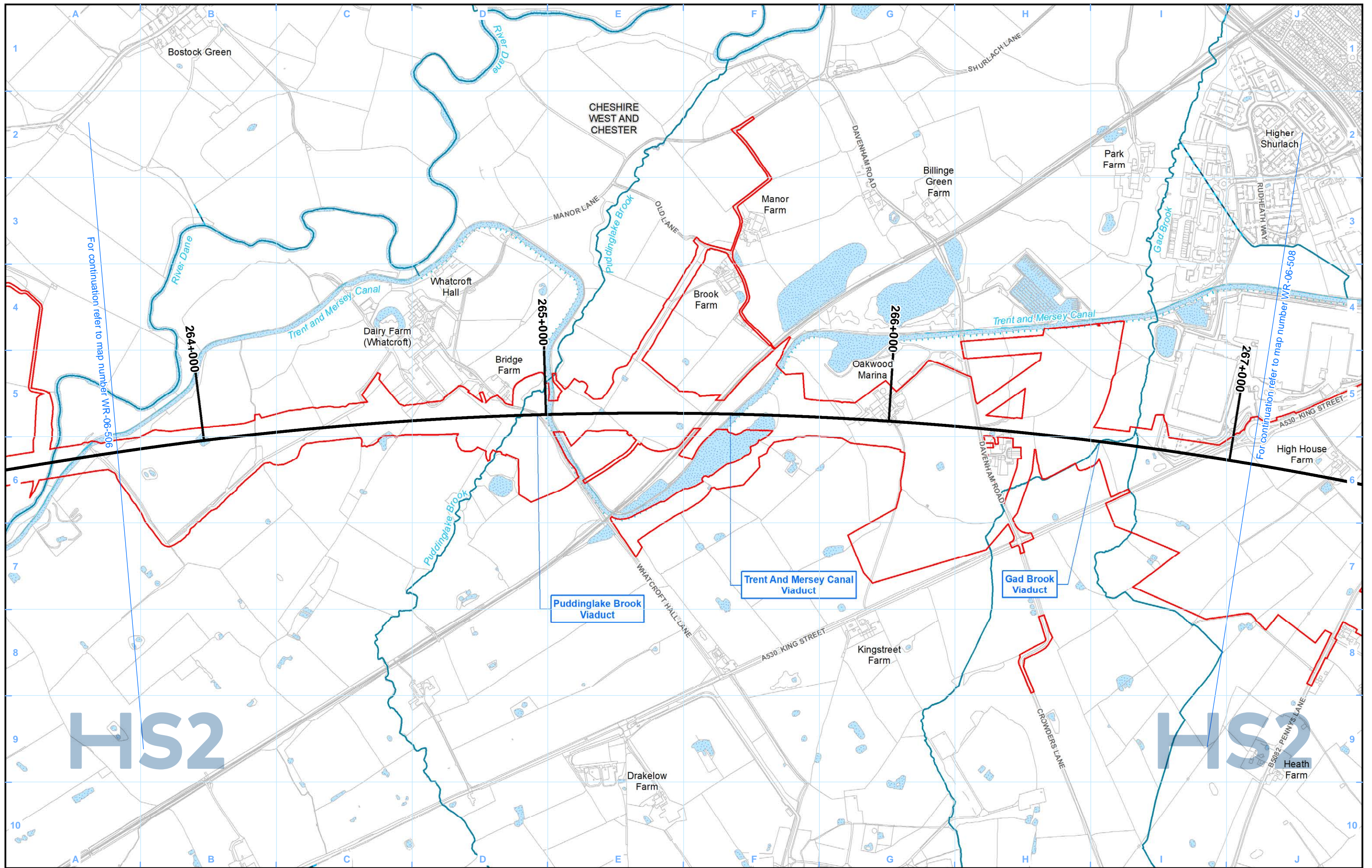
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Date: 16/09/21

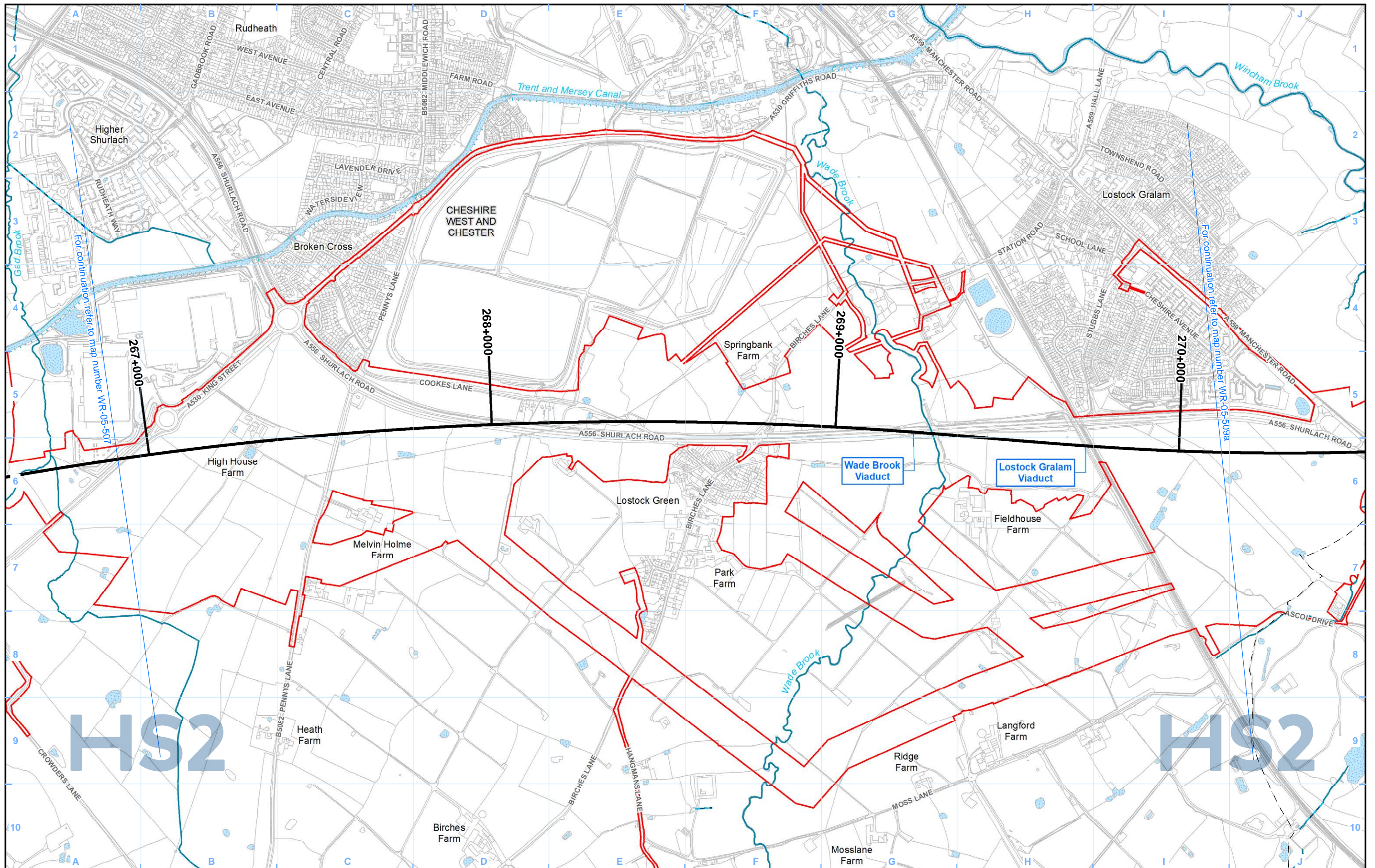
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Scale at A3: 1:10,000

Metres



Legend <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary Watercourse Culverted watercourse Canal Canal tunnel Open water Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding 		<p>Map Number: WR-06-307</p> <p>Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding</p> <p>Community Area MA02: Wimboldsley to Lostock Gralam</p>	<p>HS2</p> <p>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.</p> <p>© Crown copyright and database rights 2020 OS 100049190</p> <p>Doc Number: 2DE01-MWJ-EV-MAP-M000-002339-P01</p>	<p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Scale at A3: 1:10,000</p> <p>0 100 200 300 400 Metres</p> <p>Date: 14/10/21</p>
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Legend

Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-308
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA02: Wimboldsley to Lostock Gralam	

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Date: 16/09/21

For continuation refer to map number WR-05-509A

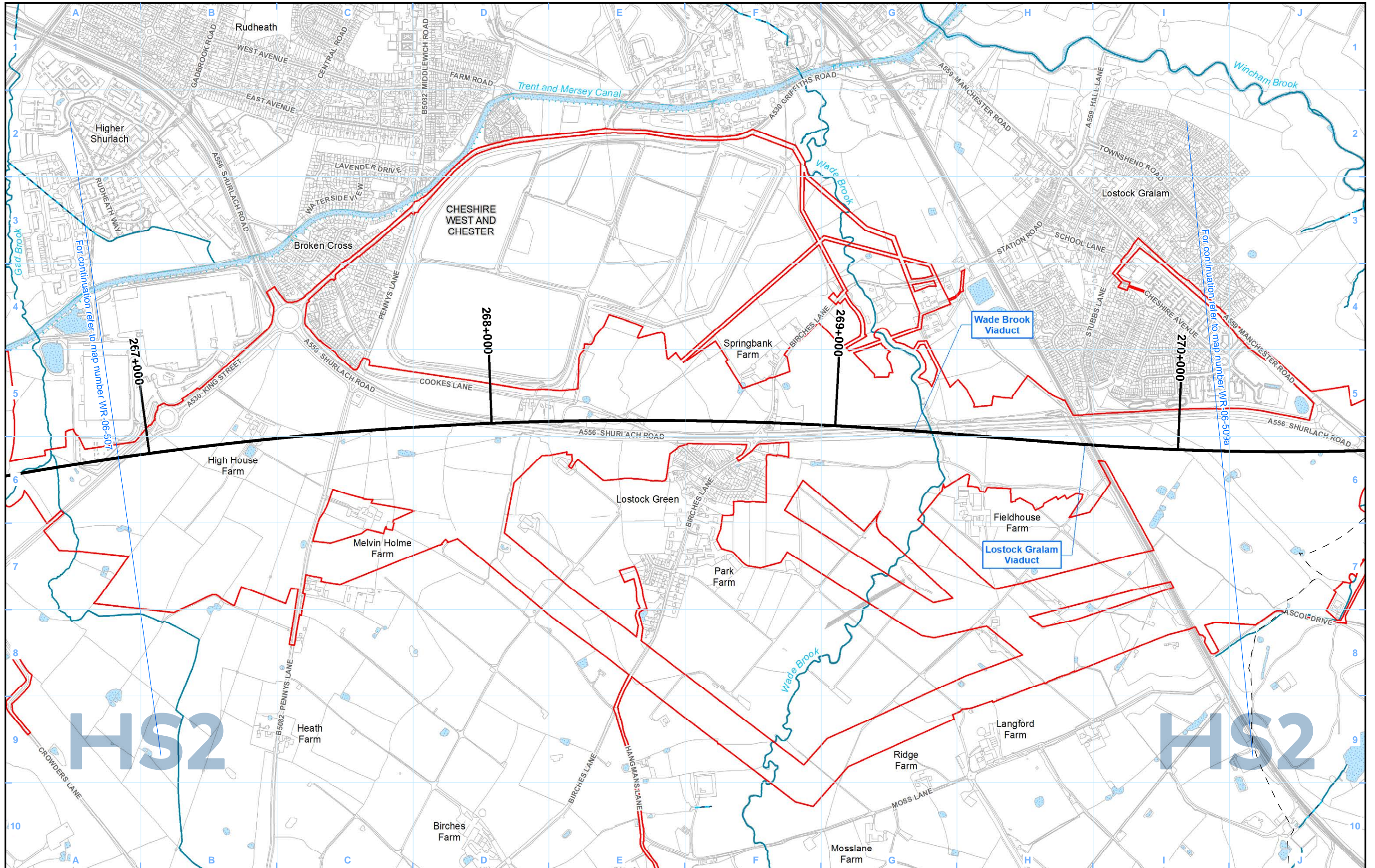
For continuation refer to map number WR-05-507

267+000

268+000

269+000

270+000

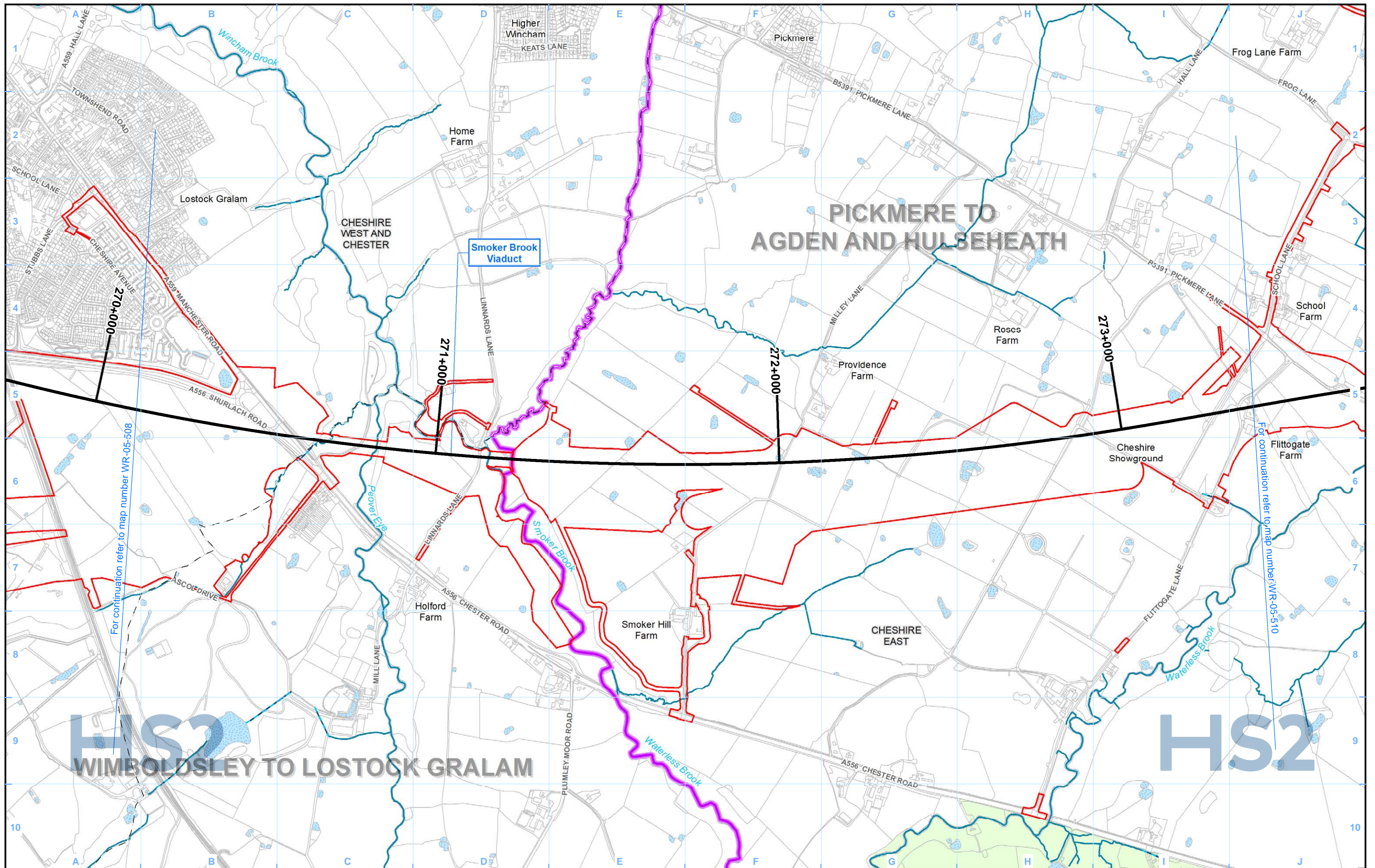


- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number WR-06-308	HS2 Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.	
Map Name Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding	Scale at A3: 1:10,000	
Community Area MA02: Wimboldsley to Lostock Gralam		
Doc Number: 2DE01-MWJ-EV-MAP-M000-002340-P01	Date: 14/10/21	

For continuation refer to map number WR-06-507

For continuation refer to map number WR-06-509A



Legend

Map Number: WR-05-309a

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

Map Number: WR-05-309a

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA02: Wimboldsley to Lostock Gralam

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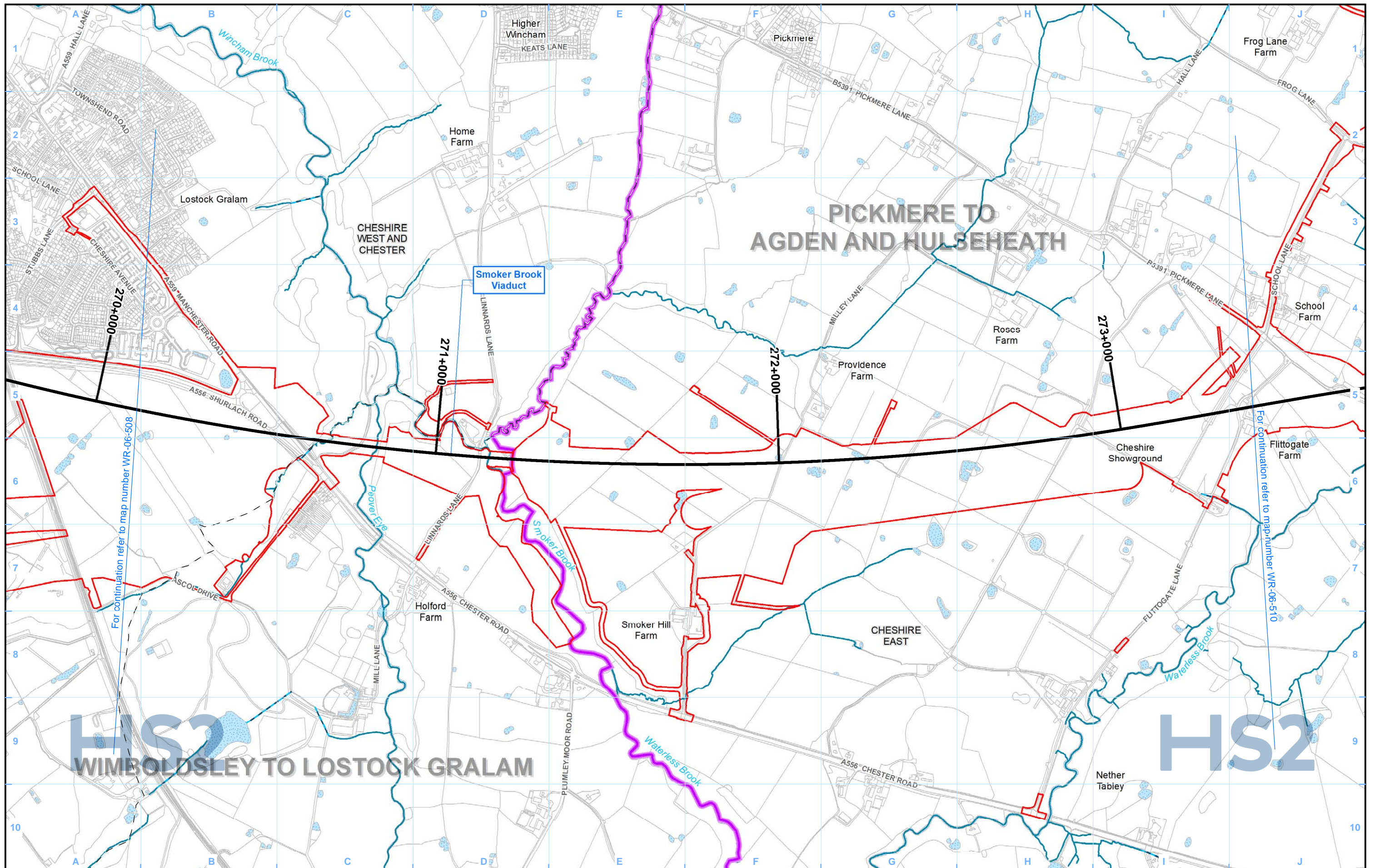
Date: 16/09/21

Scale at A3: 1:10,000

0 100 200 300 400 Metres

For continuation refer to map number WR-05-508

For continuation refer to map number WR-05-510



PICKMERE TO AGDEN AND HULSEHEATH

WIMBOLDSLEY TO LOSTOCK GRALAM

- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water

- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number	WR-06-309a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA02: Wimboldsley to Lostock Gralam

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA03: Pickmere to Agden and Hulseheath

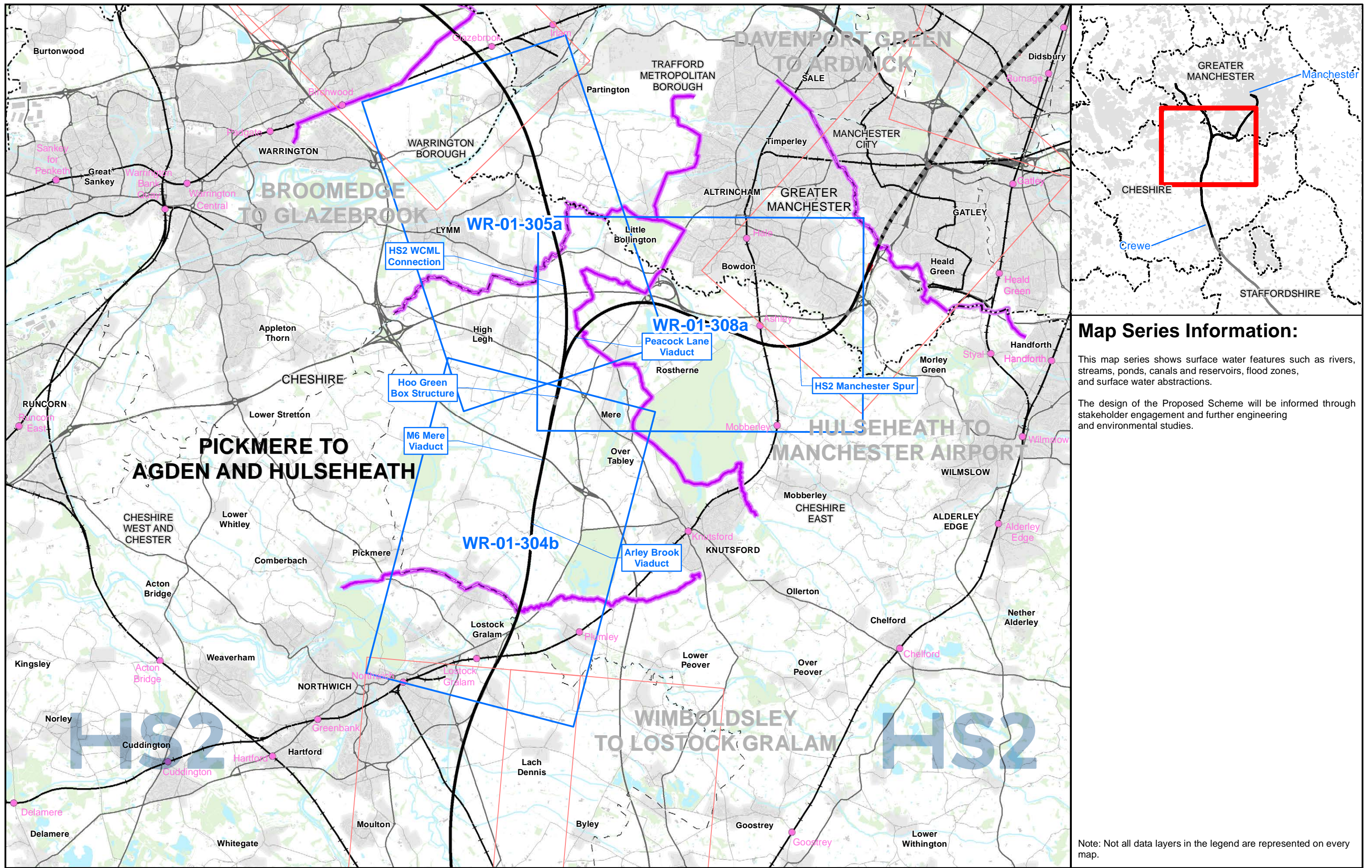
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number: WR-01-INDEX-MA03

Map Name: Index Map of:
Surface Water Baseline

Community Area MA03:
Pickmere to Agden and Hulseheath

HS2

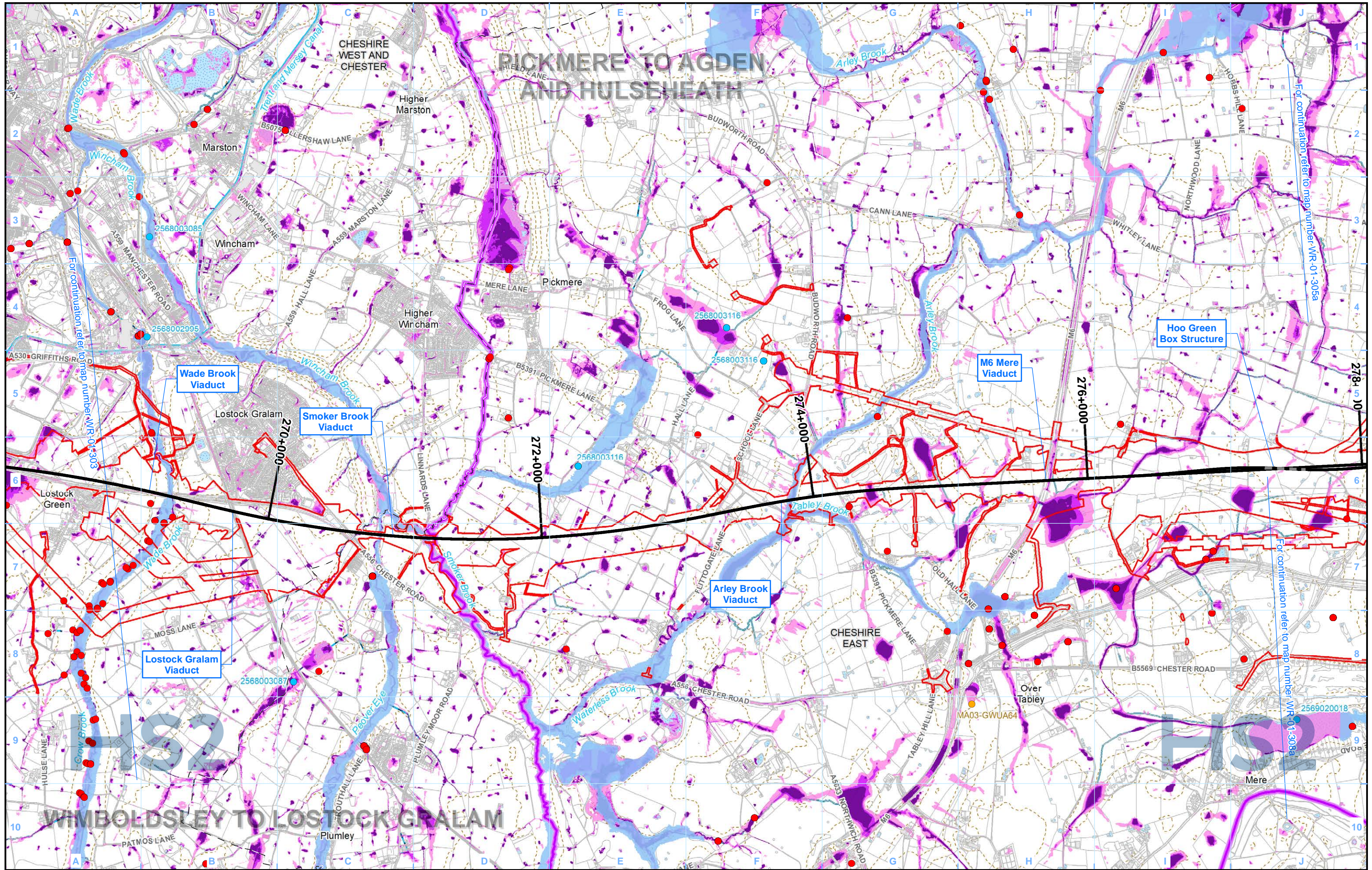
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000307-P05

Date: 12/08/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-304b

Map Name: Surface Water Baseline

Community Area MA03:
Pickmere to Agden and Hulseheath

HS2

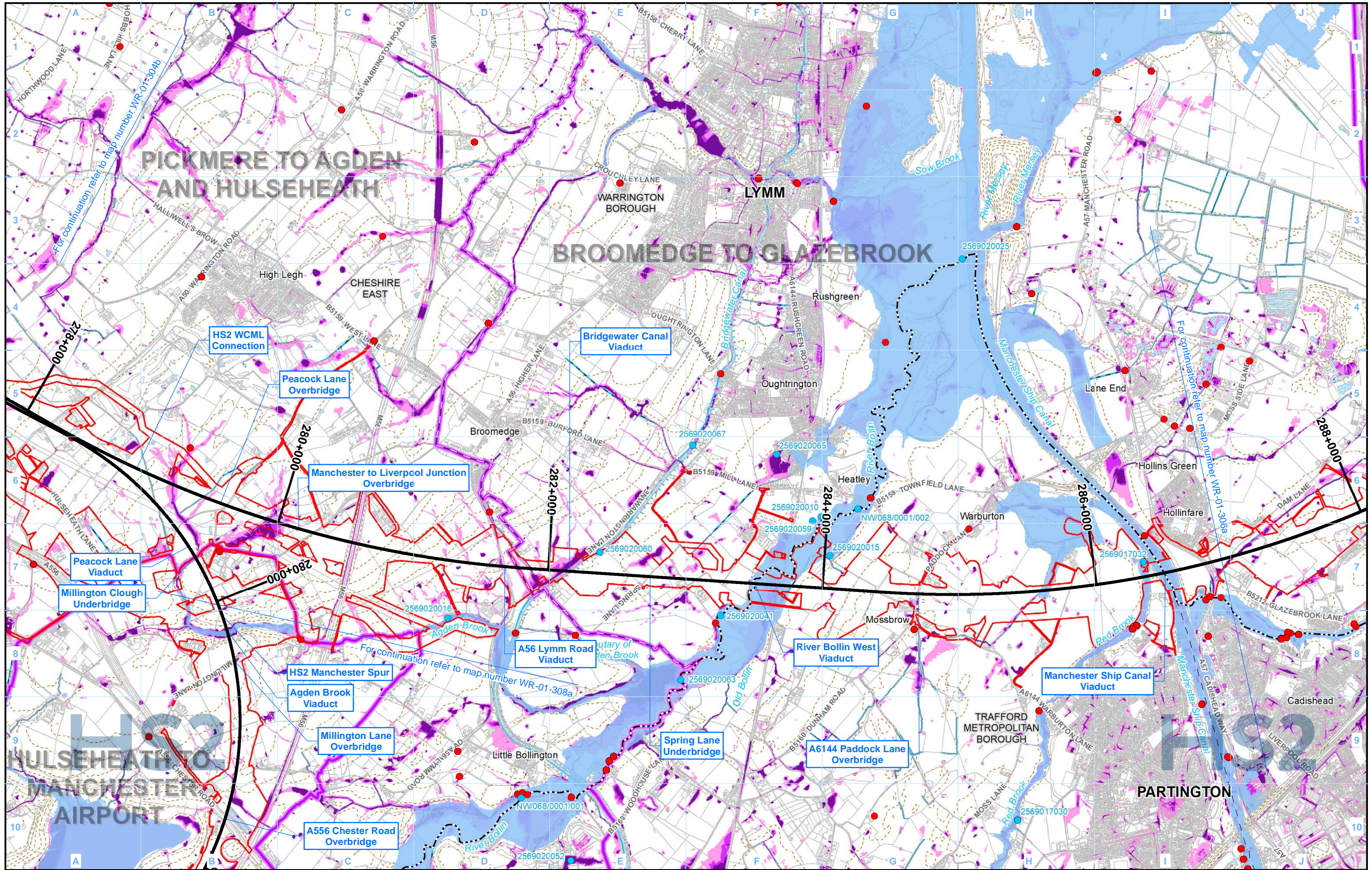
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000296-P05

Date: 12/08/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

- Fluvial flood risk:**
- Flood Zone 2
 - Flood Zone 3

- Risk of Flooding from Surface Water:**
- High - chance of flooding greater than 1 in 30 (3.33%)
 - Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-305a**

Map Name: **Surface Water Baseline**

Community Area MA03:
Pickmere to Agden and Hulseheath

HS2

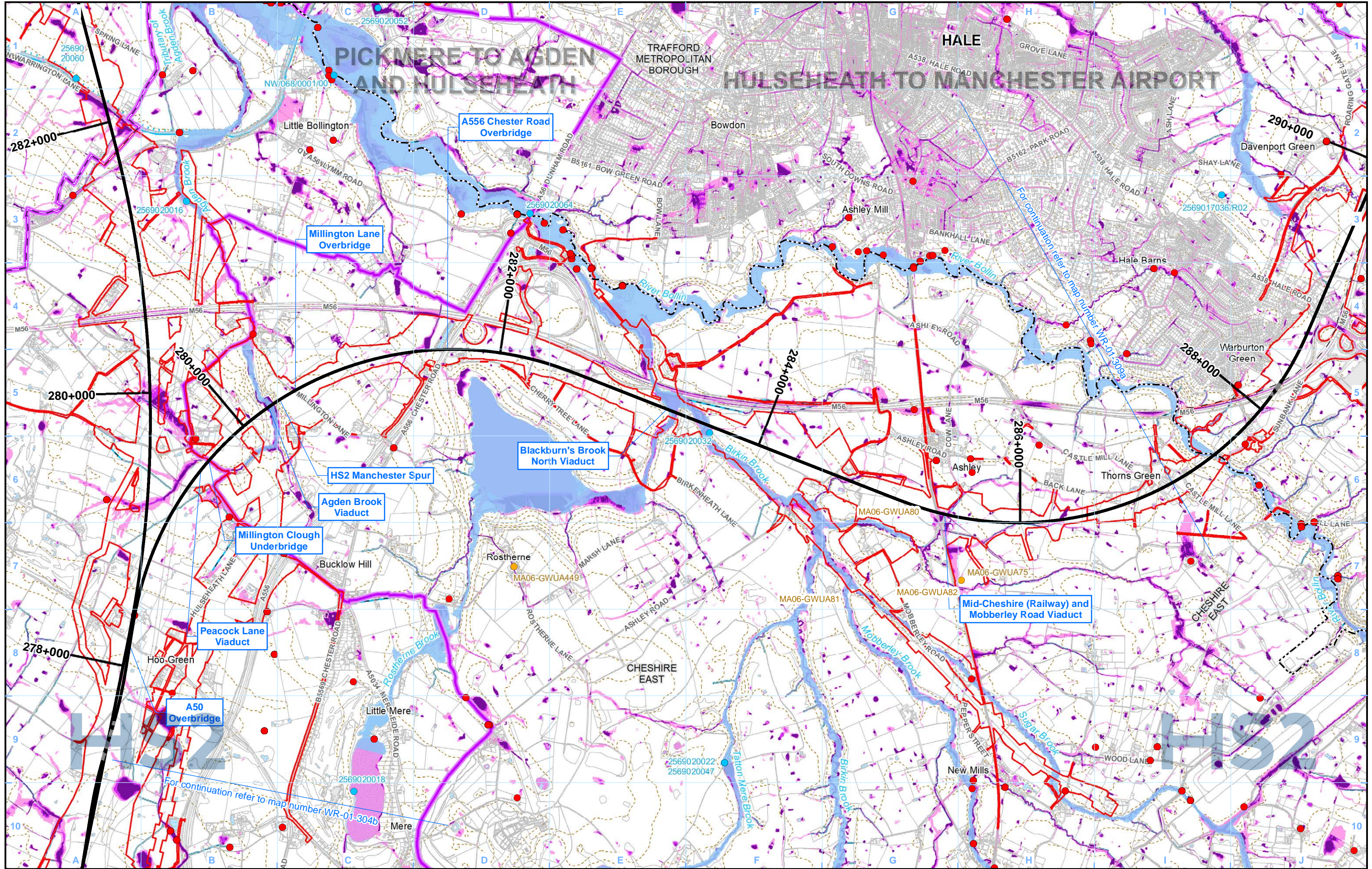
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000297-P05

Date: 12/08/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

- Fluvial flood risk:**
- Flood Zone 2
 - Flood Zone 3

- Risk of Flooding from Surface Water:**
- High - chance of flooding greater than 1 in 30 (3.33%)
 - Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-308a**

Map Name: **Surface Water Baseline**

Community Area MA03:
Pickmere to Agden and Hulseheath

HS2

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6QA.

Scale at A3: 1:25,000

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OS 100049190

Doc Number: 2DE01-MWJ-EV-MAP-M000-000302-P05

Date: 12/08/21

Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RRG-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNESLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GVA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SQB-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YVR-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Doc Number: 2EV01-ARP-GI-MAP-M000-000253

Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINGTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



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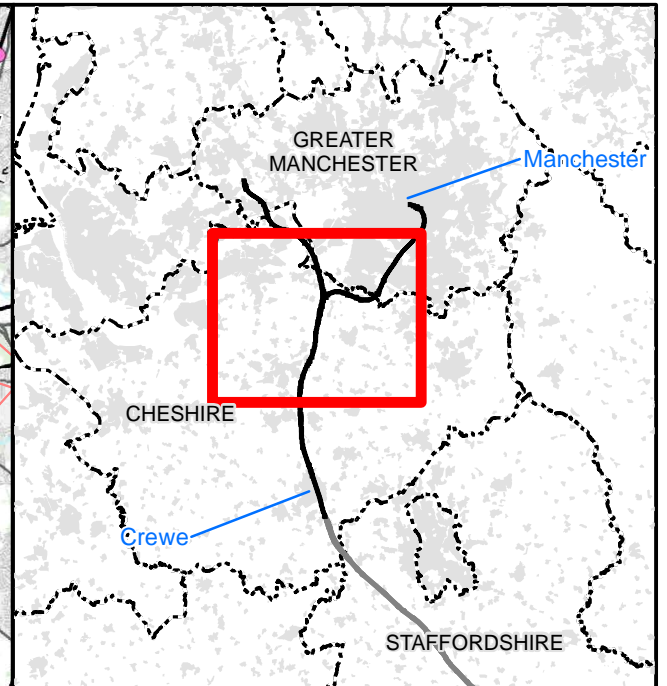
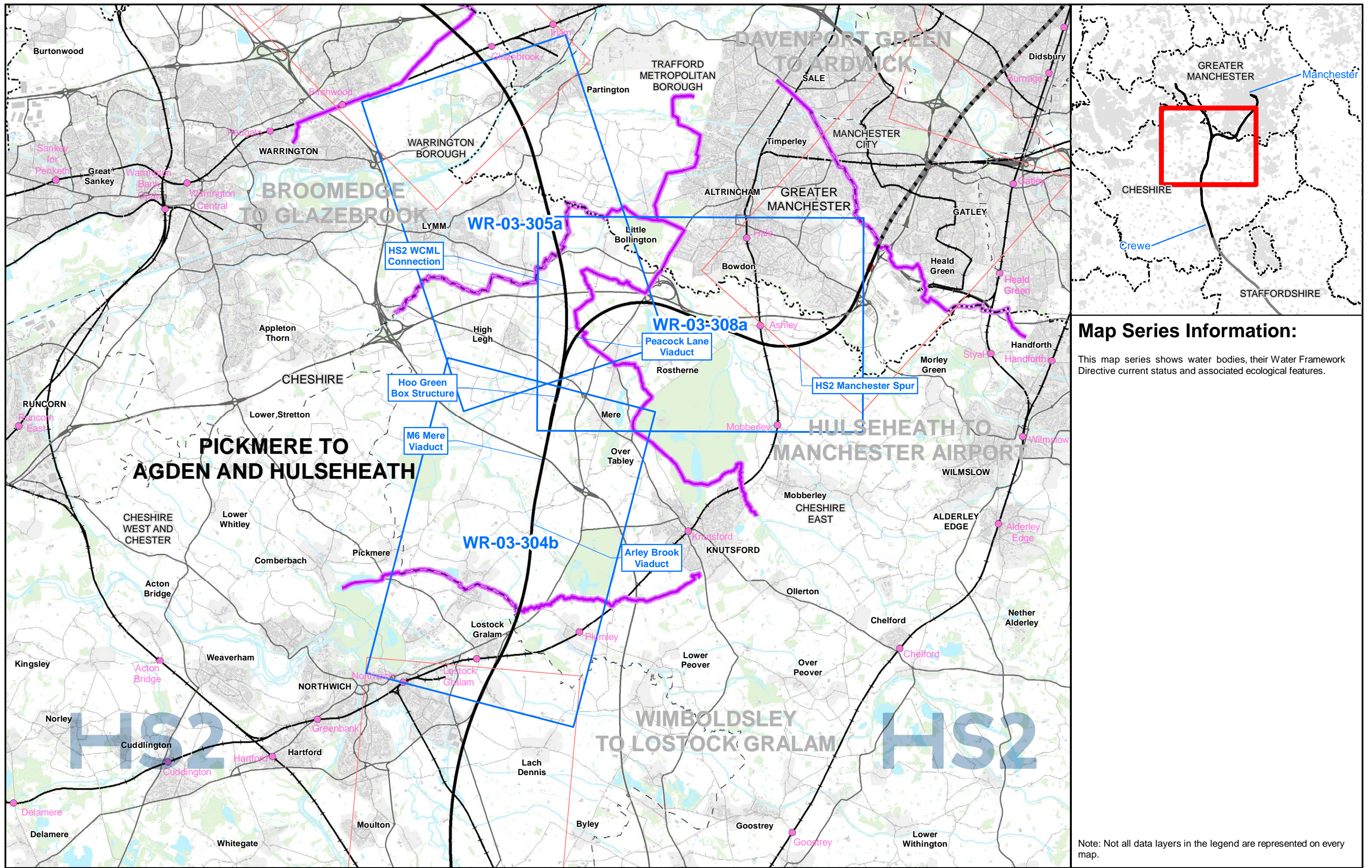
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Date: 13/08/21

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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: WR-03-INDEX-MA03

Map Name: Index Map of: Water Framework Directive

Community Area MA03: Pickmere to Agden and Hulseheath

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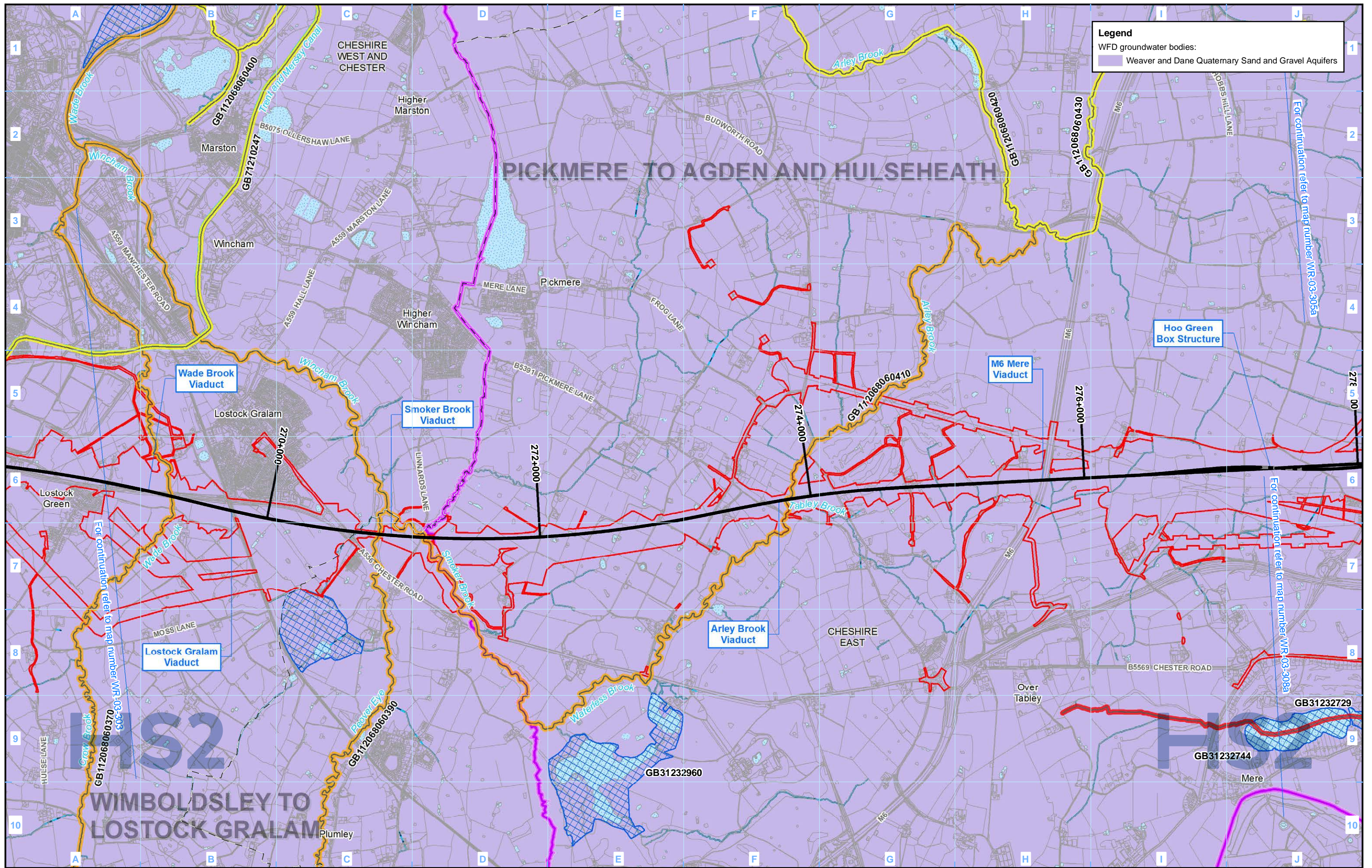
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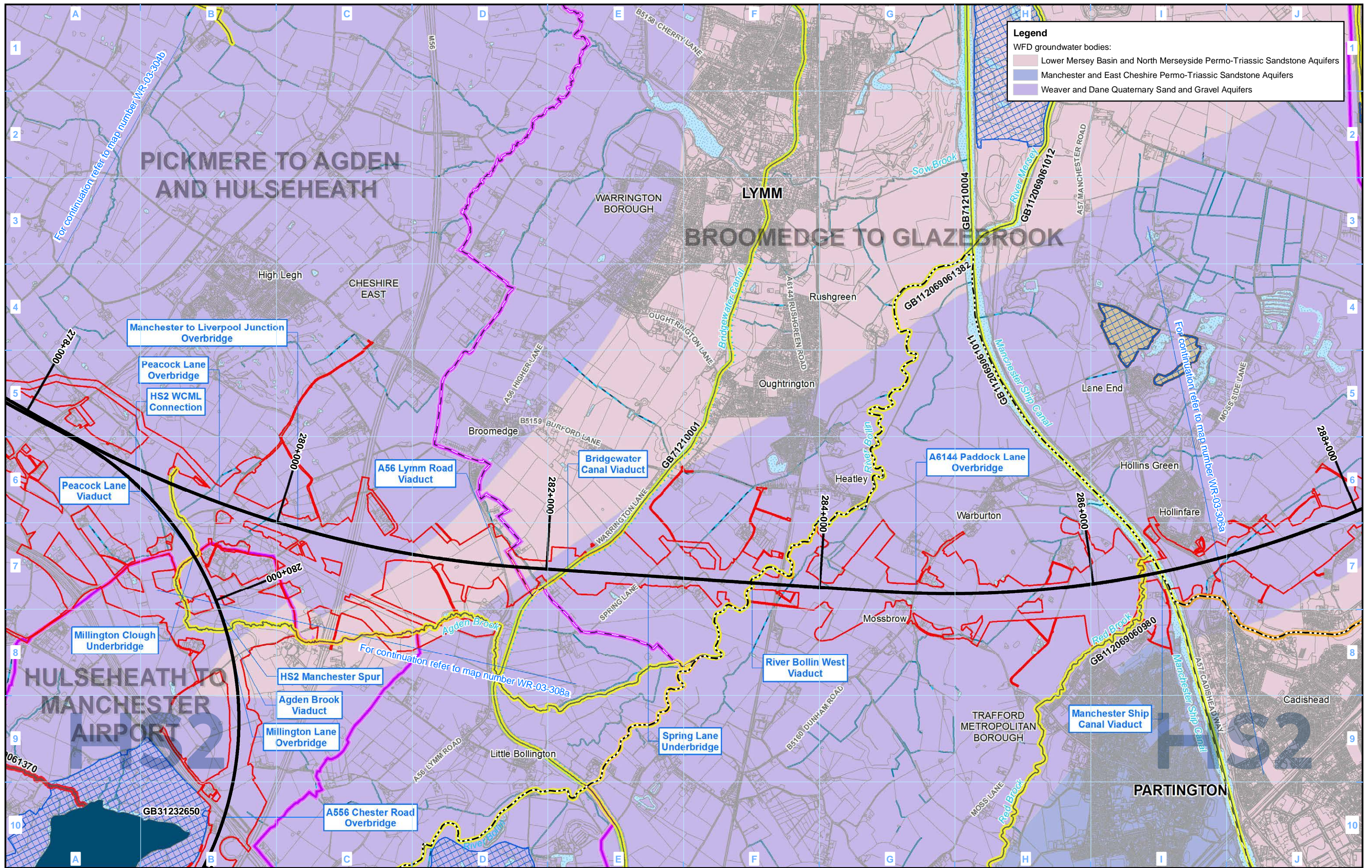
Doc Number: 2DE01-MWJ-EV-MAP-M000-002277-P01

Date: 11/08/21



Legend
 WFD groundwater bodies:
 Weaver and Dane Quaternary Sand and Gravel Aquifers

<p>Legend</p> <ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 		<p>Canal</p> <ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 		<p>WFD Surface Water Bodies</p> <p>Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 		<p>WFD Lakes</p> <p>Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 		<p> Special Areas of Conservation (SAC)</p> <p> Sites of Special Scientific Interest (SSSI)</p>	
<p>Map Number WR-03-304b</p> <p>Map Name Water Framework Directive</p> <p>Community Area MA03: Pickmere to Agden and Hulseheath</p>		<p>HS2</p> <p>HS2 Ltd accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way.</p> <p>Registered in England. Registration number 06791686. Registered office: 2 Snowhill, Queensway, Birmingham B4 6QA.</p> <p>© Crown copyright and database rights 2020 OS 100049190</p> <p>Doc Number: 2DE01-MWJ-EV-MAP-M000-002260-P01</p>		<p>Scale at A3: 1:25,000</p> <p> Metres</p> <p>Date: 11/08/21</p>					



Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport
- WFD Surface Water Bodies Overall Status Classification (2015 RBMP Cycle 2):
 - Good
 - Moderate
 - Poor
 - Bad
- WFD Lakes Overall Status:
 - Good
 - Moderate
 - Poor
 - Bad
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-305a

Map Name: Water Framework Directive

Community Area MA03: Pickmere to Agden and Hulseheath

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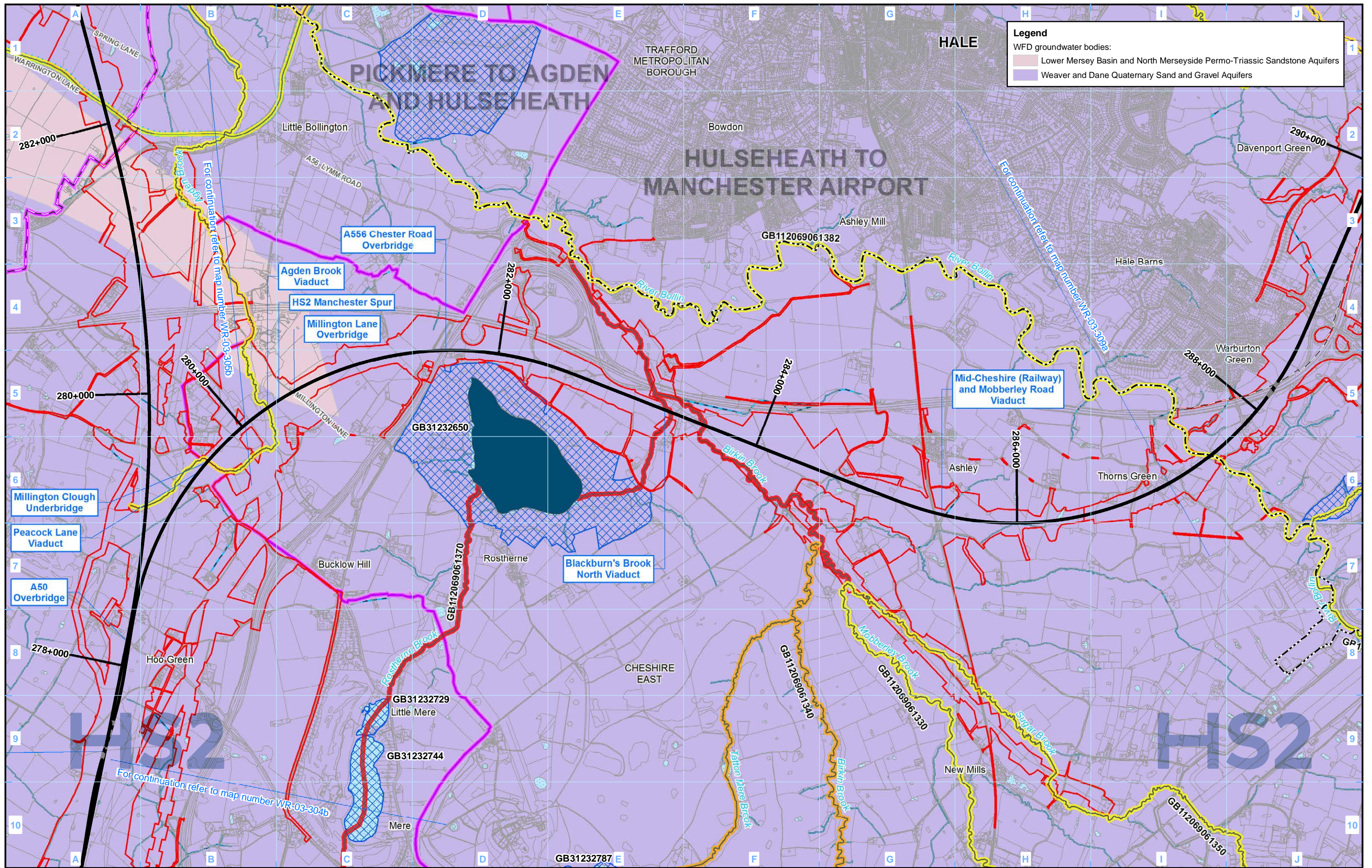
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Date: 11/08/21

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Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

<ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies</p> <p>Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes</p> <p>Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI)
---	--	---	---	--

Map Number: WR-03-308a

Map Name: Water Framework Directive

Community Area MA03: Pickmere to Agden and Hulseheath

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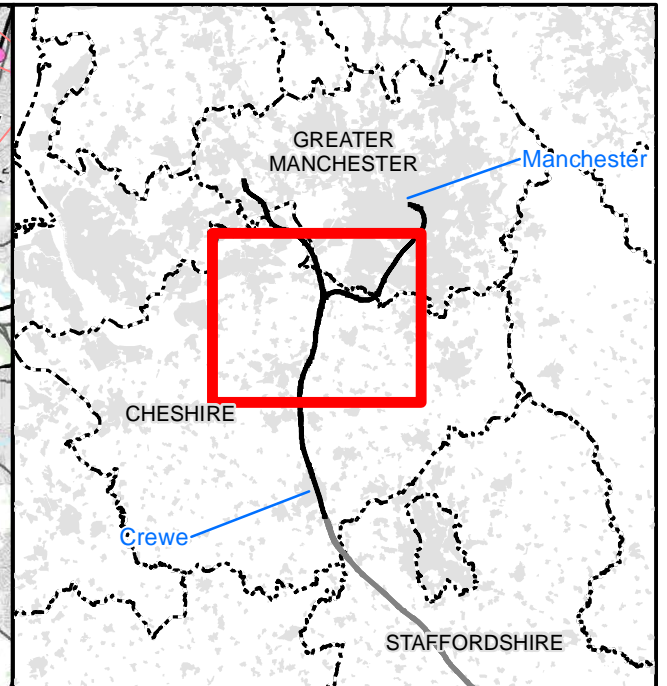
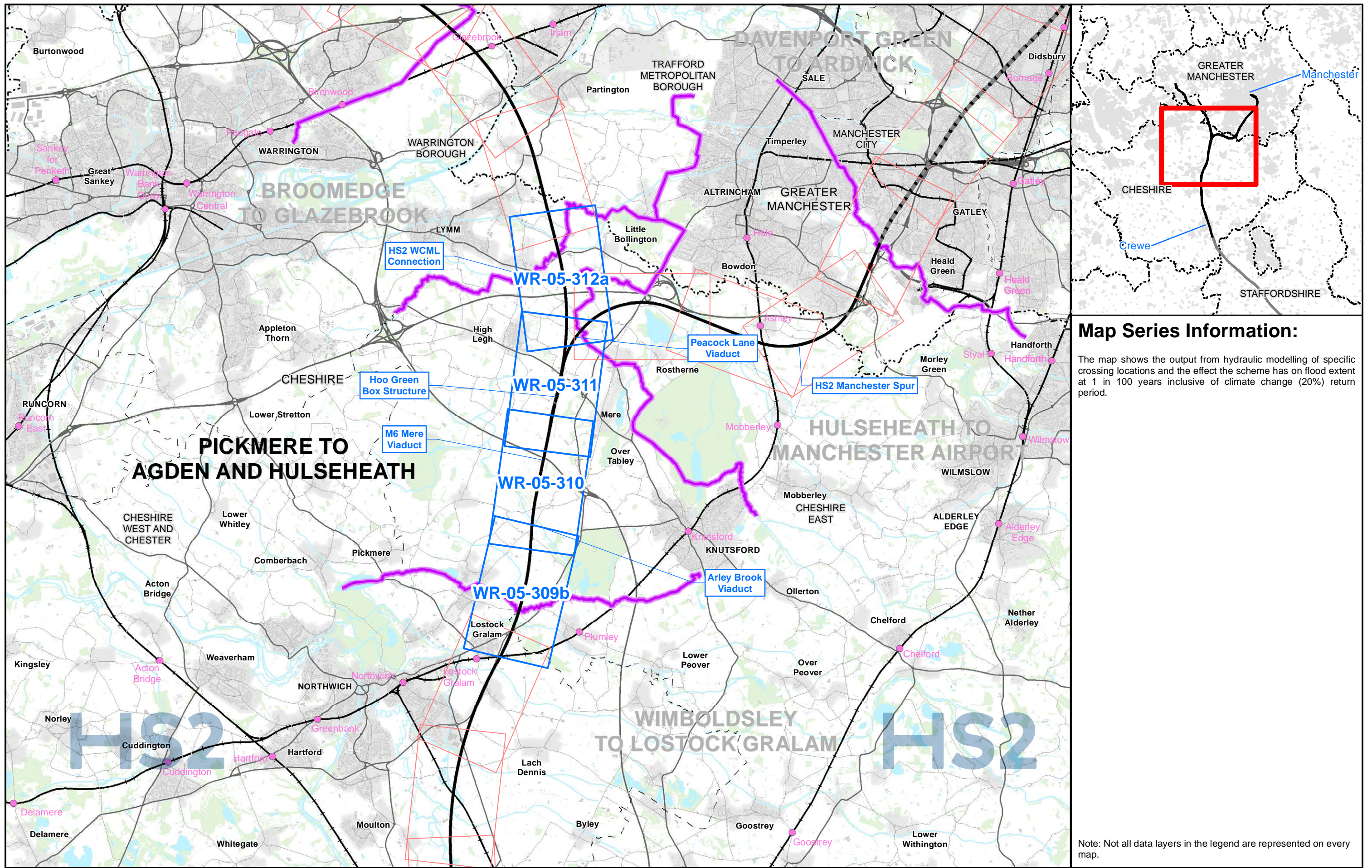
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Date: 11/08/21

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0 250 500 750 1,000 Metres



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number **WR-05-INDEX-MA03**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 100 including Climate Change (1%+CC)
 Annual Probability of River Flooding
 Community Area MA03:
 Pickmere to Agden and Hulseheath

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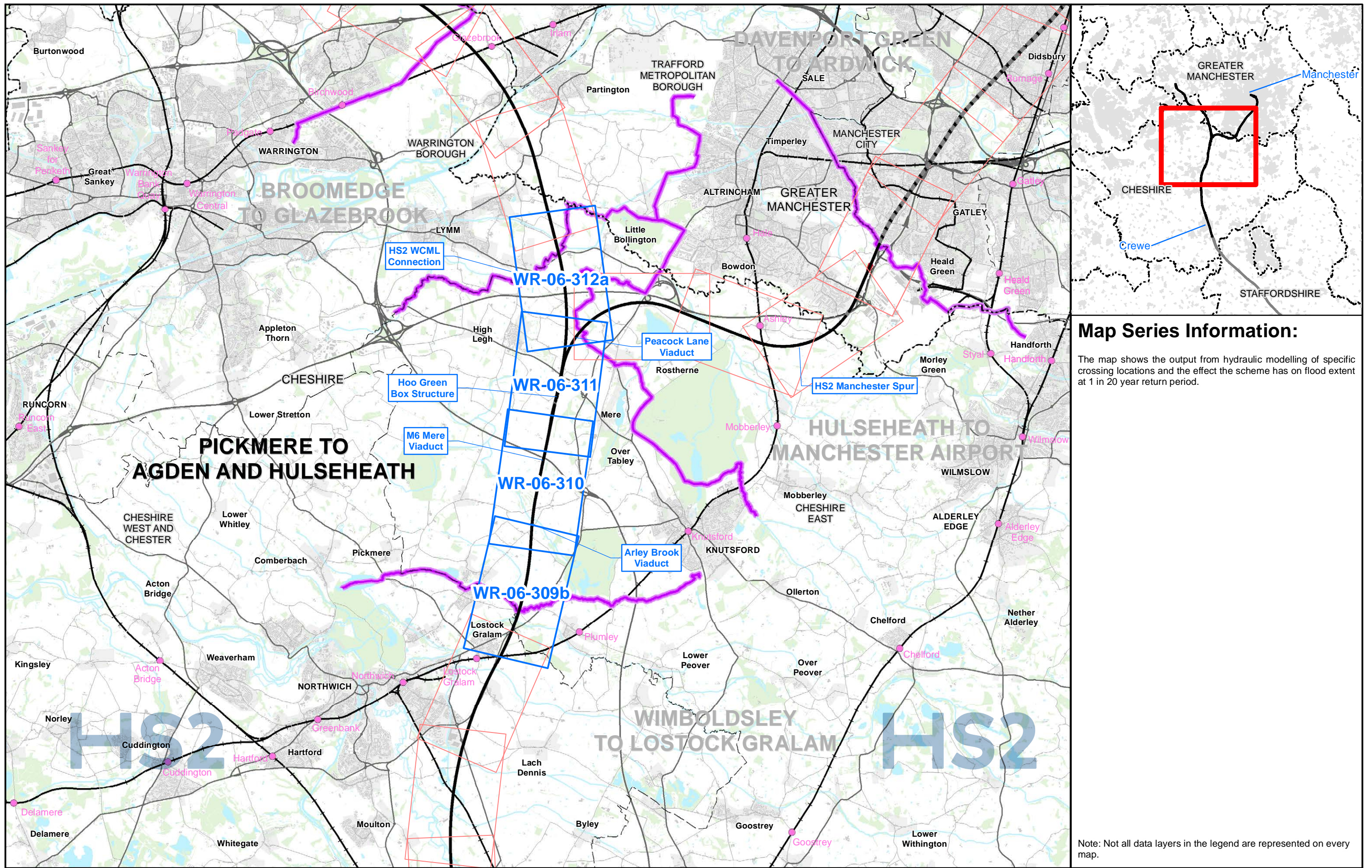
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002323-P01

Date: 07/10/21

Note: Not all data layers in the legend are represented on every map.



Map Series Information:
 The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Note: Not all data layers in the legend are represented on every map.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number: **WR-06-INDEX-MA03**

Map Name: **Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 20 (5%) Annual Probability of River
 Flooding**

**Community Area MA03:
 Pickmere to Agden and Hulseheath**

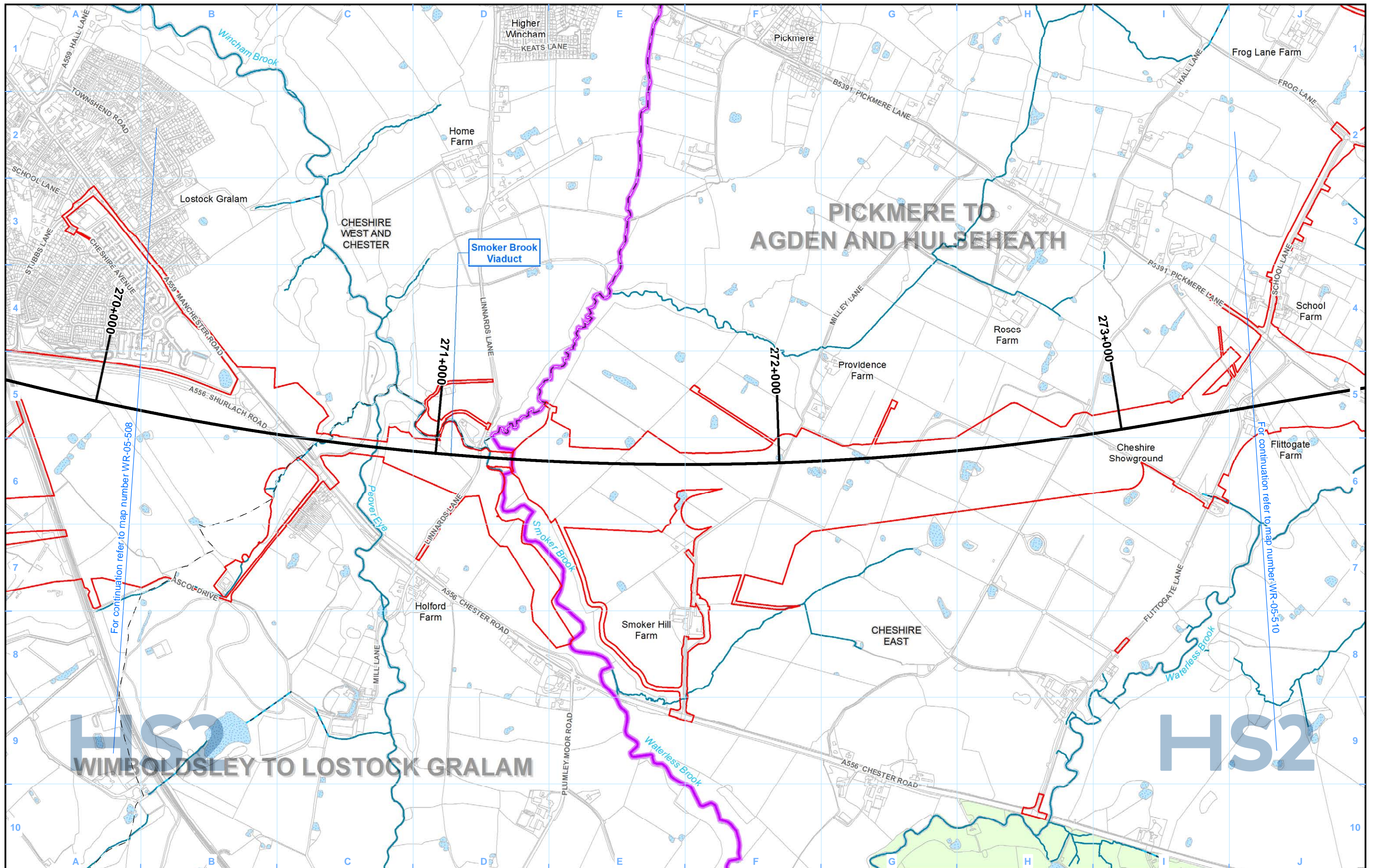
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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water

- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: WR-05-309b

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA03: Pickmere to Agden and Hulseheath

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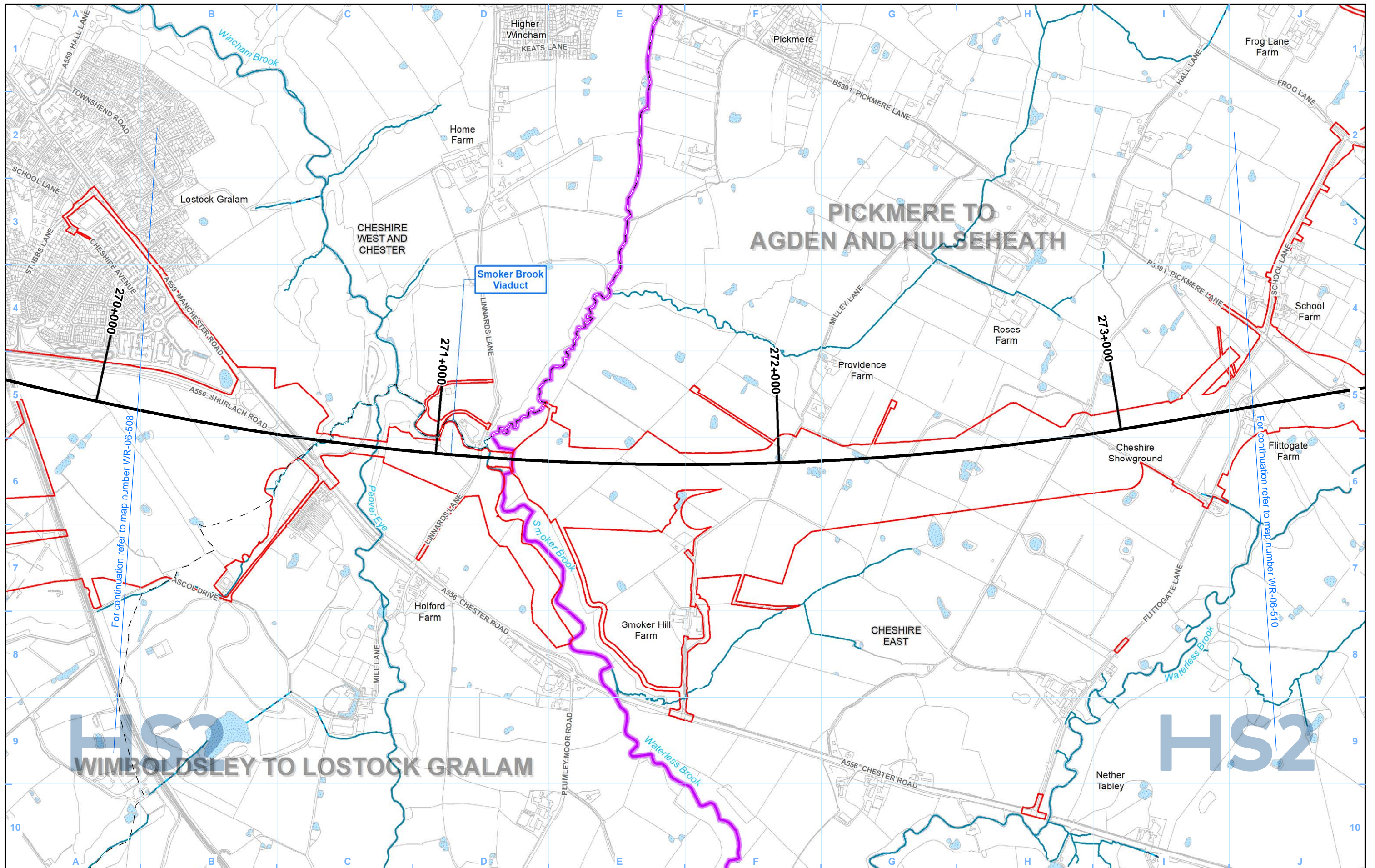
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For continuation refer to map number WR-05-508

For continuation refer to map number WR-05-510

PICKMERE TO AGDEN AND HULSEHEATH

WIMBOLDSLEY TO LOSTOCK GRALAM



Legend

Map Number	WR-06-309b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA03: Pickmere to Agden and Hulseheath

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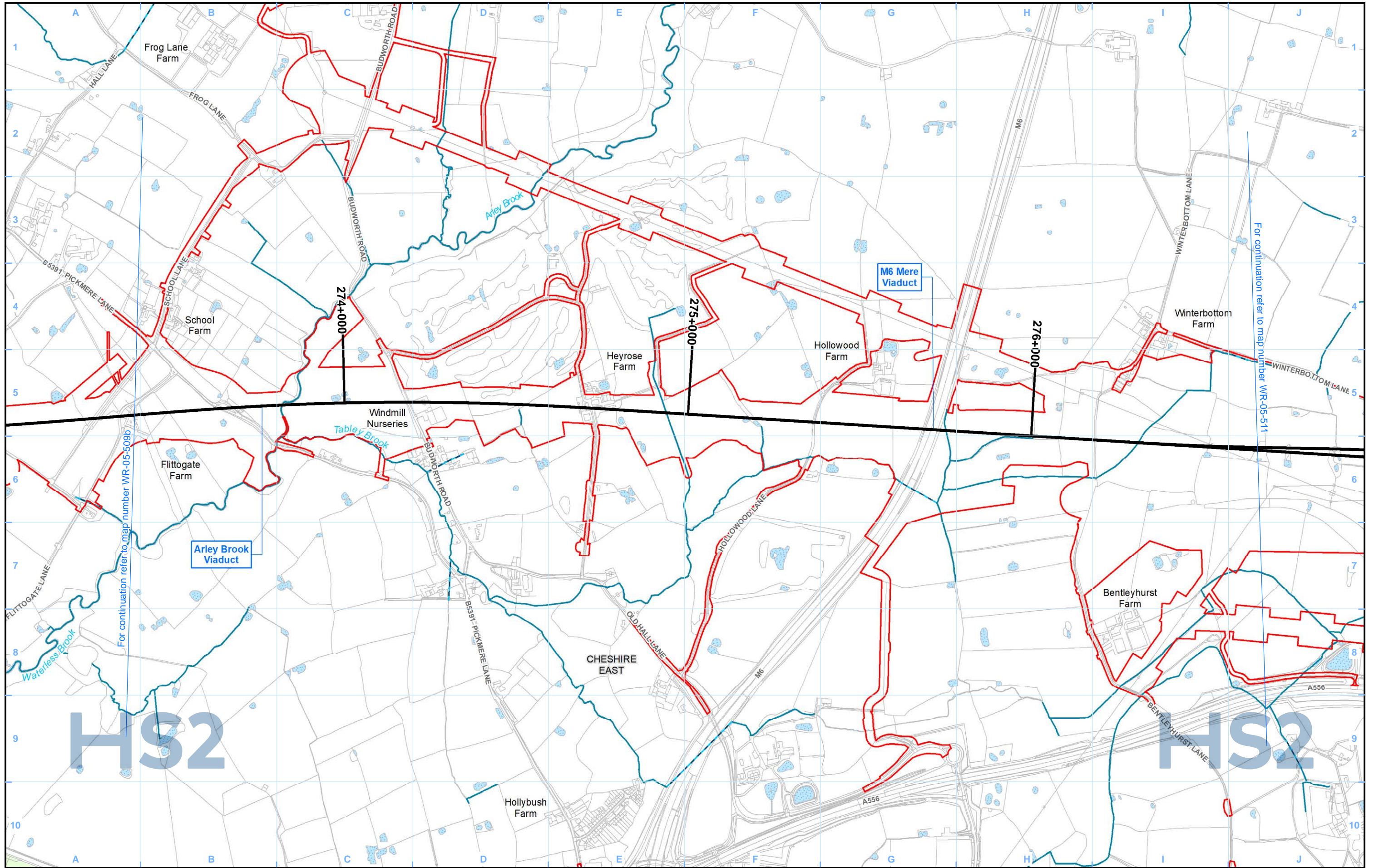
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Date: 14/10/21

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Metres



For continuation refer to map number WR-05-509b

For continuation refer to map number WR-05-511

- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number **WR-05-310**

Map Name
Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA03:
 Pickmere to Agden and Hulse Heath

HS2

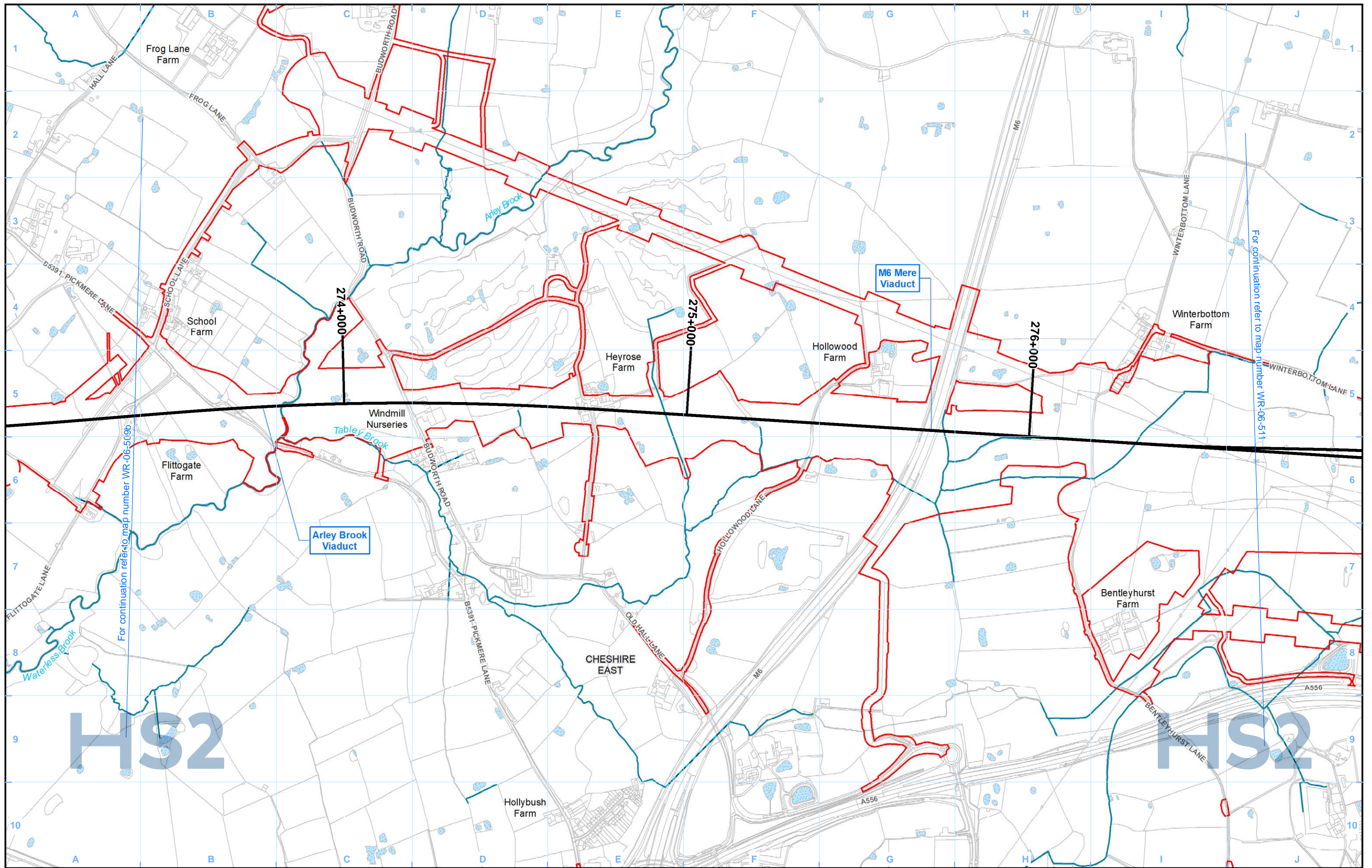
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Date: 16/09/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number
WR-06-310

Map Name
Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA03:
Pickmere to Agden and Hulseheath

HS2

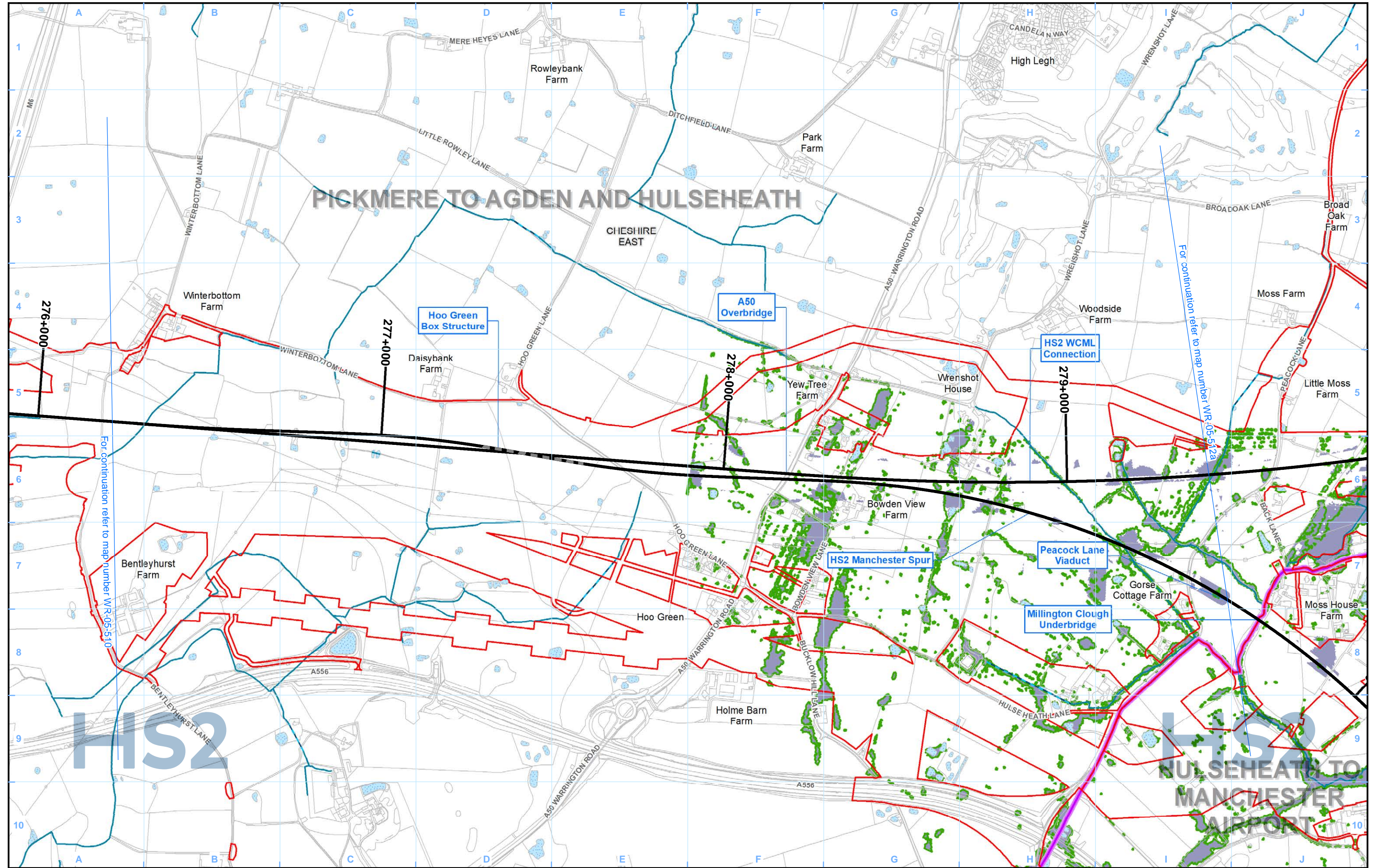
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Legend

Map Number: WR-05-311

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA03: Pickmere to Agden and Hulseheath

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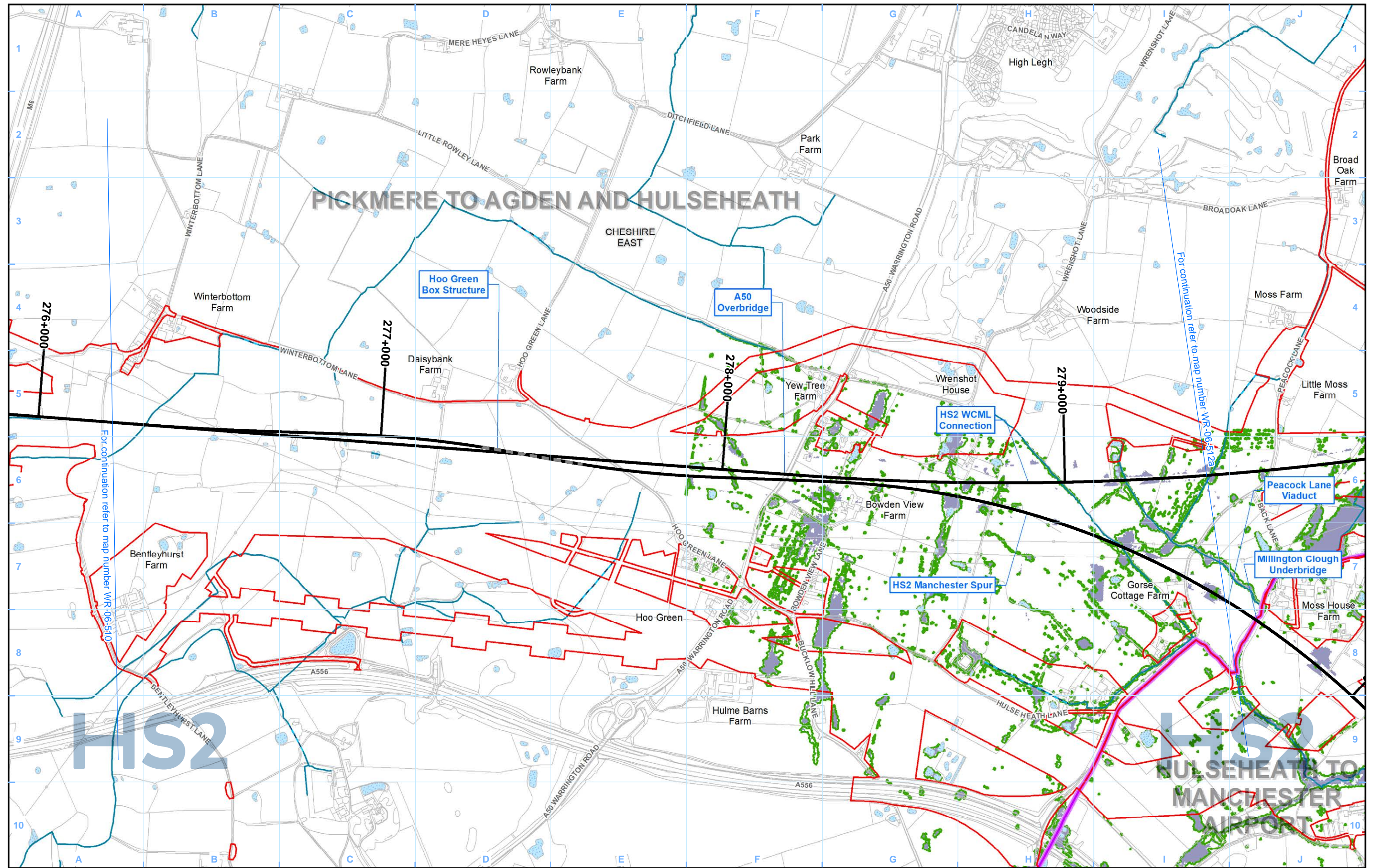
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 16/09/21



Legend		

Map Number	WR-06-311
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA03: Pickmere to Agden and Hulseheath

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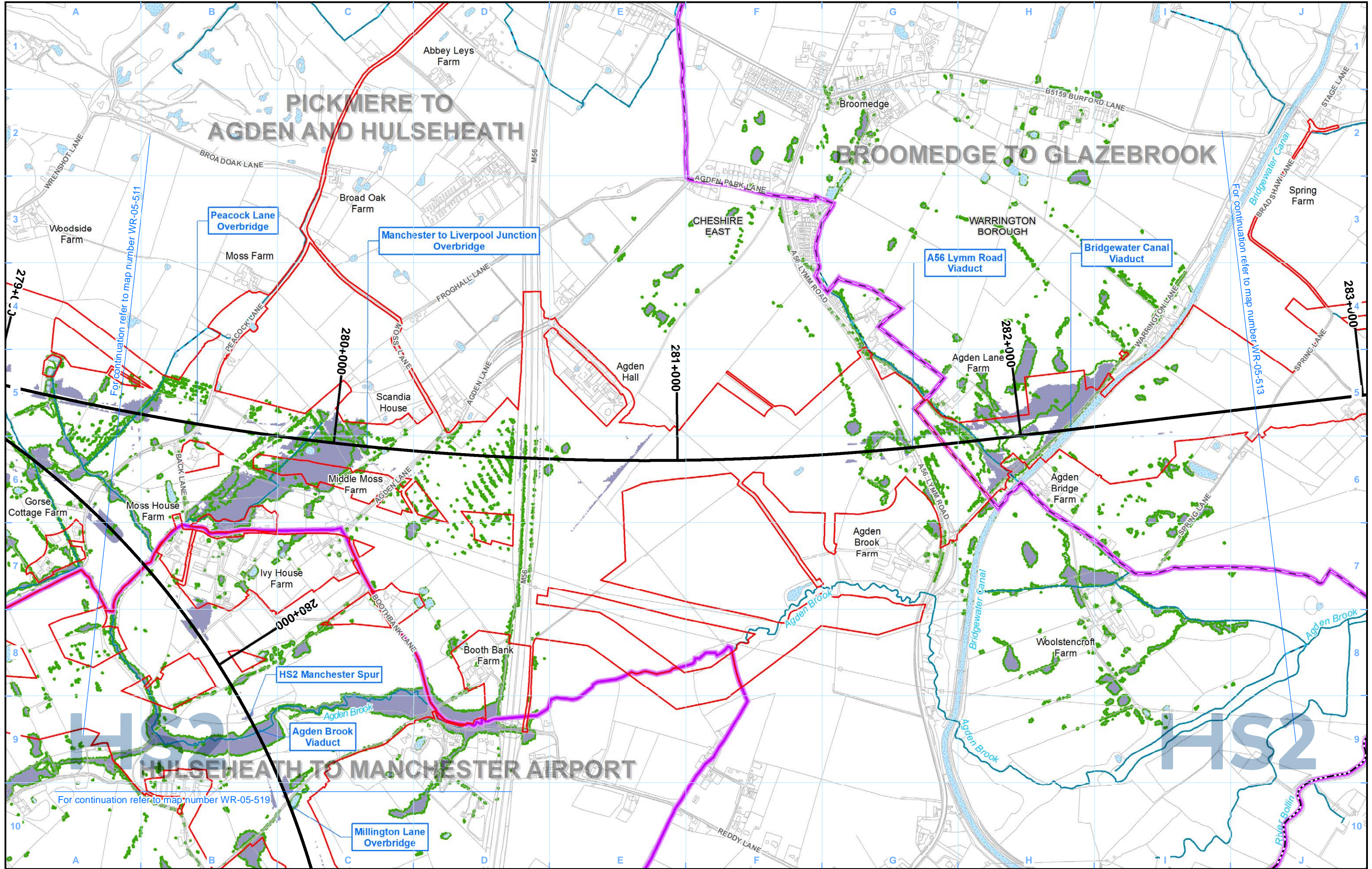
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PICKMERE TO AGDEN AND HULSEHEATH

BROOMEDGE TO GLAZEBROOK

HULSEHEATH TO MANCHESTER AIRPORT

Legend

Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-312a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA03: Pickmere to Agden and Hulseheath	

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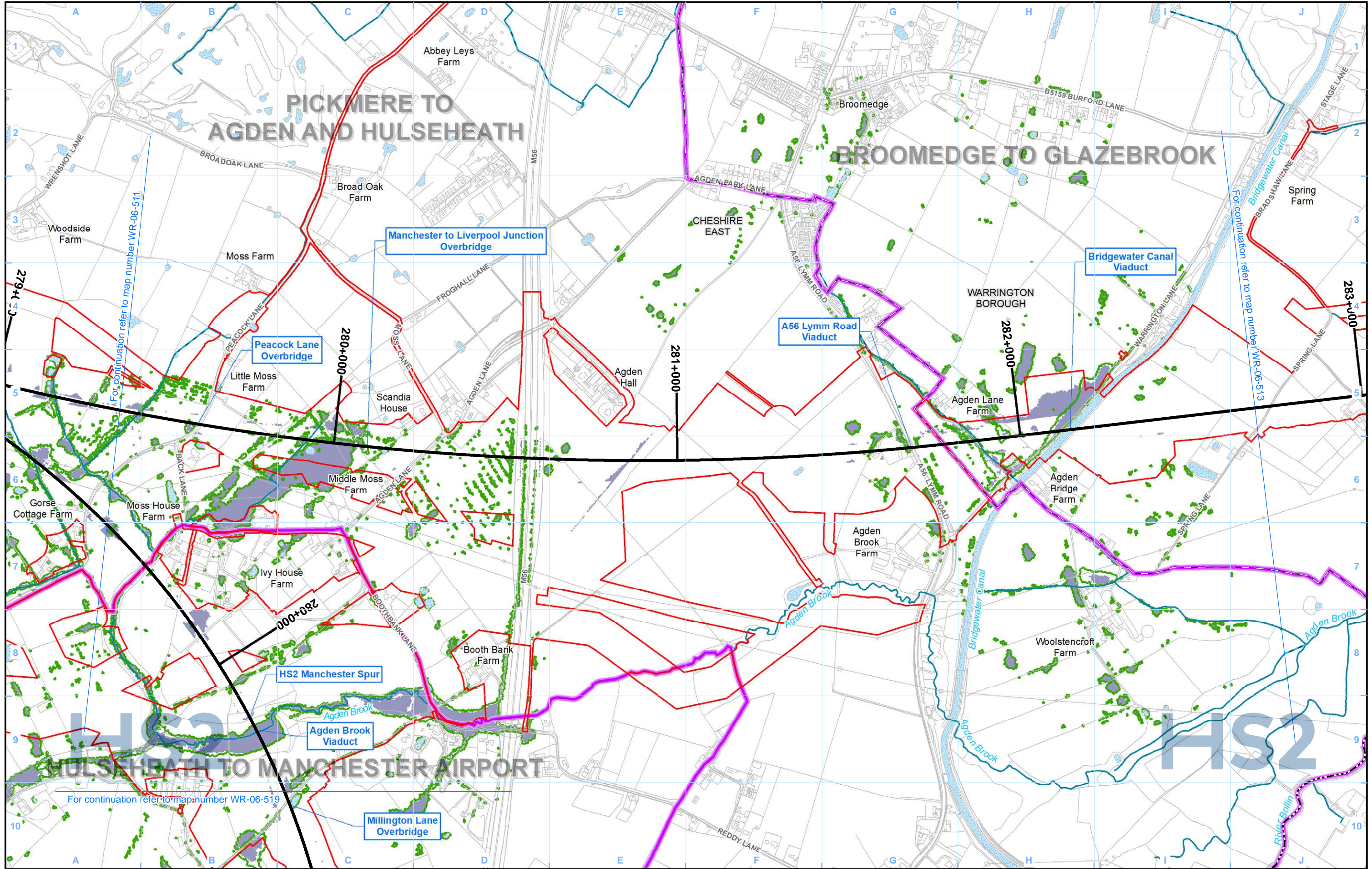
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Date: 16/09/21

For continuation refer to map number WR-05-511

For continuation refer to map number WR-05-513

For continuation refer to map number WR-05-519



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-312a**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA03:
Pickmere to Agden and Hulseheath

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA04: Broomedge to Glazebrook

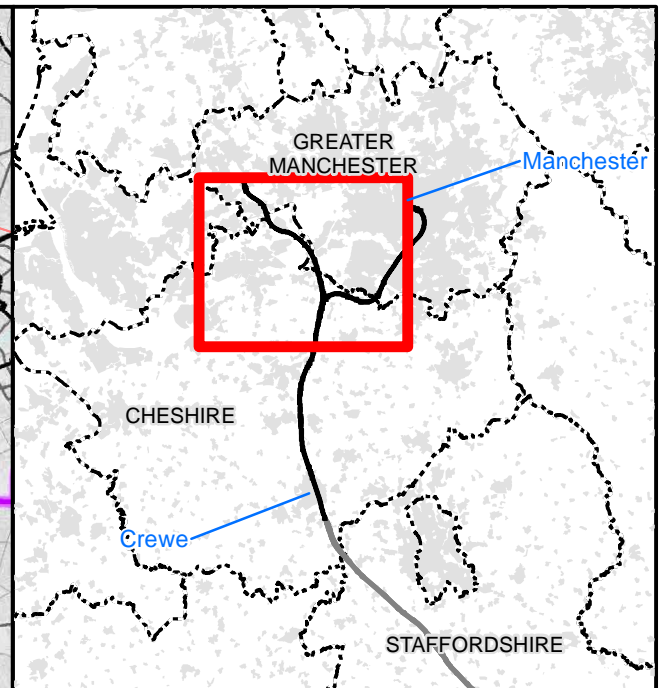
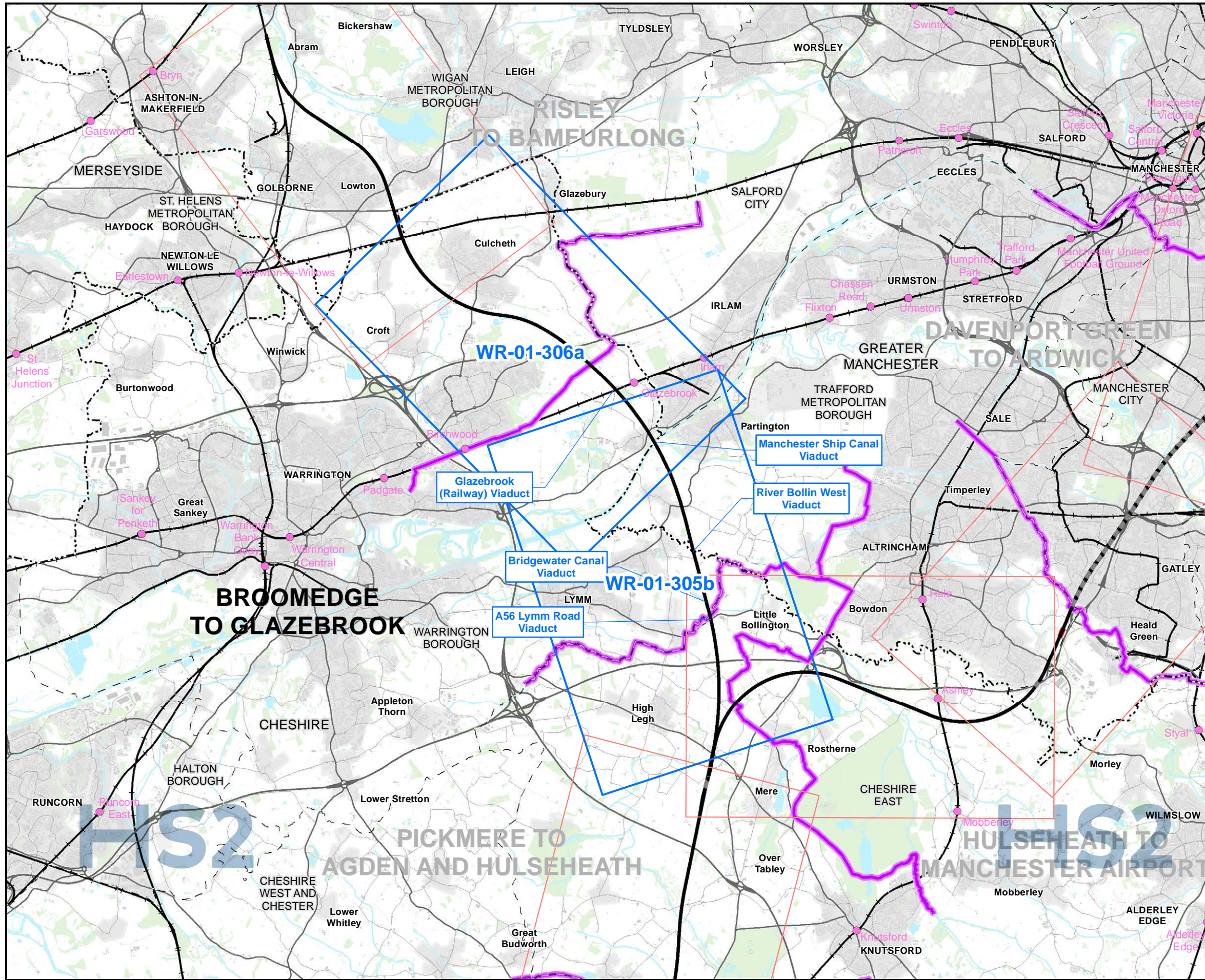
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: WR-01-INDEX-MA04

Map Name: Index Map of: Surface Water Baseline

Community Area MA04: Broomedge to Glazebrook

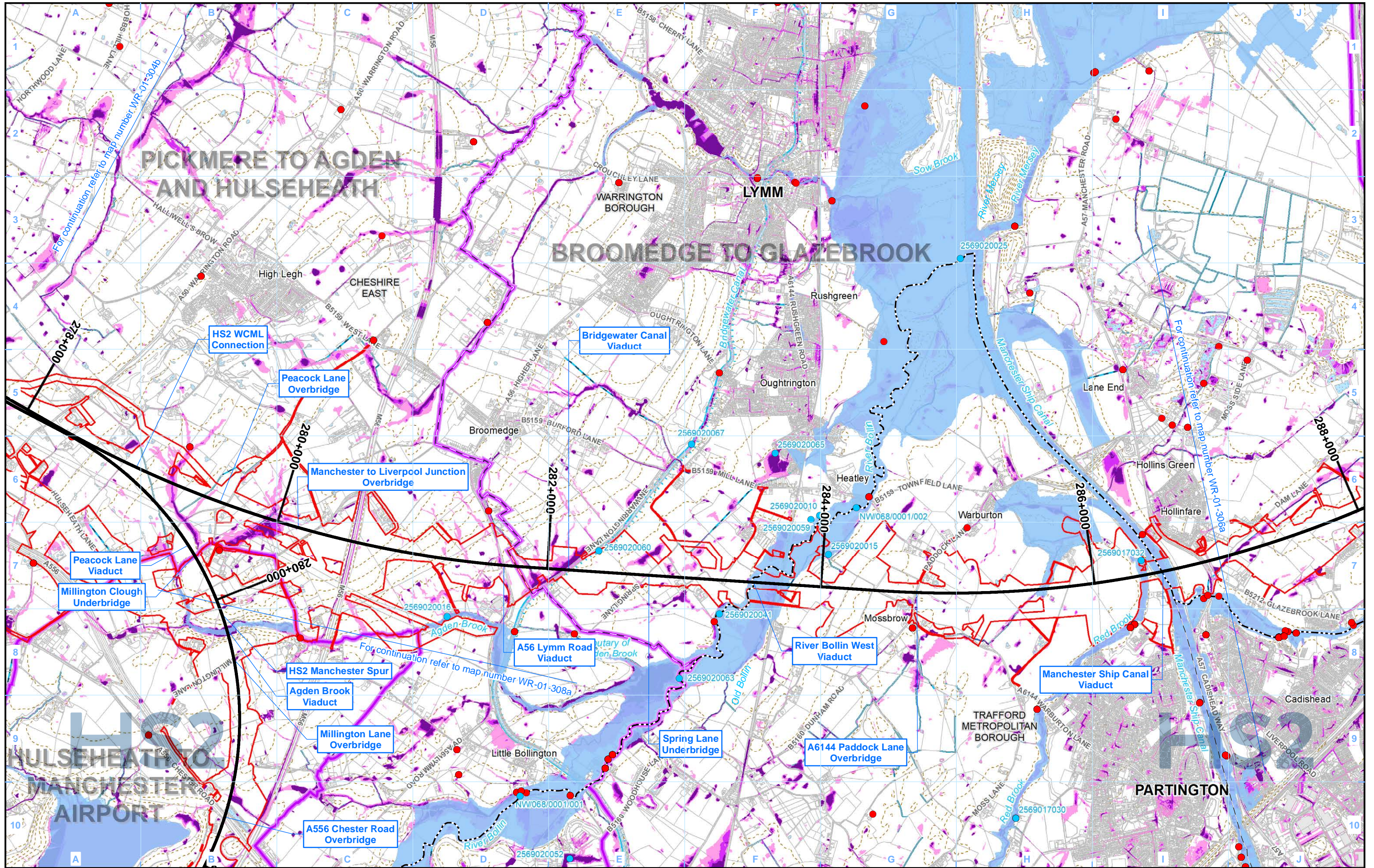
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Legend

Map Number	WR-01-305b
Map Name	Surface Water Baseline
Community Area MA04: Broomedge to Glazebrook	

HS2

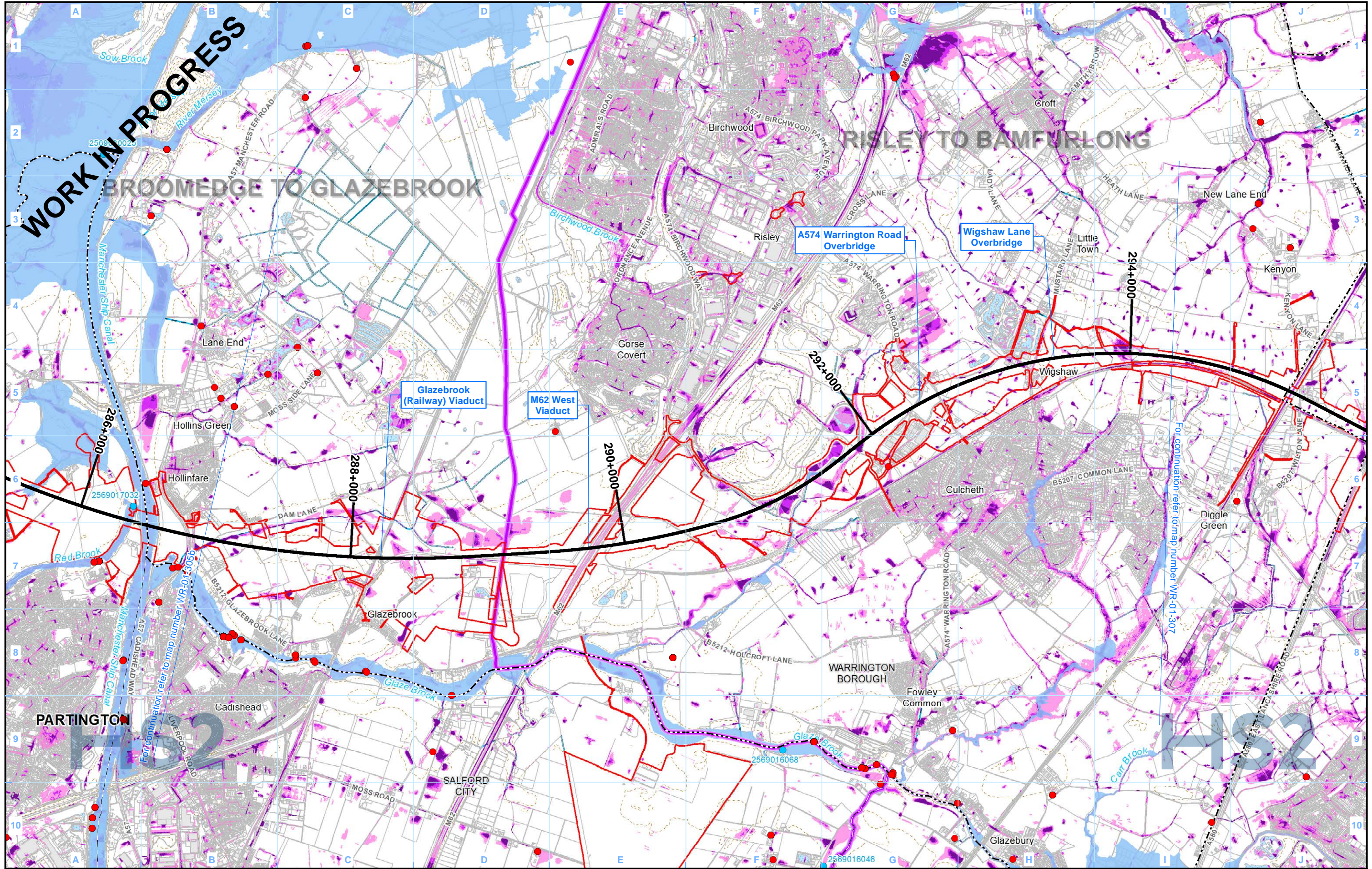
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Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-306a

Map Name: Surface Water Baseline

Community Area MA04:
Broomedge to Glazebrook

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Date: 12/08/21

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOOTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYLK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GYA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-BRECCIA (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SOBR-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YQB-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**

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Doc Number: 2EV01-ARP-GI-MAP-M000-000253

Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORAINES MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORAINES MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINGTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



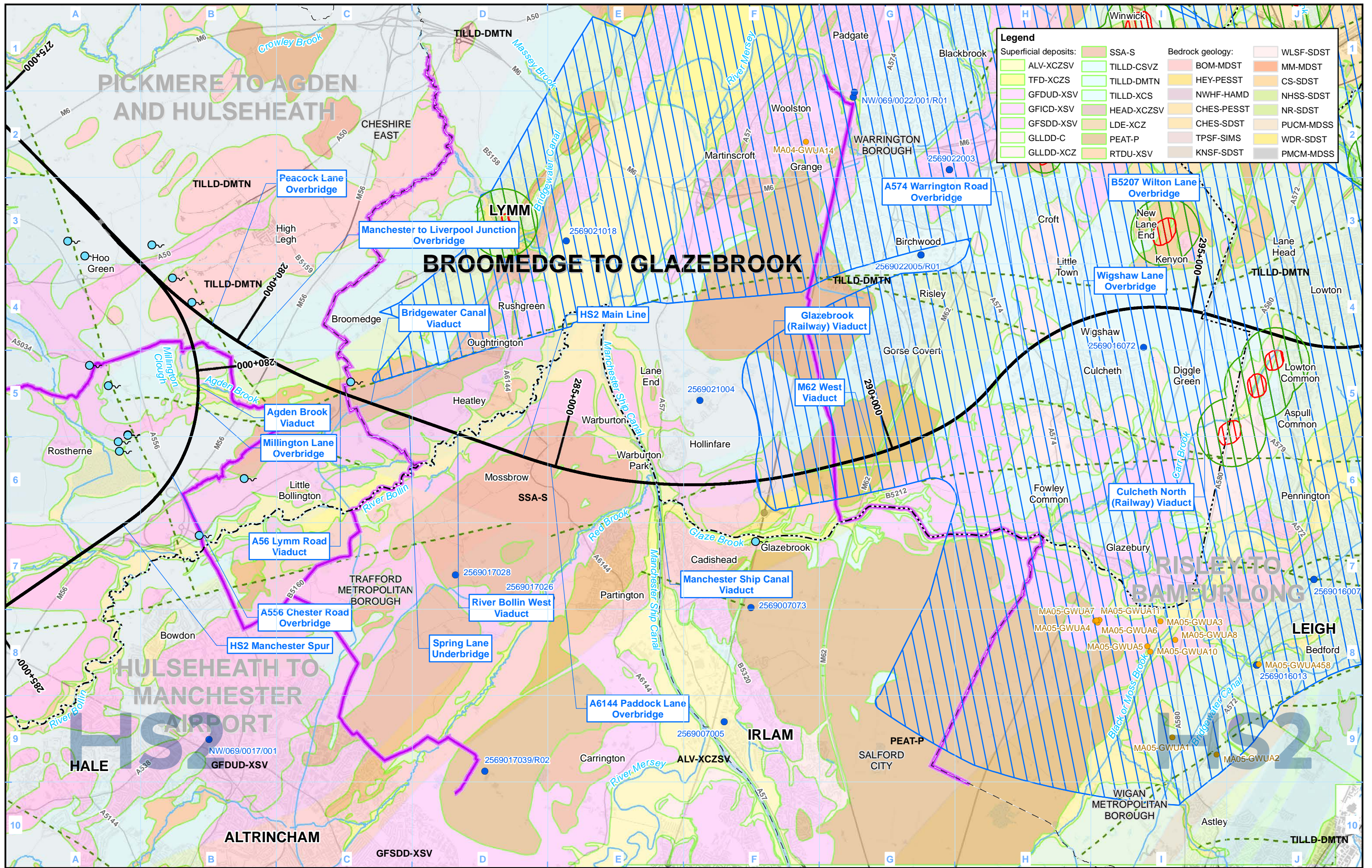
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Legend

Superficial deposits:	SSA-S	Bedrock geology:	WLSF-SDST
ALV-XCZSV	TILLD-CSVZ	BOM-MDST	MM-MDST
TFD-XCZS	TILLD-DMTN	HEY-PESST	CS-SDST
GFDUD-XSV	TILLD-XCS	NWHF-HAMD	NHS-SDST
GFICD-XSV	HEAD-XCZSV	CHES-PESST	NR-SDST
GFSDD-XSV	LDE-XCZ	CHES-SDST	PUCM-MDSS
GLLDD-C	PEAT-P	TPSF-SIMS	WDR-SDST
GLLDD-XCZ	RTDU-XSV	KNSF-SDST	PMCM-MDSS

Legend

Route in tunnel	Lakes & Reservoirs	Groundwater source protection zone:
Route on surface	Geological fault line	Zone 1
Depot, station, headhouse or portal building	Licensed groundwater abstraction (excluding public water supplies)	Zone 2
Community area boundary	Unlicensed private groundwater abstraction	Zone 3
County boundary	Consented discharge to groundwater	
District/Borough boundary	Springs	
Airport		

For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

Map Number: WR-02-304
 Map Name: Groundwater Baseline
 Community Area MA04:
 Broomedge to Glazebrook

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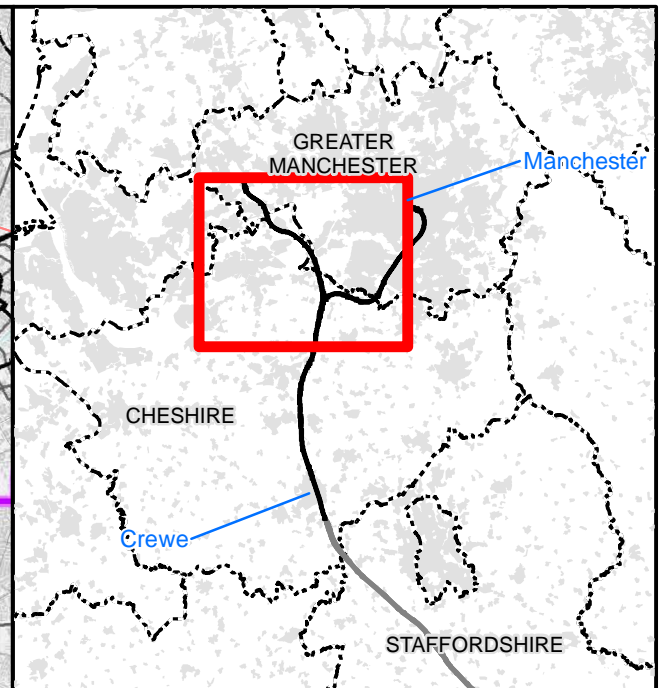
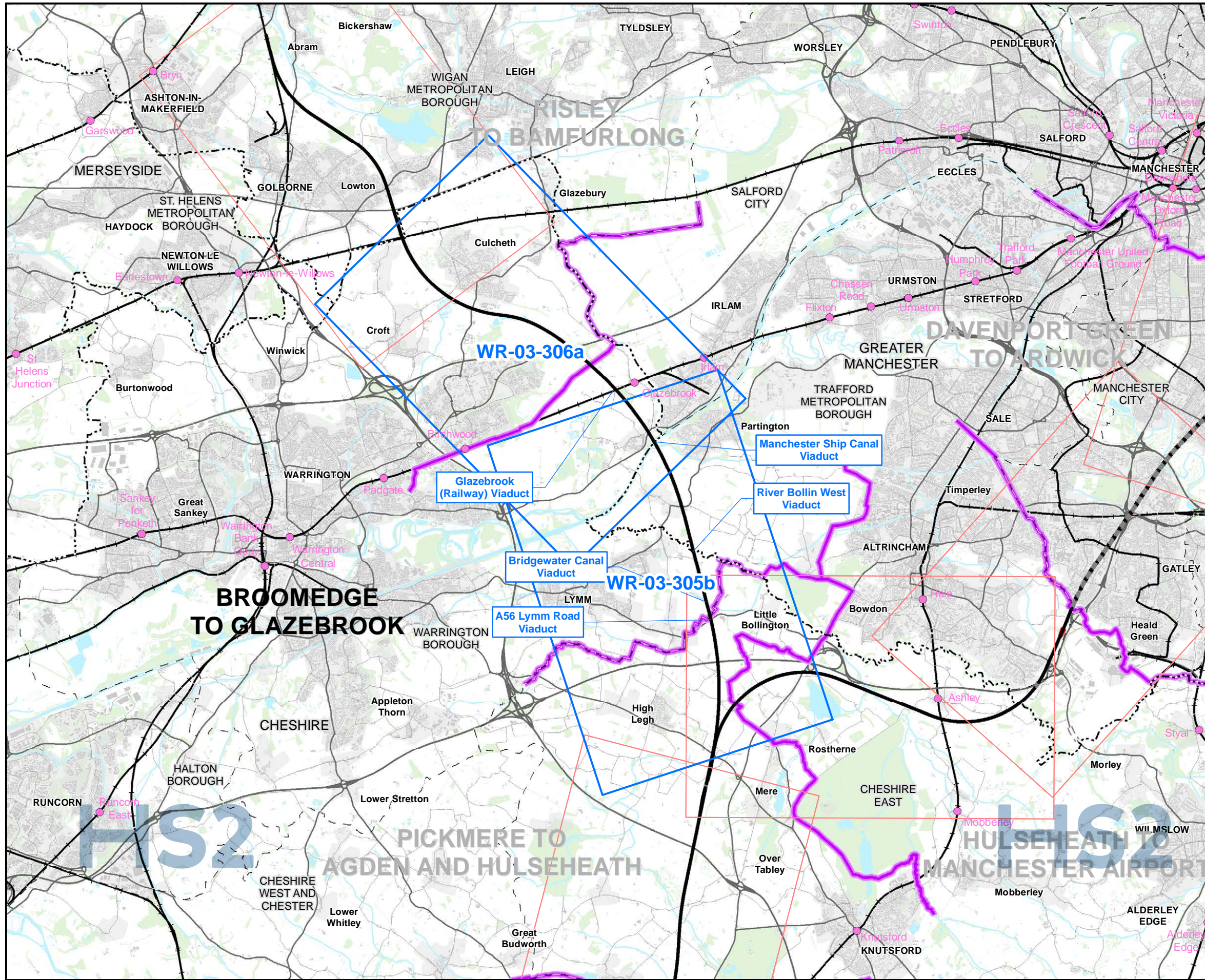
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Map Series Information:
 This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: WR-03-INDEX-MA04
 Map Name: Index Map of: Water Framework Directive
 Community Area MA04: Broomedge to Glazebrook

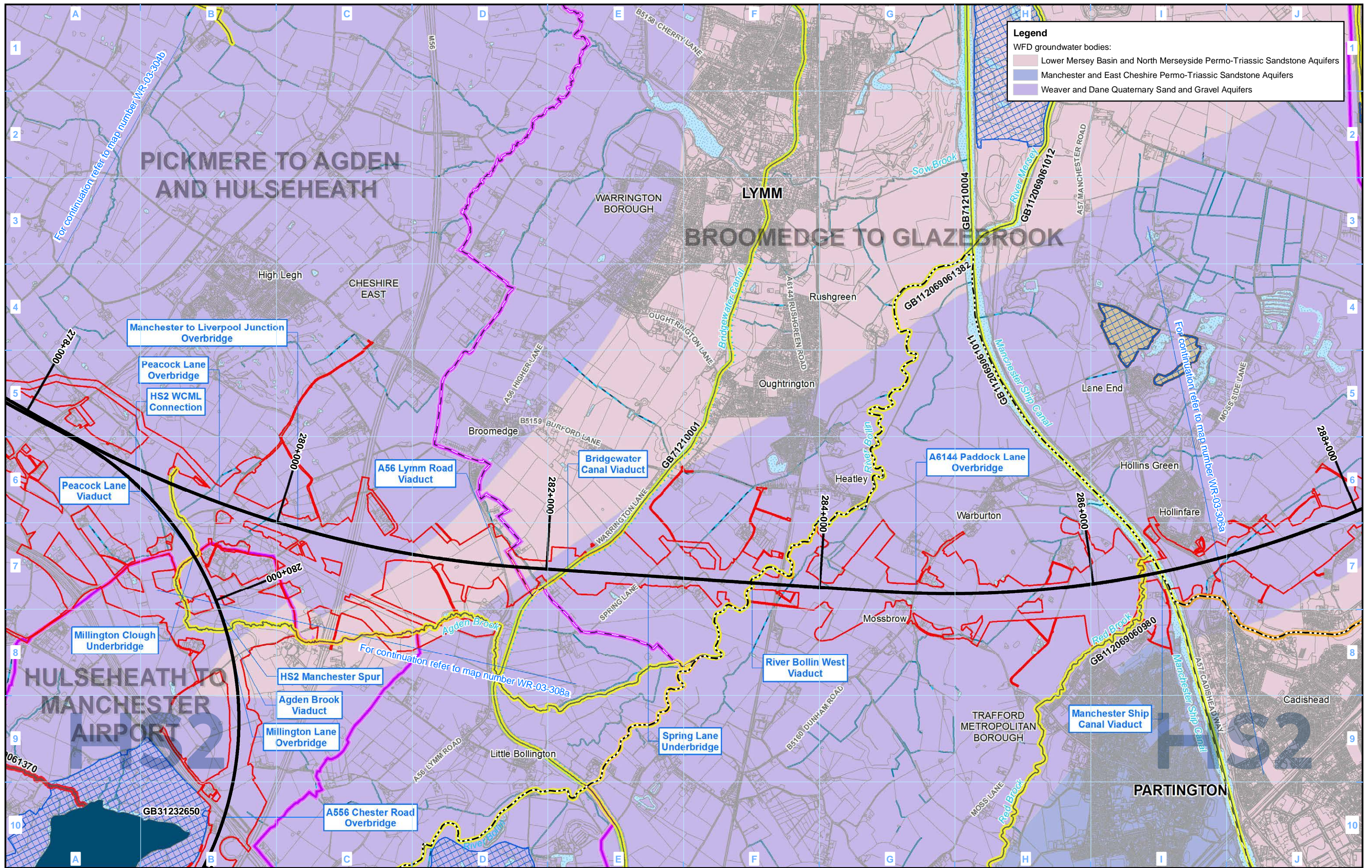
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002278-P01 **Date:** 11/08/21



Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport
- WFD Surface Water Bodies Overall Status Classification (2015 RBMP Cycle 2):
- Good
- Moderate
- Poor
- Bad
- WFD Lakes Overall Status:
- Good
- Moderate
- Poor
- Bad
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-305b

Map Name: Water Framework Directive

Community Area MA04: Broomedge to Glazebrook

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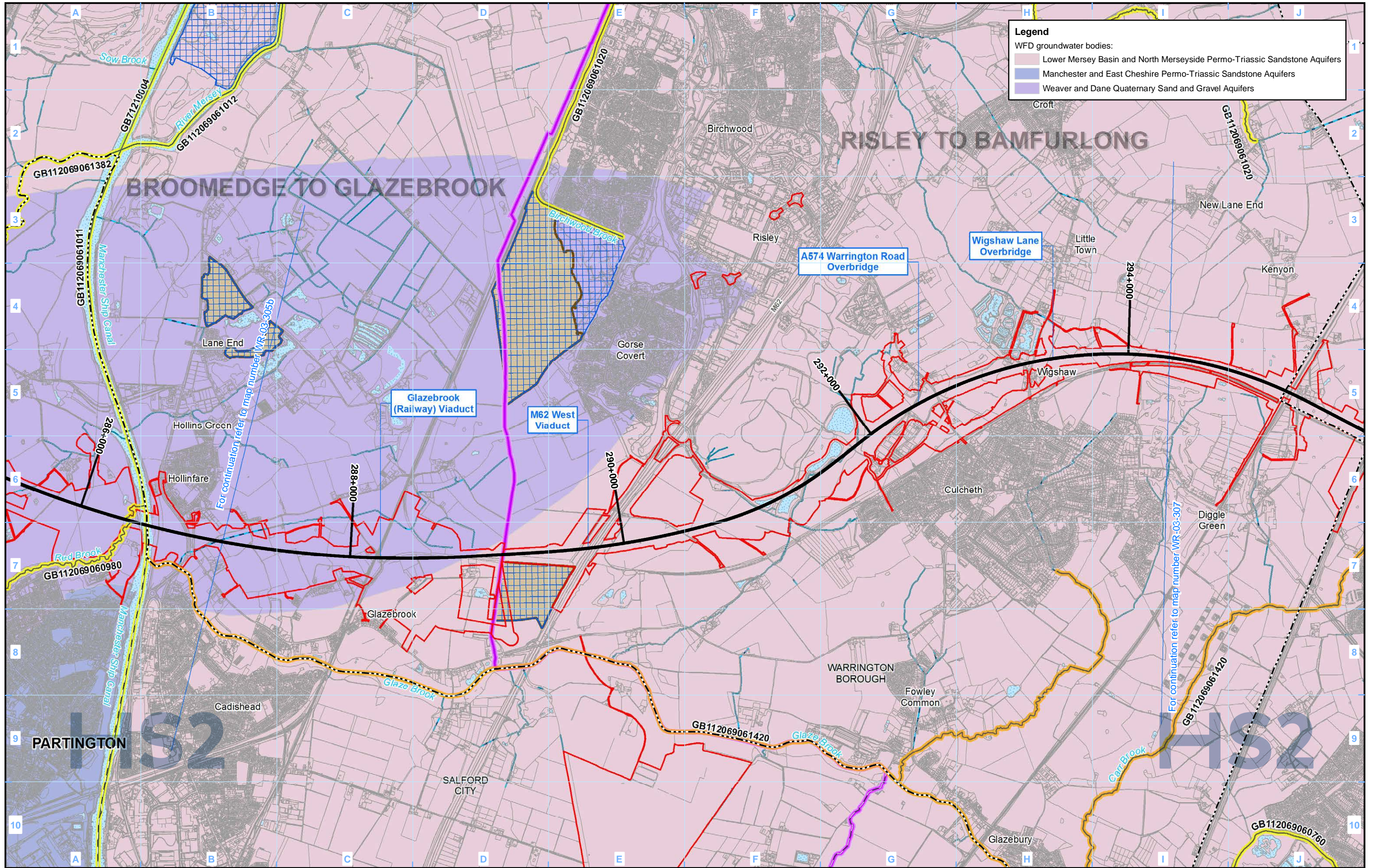
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002262-P01

Date: 11/08/21



Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

<ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies</p> <p>Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes</p> <p>Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI)
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Map Number: WR-03-306a

Map Name: Water Framework Directive

Community Area MA04: Broome Edge to Glazebrook

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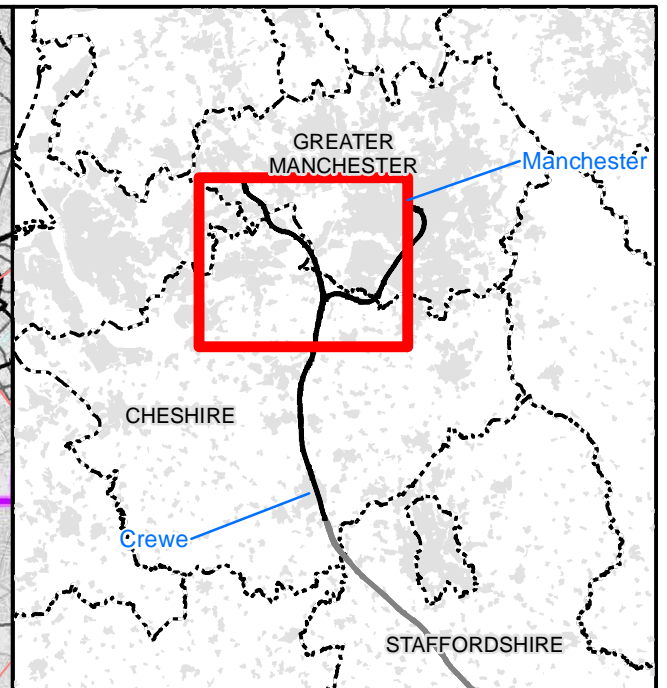
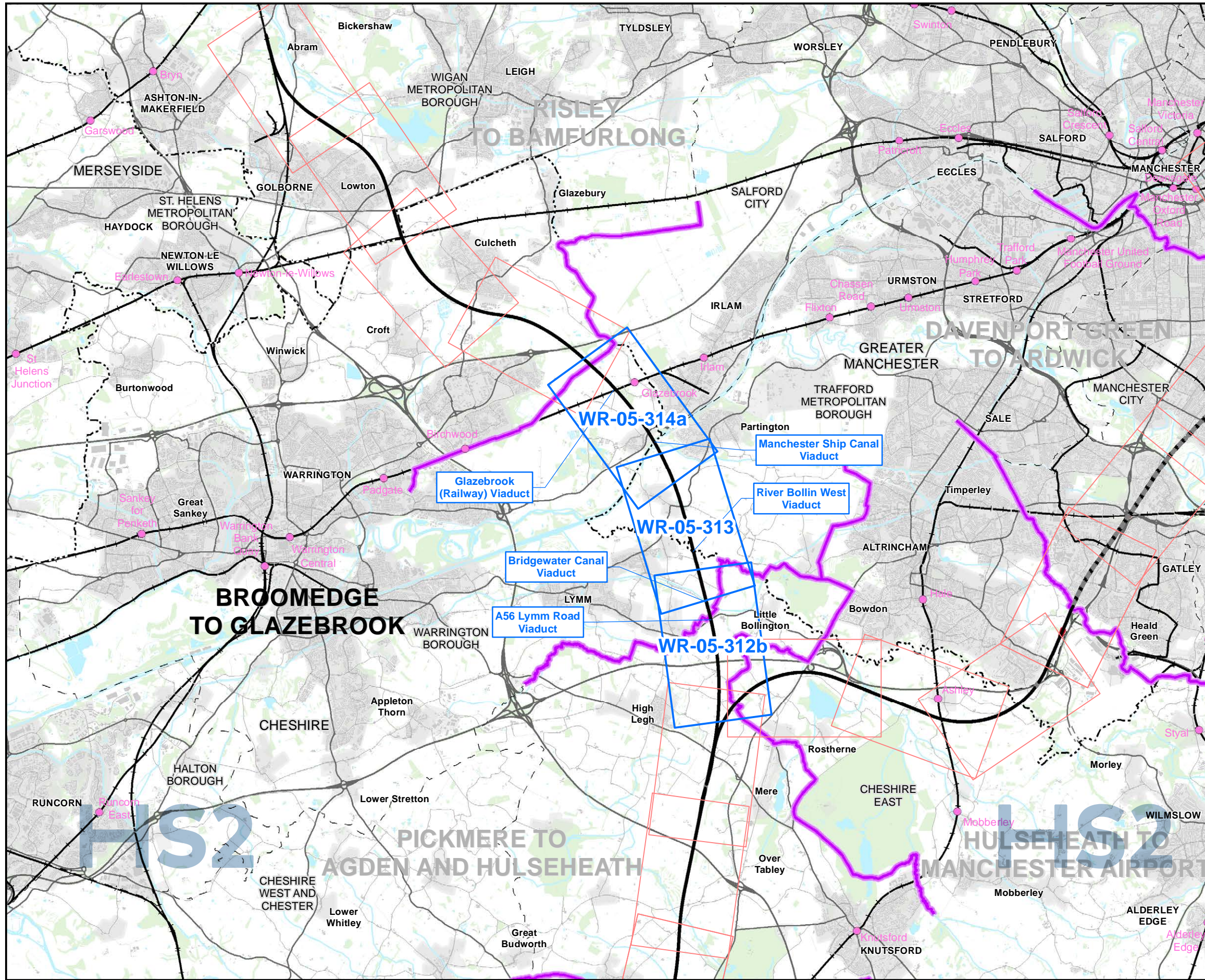
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Date: 11/08/21

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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-05-INDEX-MA04
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 100 including Climate Change (1%+CC) Annual Probability of River Flooding Community Area MA04: Broomedge to Glazebrook

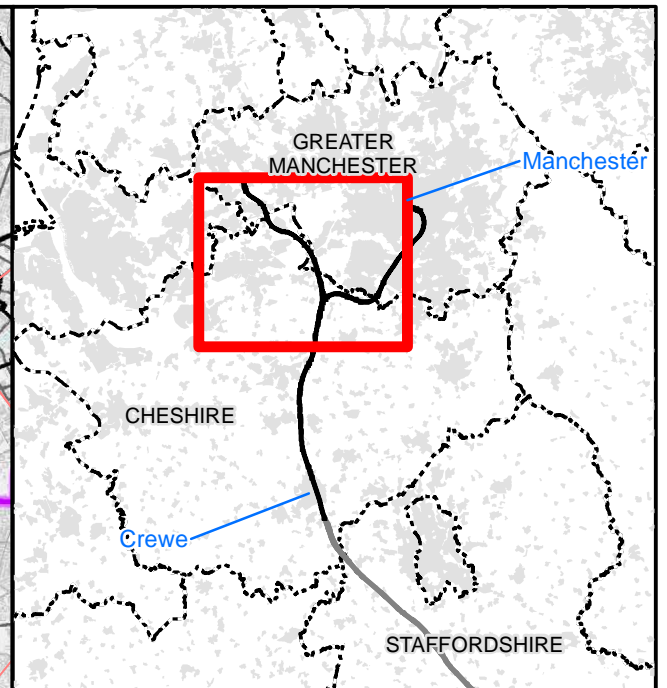
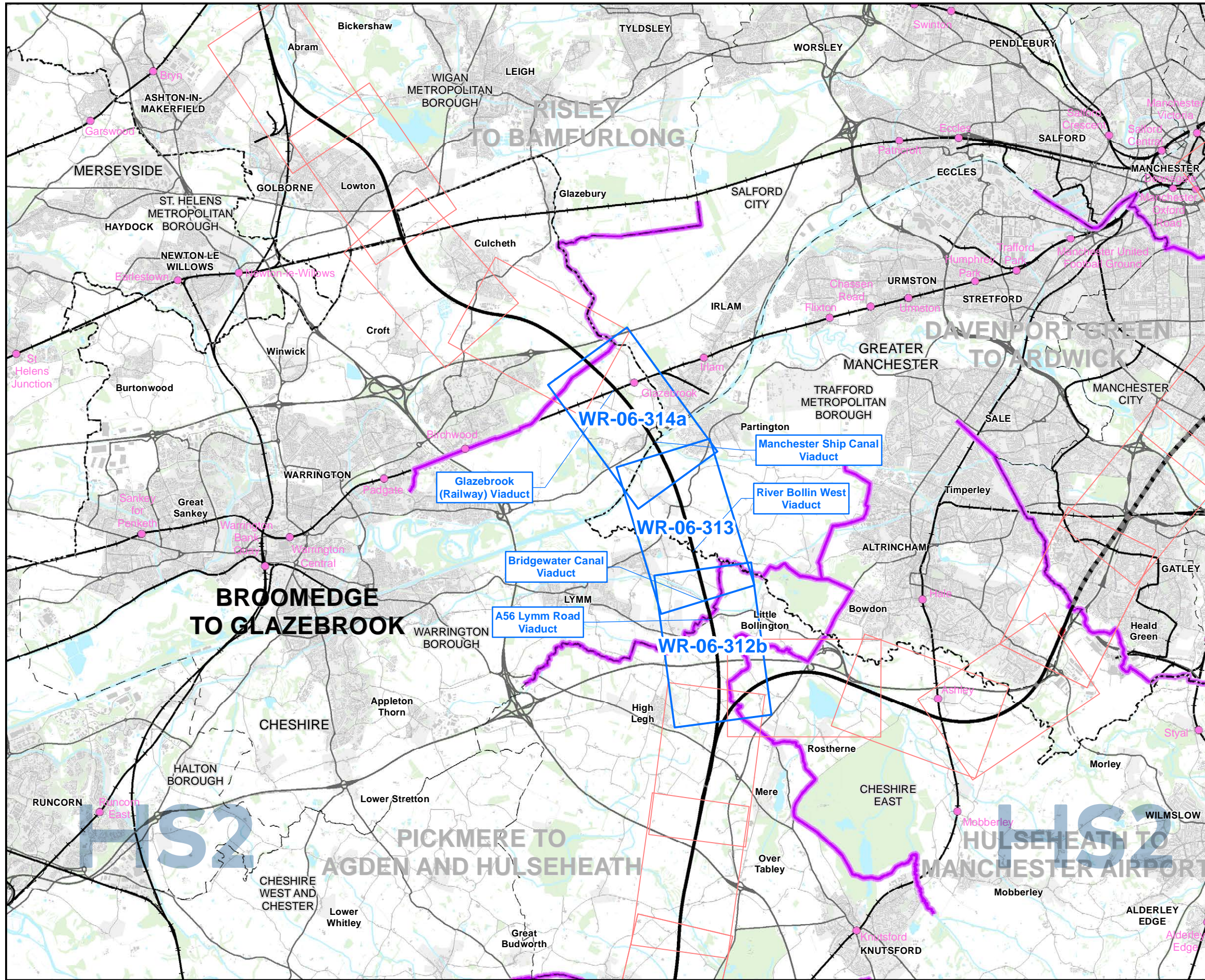
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002324-P01 Date: 07/10/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-06-INDEX-MA04**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 20 (5%) Annual Probability of River
 Flooding

Community Area MA04:
 Broomedge to Glazebrook

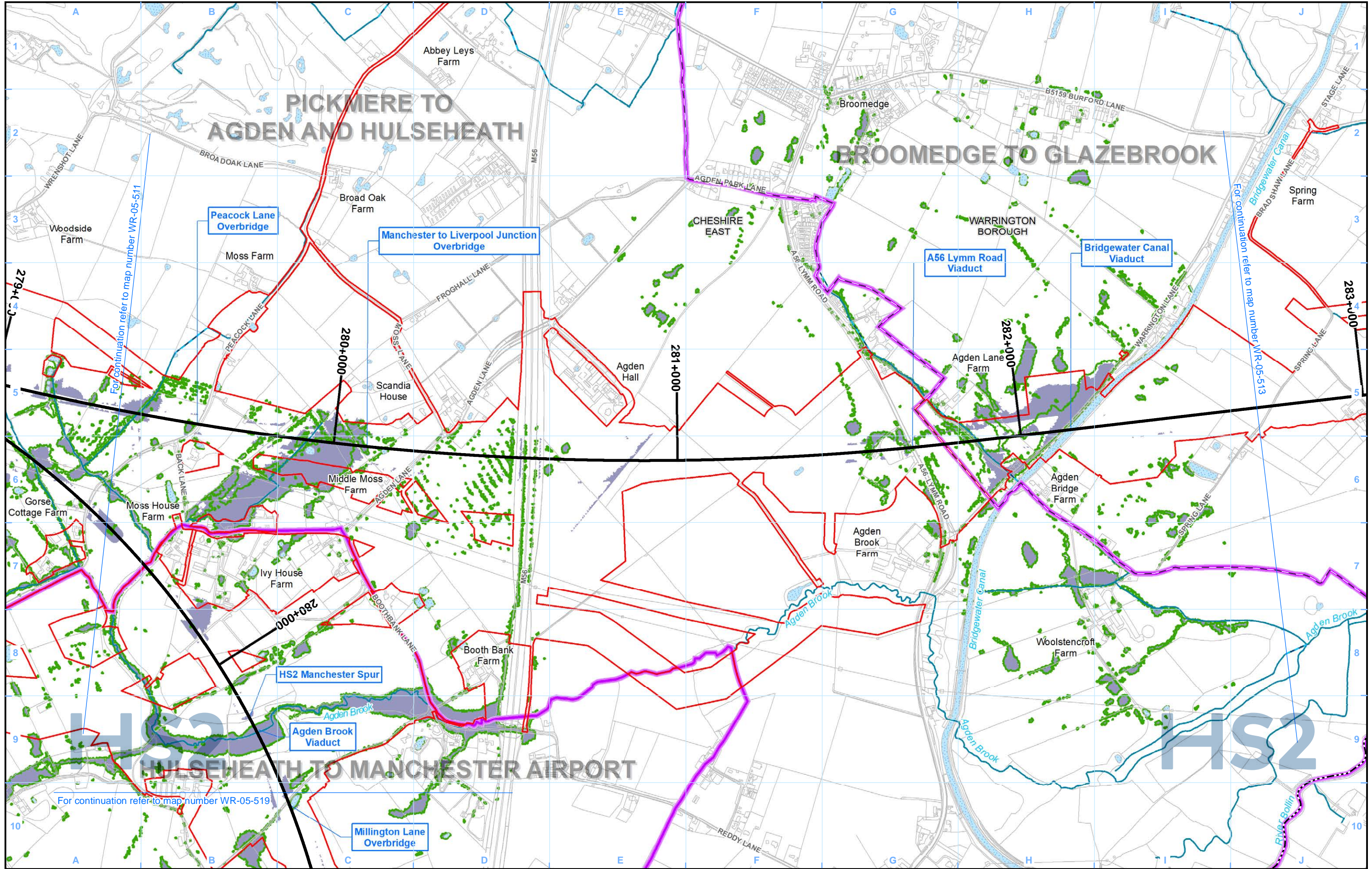
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002370-P01 Date: 12/10/21



Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-312b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area	MA04: Broomedge to Glazebrook

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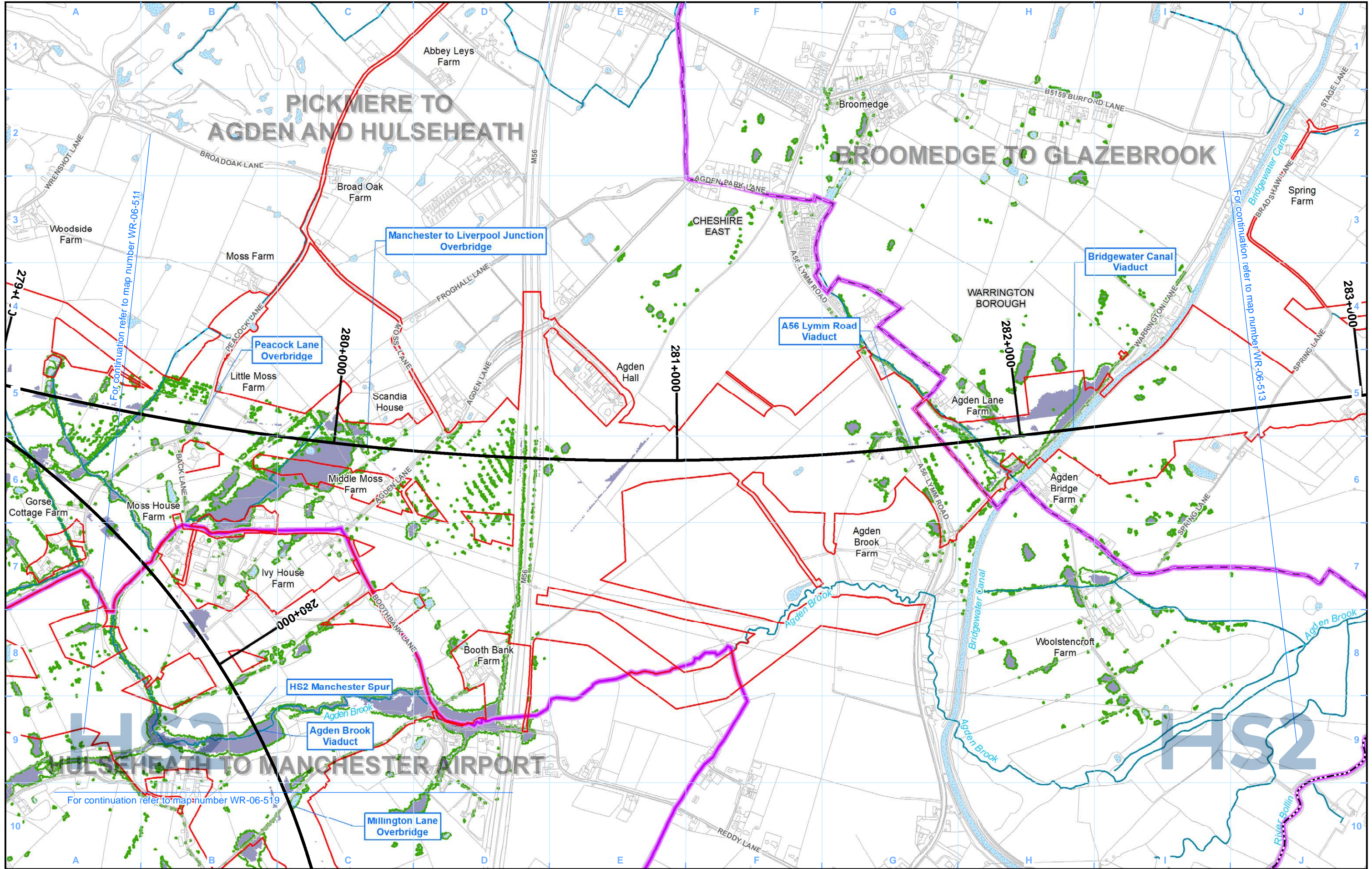
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002300-P01

Date: 16/09/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-312b

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA04: Broomedge to Glazebrook

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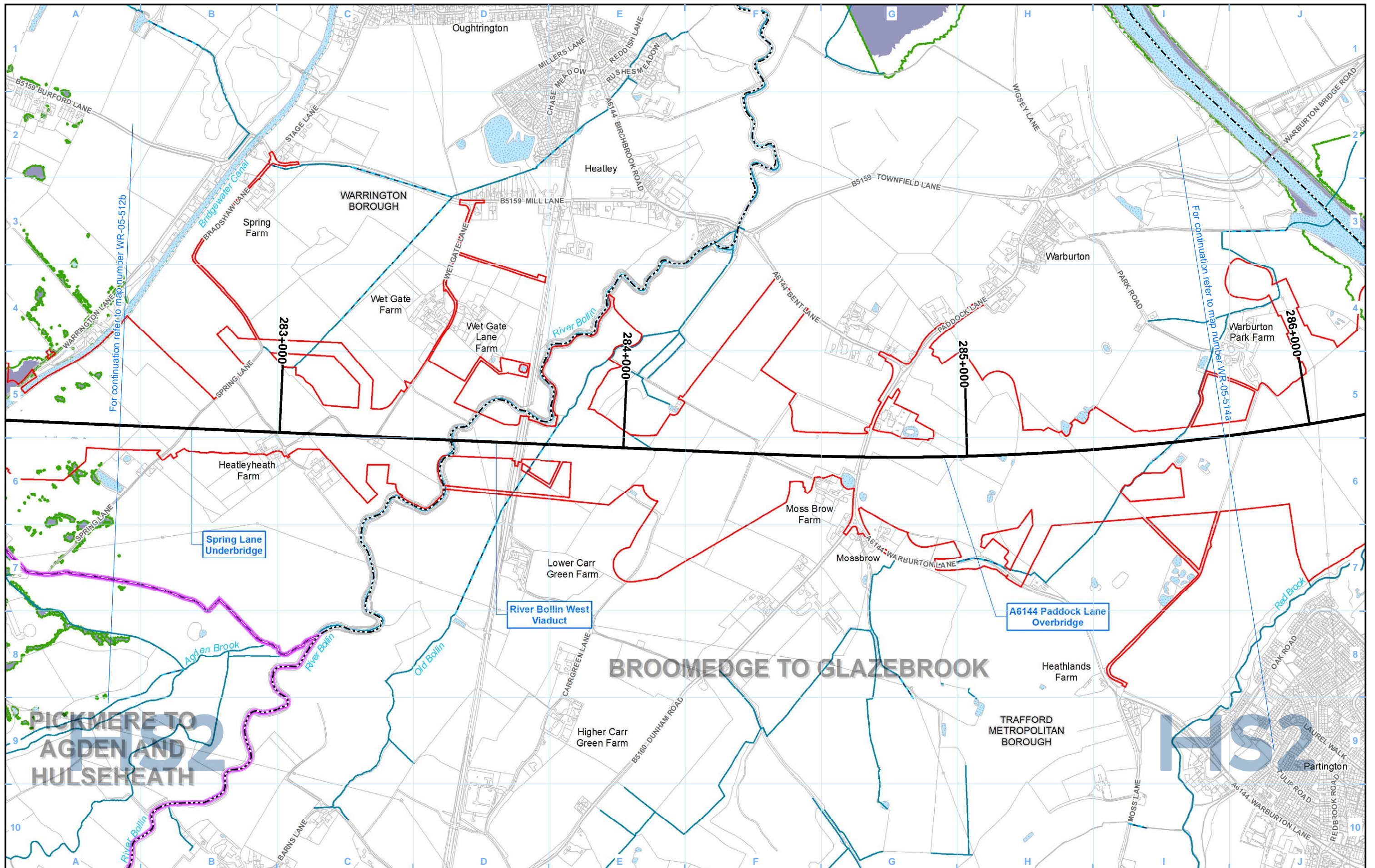
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Date: 14/10/21



Legend

Map Number: WR-05-313

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA04: Broomedge to Glazebrook

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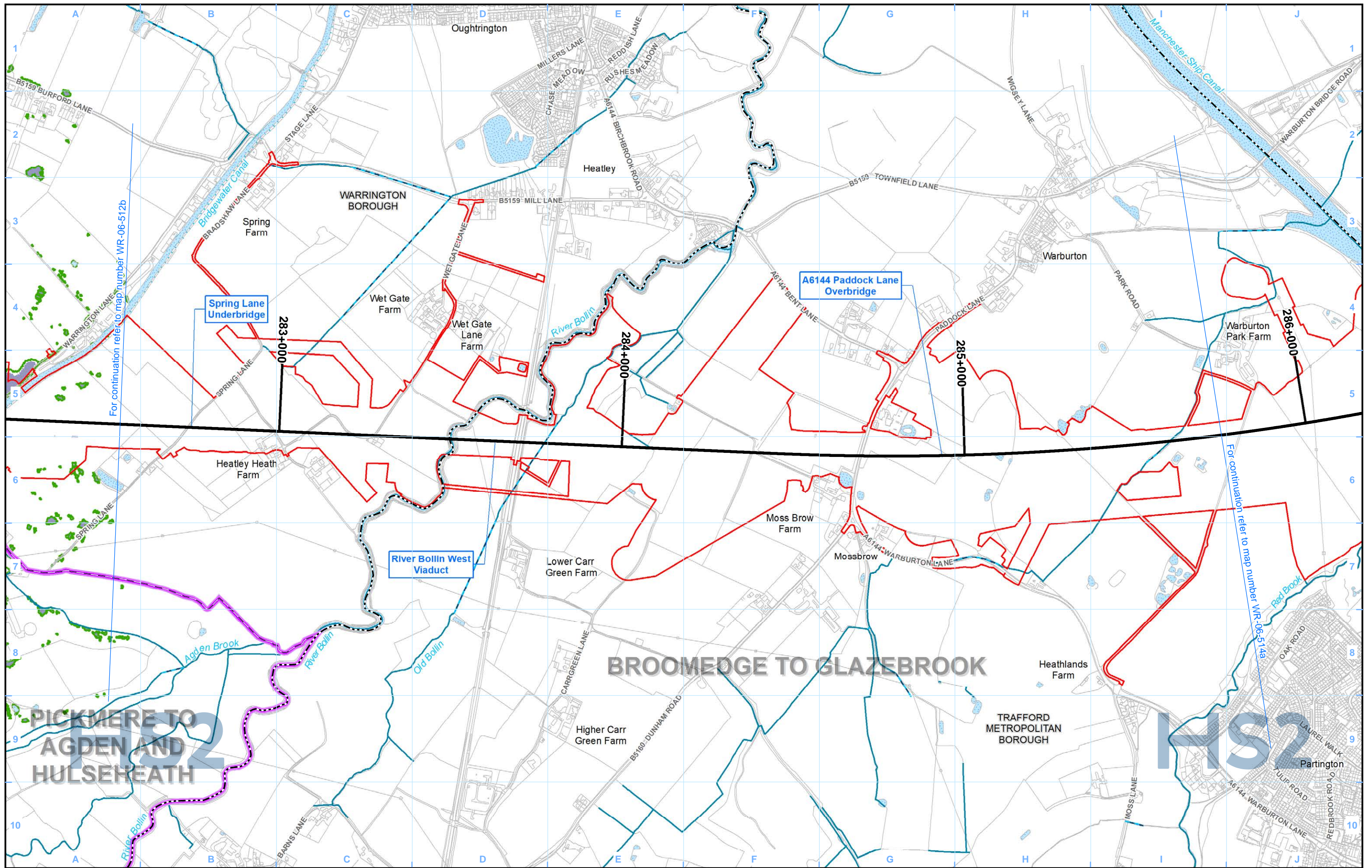
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Scale at A3: 1:10,000

0 100 200 300 400 Metres

Date: 16/09/21

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Legend		

Map Number	WR-06-313
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA04: Broomedge to Glazebrook

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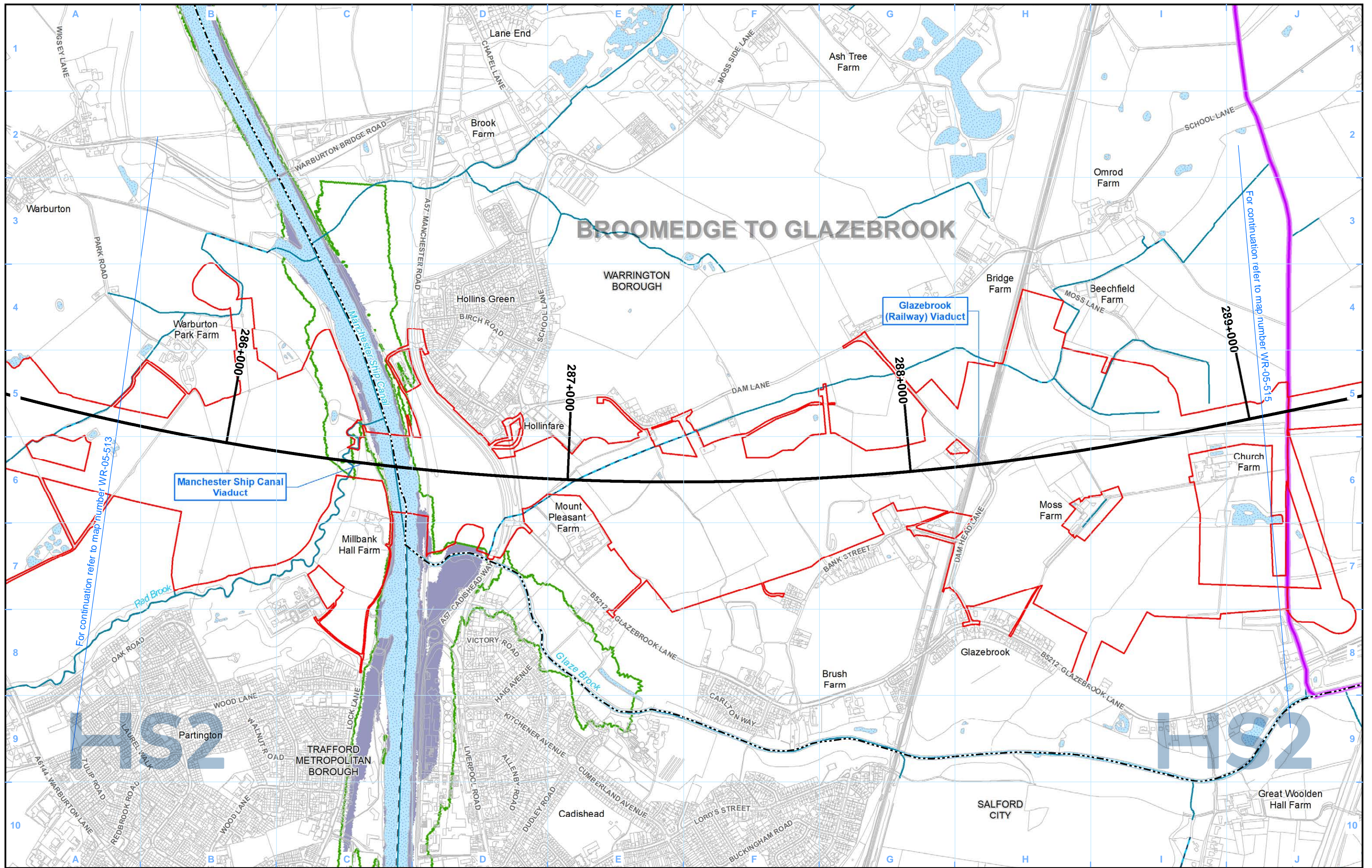
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Metres

Date: 14/10/21



Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-314a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA04: Broomedge to Glazebrook	

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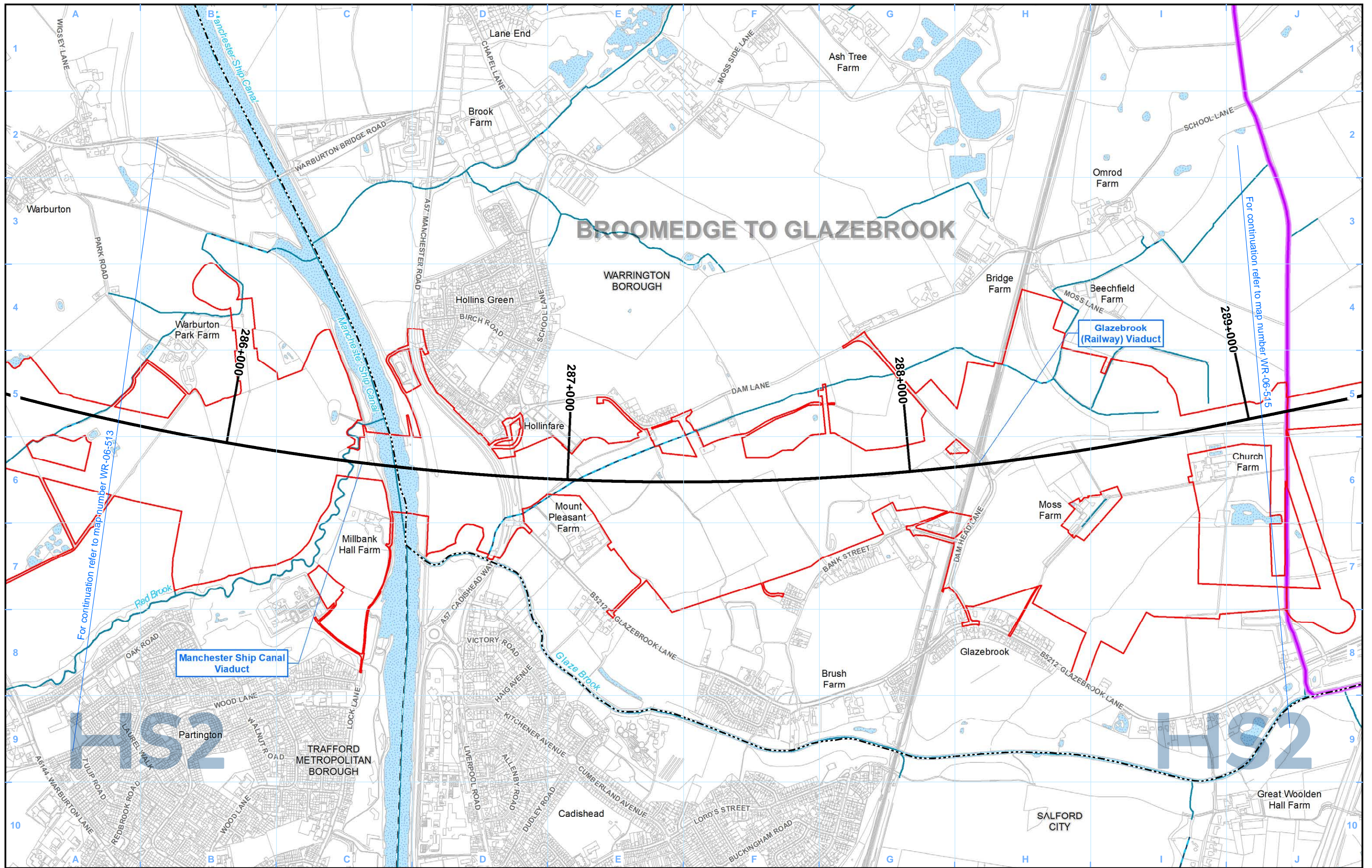
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002302-P01

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Metres

Date: 16/09/21



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	Canal tunnel
Land potentially required during construction	Open water	
Community area boundary		
County boundary		
District/Borough boundary		

Map Number: WR-06-314a

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA04: Broomedge to Glazebrook

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA05: Risley to Bamfurlong

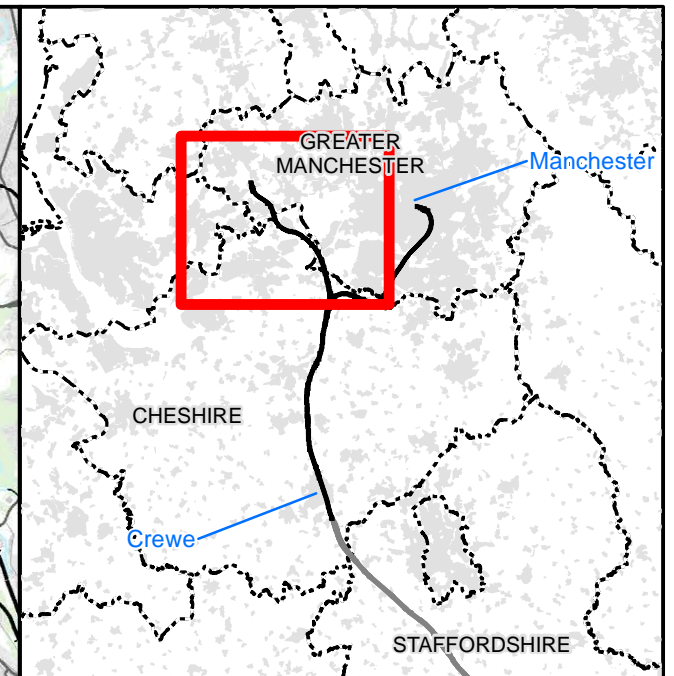
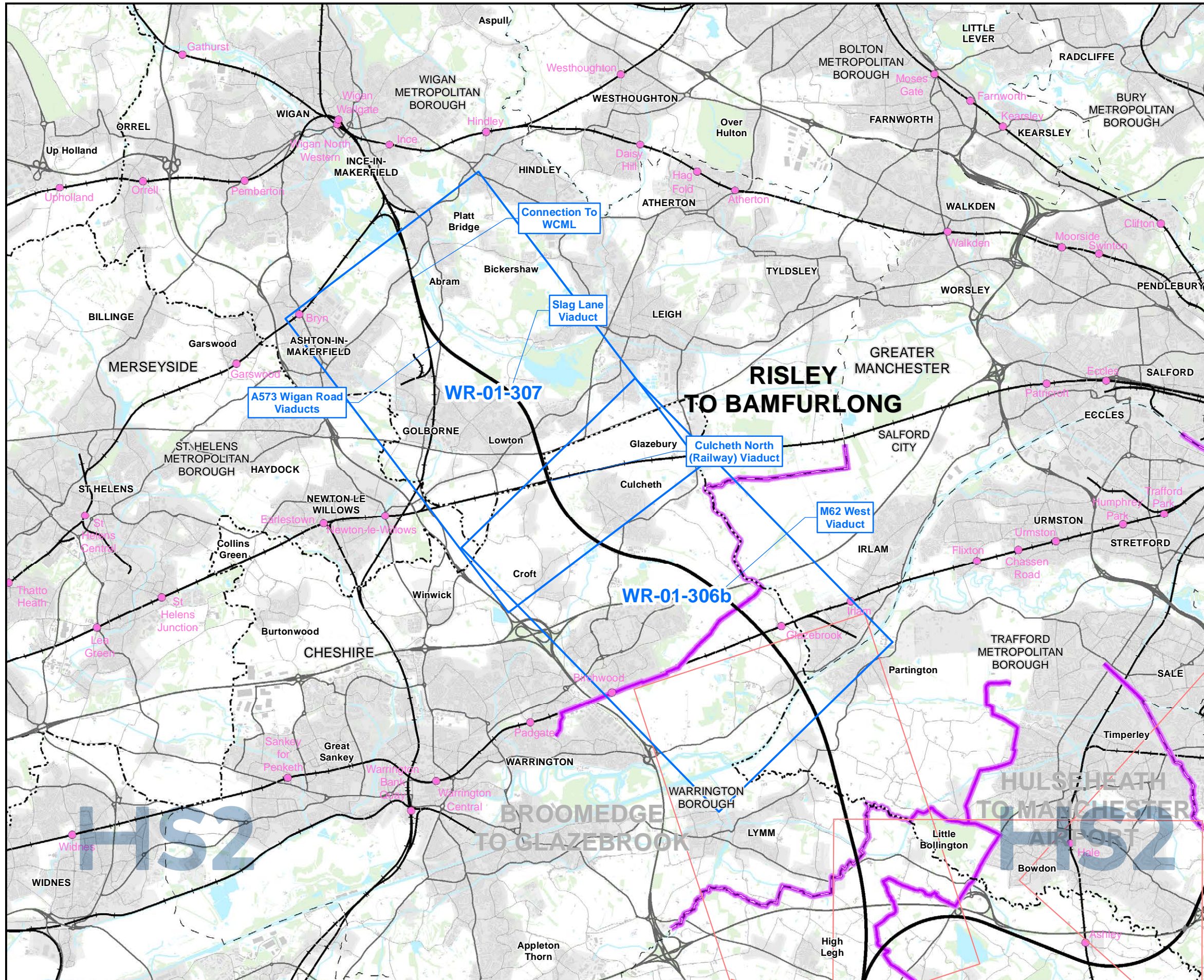
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	Existing railway station
	County boundary
	District/Borough boundary
	Map sheets included in this community area
	Map sheets not included in this community area

Map Number	WR-01-INDEX-MA05
Map Name	Index Map of: Surface Water Baseline
Community Area MA05: Risley to Bamfurlong	

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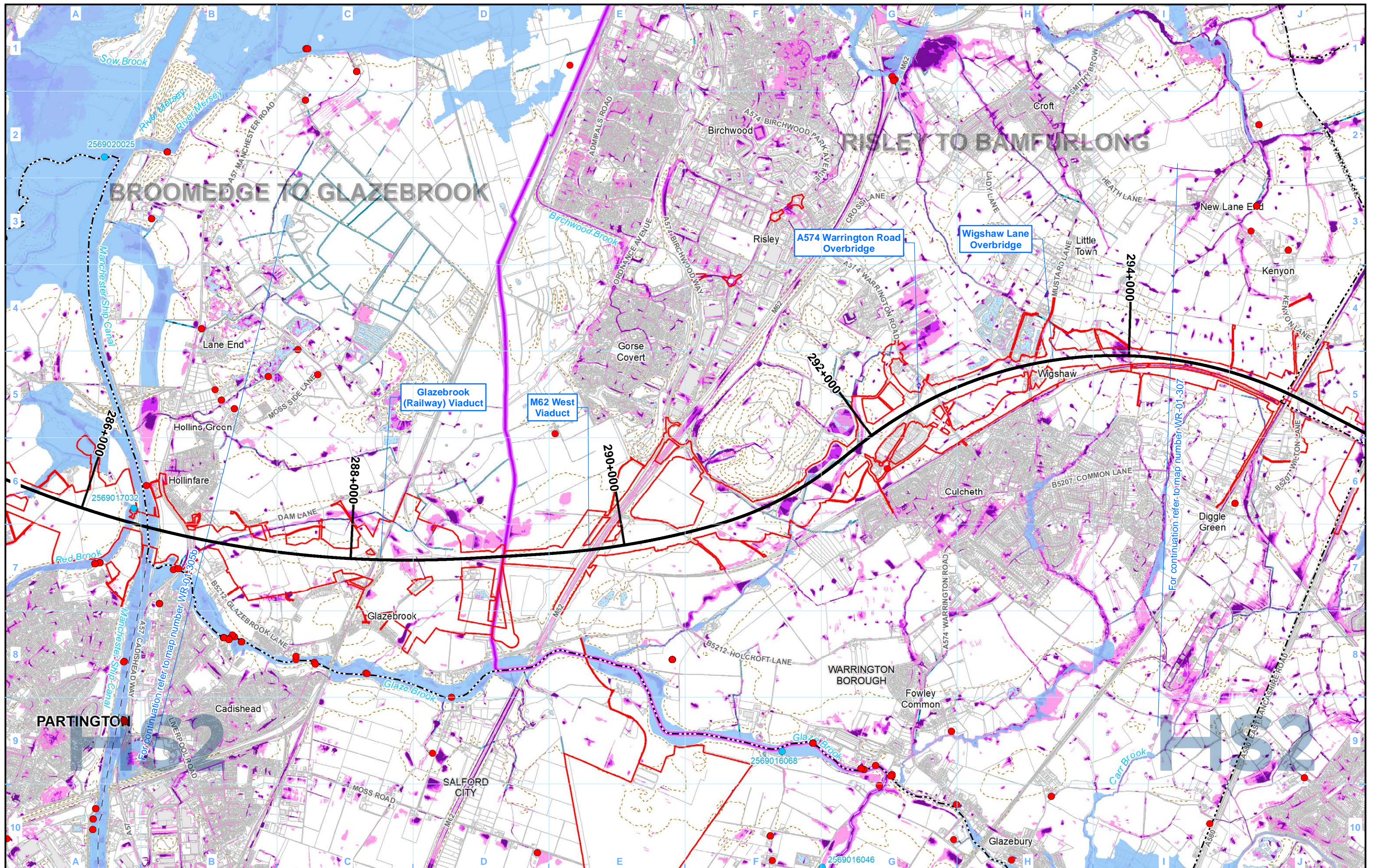
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Metres

Date: 12/08/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Licensed surface water abstraction (excluding public water supplies)
 - Unlicensed private surface water abstraction
 - Consented discharge to surface water
 - Airport
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Lakes & Reservoirs
 - Historic flooding area
 - Fluvial flood risk:
 - Flood Zone 2
 - Flood Zone 3
 - Risk of Flooding from Surface Water:
 - High - chance of flooding greater than 1 in 30 (3.33%)
 - Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-306b

Map Name: Surface Water Baseline

Community Area MA05: Risley to Bamfurlong

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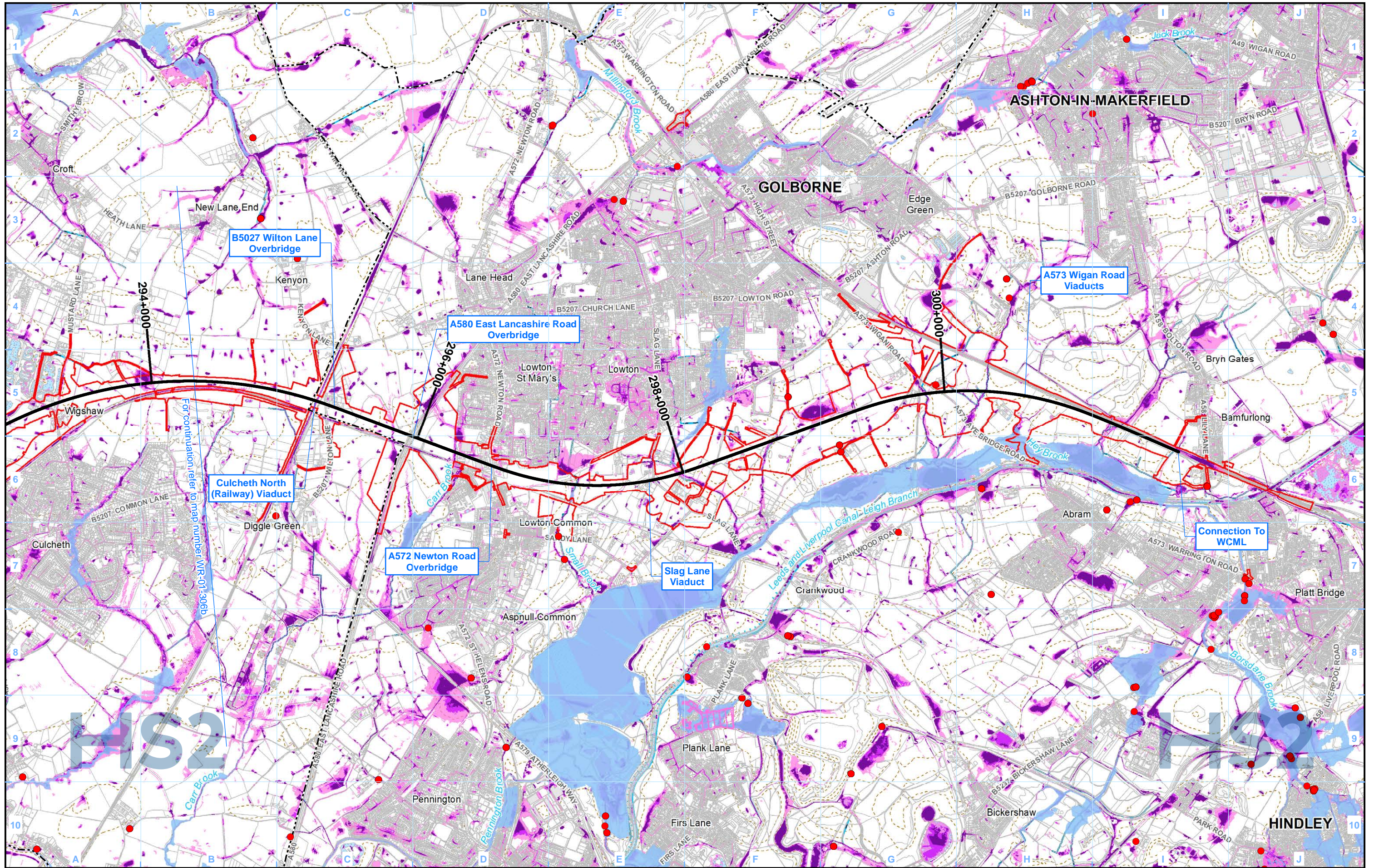
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000300-P05

Date: 12/08/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-307**

Map Name: **Surface Water Baseline**

Community Area MA05:
Risley to Bamfurlong

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Doc Number: 2DE01-MWJ-EV-MAP-M000-000301-P05

Date: 12/08/21

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GVA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SQB-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YVR-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Doc Number: 2EV01-ARP-GI-MAP-M000-000253

Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



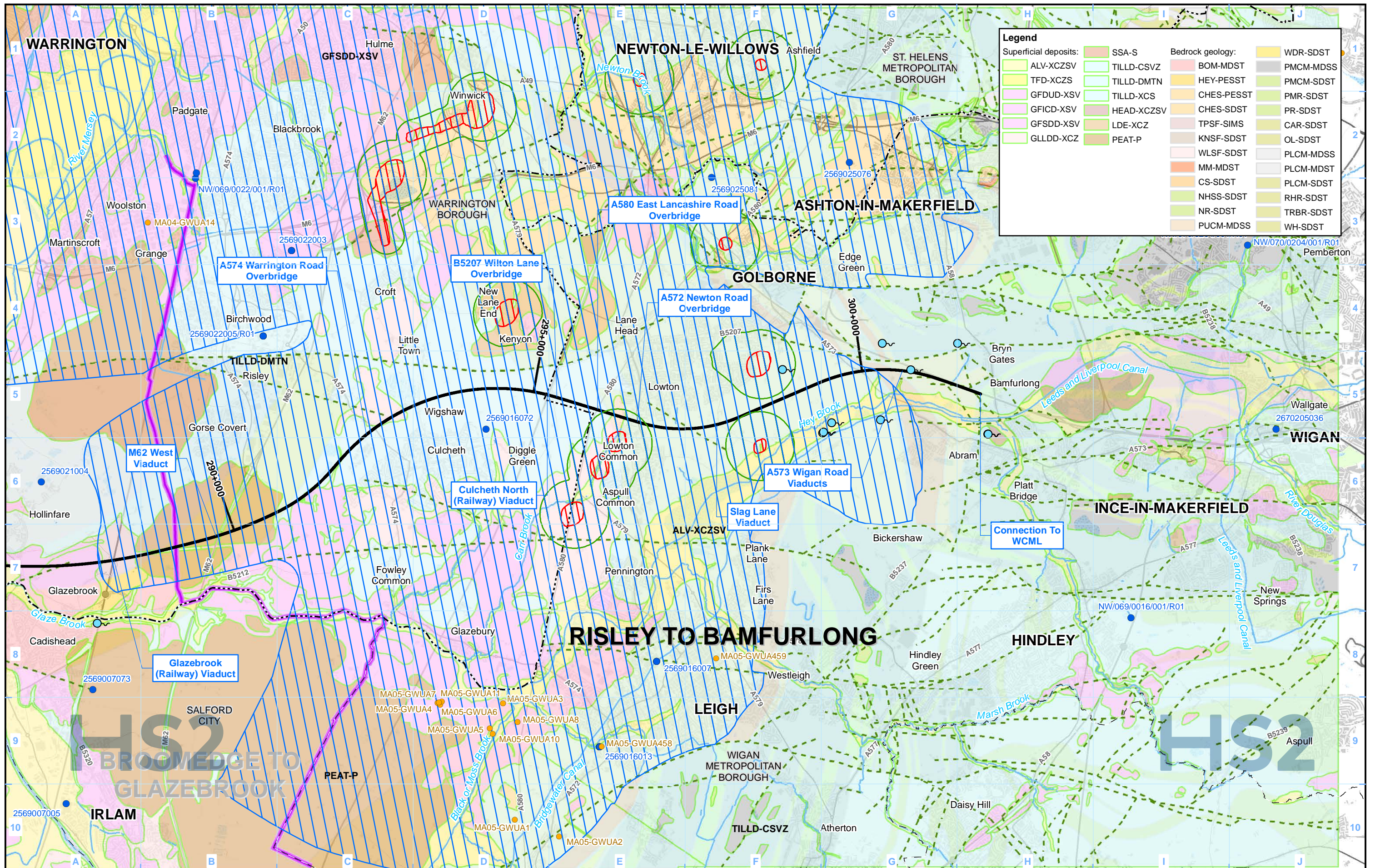
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Superficial deposits:		Bedrock geology:	
SSA-S	TILLD-CSVZ	BOM-MDST	WDR-SDST
ALV-XCZSV	TILLD-DMTN	HEY-PESST	PMCM-MDSS
TFD-XCZS	TILLD-XCS	CHES-PESST	PMCM-SDST
GFDUD-XSV	HEAD-XCZSV	CHES-SDST	PMR-SDST
GFICD-XSV	LDE-XCZ	TPSF-SIMS	PR-SDST
GFSDD-XSV	PEAT-P	KNSF-SDST	CAR-SDST
GLLDD-XCZ		WLSF-SDST	OL-SDST
		MM-MDST	PLCM-MDSS
		CS-SDST	PLCM-MDST
		NHSS-SDST	PLCM-SDST
		NR-SDST	RHR-SDST
		PUCM-MDSS	TRBR-SDST
			WH-SDST

Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	County boundary
	District/Borough boundary
	Airport
	Lakes & Reservoirs
	Geological fault line
	Licensed groundwater abstraction (excluding public water supplies)
	Unlicensed private groundwater abstraction
	Consented discharge to groundwater
	Springs

Groundwater source protection zone:	
	Zone 1
	Zone 2
	Zone 3

For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

Map Number	WR-02-305
Map Name	Groundwater Baseline
Community Area MA05: Risley to Bamfurlong	

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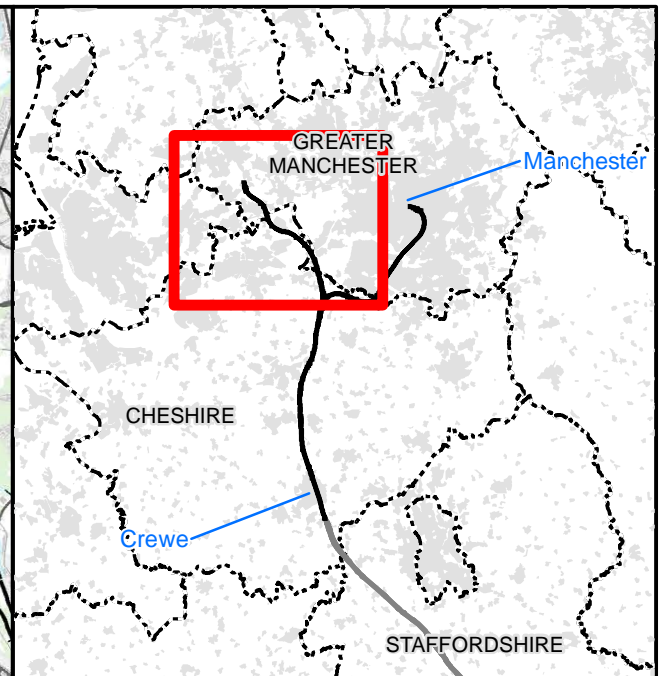
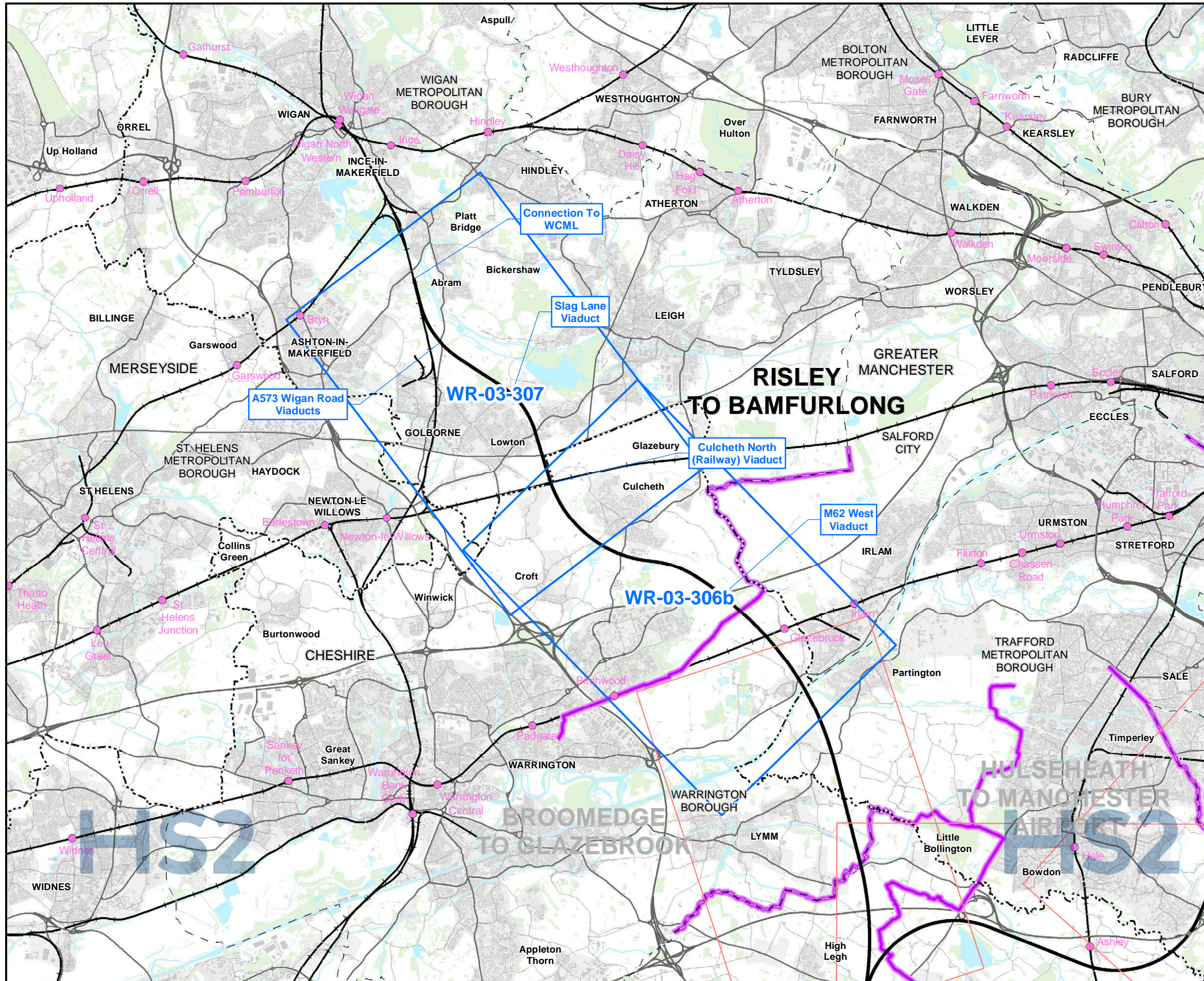
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Map Series Information:
 This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: **WR-03-INDEX-MA05**
 Map Name: **Index Map of:
 Water Framework Directive**
 Community Area MA05:
 Risley to Bamfurlong

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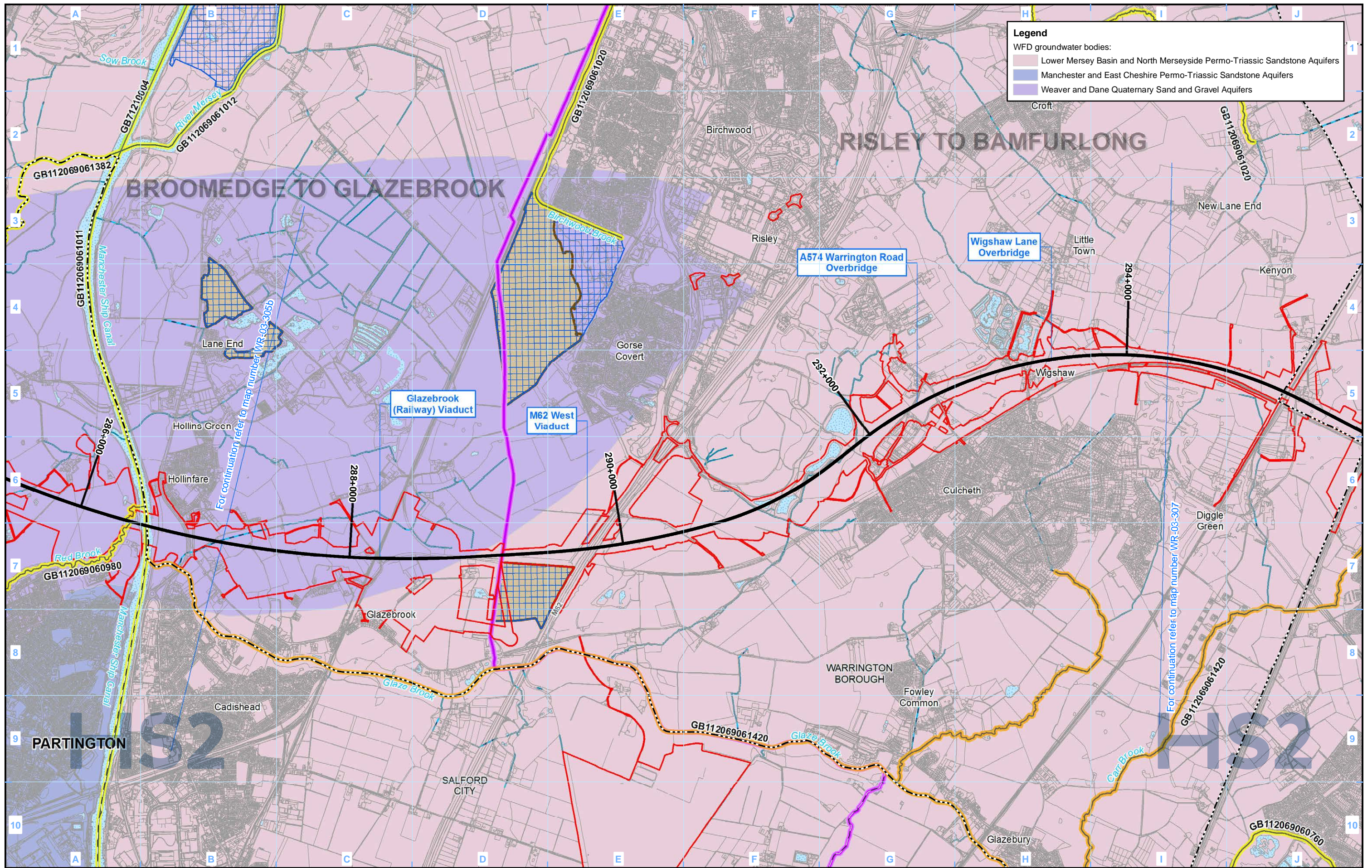
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Note: Not all data layers in the legend are represented on every map.



Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies

Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes

Overall Status:

- Good
- Moderate
- Poor
- Bad

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-306b

Map Name: Water Framework Directive

Community Area MA05: Risley to Bamfurlong

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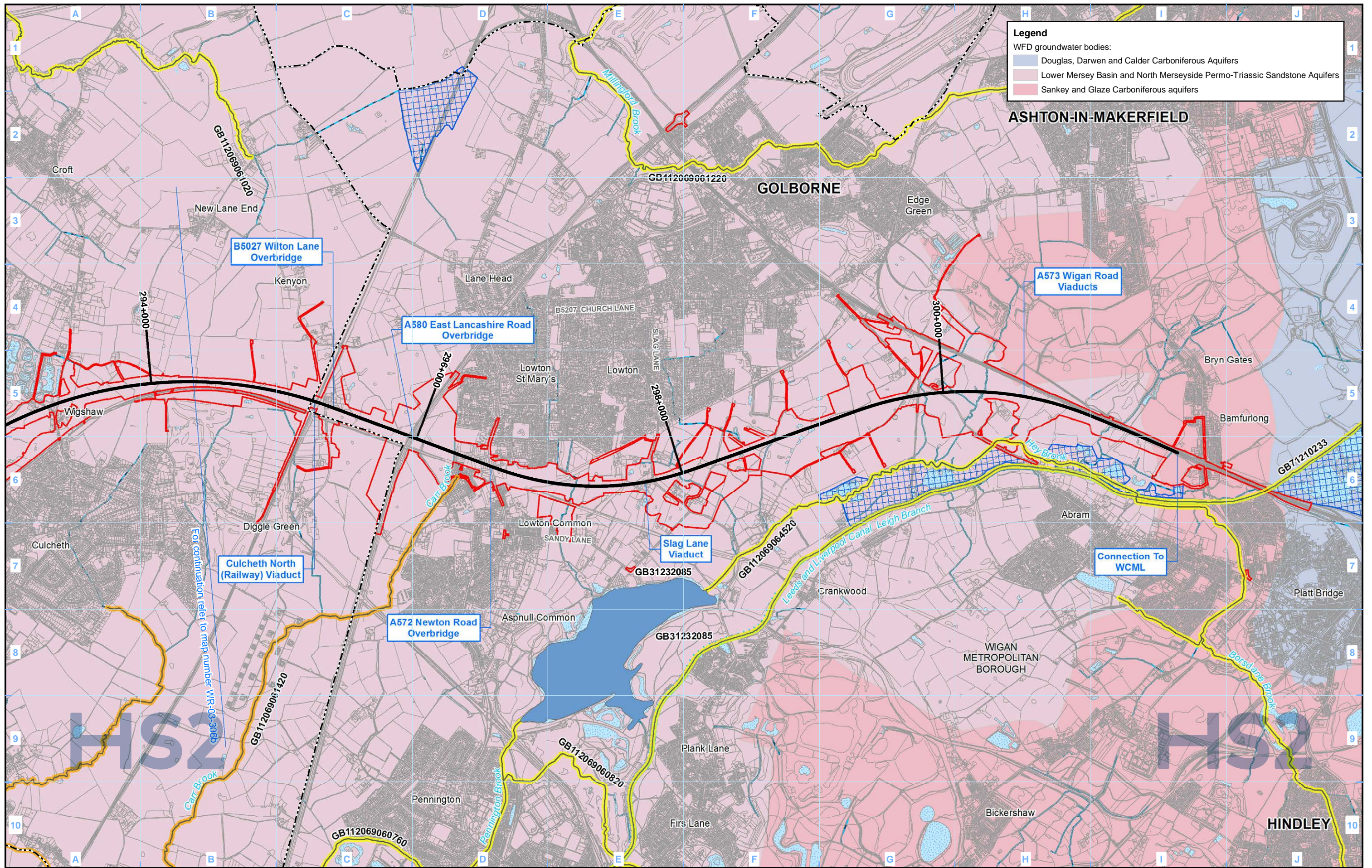
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Legend

WFD groundwater bodies:

- Douglas, Darwen and Calder Carboniferous Aquifers
- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Sankey and Glaze Carboniferous aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies

Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes

Overall Status:

- Good
- Moderate
- Poor
- Bad

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-307

Map Name: Water Framework Directive

Community Area MA05: Risley to Bamfurlong

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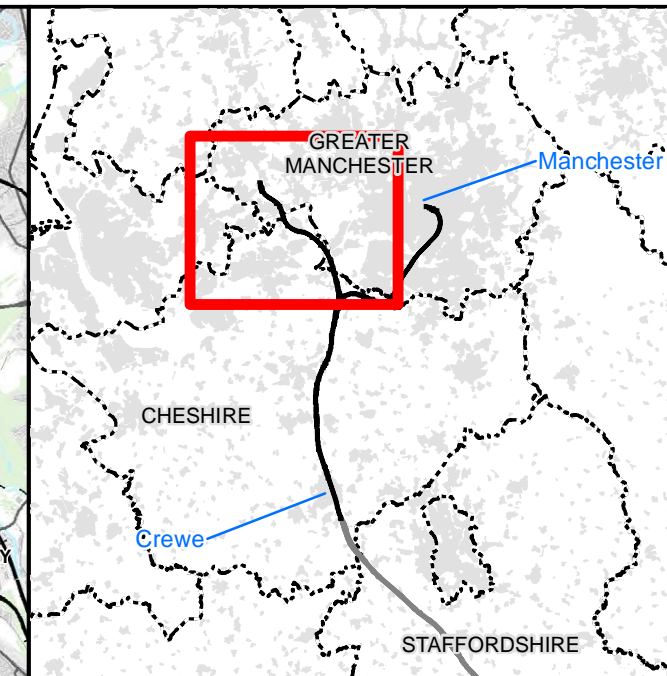
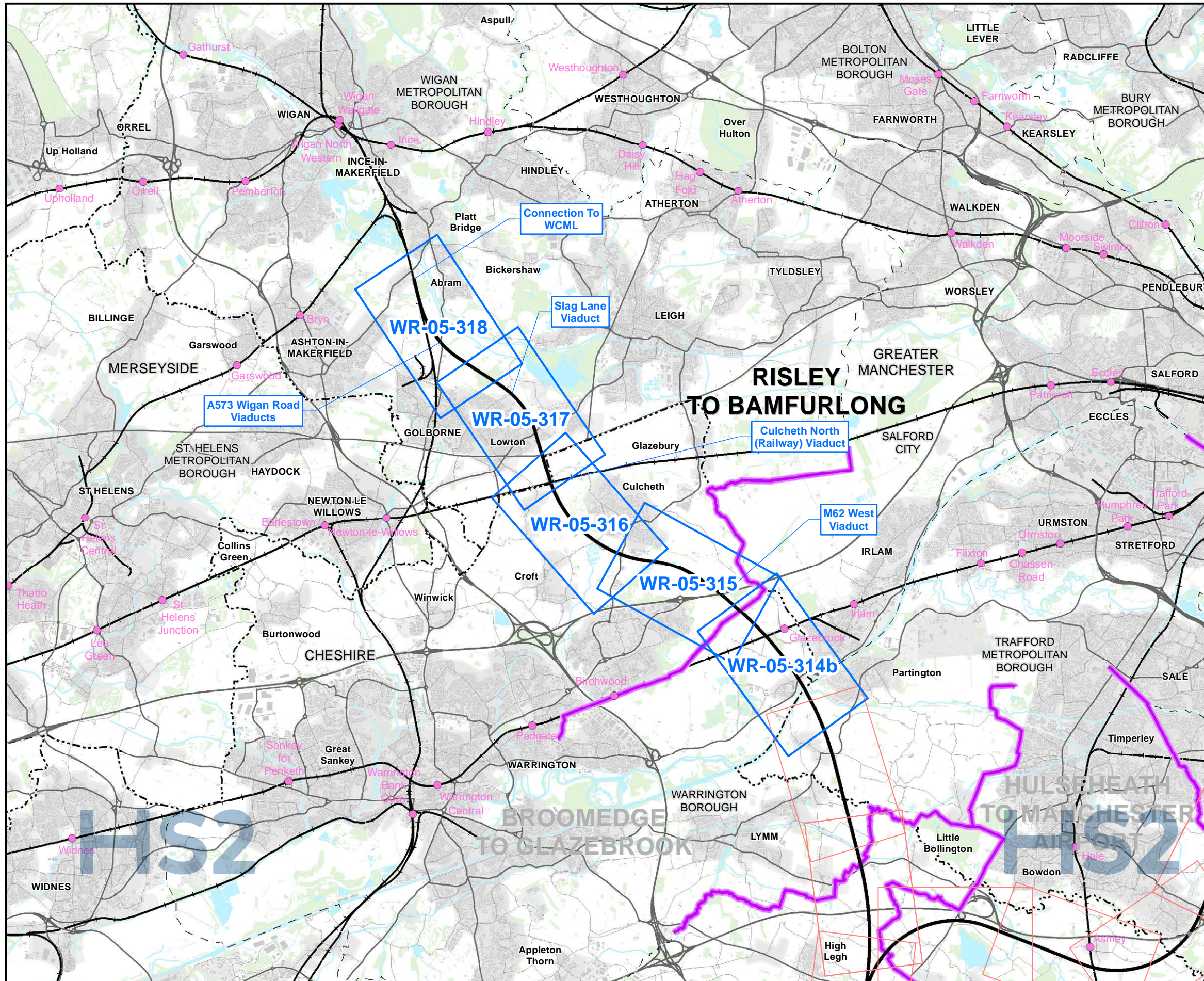
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number **WR-05-INDEX-MA05**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 100 including Climate Change (1%+CC)
 Annual Probability of River Flooding

Community Area MA05:
 Risley to Bamfurlong

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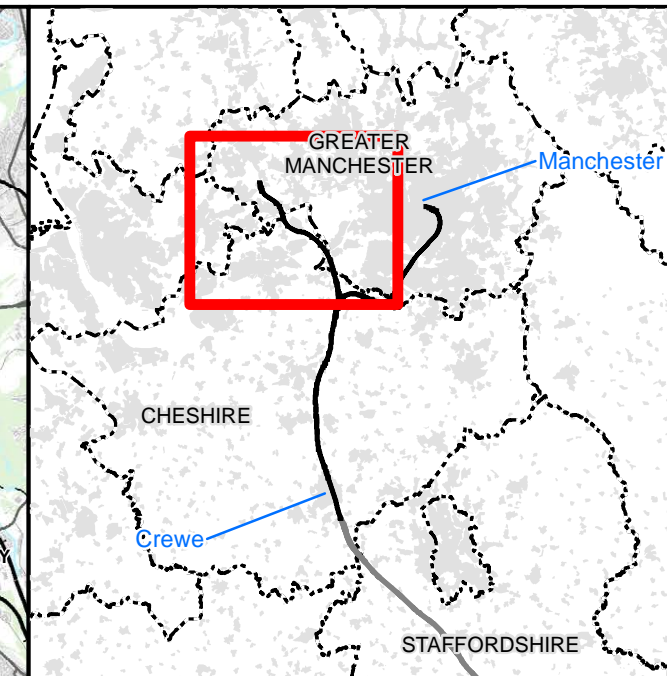
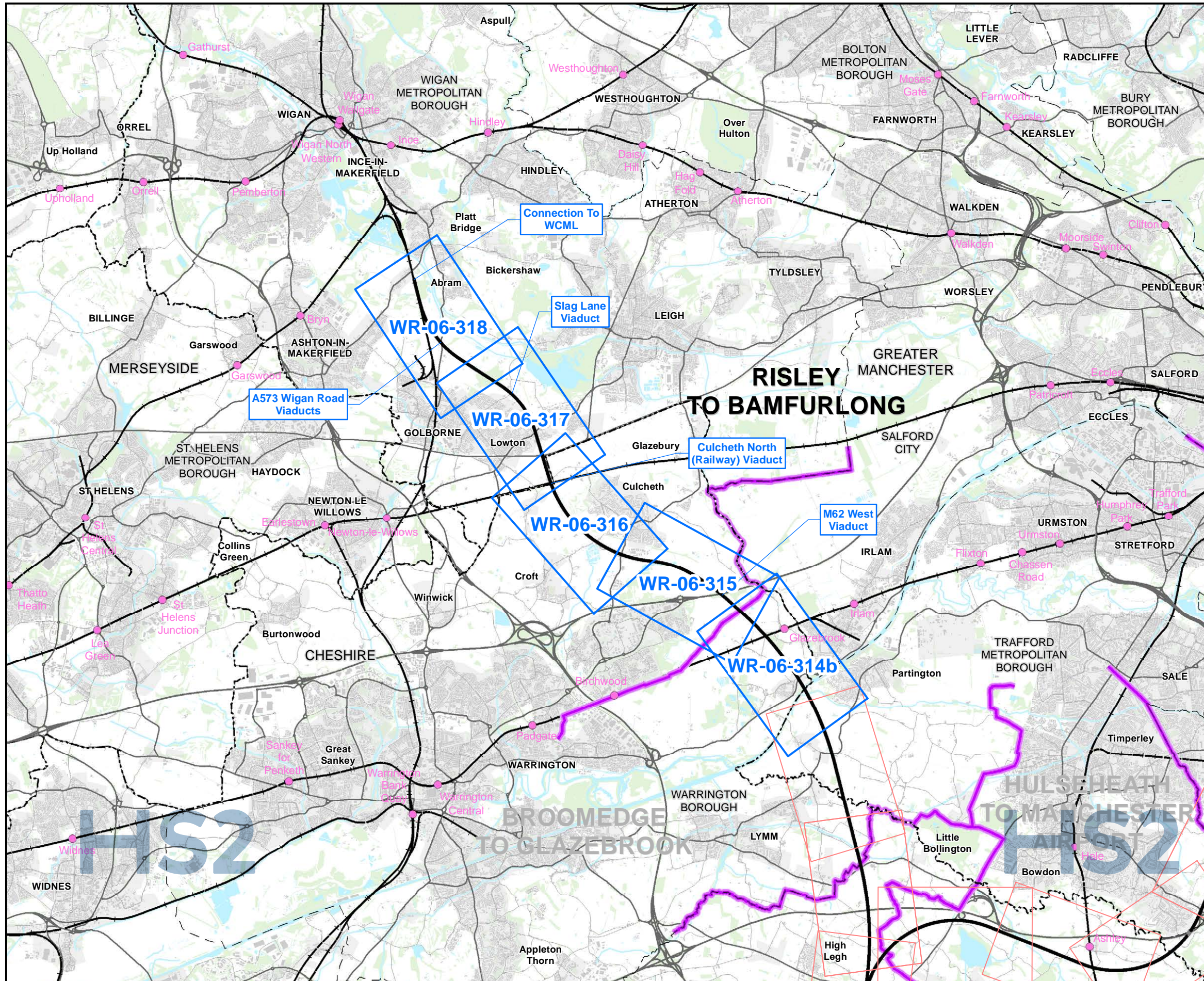
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002325-P01

Date: 07/10/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-06-INDEX-MA05
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA05: Risley to Bamfurlong

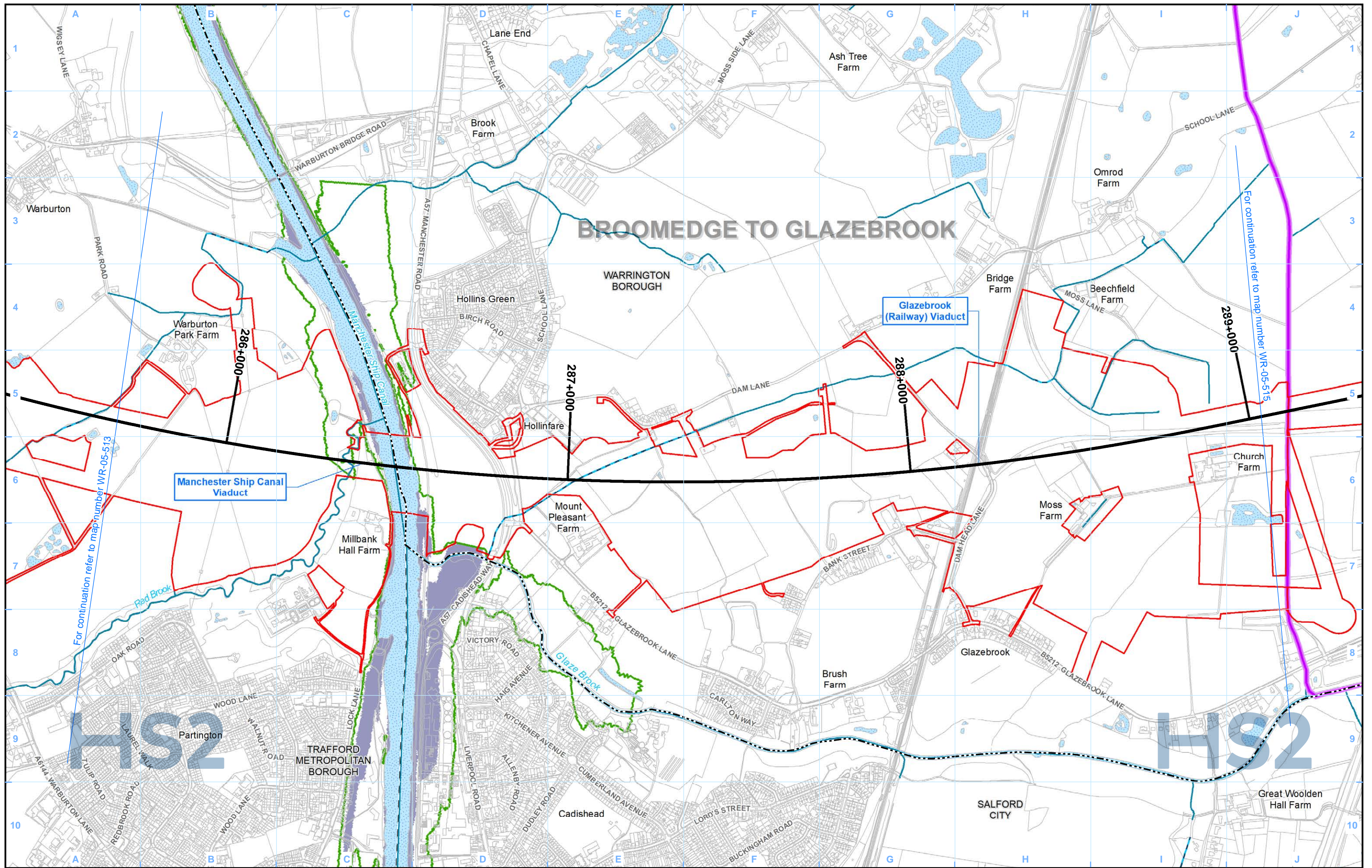
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002371-P01 **Date:** 12/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: WR-05-314b

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA05: Risley to Bamfurlong

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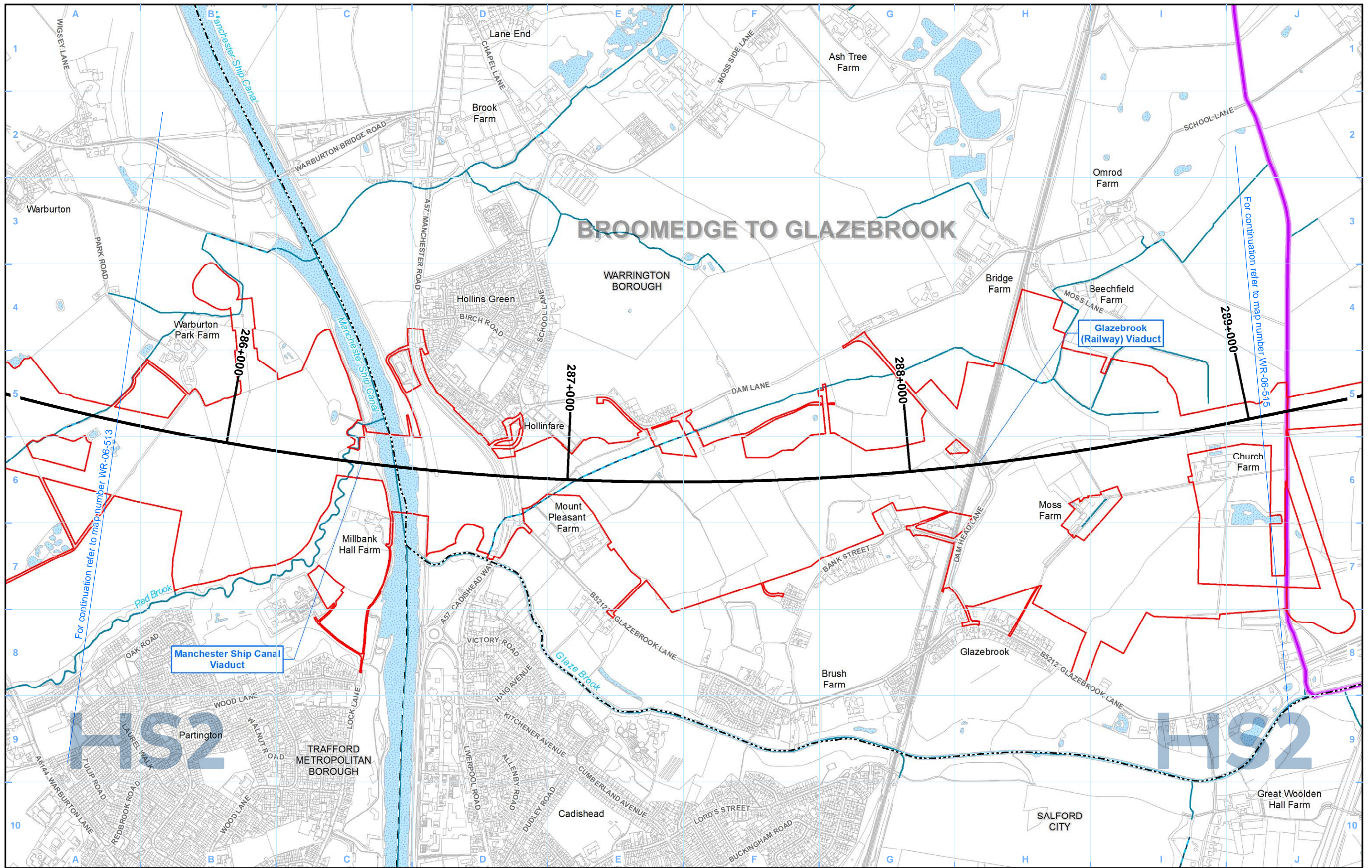
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002303-P01

Date: 16/09/21

Scale at A3: 1:10,000

0 100 200 300 400 Metres



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	Canal tunnel
Land potentially required during construction	Open water	
Community area boundary		
County boundary		
District/Borough boundary		

Map Number	WR-06-314b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA05: Risley to Bamfurlong

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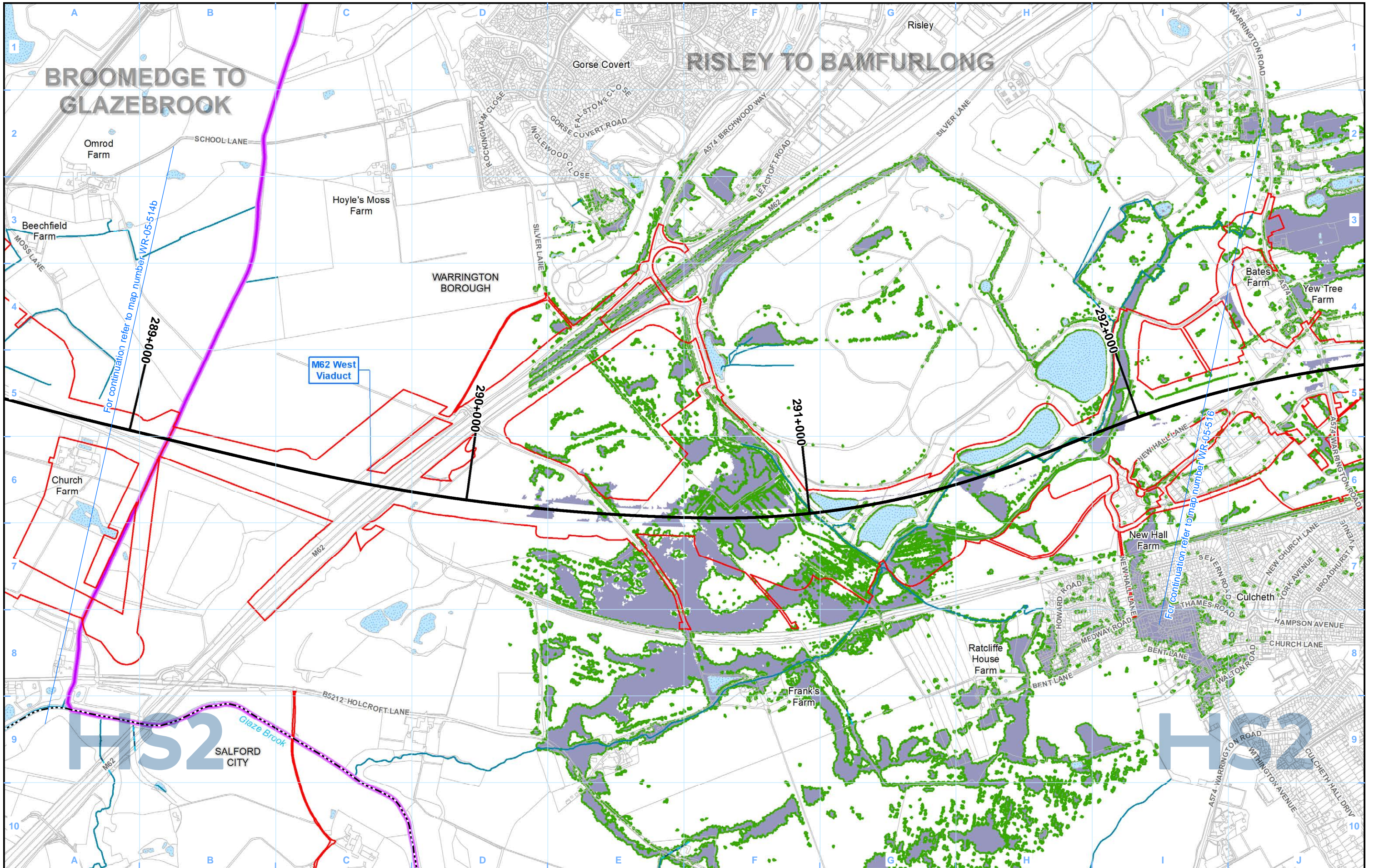
Scale at A3: 1:10,000

Doc Number: 2DE01-MWJ-EV-MAP-M000-002349-P01

Date: 14/10/21

BROOMEDGE TO GLAZEBROOK

RISLEY TO BAMFURLONG



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water

- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-315**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA05:
Risley to Bamfurlong

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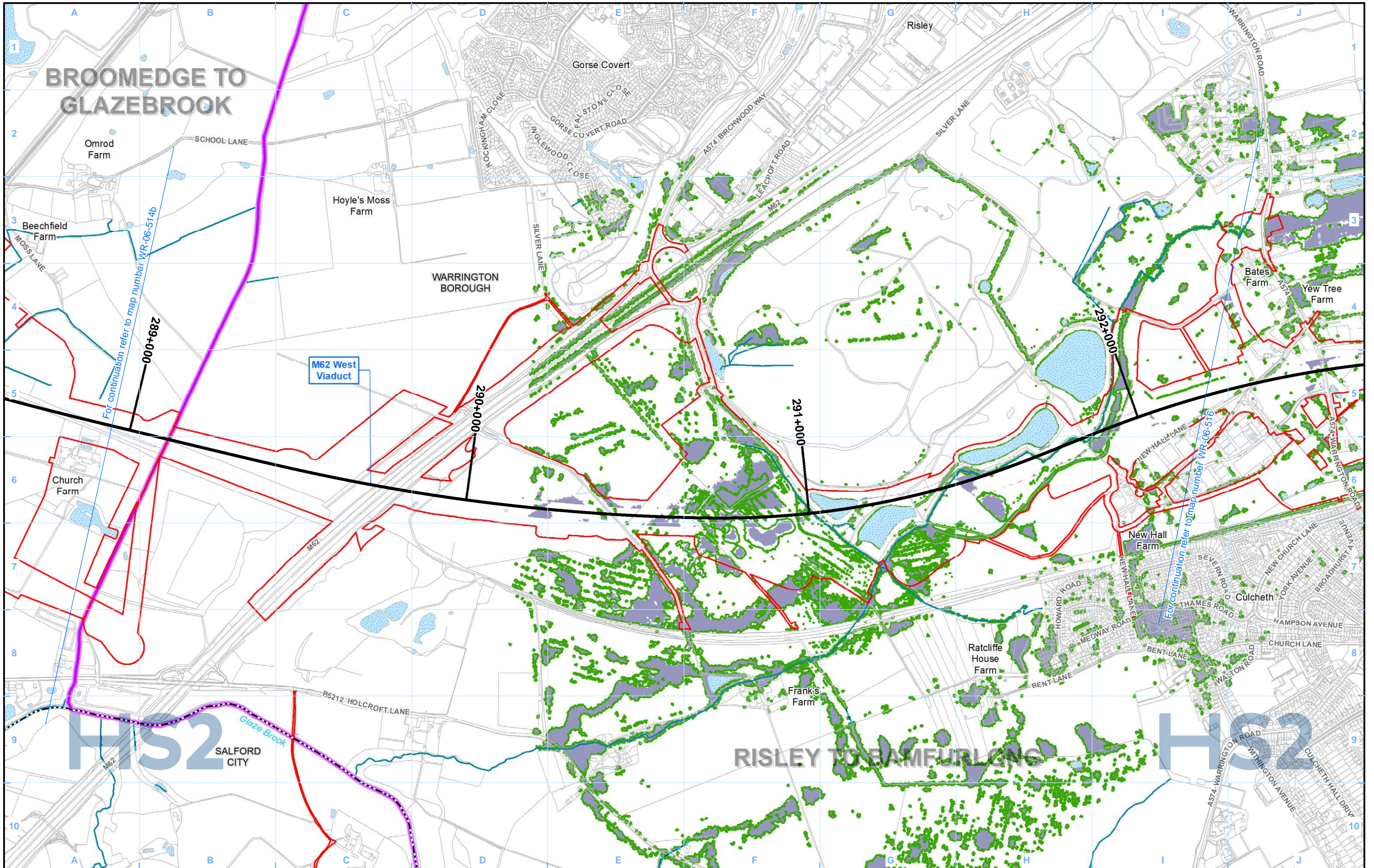
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002304-P01

Date: 16/09/21

BROOMEDGE TO GLAZEBROOK



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-315

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA05: Risley to Bamfurlong

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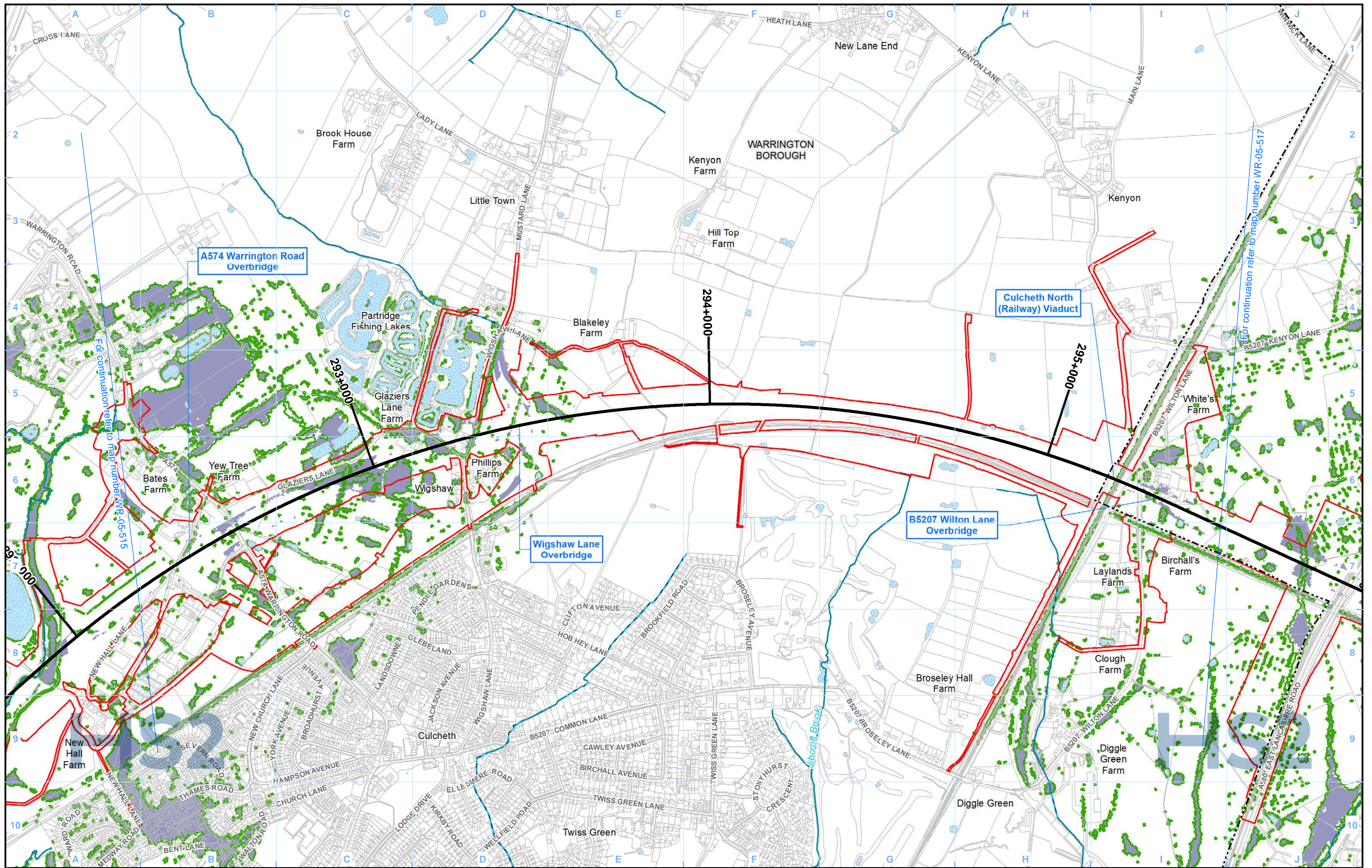
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Date: 14/10/21

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Metres



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number
WR-05-316

Map Name
Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Community Area MA05:
Risley to Bamfurlong

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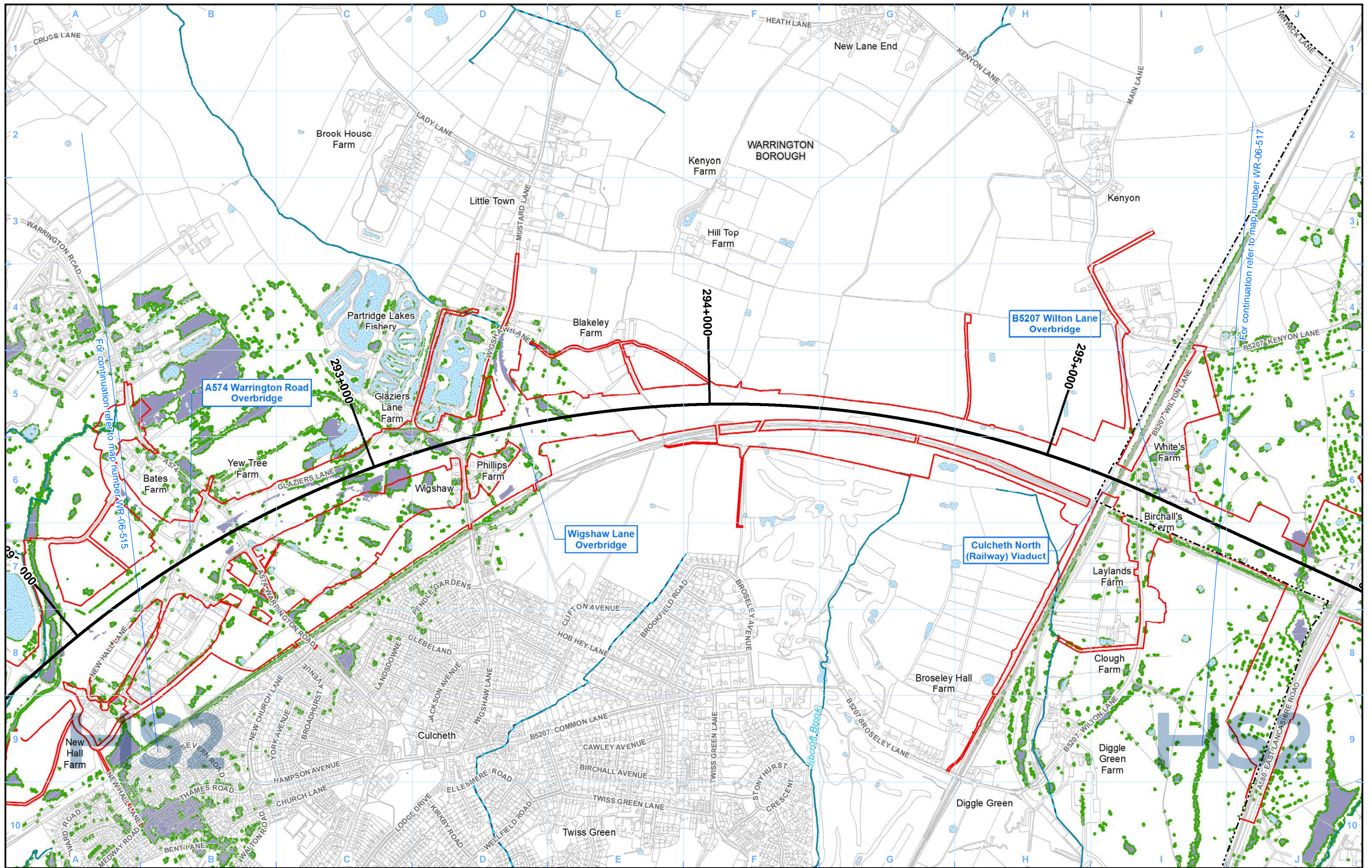
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002305-P01

Date: 16/09/21

For continuation refer to map number WR-05-517

For continuation refer to map number WR-05-515



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-316**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA05:
Risley to Bamfurlong

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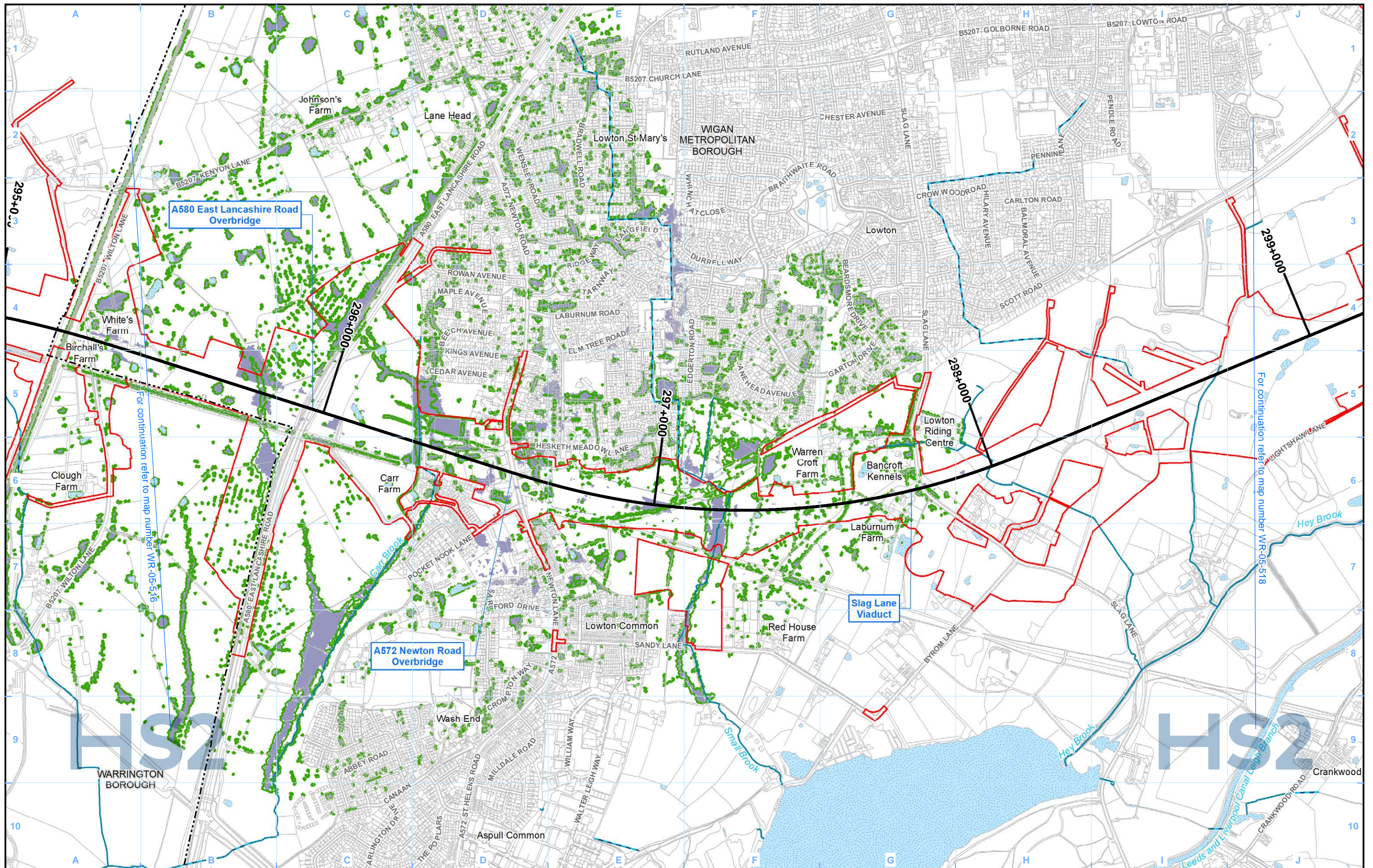
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Metres



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-317
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA05: Risley to Bamfurlong	

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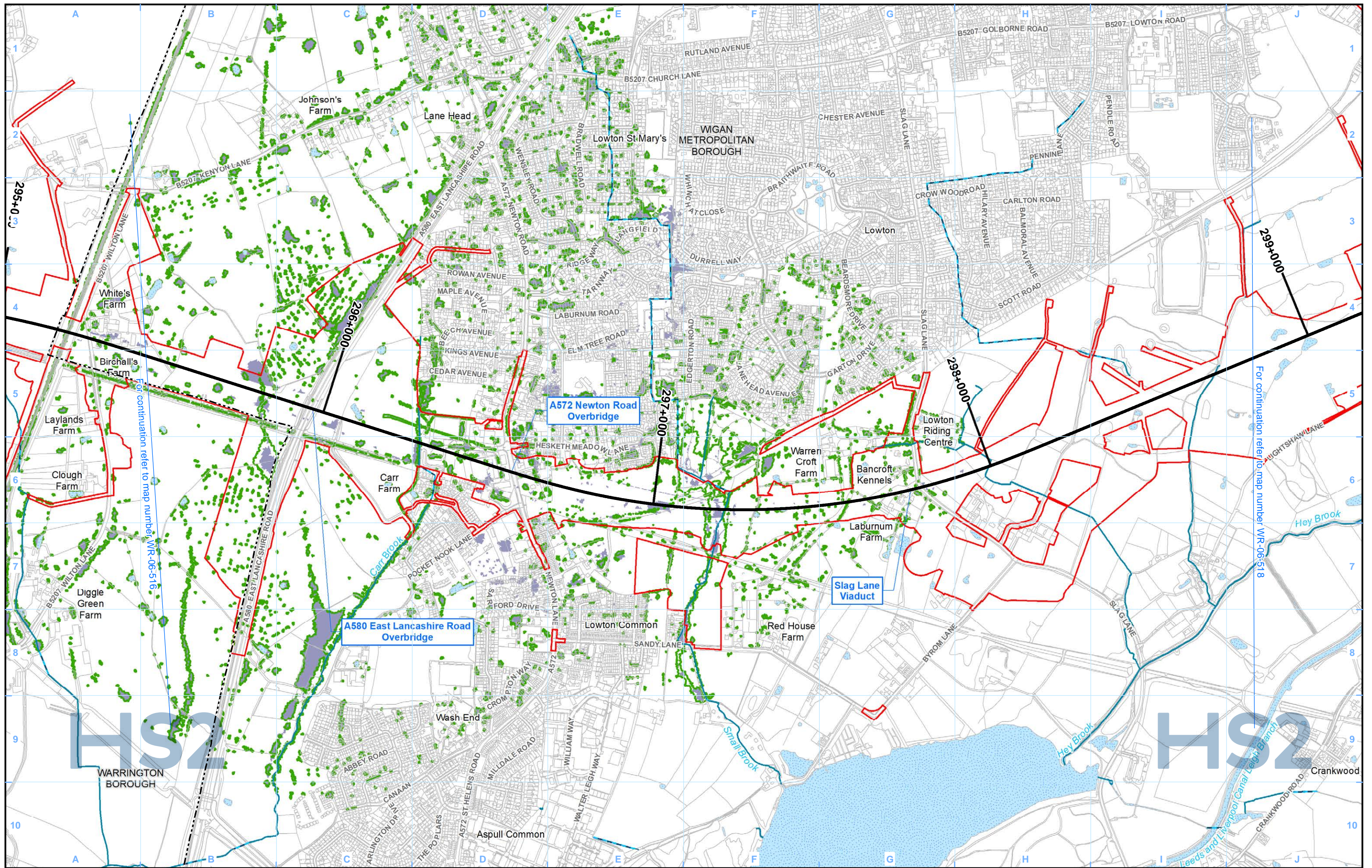
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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-317

Map Name: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Community Area MA05: Risley to Bamfurlong

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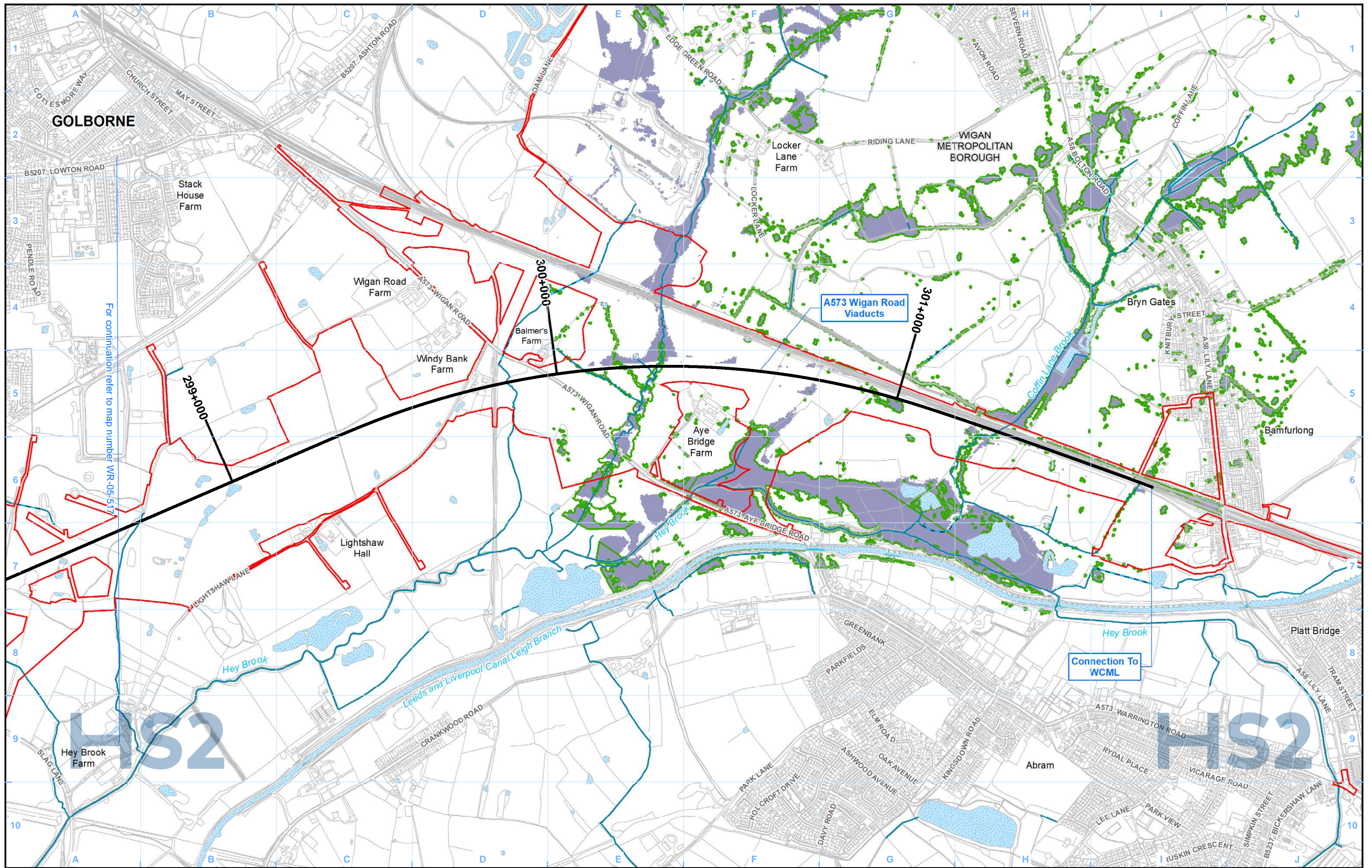
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Date: 14/10/21

For continuation refer to map number WR-06-516

For continuation refer to map number WR-06-518



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-318**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA05:
Risley to Bamfurlong

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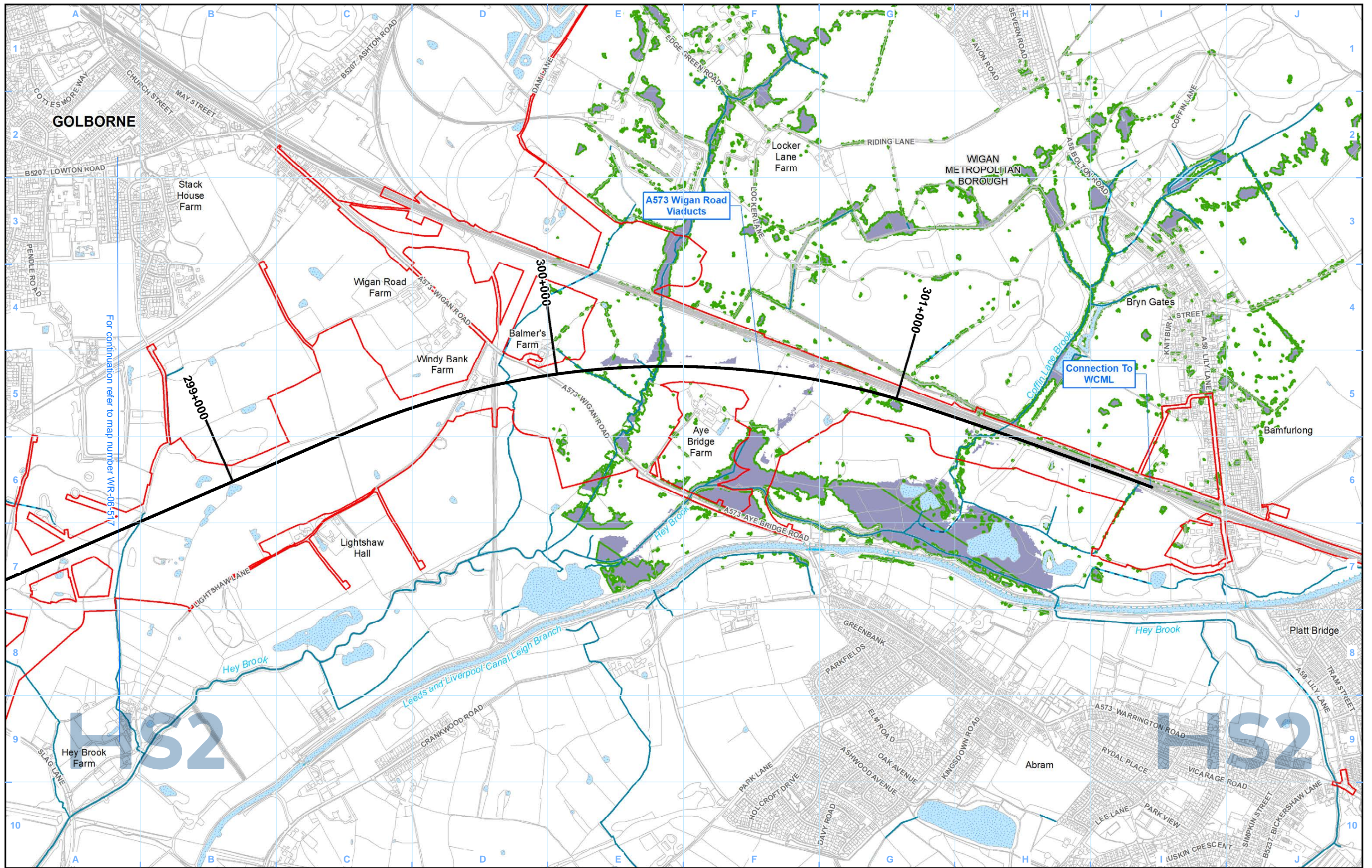
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Date: 16/09/21



Legend			
	Route in tunnel		Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Route on surface		Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Depot, station, headhouse or portal building		Canal
	Land potentially required during construction		Canal tunnel
	Community area boundary		Open water
	County boundary		
	District/Borough boundary		

Map Number	WR-06-318
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA05: Risley to Bamfurlong

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Metres

Date: 14/10/21

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA06: Hulseheath to Manchester Airport

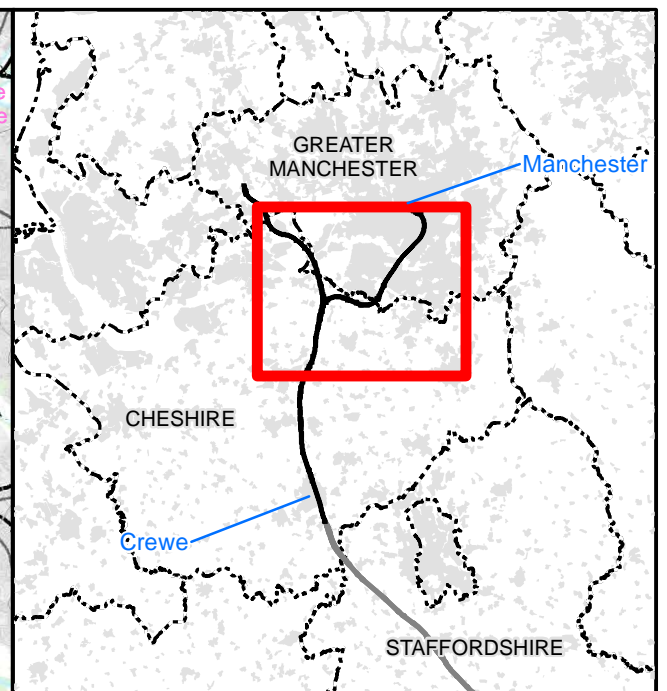
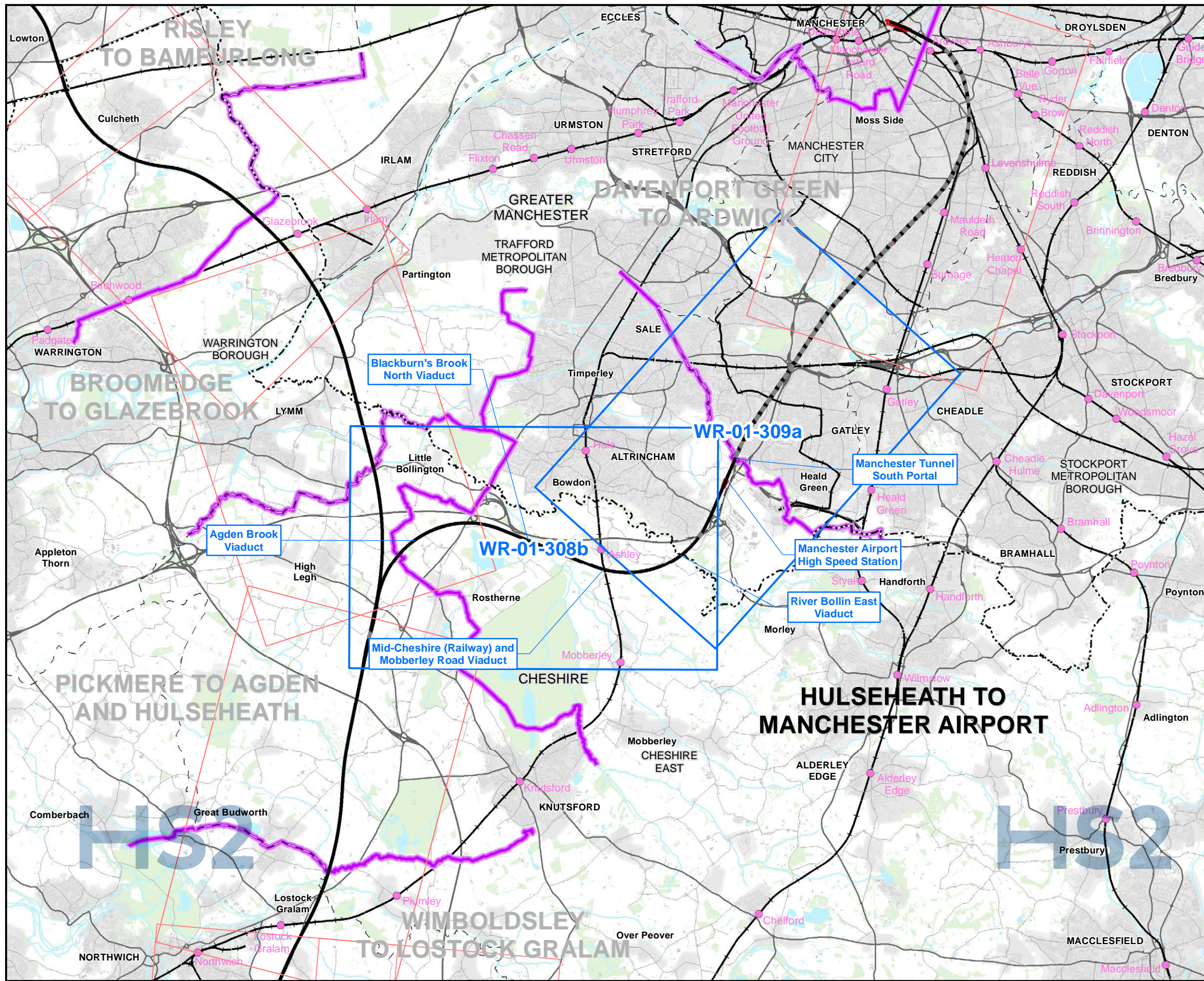
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-01-INDEX-MA06
Map Name	Index Map of: Surface Water Baseline
	Community Area MA06: Hulseheath to Manchester Airport

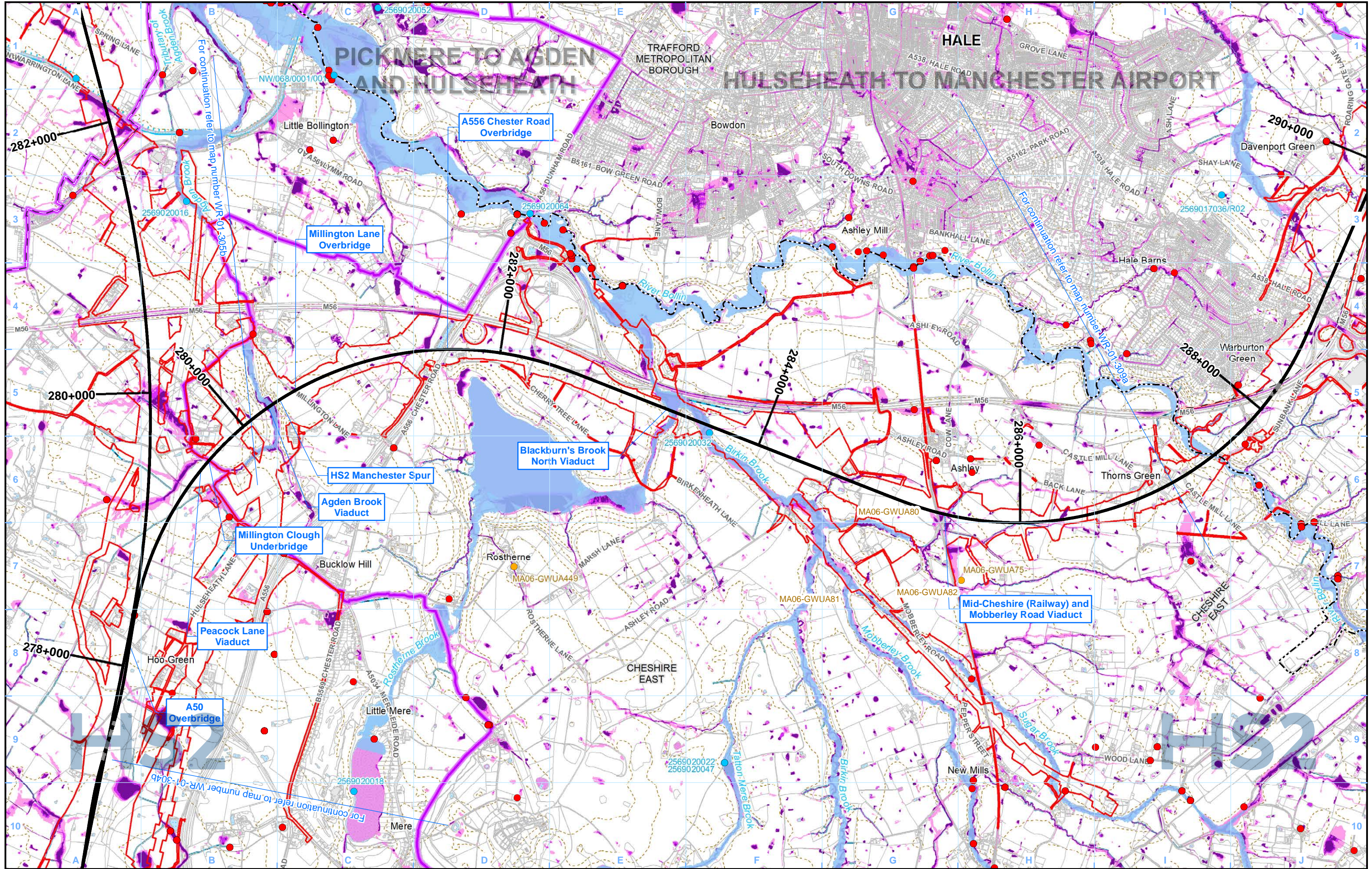
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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

- Fluvial flood risk:**
- Flood Zone 2
 - Flood Zone 3

- Risk of Flooding from Surface Water:**
- High - chance of flooding greater than 1 in 30 (3.33%)
 - Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-308b
 Map Name: Surface Water Baseline
 Community Area MA06:
 Hulseheath to Manchester Airport

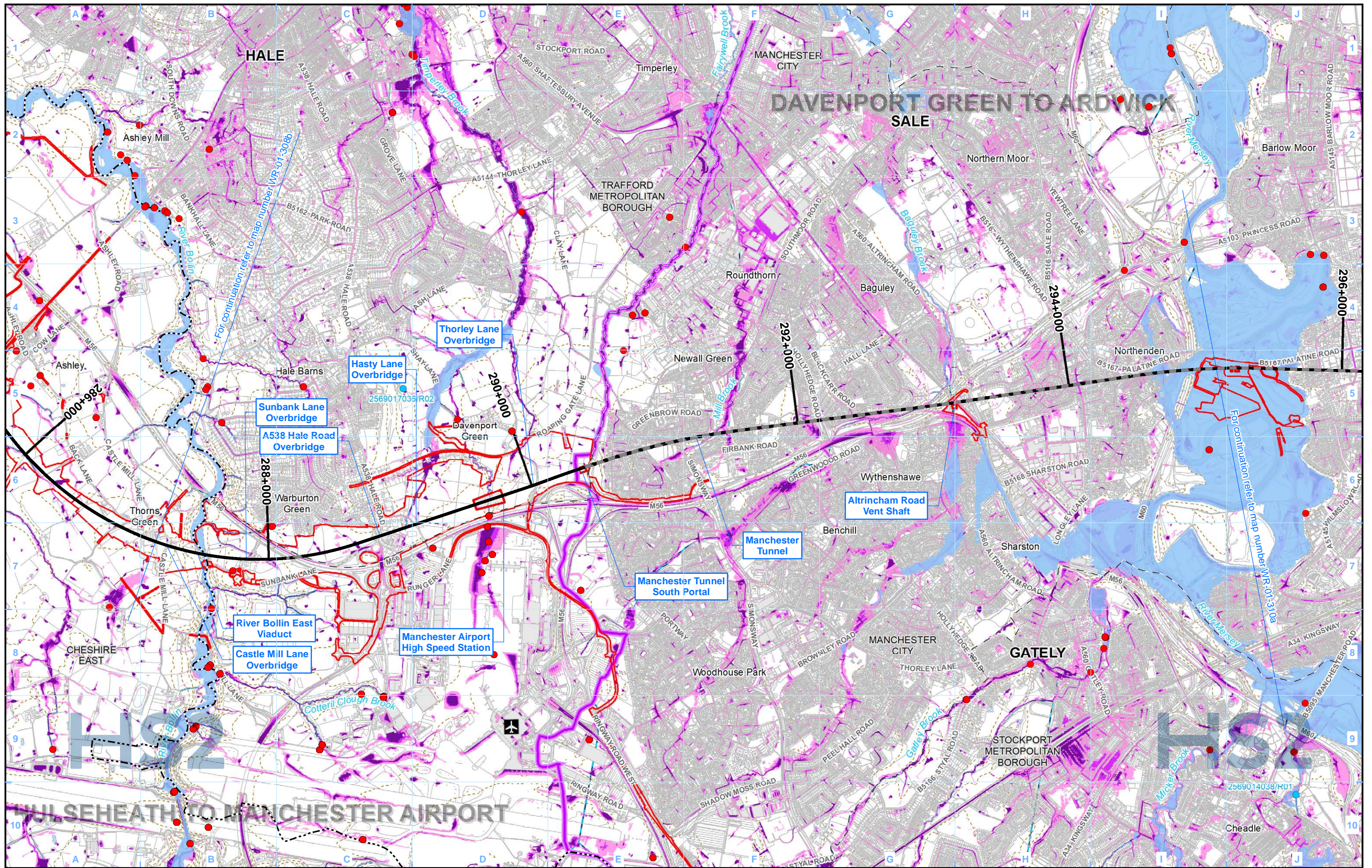
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Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: **WR-01-309a**

Map Name: **Surface Water Baseline**

Community Area MA06:
Hulseheath to Manchester Airport

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GYA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-BRECCIA (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SOBR-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YQB-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Doc Number: 2EV01-ARP-GI-MAP-M000-000253

Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



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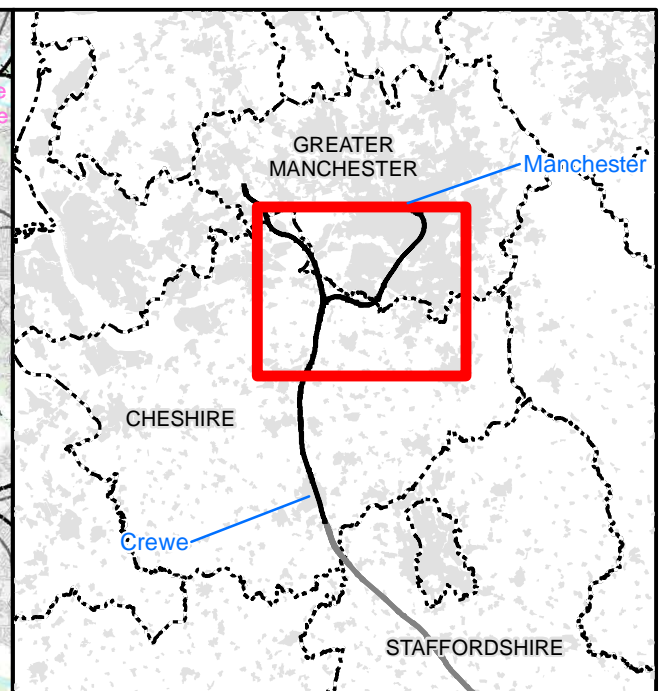
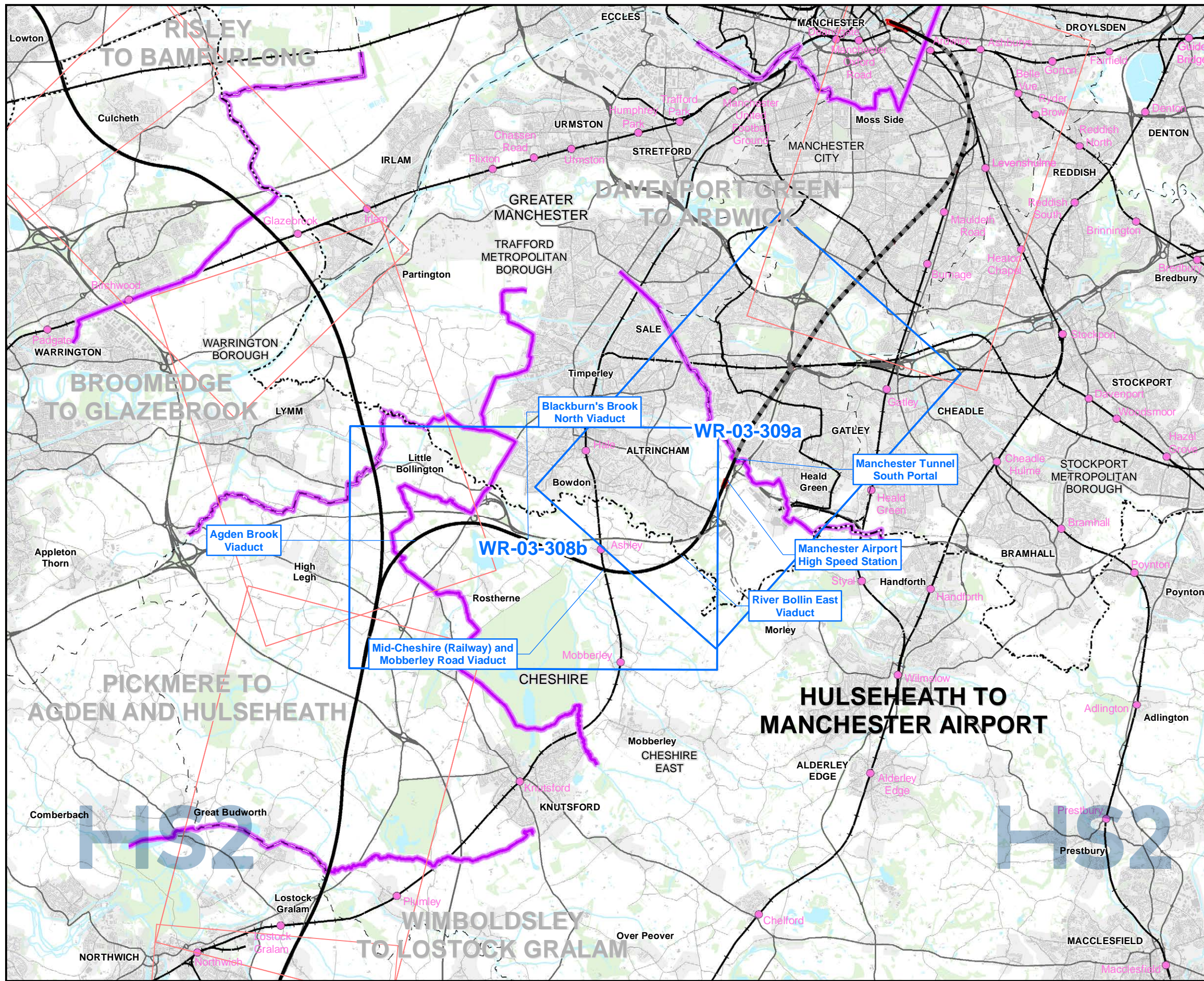
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Map Series Information:
 This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: WR-03-INDEX-MA06

Map Name: Index Map of: Water Framework Directive

Community Area MA06: Hulseheath to Manchester Airport

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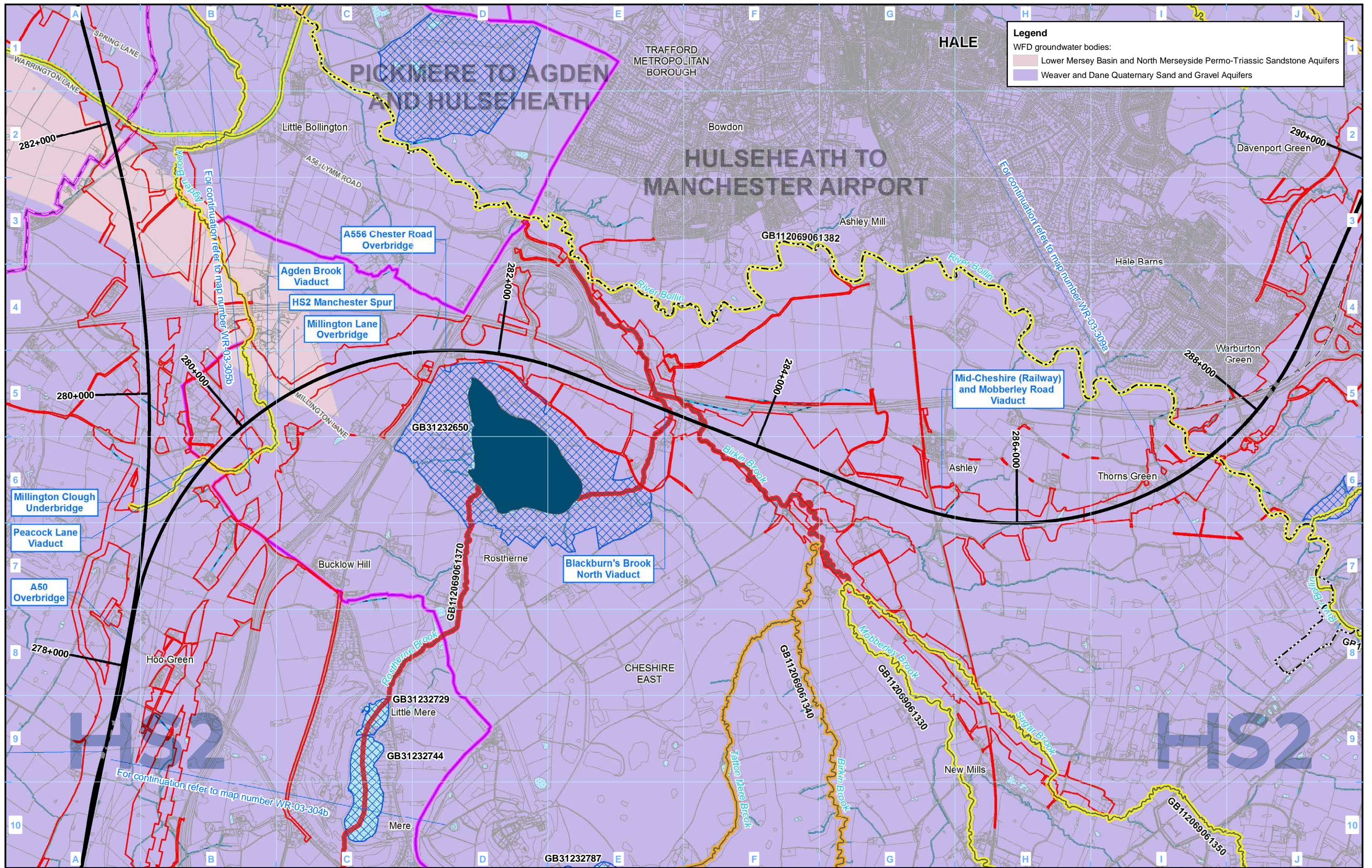
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Legend

WFD groundwater bodies:

- Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies

Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes

Overall Status:

- Good
- Moderate
- Poor
- Bad

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-308b

Map Name: Water Framework Directive

Community Area MA06: Hulseheath to Manchester Airport

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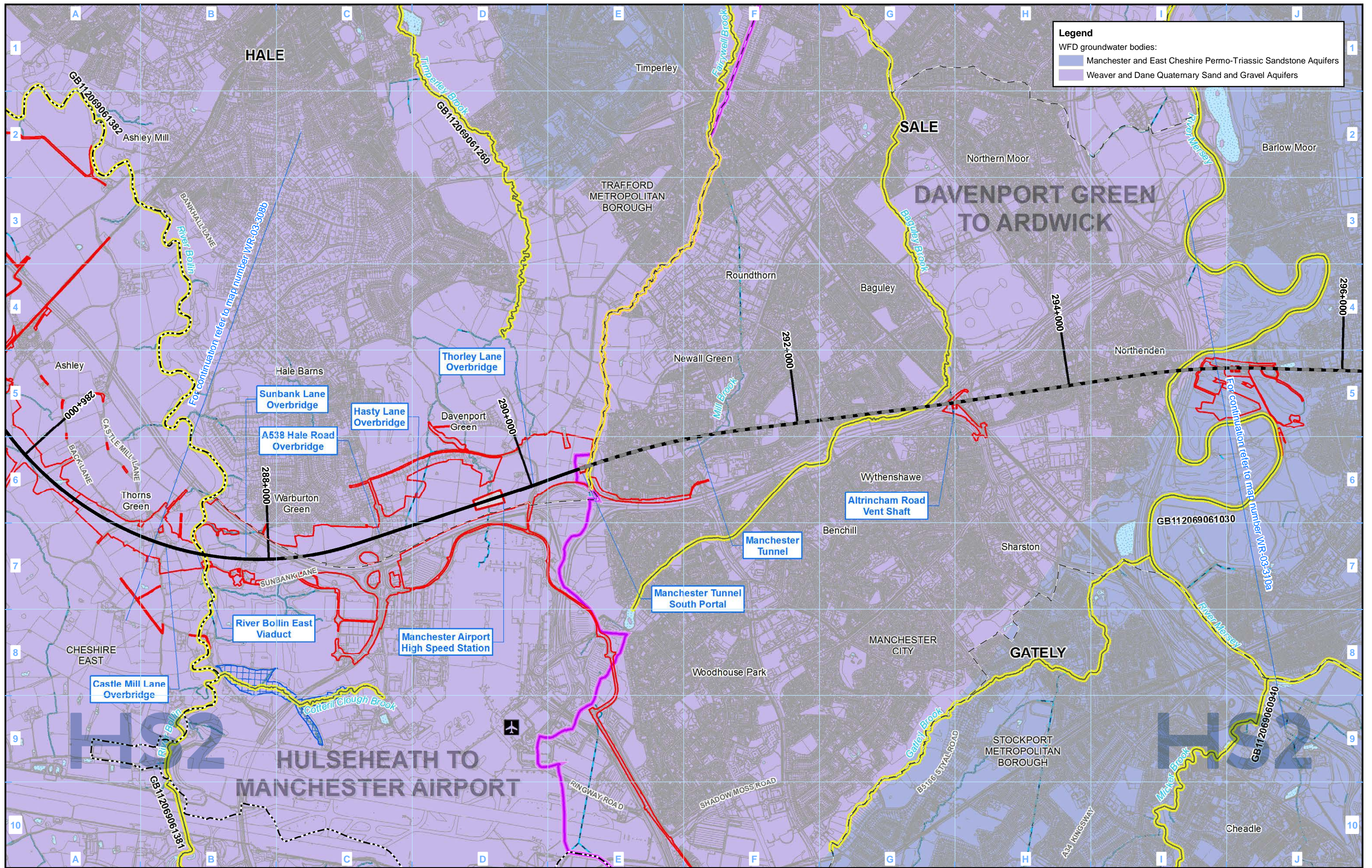
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Legend

WFD groundwater bodies:

- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport
- WFD Surface Water Bodies Overall Status Classification (2015 RBMP Cycle 2):
- Good
- Moderate
- Poor
- Bad
- WFD Lakes Overall Status:
- Good
- Moderate
- Poor
- Bad
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-309a

Map Name: Water Framework Directive

Community Area MA06: Hulseheath to Manchester Airport

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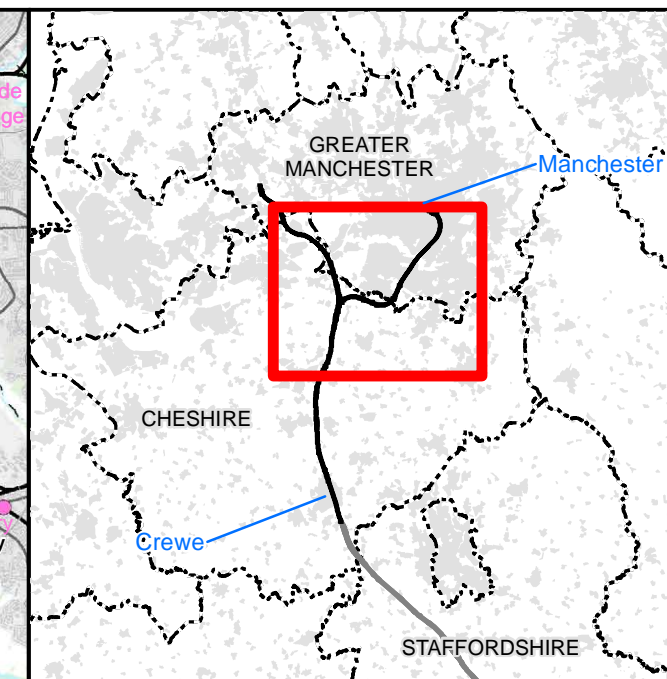
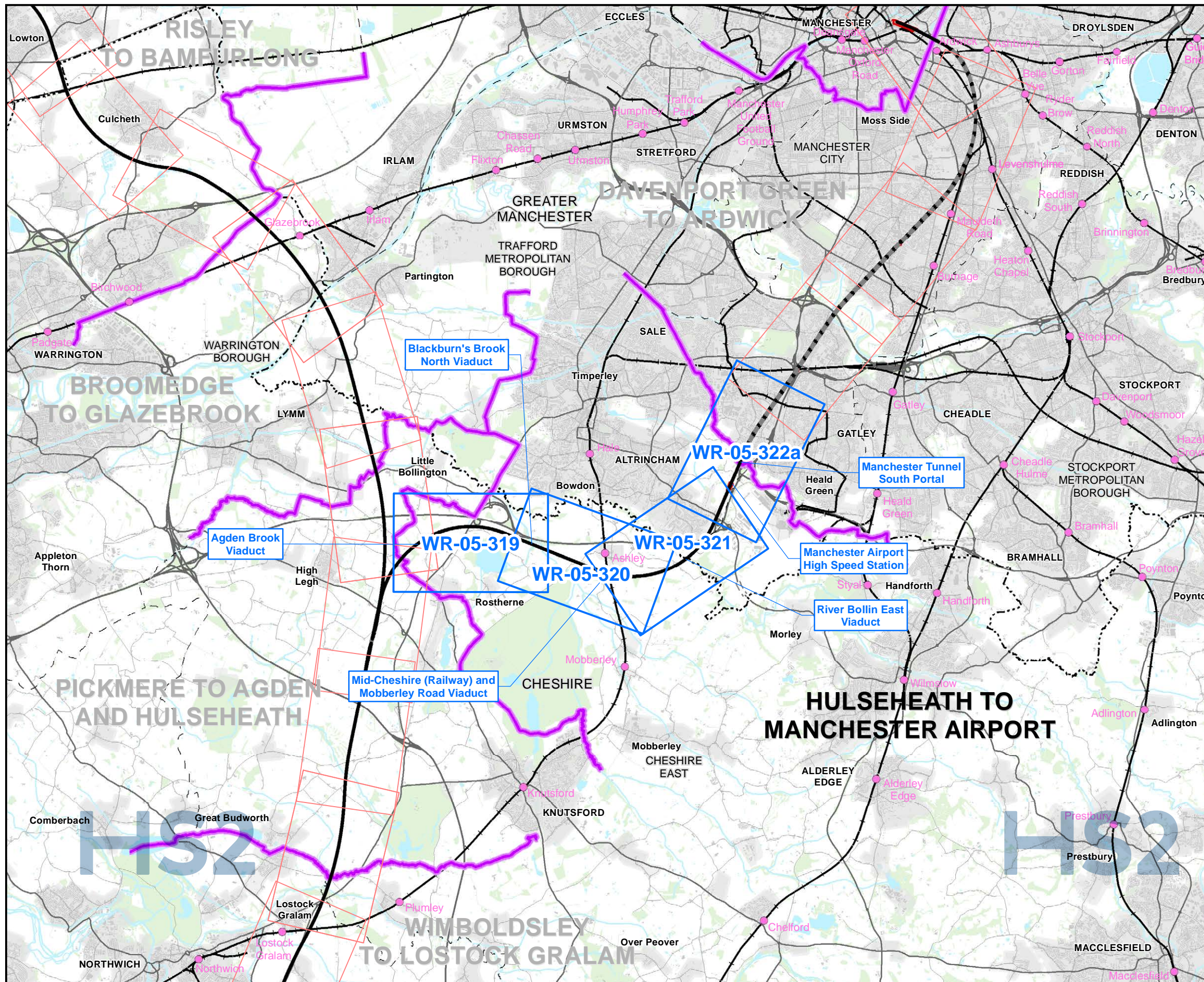
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

Map Number	WR-05-INDEX-MA06
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 100 including Climate Change (1%+CC) Annual Probability of River Flooding Community Area MA06: Hulseheath to Manchester Airport

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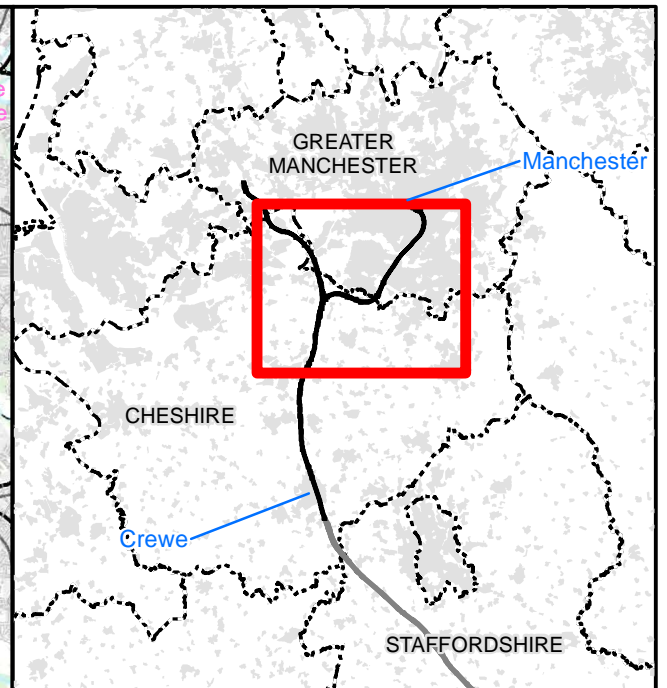
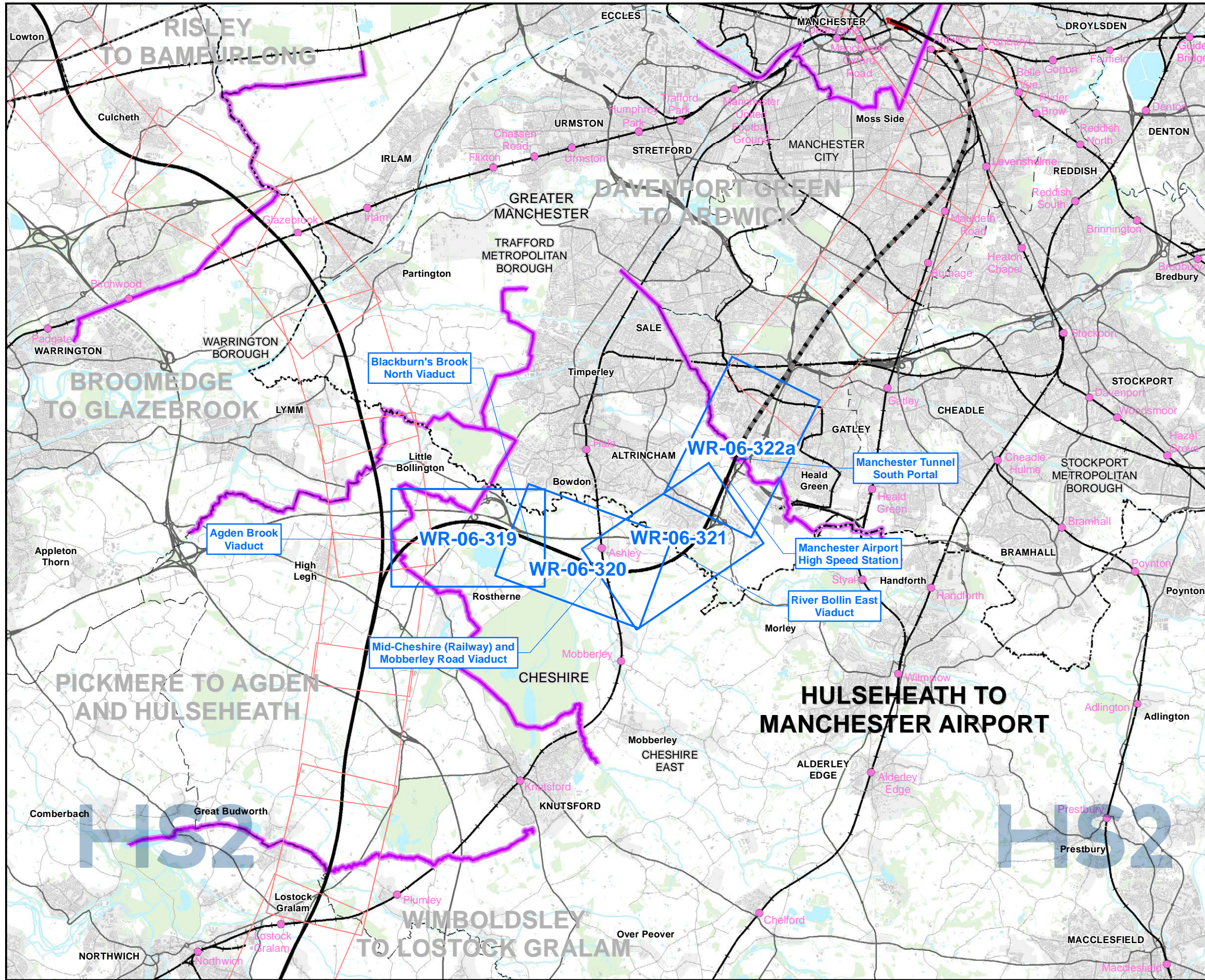
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002326-P01

Date: 07/10/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-06-INDEX-MA06**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 20 (5%) Annual Probability of River
 Flooding

Community Area MA06:
 Hulseheath to Manchester Airport

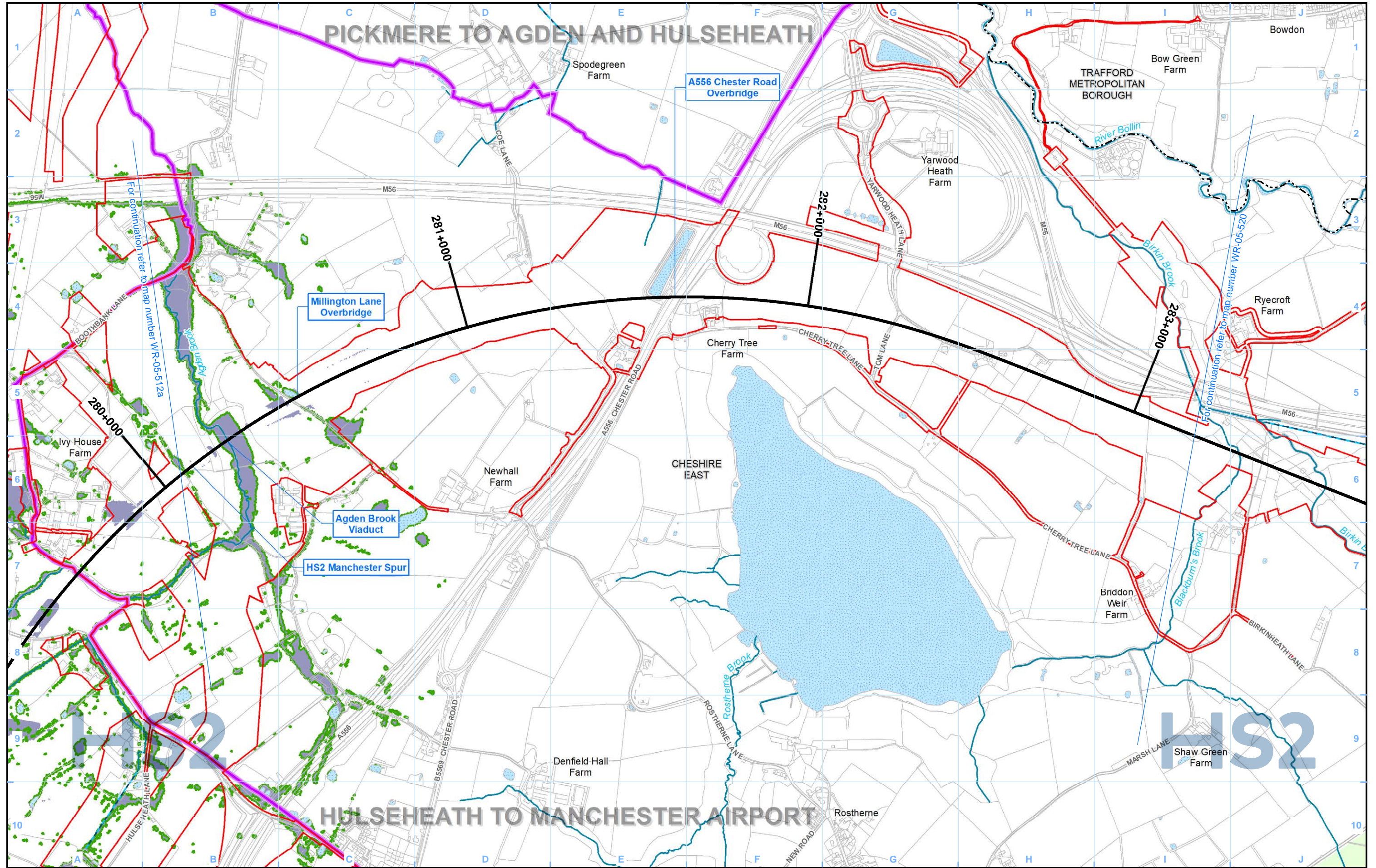
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002372-P01

Date: 12/10/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-319**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA06:
Hulseheath to Manchester Airport

HS2

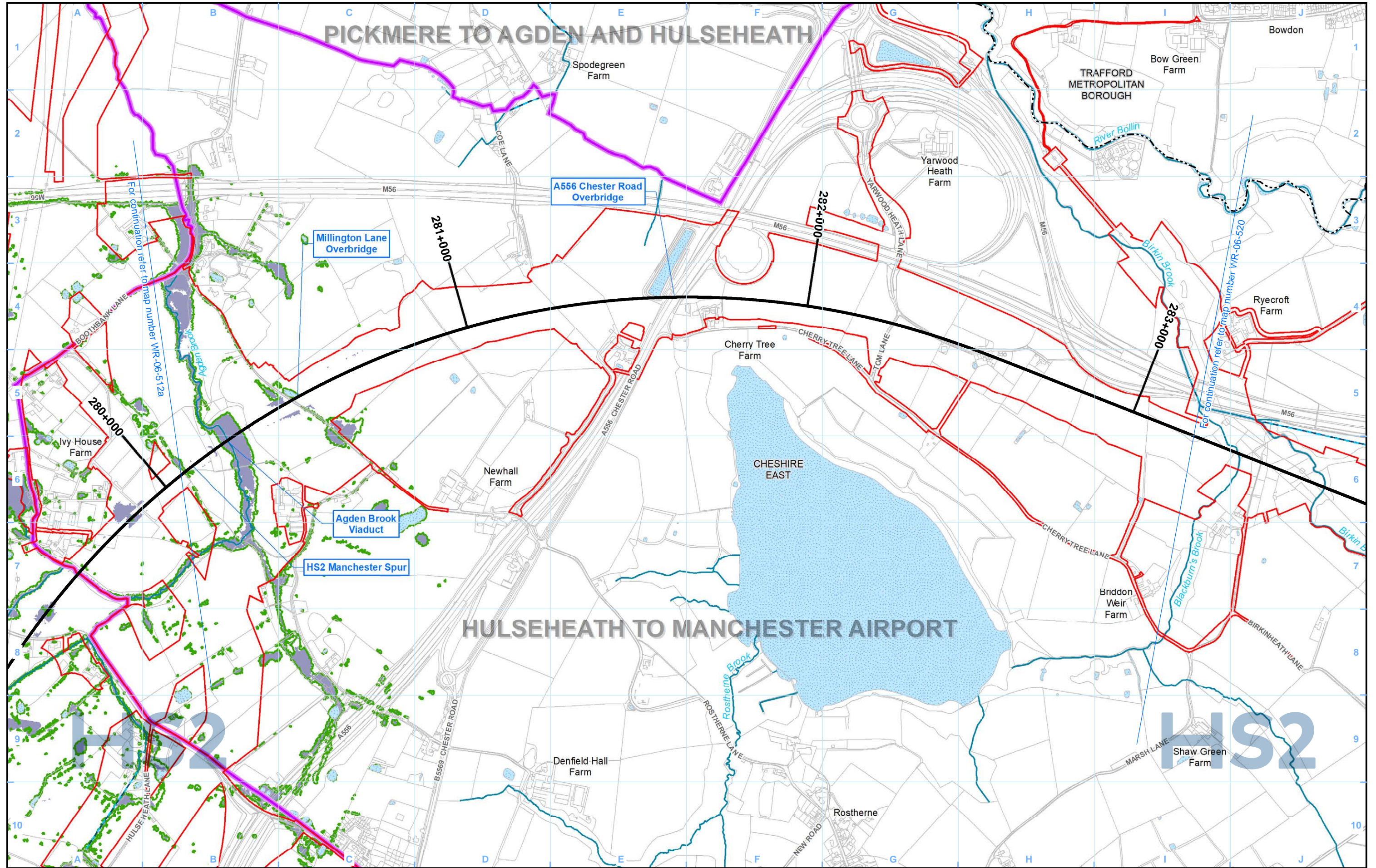
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002308-P01

Date: 16/09/21



Legend		

Map Number	WR-06-319
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA06: Hulseheath to Manchester Airport

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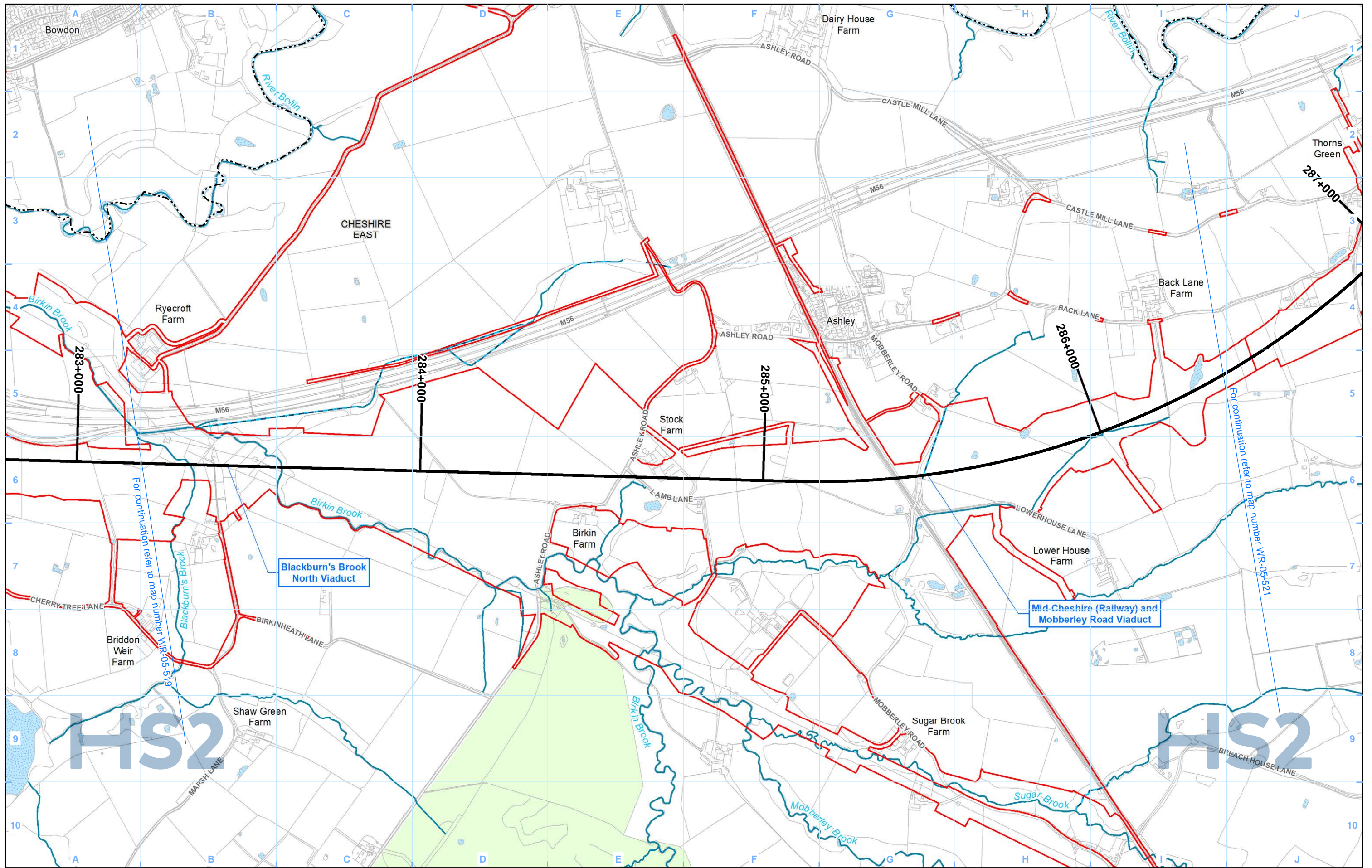
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Scale at A3: 1:10,000

Metres

Date: 14/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-320**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA06:
Hulseheath to Manchester Airport

HS2

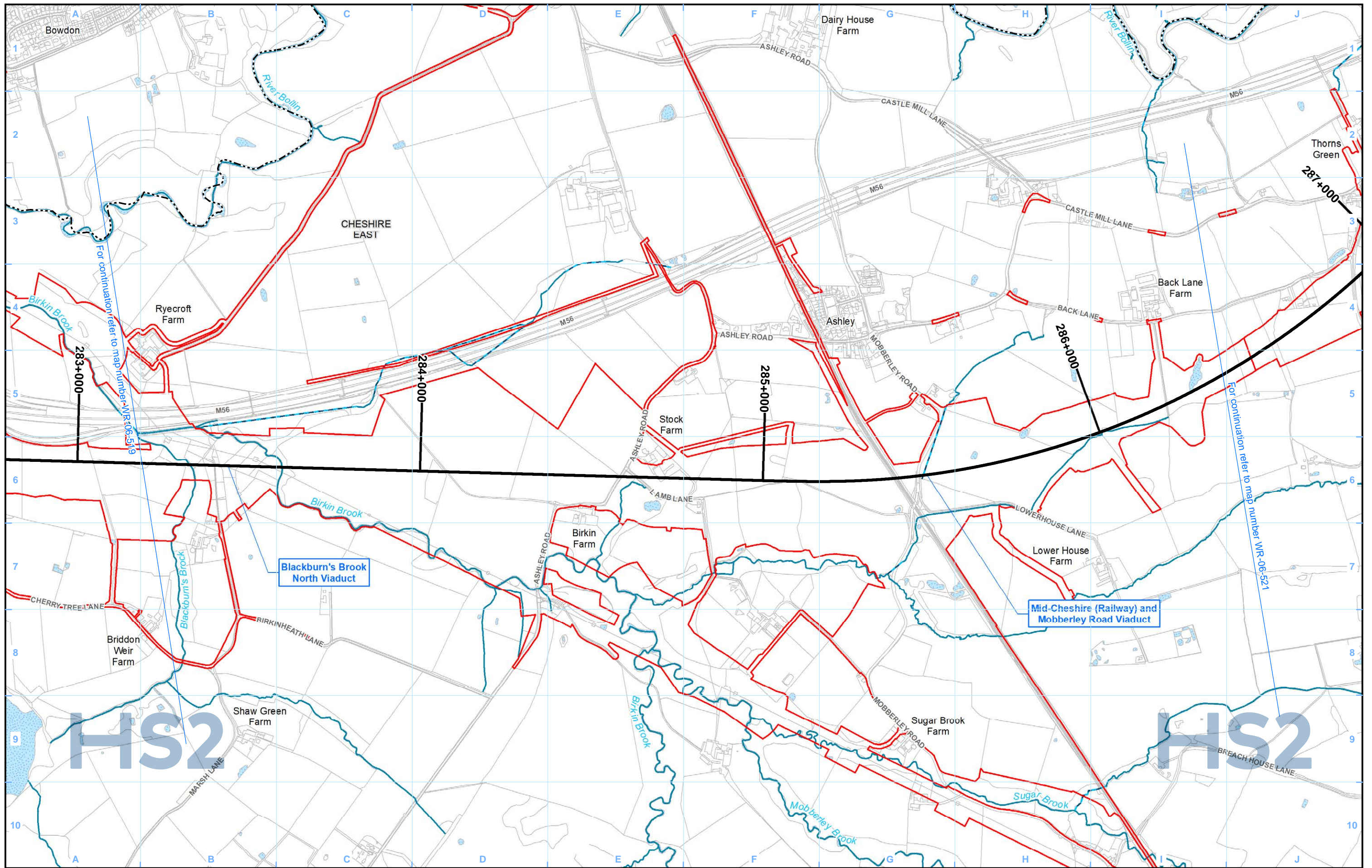
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002309-P01

Date: 16/09/21



Legend			
	Route in tunnel		Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Route on surface		Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Depot, station, headhouse or portal building		Canal
	Land potentially required during construction		Canal tunnel
	Community area boundary		Open water
	County boundary		
	District/Borough boundary		

Map Number	WR-06-320
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA06: Hulseheath to Manchester Airport

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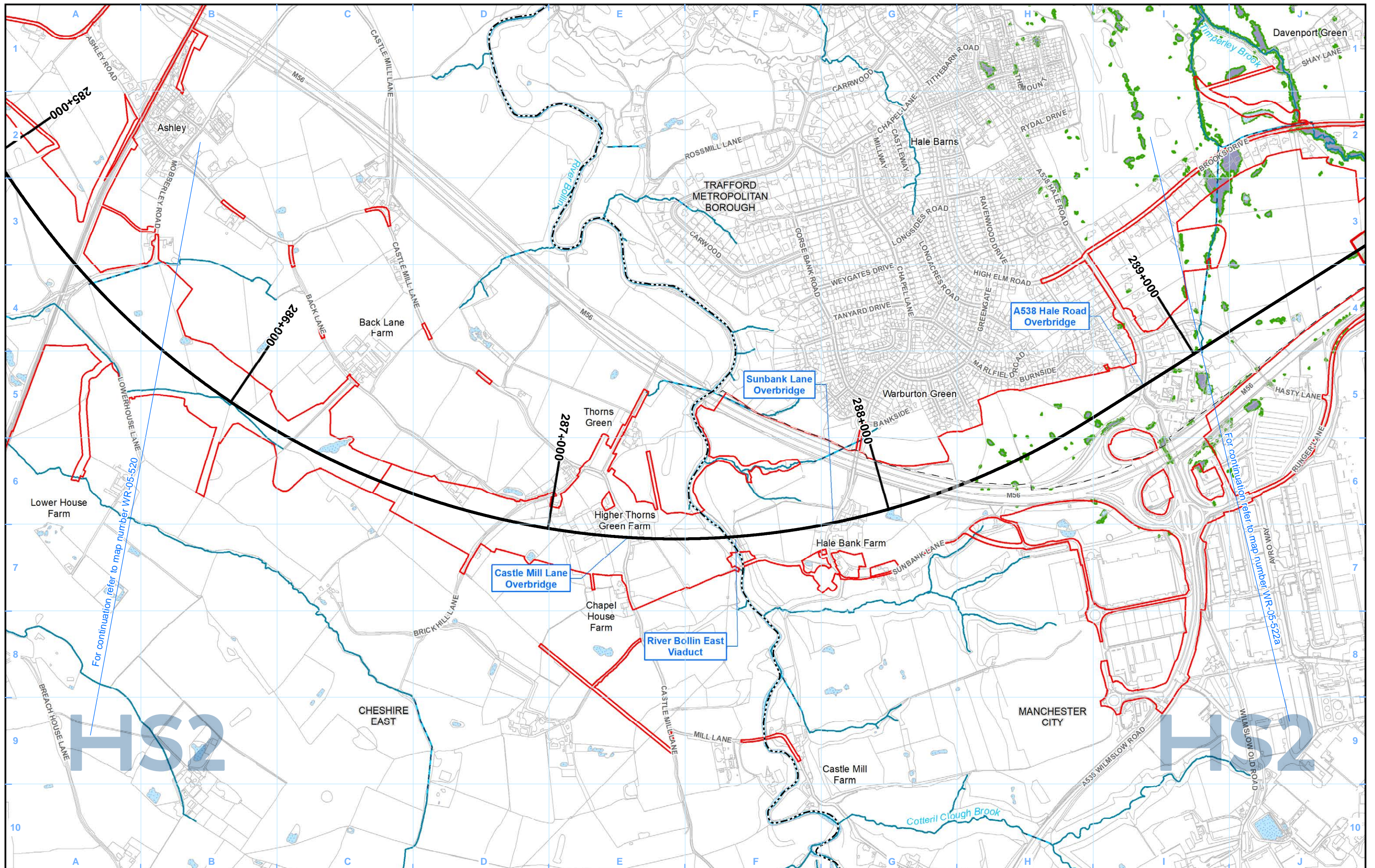
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Scale at A3: 1:10,000

Metres

Date: 14/10/21



Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-321
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA06: Hulseheath to Manchester Airport	

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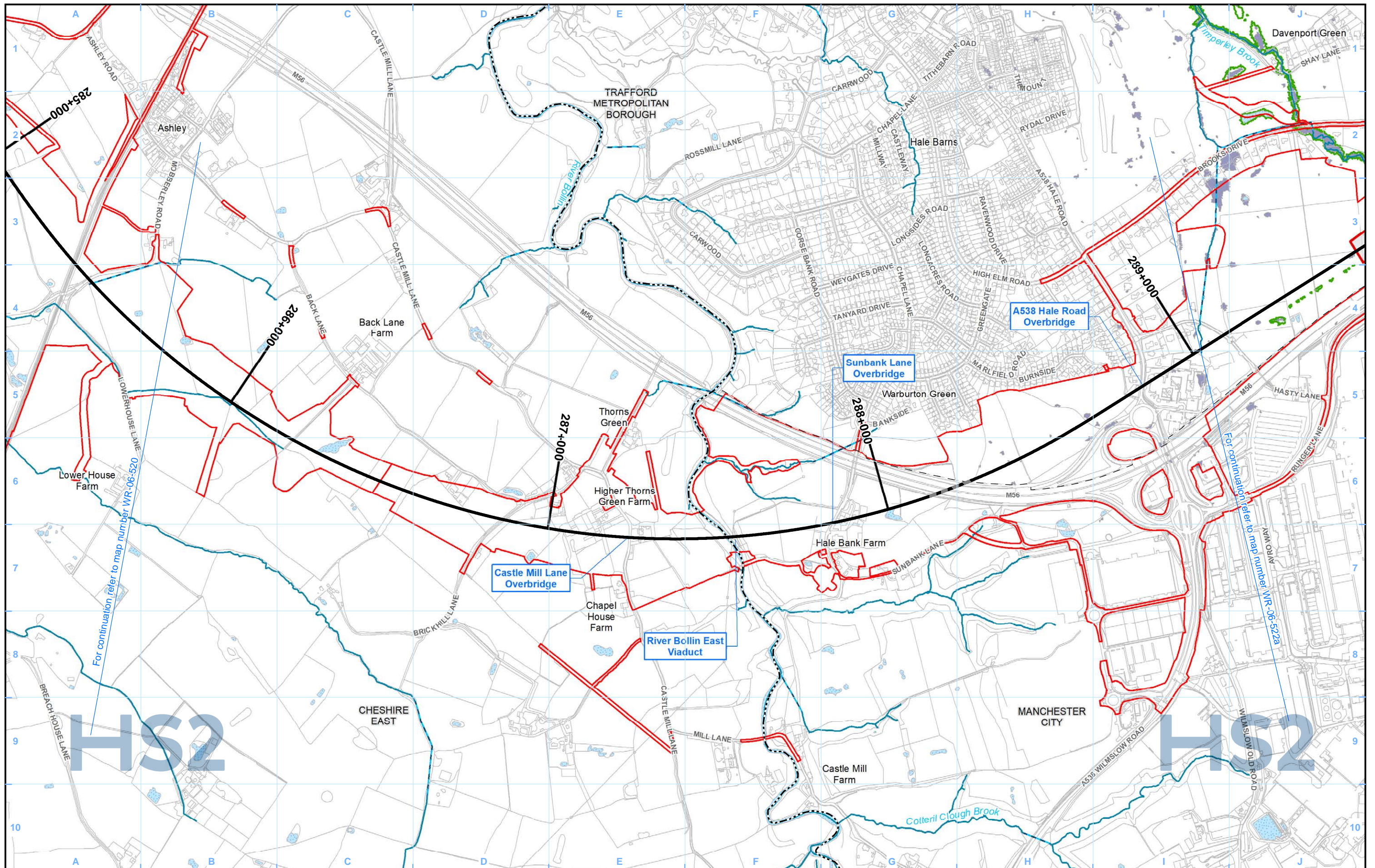
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Legend			
	Route in tunnel		Watercourse
	Route on surface		Culverted watercourse
	Depot, station, headhouse or portal building		Canal
	Land potentially required during construction		Canal tunnel
	Community area boundary		Open water
	County boundary		Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	District/Borough boundary		Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number	WR-06-321
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA06: Hulseheath to Manchester Airport

HS2

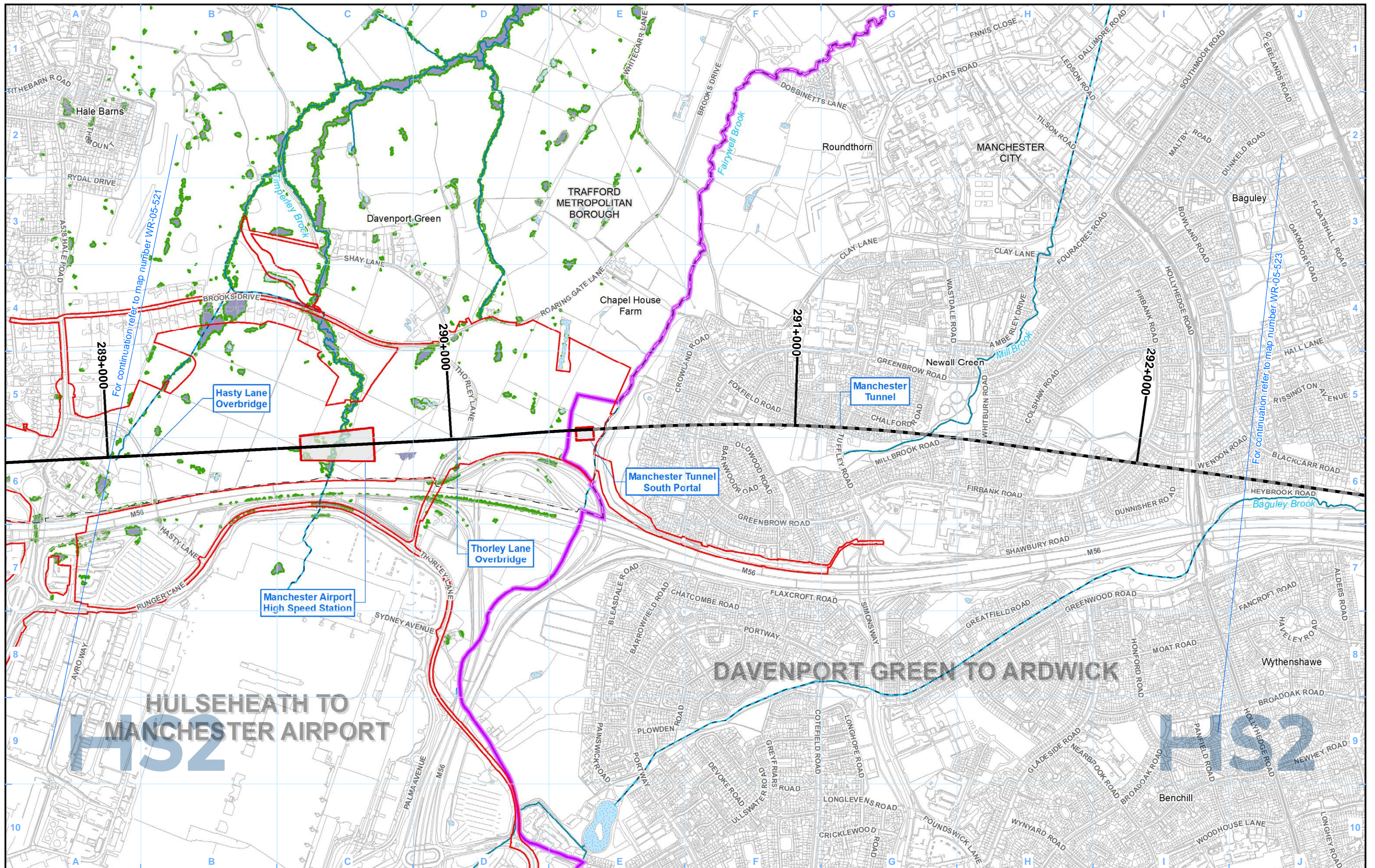
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Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-322a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA06: Hulseheath to Manchester Airport	

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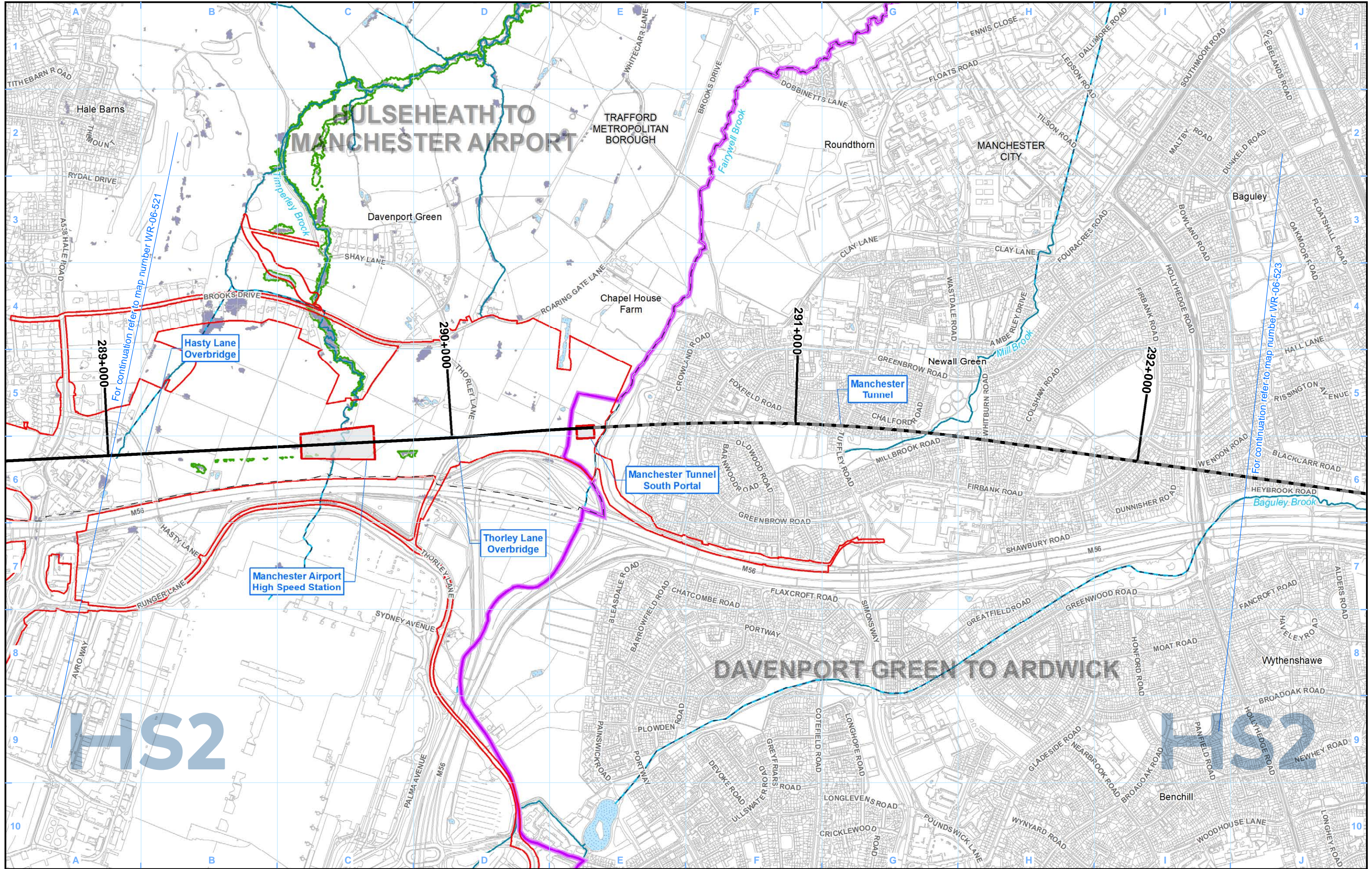
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002311-P01

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Date: 16/09/21



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	
Land potentially required during construction	Canal tunnel	
Community area boundary	Open water	
County boundary		
District/Borough boundary		

Map Number	WR-06-322a
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA06: Hulseheath to Manchester Airport

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA07: Davenport Green to Ardwick

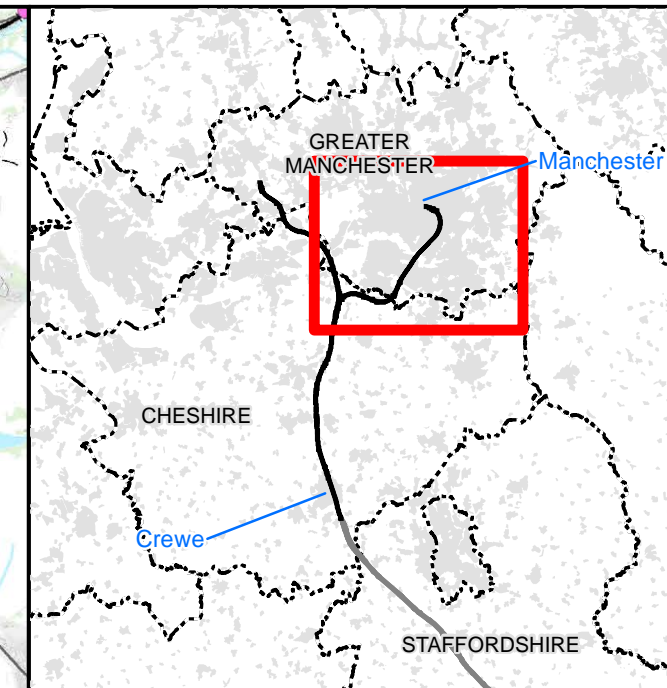
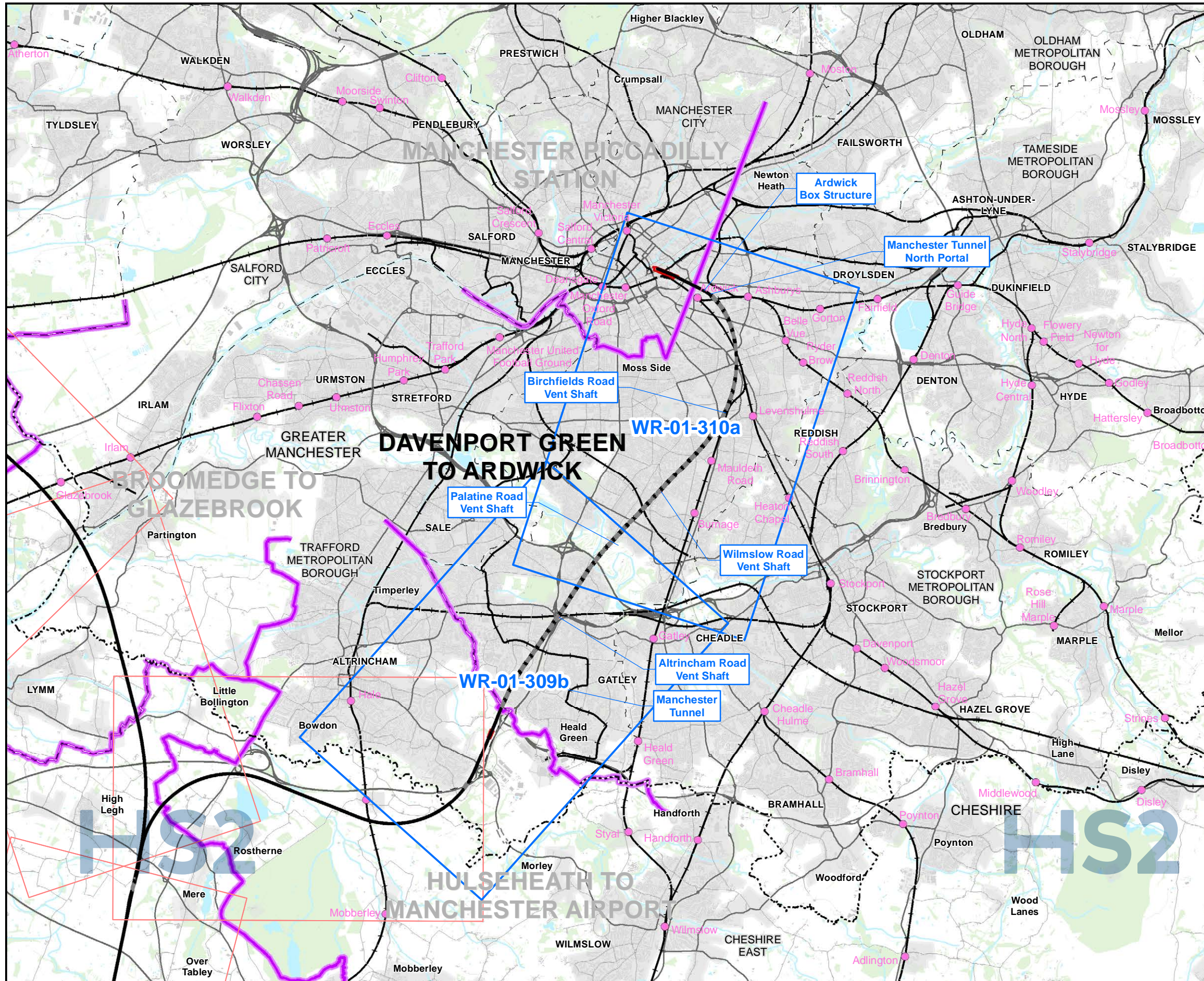
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend

Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets not included in this community area
Depot, station, headhouse or portal building	Existing railway station
Community area boundary	County boundary
Existing railway station	District/Borough boundary

Map Number	WR-01-INDEX-MA07
Map Name	Index Map of: Surface Water Baseline
	Community Area MA07: Davenport Green to Ardwick

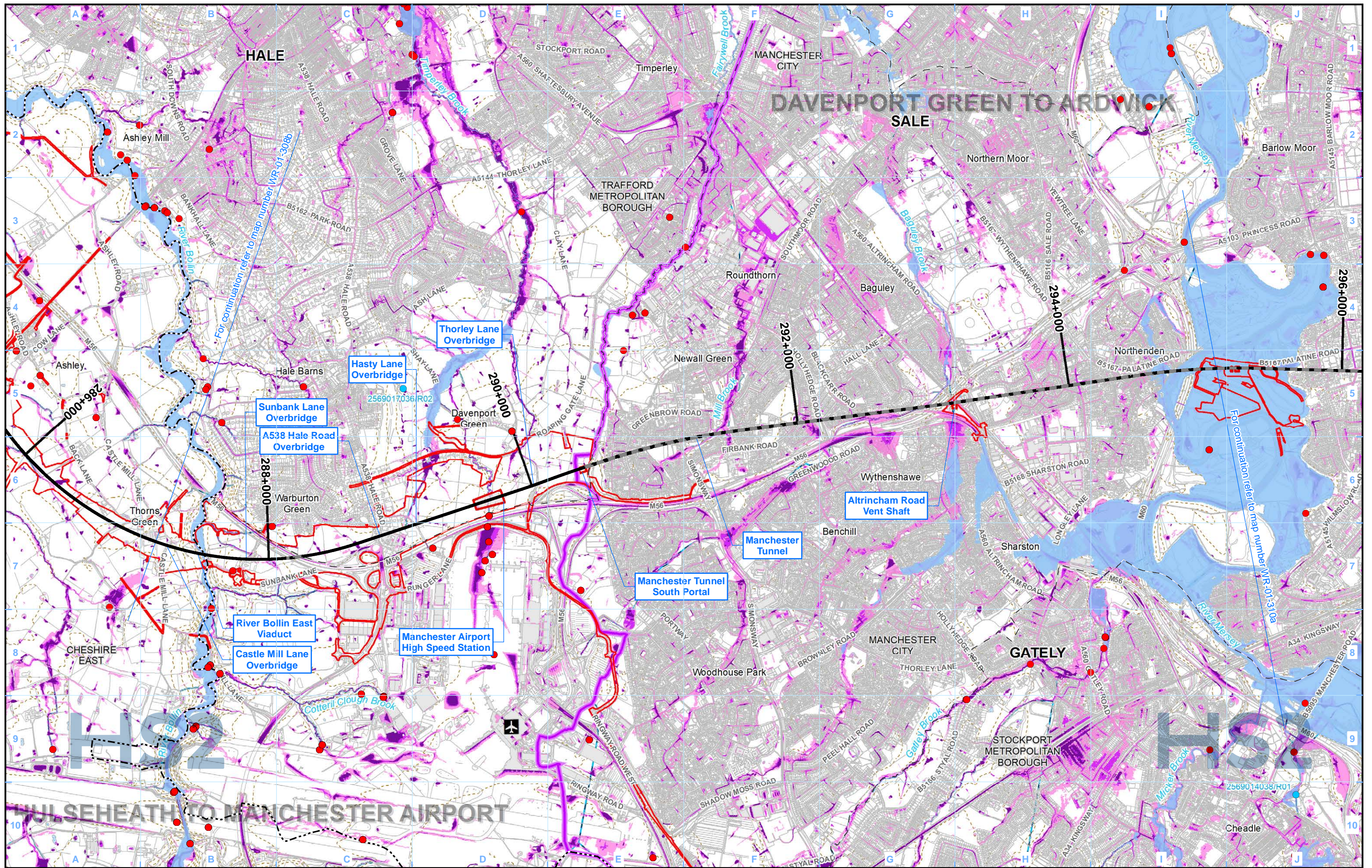
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0 1,000 2,000 3,000 4,000 Metres

Doc Number: 2DE01-MWJ-EV-MAP-M000-000310-P05 Date: 12/08/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary

- Licensed surface water abstraction (excluding public water supplies)
- Unlicensed private surface water abstraction
- Consented discharge to surface water
- Airport
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Lakes & Reservoirs
- Historic flooding area

Fluvial flood risk:

- Flood Zone 2
- Flood Zone 3

Risk of Flooding from Surface Water:

- High - chance of flooding greater than 1 in 30 (3.33%)
- Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
- Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-309b

Map Name: Surface Water Baseline

Community Area MA07:
Davenport Green to Ardwick

HS2

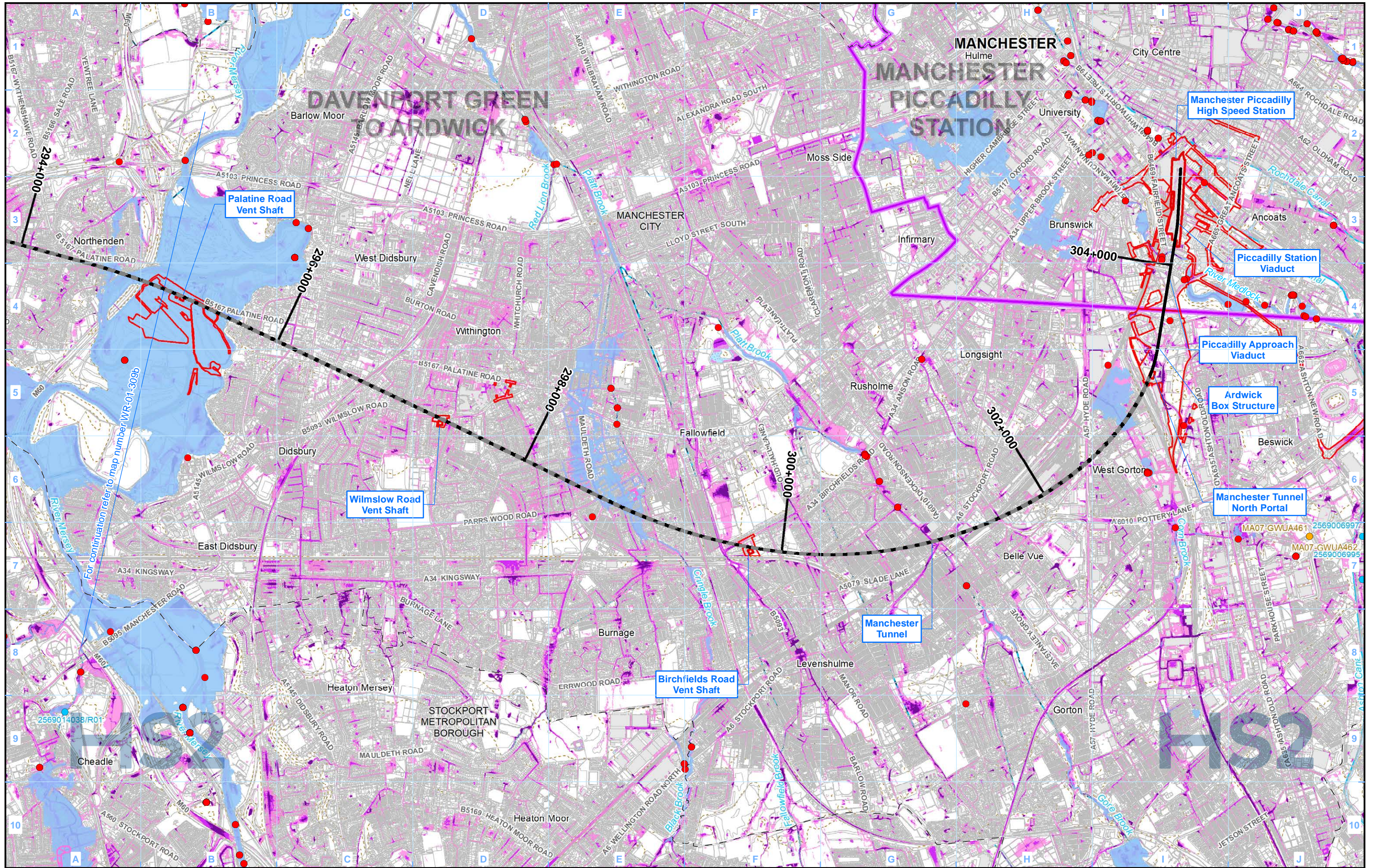
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000303-P05

Date: 12/08/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Licensed surface water abstraction (excluding public water supplies)
 - Unlicensed private surface water abstraction
 - Consented discharge to surface water
 - Airport
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Lakes & Reservoirs
 - Historic flooding area
 - Fluvial flood risk: Flood Zone 2
 - Fluvial flood risk: Flood Zone 3
 - Risk of Flooding from Surface Water: High - chance of flooding greater than 1 in 30 (3.33%)
 - Risk of Flooding from Surface Water: Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Risk of Flooding from Surface Water: Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-310a
 Map Name: Surface Water Baseline
 Community Area MA07:
 Davenport Green to Ardwick

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 Date: 12/08/21

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Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GYA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SOBR-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YQB-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



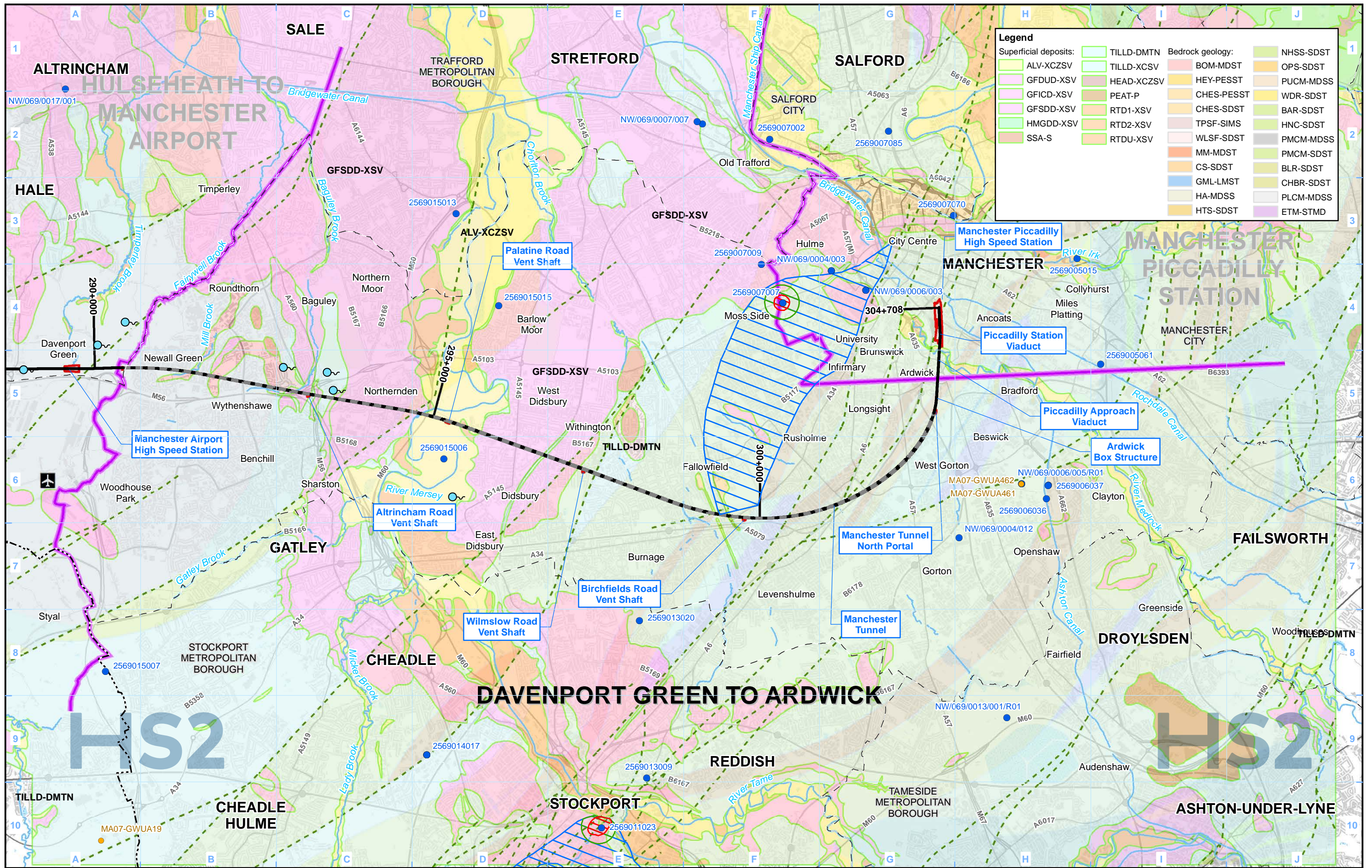
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Superficial deposits:		Bedrock geology:	
TILLD-DMTN	TILLD-XCSV	BOM-MDST	NHSS-SDST
ALV-XCZSV	GFDUD-XSV	HEY-PESST	OPS-SDST
GFDUD-XSV	GFDSD-XSV	CHES-PESST	PUCM-MDSS
HMGDD-XSV	SSA-S	CHES-SDST	WDR-SDST
		RTD1-XSV	BAR-SDST
		RTD2-XSV	HNC-SDST
		RTDU-XSV	PMCM-MDSS
			PMCM-SDST
			BLR-SDST
			CHBR-SDST
			PLCM-MDSS
			ETM-STMD

Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	County boundary
	District/Borough boundary
	Airport
	Lakes & Reservoirs
	Geological fault line
	Licensed groundwater abstraction (excluding public water supplies)
	Unlicensed private groundwater abstraction
	Consented discharge to groundwater
	Springs
	Groundwater source protection zone:
	Zone 1
	Zone 2
	Zone 3

For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

Map Number	WR-02-307
Map Name	Groundwater Baseline
Community Area MA07: Davenport Green to Ardwick	

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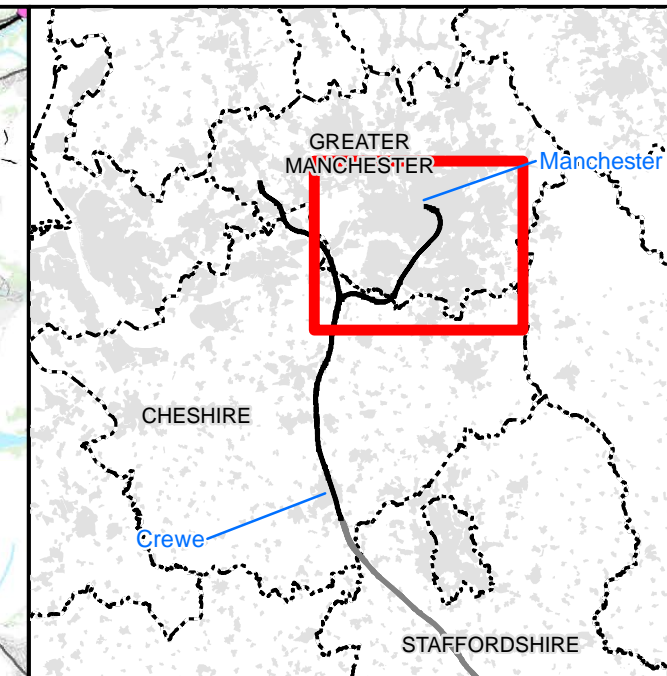
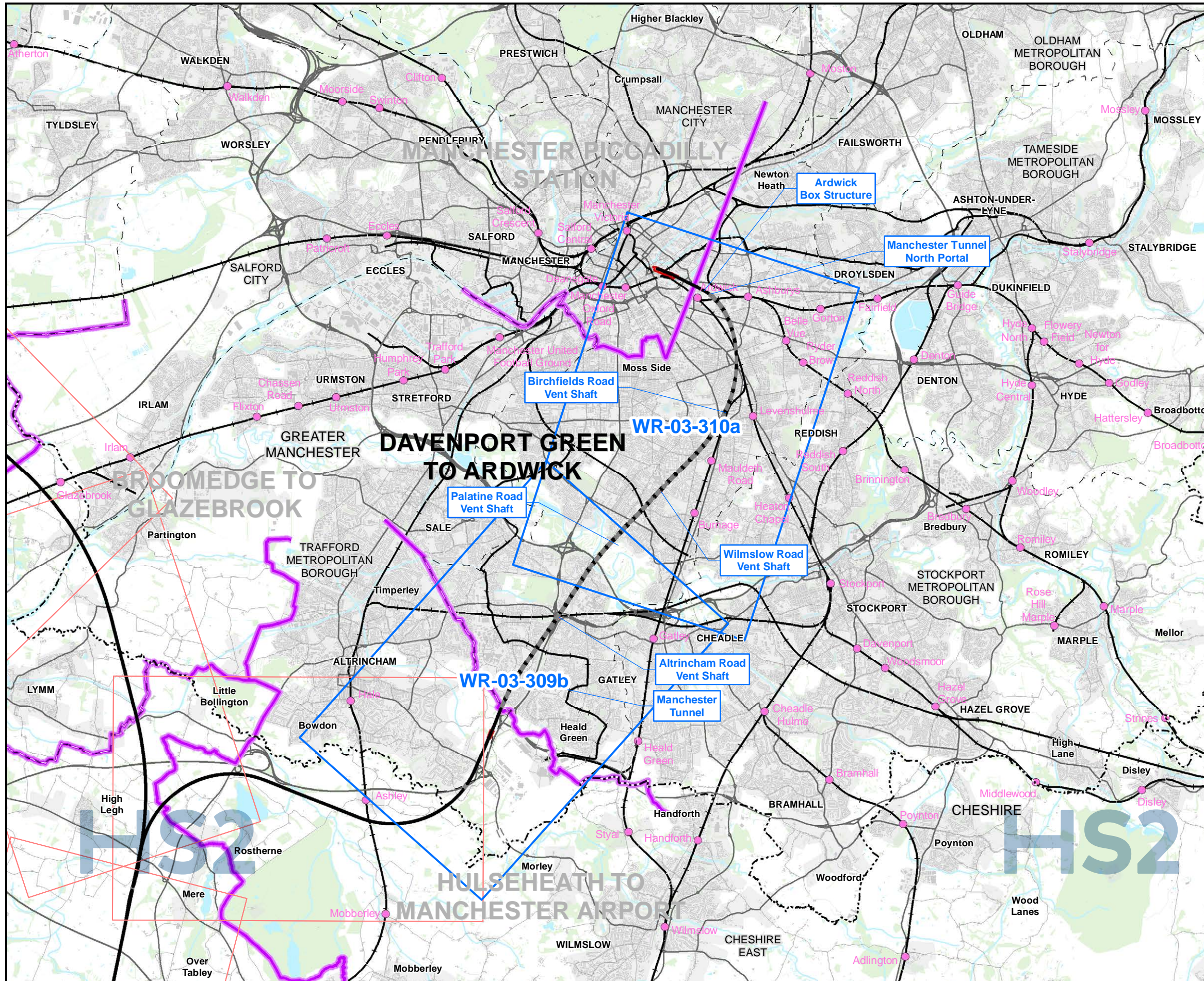
Doc Number: 2DE01-MWJ-EV-MAP-M000-000316-P05

Scale at A3: 1:50,000

Metres

Date: 12/08/21

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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: WR-03-INDEX-MA07

Map Name: Index Map of: Water Framework Directive

Community Area MA07: Davenport Green to Ardwick

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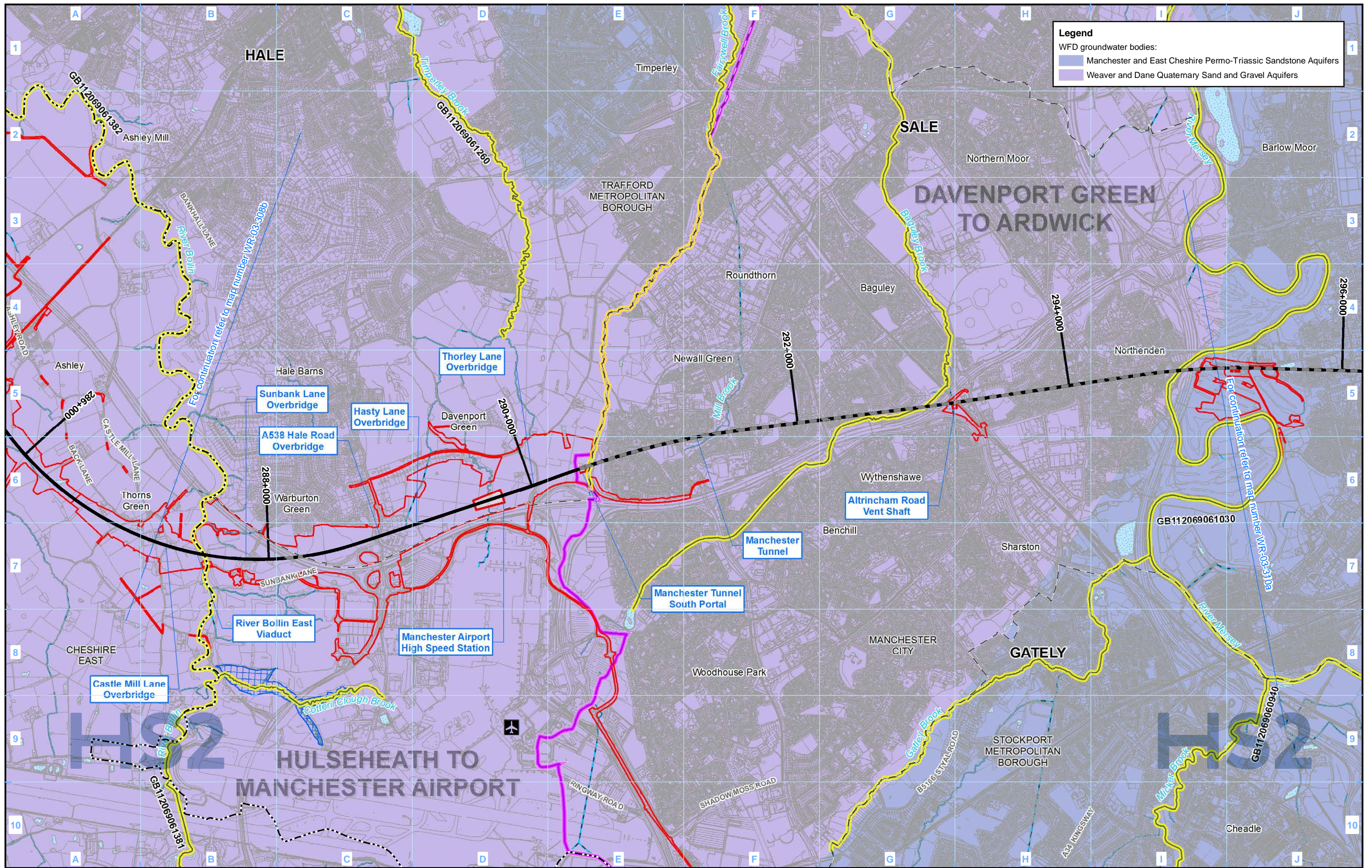
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Date: 11/08/21

Note: Not all data layers in the legend are represented on every map.



Legend

WFD groundwater bodies:

- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
- Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

<ul style="list-style-type: none"> Route in tunnel Route on surface Depot, station, headhouse or portal building Land potentially required during construction Community area boundary County boundary District/Borough boundary 	<ul style="list-style-type: none"> Canal Canal tunnel Watercourse Culverted watercourse Lakes & Reservoirs Airport 	<p>WFD Surface Water Bodies</p> <p>Overall Status Classification (2015 RBMP Cycle 2):</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<p>WFD Lakes</p> <p>Overall Status:</p> <ul style="list-style-type: none"> Good Moderate Poor Bad 	<ul style="list-style-type: none"> Special Areas of Conservation (SAC) Sites of Special Scientific Interest (SSSI)
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Map Number: WR-03-309b

Map Name: Water Framework Directive

Community Area MA07: Davenport Green to Ardwick

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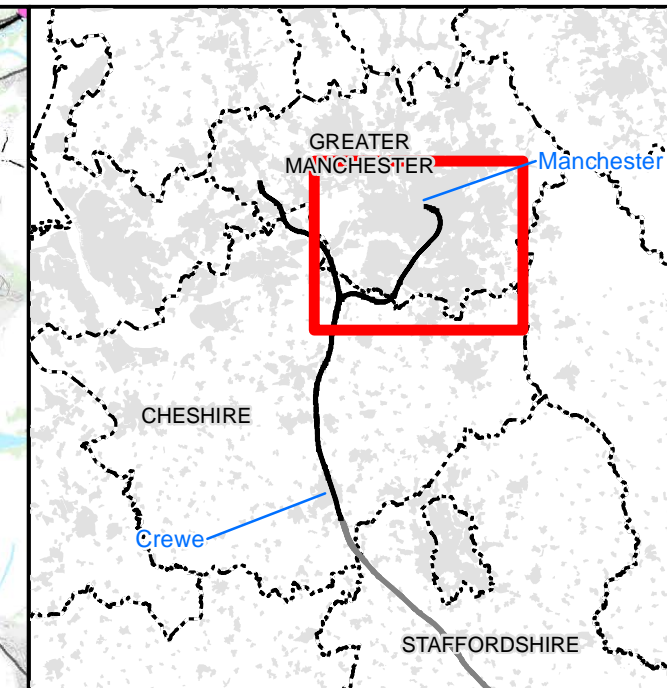
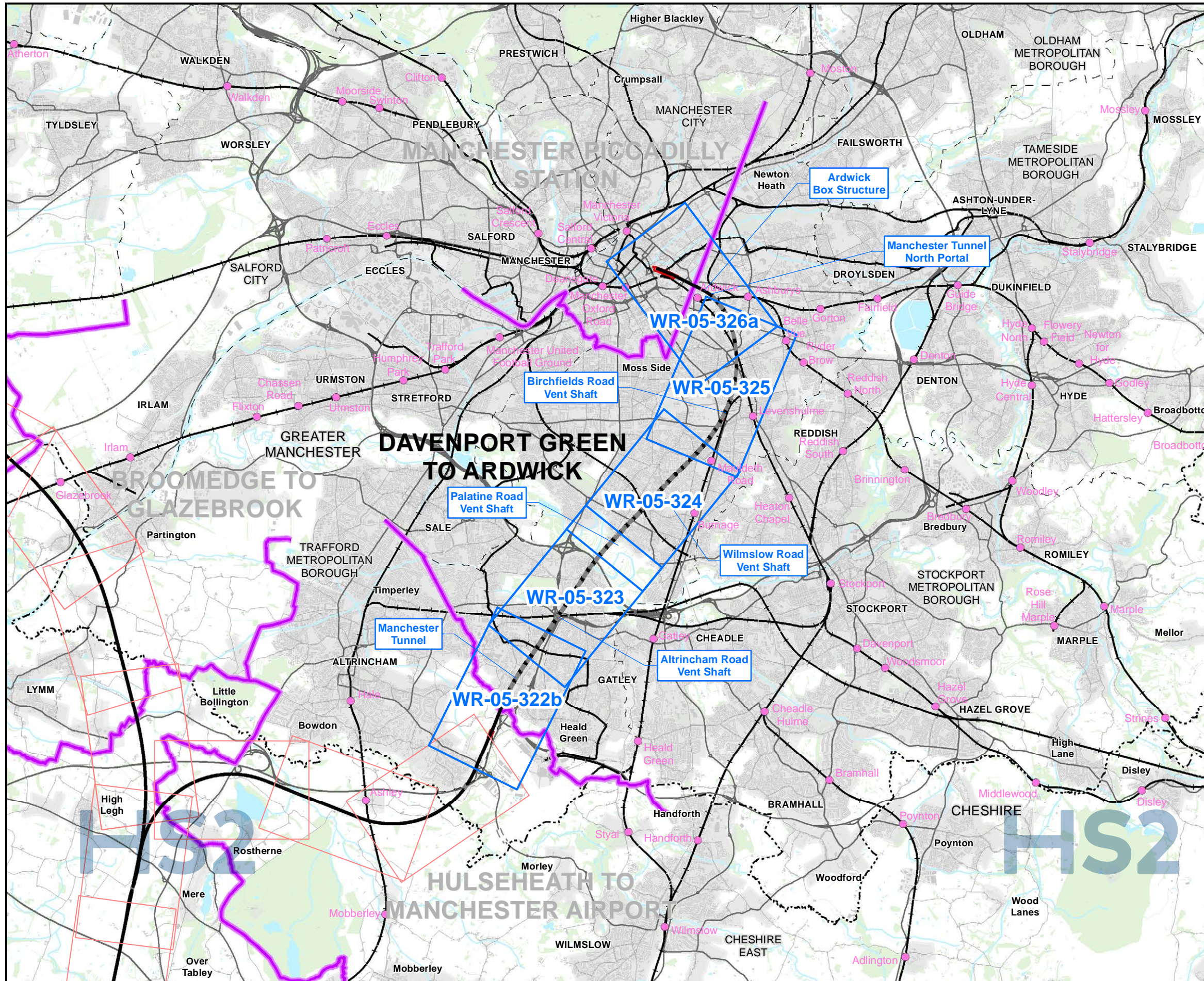
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number: **WR-05-INDEX-MA07**

Map Name: **Index Map of:
Modelled Baseline and Post Development Flood
Extent 1 in 100 including Climate Change (1%+CC)
Annual Probability of River Flooding
Community Area MA07:
Davenport Green to Ardwick**

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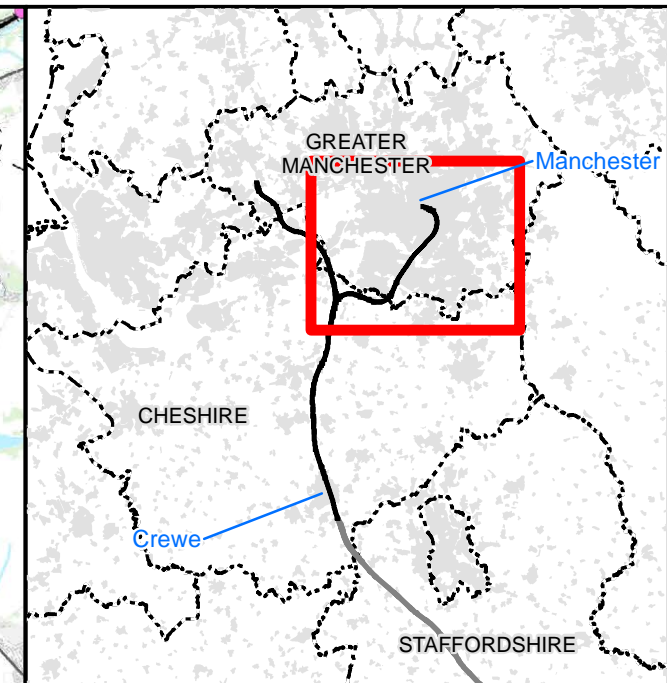
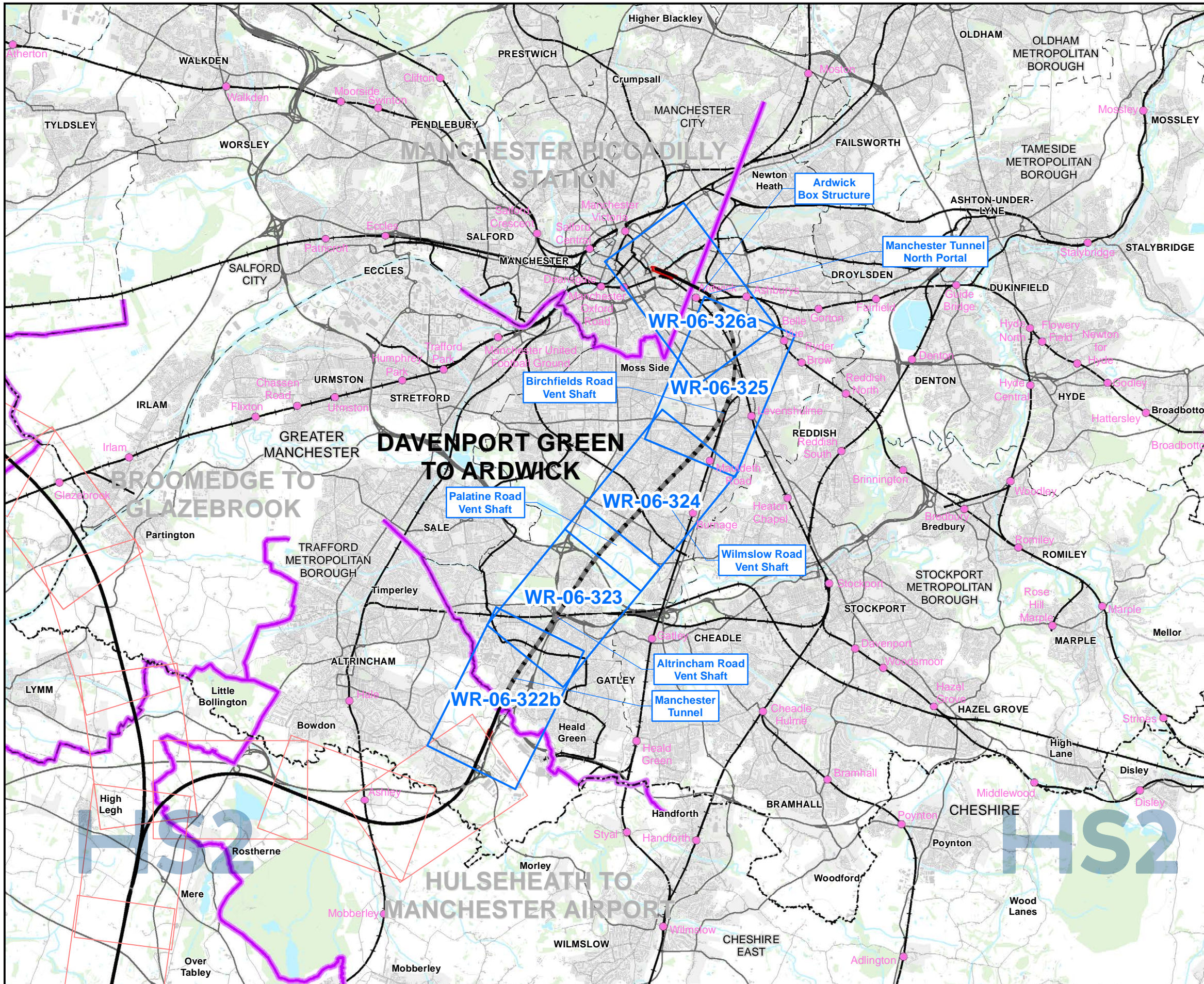
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Date: 07/10/21



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-06-INDEX-MA07
Map Name	Index Map of: Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA07: Davenport Green to Ardwick

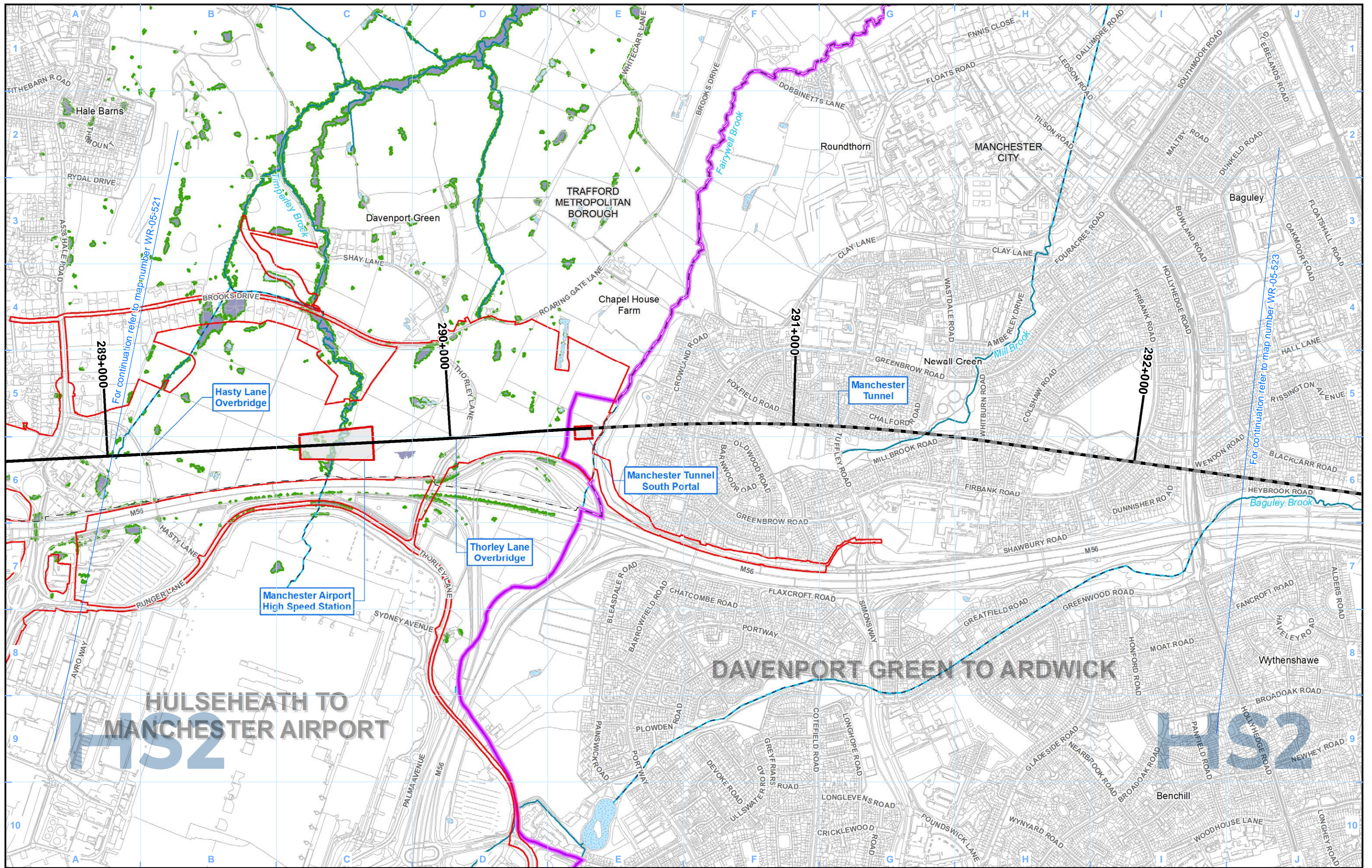
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Date: 12/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water

- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

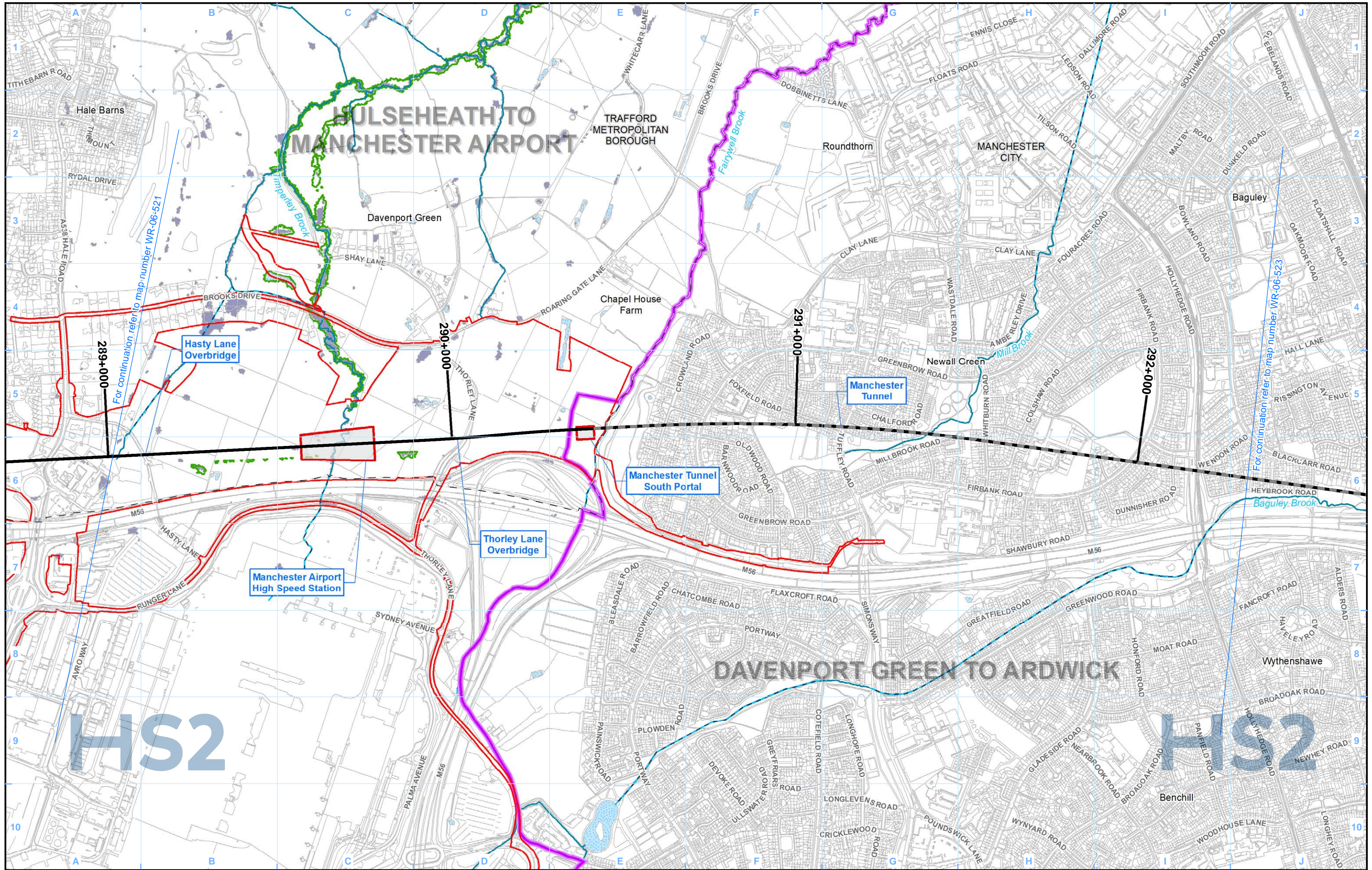
Map Number: WR-05-322b
 Map Name: Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 Community Area MA07: Davenport Green to Ardwick

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 Date: 16/09/21



Legend

Route in tunnel	Watercourse	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Route on surface	Culverted watercourse	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
Depot, station, headhouse or portal building	Canal	
Land potentially required during construction	Canal tunnel	
Community area boundary	Open water	
County boundary		
District/Borough boundary		

Map Number	WR-06-322b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA07: Davenport Green to Ardwick

HS2

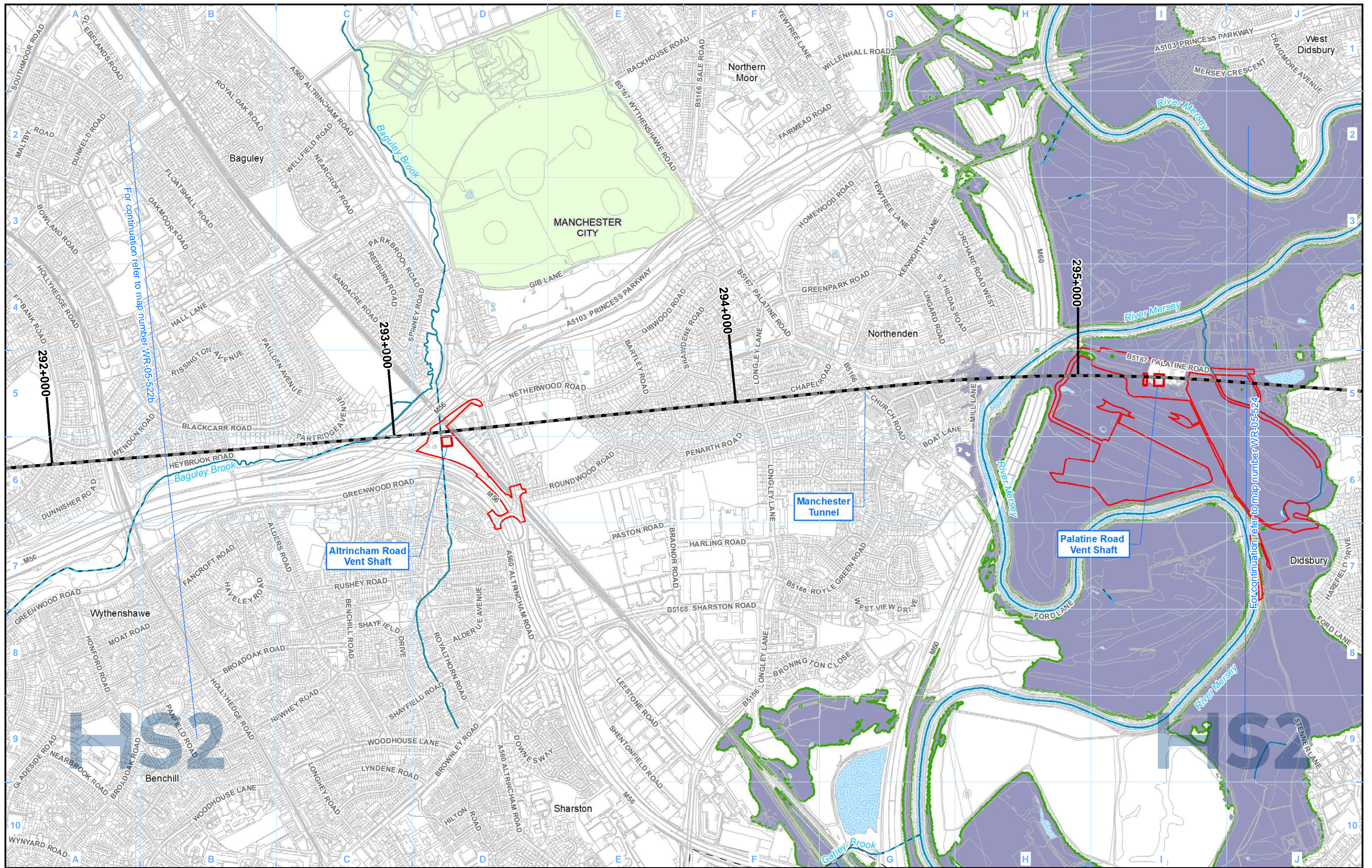
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002358-P01

Date: 14/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-323**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA07:
Davenport Green to Ardwick

HS2

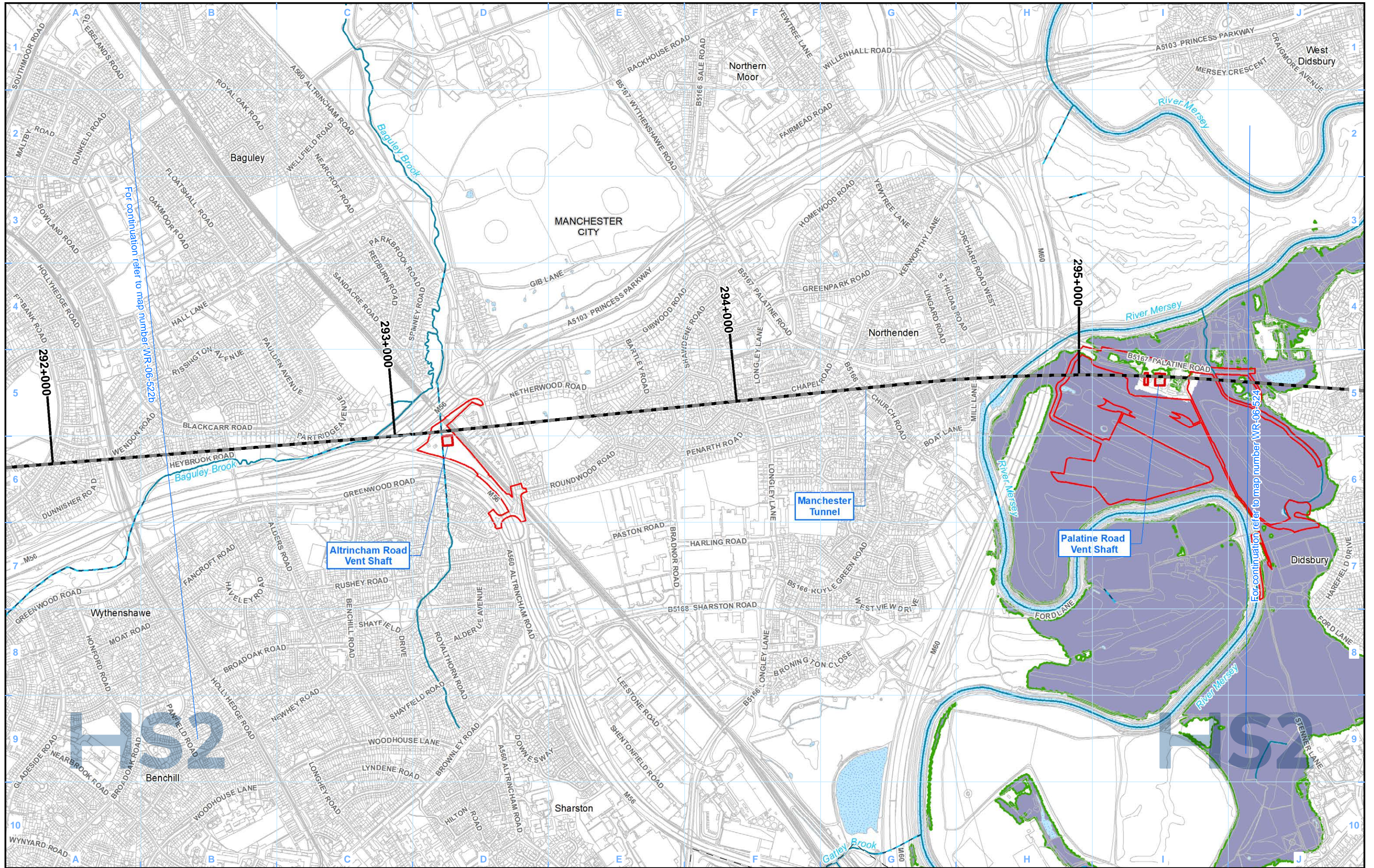
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- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-323**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA07: **Davenport Green to Ardwick**

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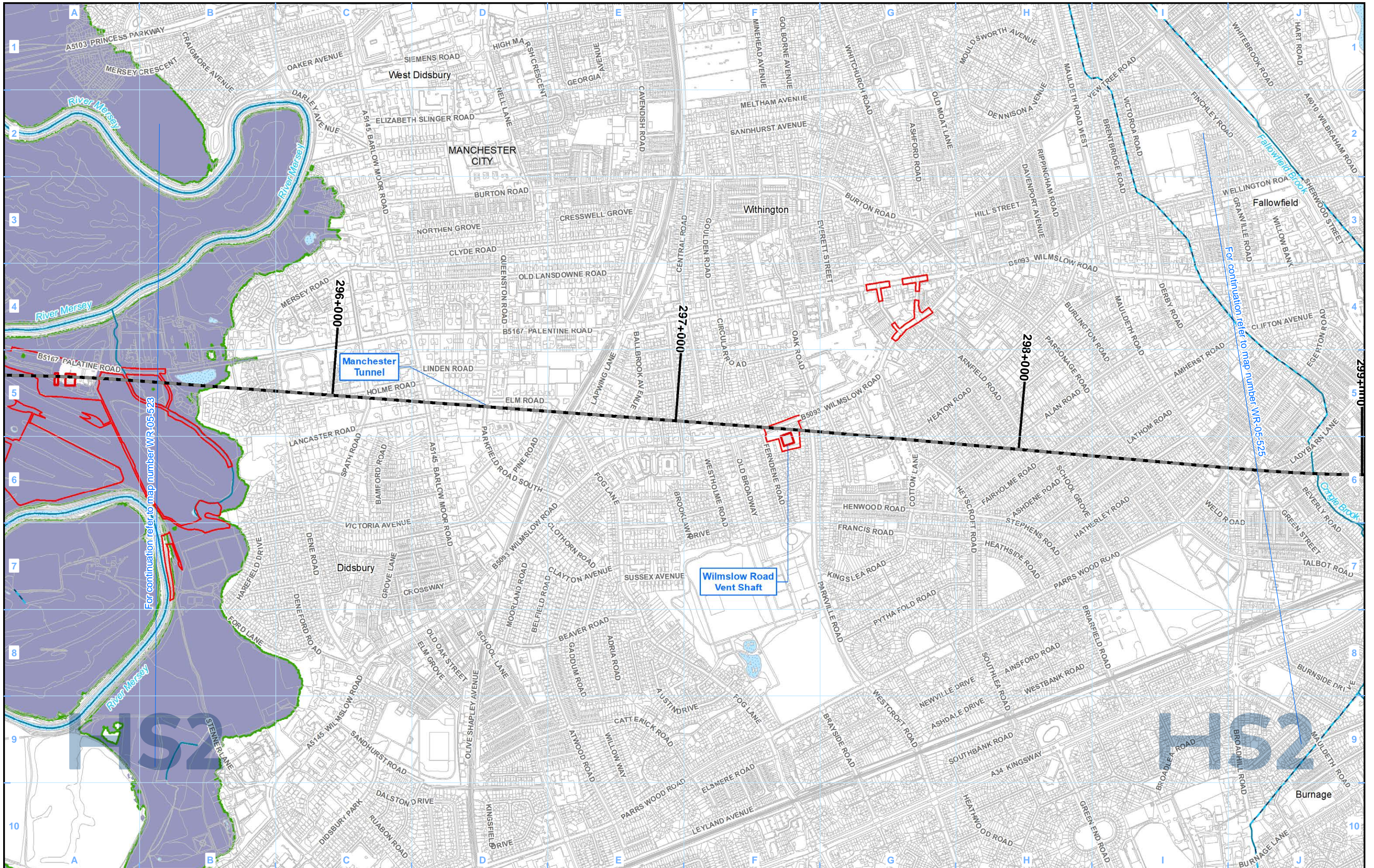
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Metres

Date: 14/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary

- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water

- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-324**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA07:
Davenport Green to Ardwick

HS2

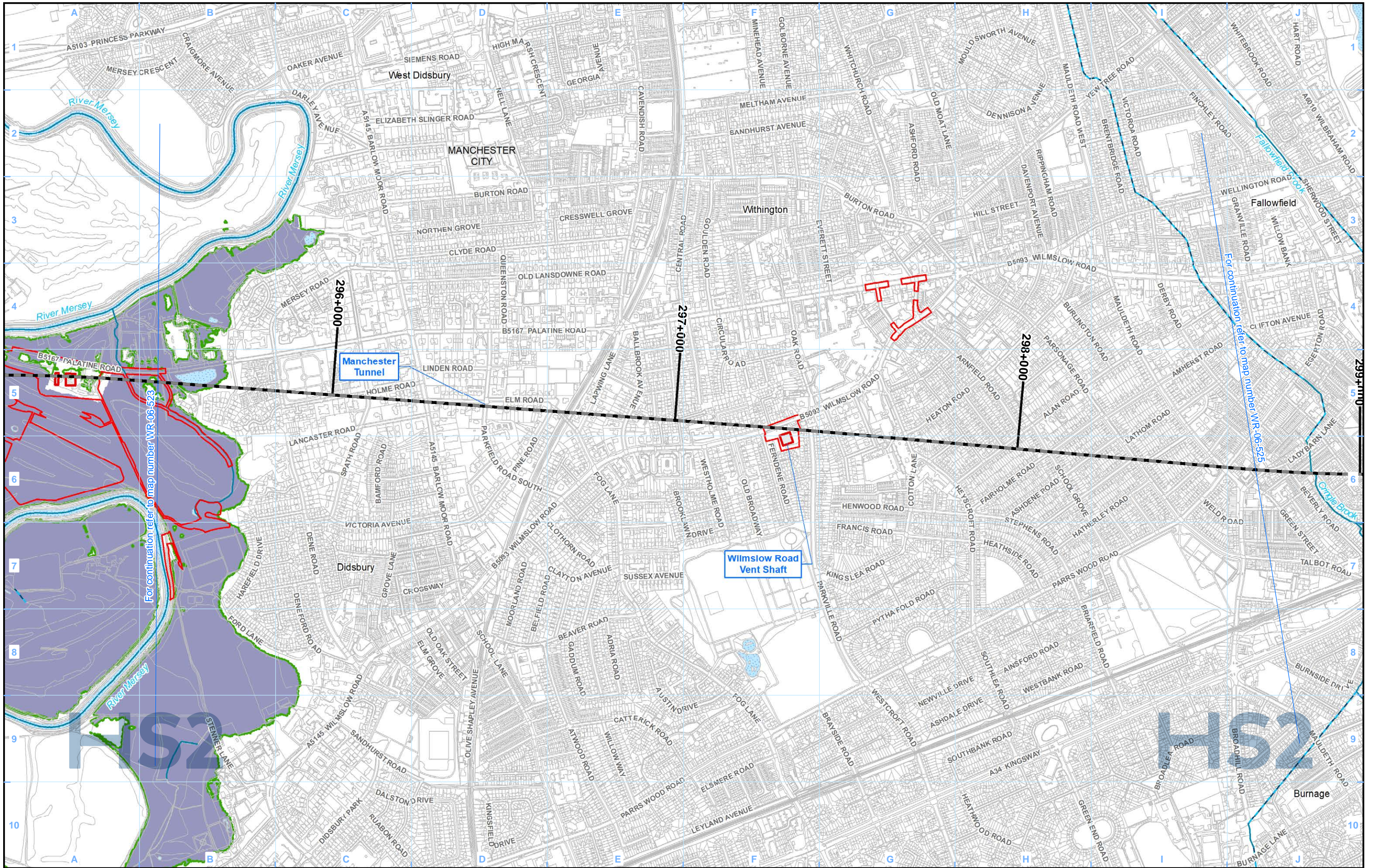
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0 100 200 300 400 Metres

Doc Number: 2DE01-MWJ-EV-MAP-M000-002314-P01

Date: 16/09/21



For continuation refer to map number WR-06-523

For continuation refer to map number WR-06-525

Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number	WR-06-324
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
	Community Area MA07: Davenport Green to Ardwick

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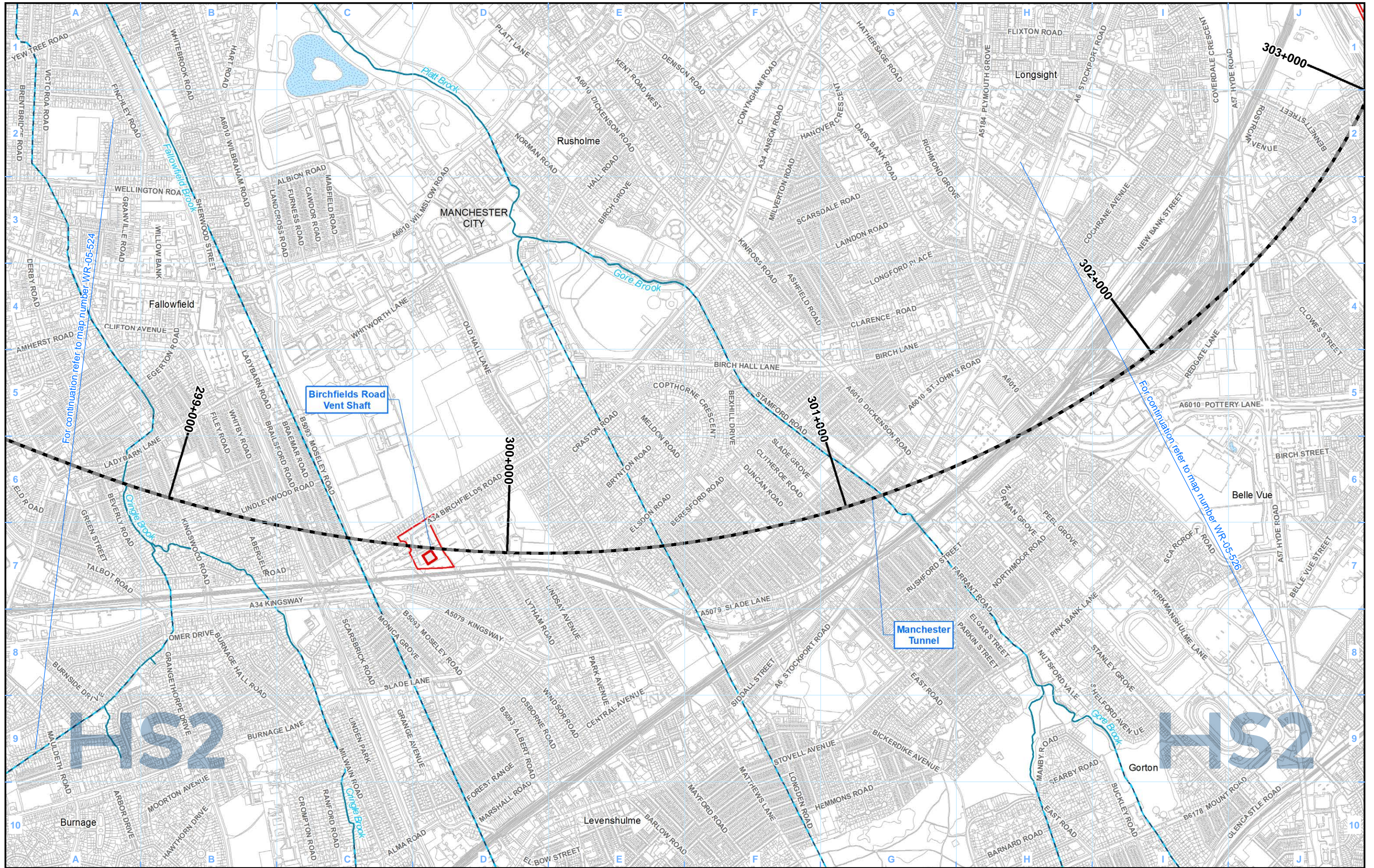
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Metres

Date: 14/10/21



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Open water
 - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
 - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-325**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA07:
Davenport Green to Ardwick

HS2

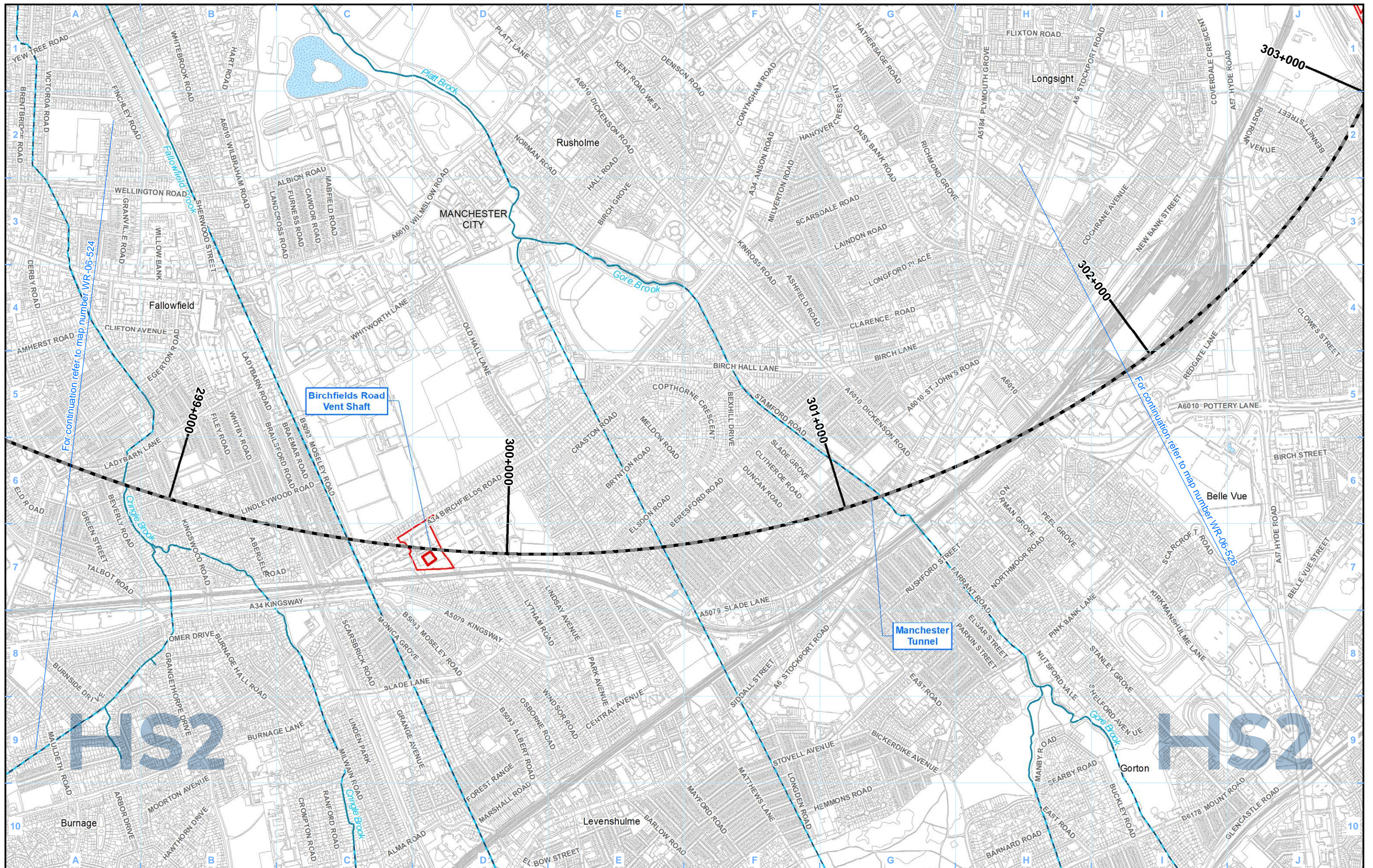
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Doc Number: 2DE01-MWJ-EV-MAP-M000-002315-P01

Date: 16/09/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-325**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA07: **Davenport Green to Ardwick**

HS2

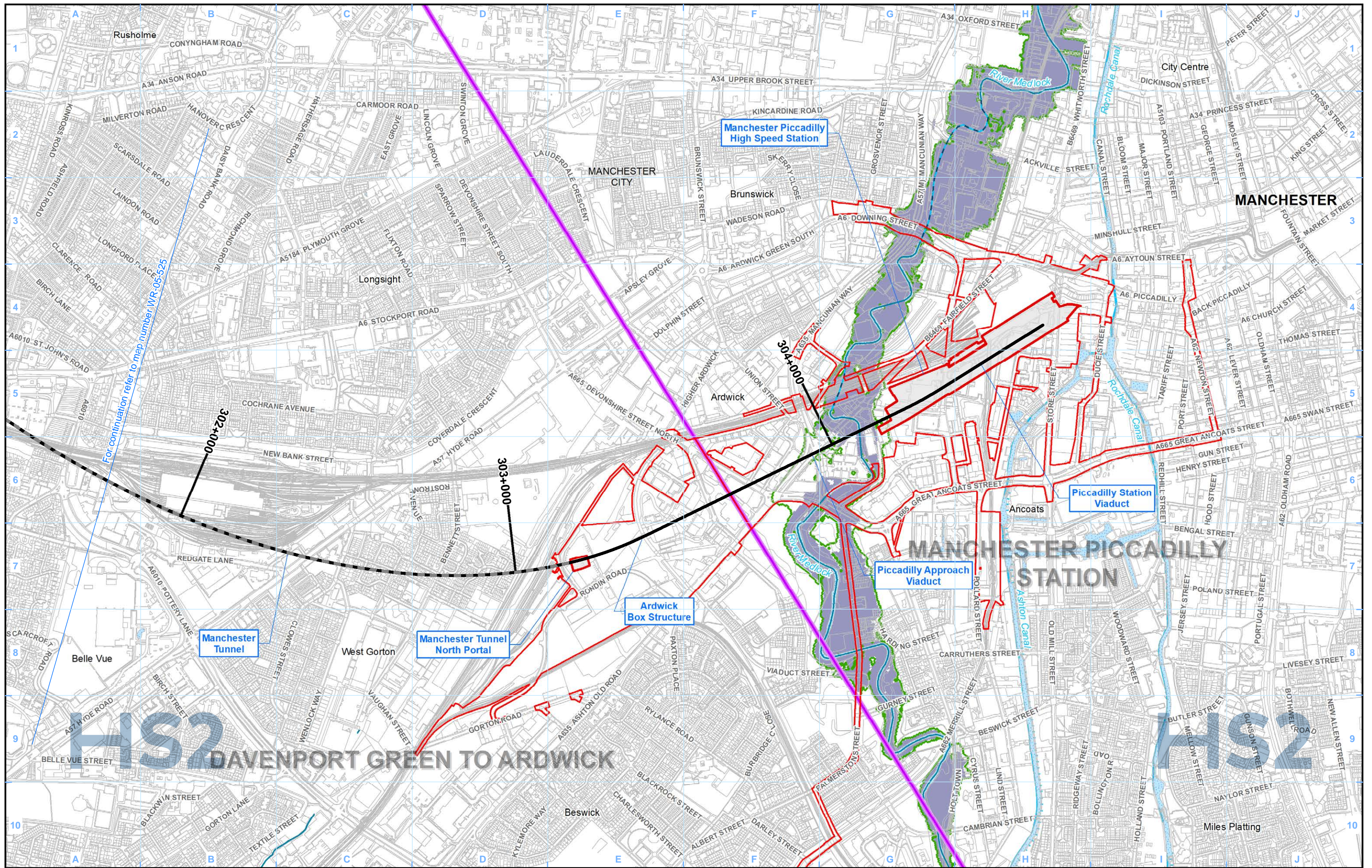
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Doc Number: **2DE01-MWJ-EV-MAP-M000-002361-P01**

Date: **14/10/21**



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: **WR-05-326a**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding**

Community Area MA07:
Davenport Green to Ardwick

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Date: 16/09/21

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High Speed Rail (Crewe – Manchester) Environmental Statement

MA08: Manchester Piccadilly Station

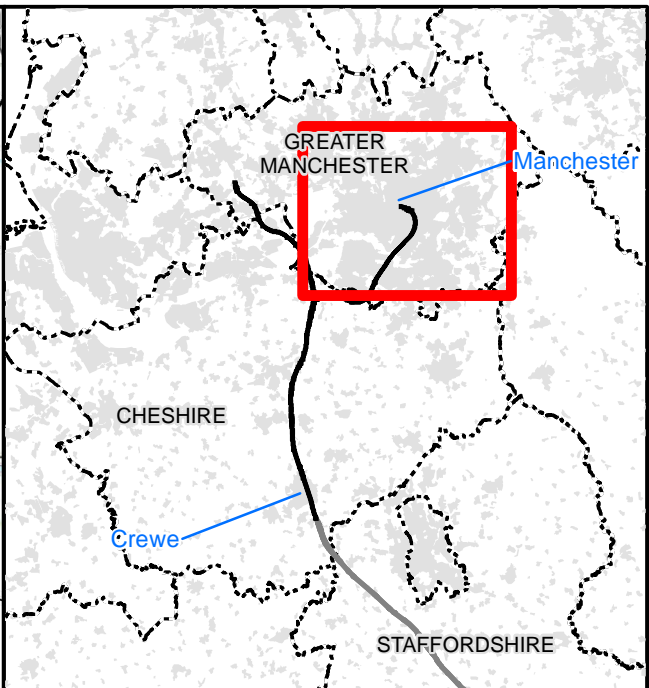
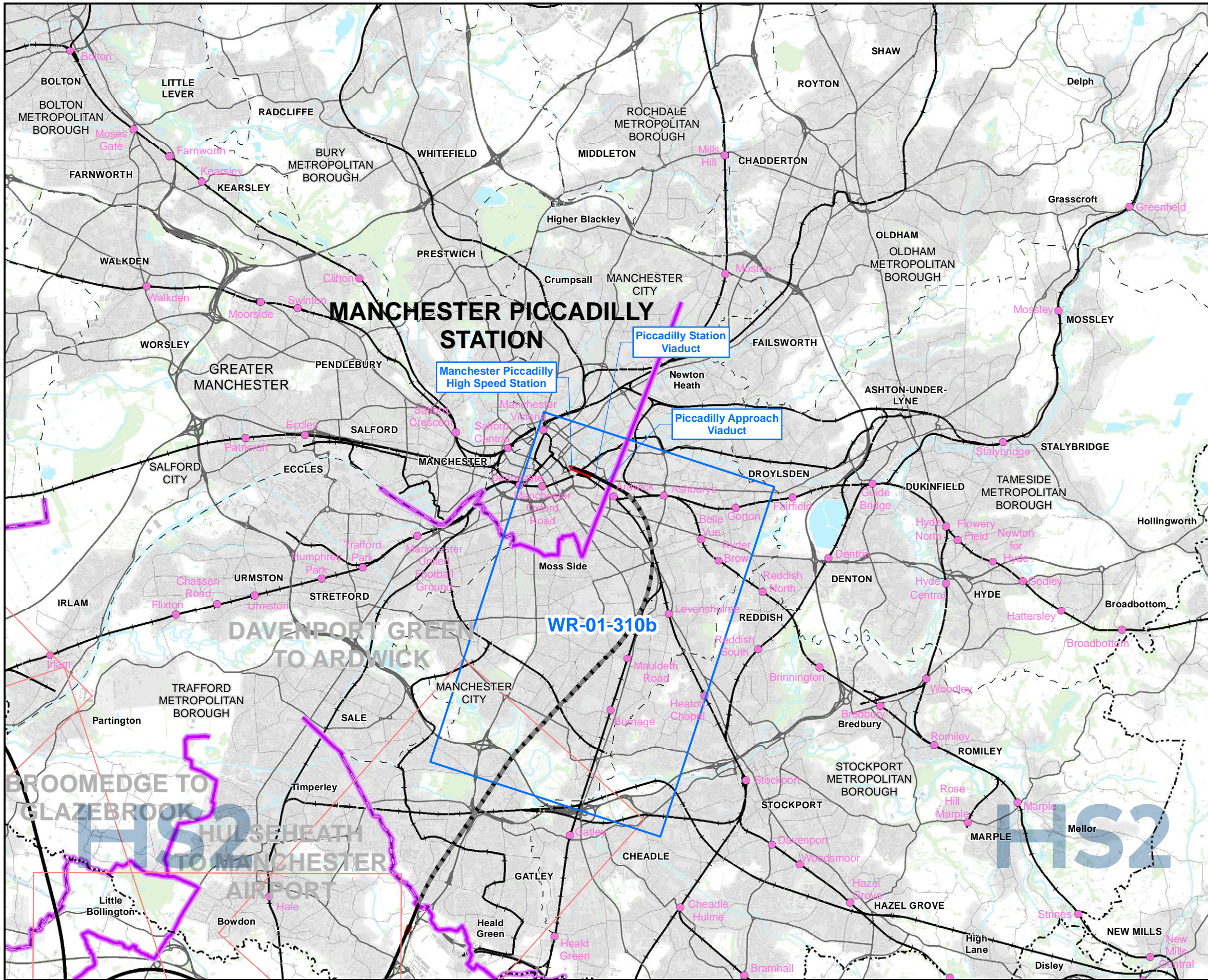
WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions.

The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

- Main Map Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Community area boundary
 - Existing railway station
 - County boundary
 - District/Borough boundary
 - Map sheets included in this community area
 - Map sheets not included in this community area

Map Number	WR-01-INDEX-MA08
Map Name	Index Map of: Surface Water Baseline
	Community Area MA08: Manchester Piccadilly Station

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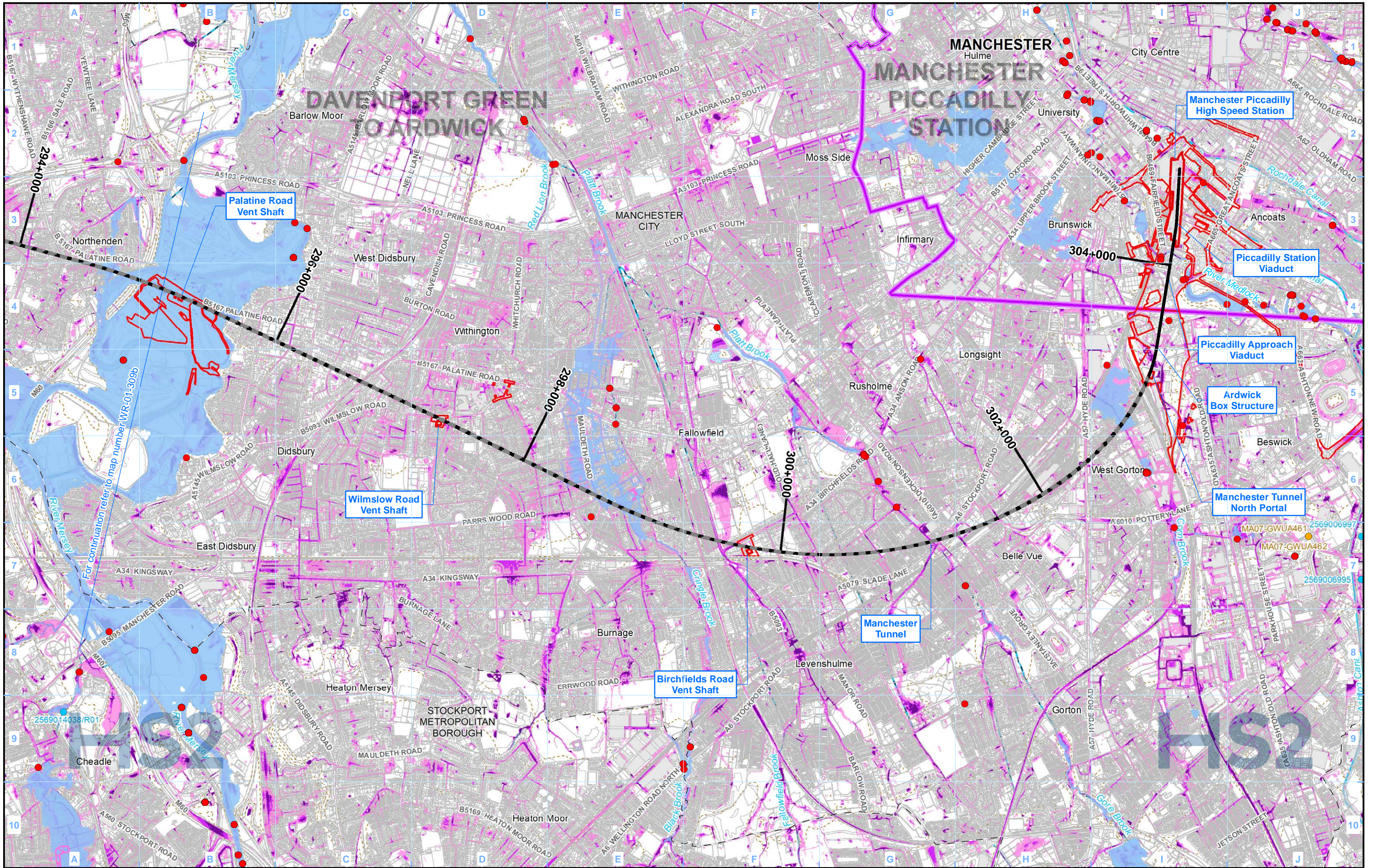
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Doc Number: 2DE01-MWJ-EV-MAP-M000-000311-P05

Date: 12/08/21

Note: Not all data layers in the legend are represented on every map.



- Legend**
- Route in tunnel
 - Route on surface
 - Depot, station, headhouse or portal building
 - Land potentially required during construction
 - Community area boundary
 - County boundary
 - District/Borough boundary
 - Licensed surface water abstraction (excluding public water supplies)
 - Unlicensed private surface water abstraction
 - Consented discharge to surface water
 - Airport
 - Watercourse
 - Culverted watercourse
 - Canal
 - Canal tunnel
 - Lakes & Reservoirs
 - Historic flooding area
 - Fluvial flood risk: Flood Zone 2
 - Fluvial flood risk: Flood Zone 3
 - Risk of Flooding from Surface Water: High - chance of flooding greater than 1 in 30 (3.33%)
 - Risk of Flooding from Surface Water: Medium - chance of flooding between 1 in 100 (1%) and 1 in 30 (3.33%)
 - Risk of Flooding from Surface Water: Low - chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%)

Map Number: WR-01-310b
 Map Name: Surface Water Baseline
 Community Area MA08:
 Manchester Piccadilly Station

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Doc Number: 2DE01-MWJ-EV-MAP-M000-000305-P05
 Date: 12/08/21

Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG CZ-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEBY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEBY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYLK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GYA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SOBR-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YQB-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-LIMESTONE-BRECCIA (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Date: 13/08/21

Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINGTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status

HS2

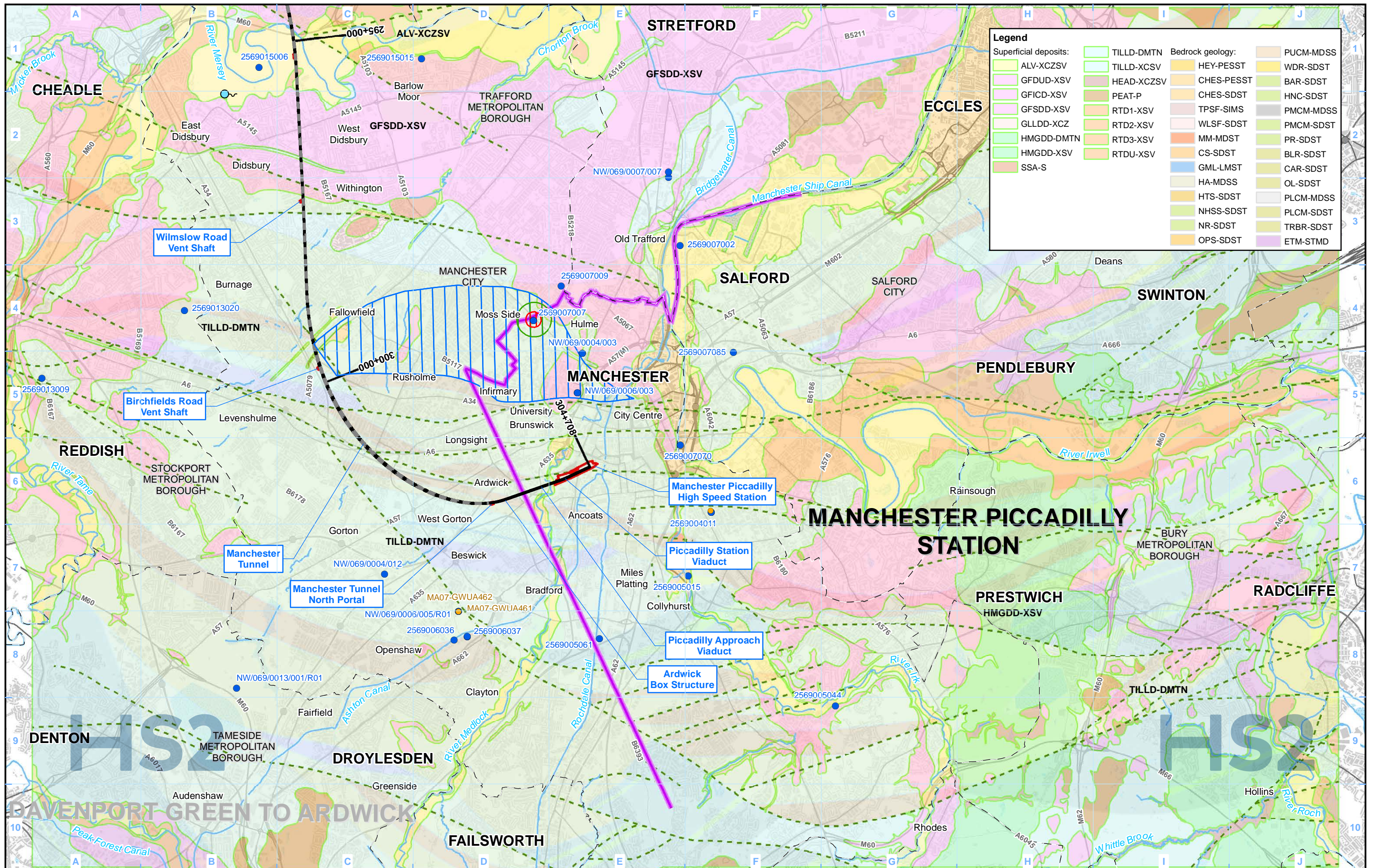
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Legend	
Superficial deposits:	Bedrock geology:
TILLD-DMTN	HEY-PESST
ALV-XCZSV	CHEP-PESST
GFDUD-XSV	CHEP-SDST
GFICD-XSV	PEAT-P
GFSDD-XSV	RTD1-XSV
GLLDD-XCZ	RTD2-XSV
HMGDD-DMTN	RTD3-XSV
HMGDD-XSV	RTDU-XSV
SSA-S	
	PUCM-MDSS
	WDR-SDST
	BAR-SDST
	HNC-SDST
	PMCM-MDSS
	PMCM-SDST
	PR-SDST
	BLR-SDST
	CAR-SDST
	OL-SDST
	PLCM-MDSS
	PLCM-SDST
	TRBR-SDST
	ETM-STMD

Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Community area boundary
	County boundary
	District/Borough boundary
	Airport
	Lakes & Reservoirs
	Geological fault line
	Licensed groundwater abstraction (excluding public water supplies)
	Unlicensed private groundwater abstraction
	Consented discharge to groundwater
	Springs

Groundwater source protection zone:	
	Zone 1
	Zone 2
	Zone 3

For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

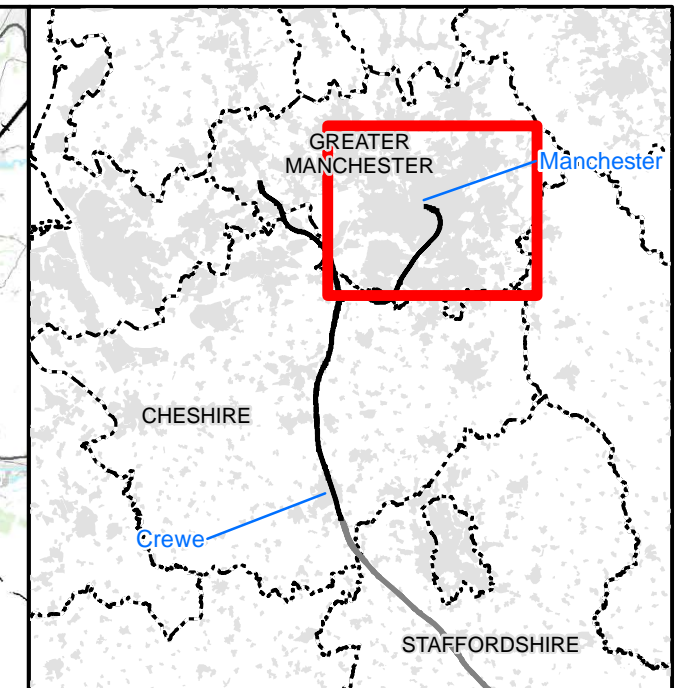
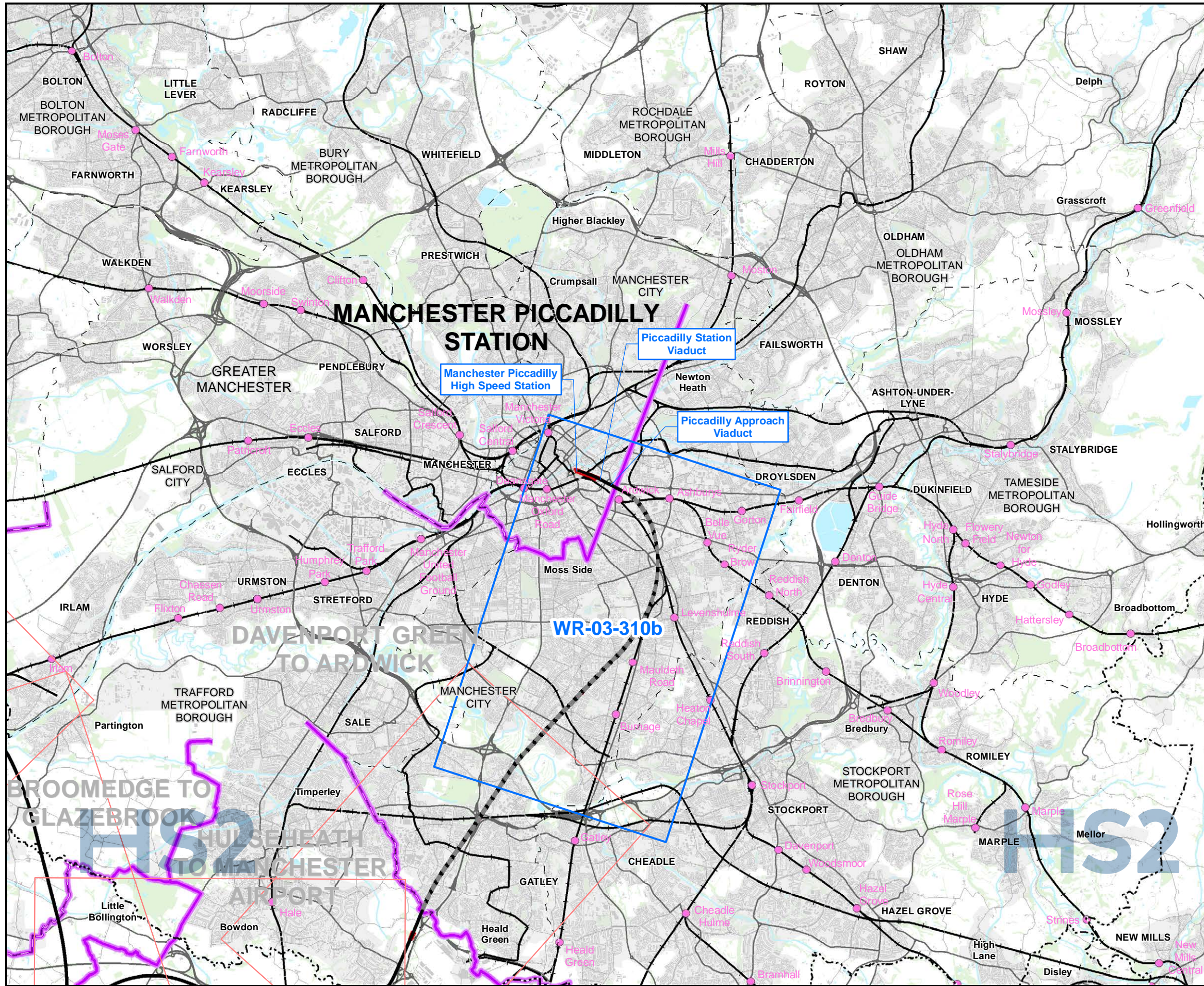
Map Number	WR-02-308
Map Name	Groundwater Baseline
Community Area MA08: Manchester Piccadilly Station	

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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number	WR-03-INDEX-MA08
Map Name	Index Map of: Water Framework Directive
	Community Area MA08: Manchester Piccadilly Station

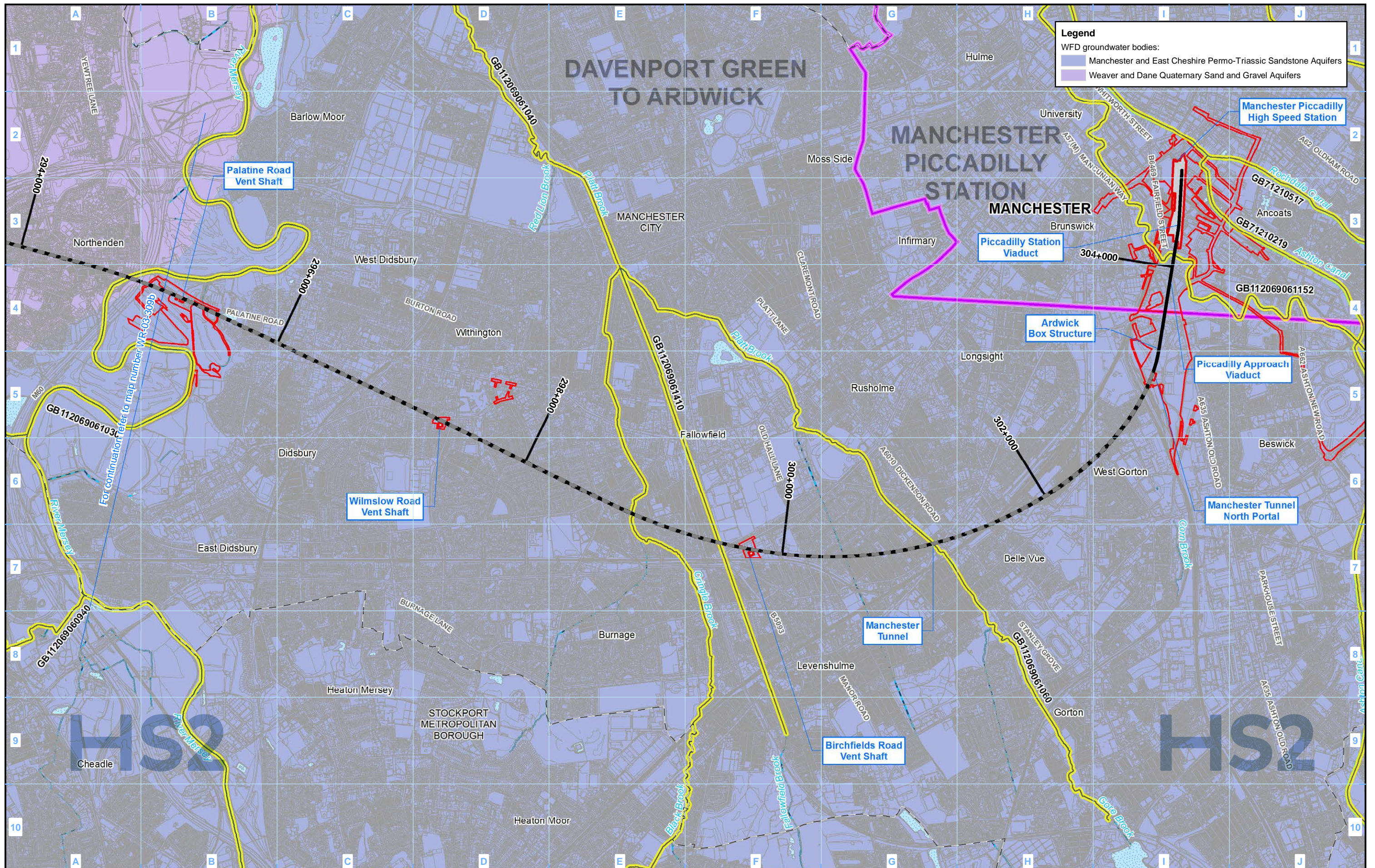
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Date: 11/08/21



Legend
 WFD groundwater bodies:
 Manchester and East Cheshire Permo-Triassic Sandstone Aquifers
 Weaver and Dane Quaternary Sand and Gravel Aquifers

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies
 Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes
 Overall Status:

- Good
- Moderate
- Poor
- Bad

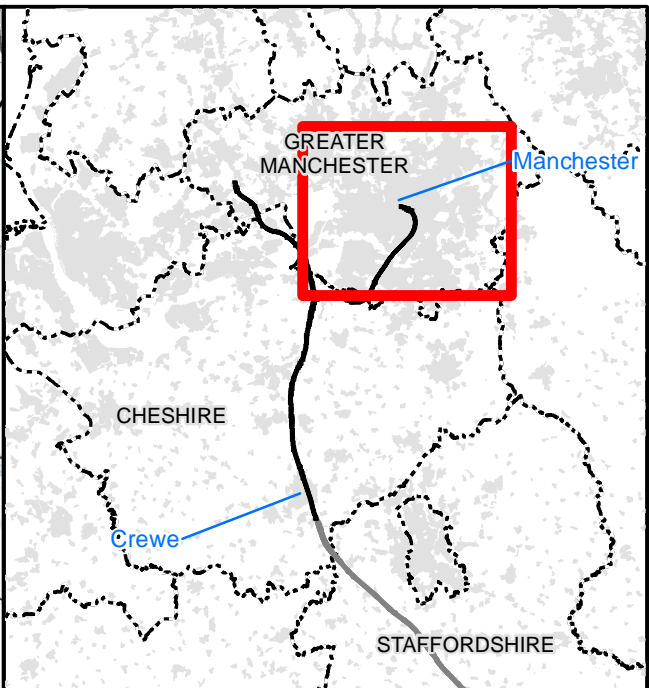
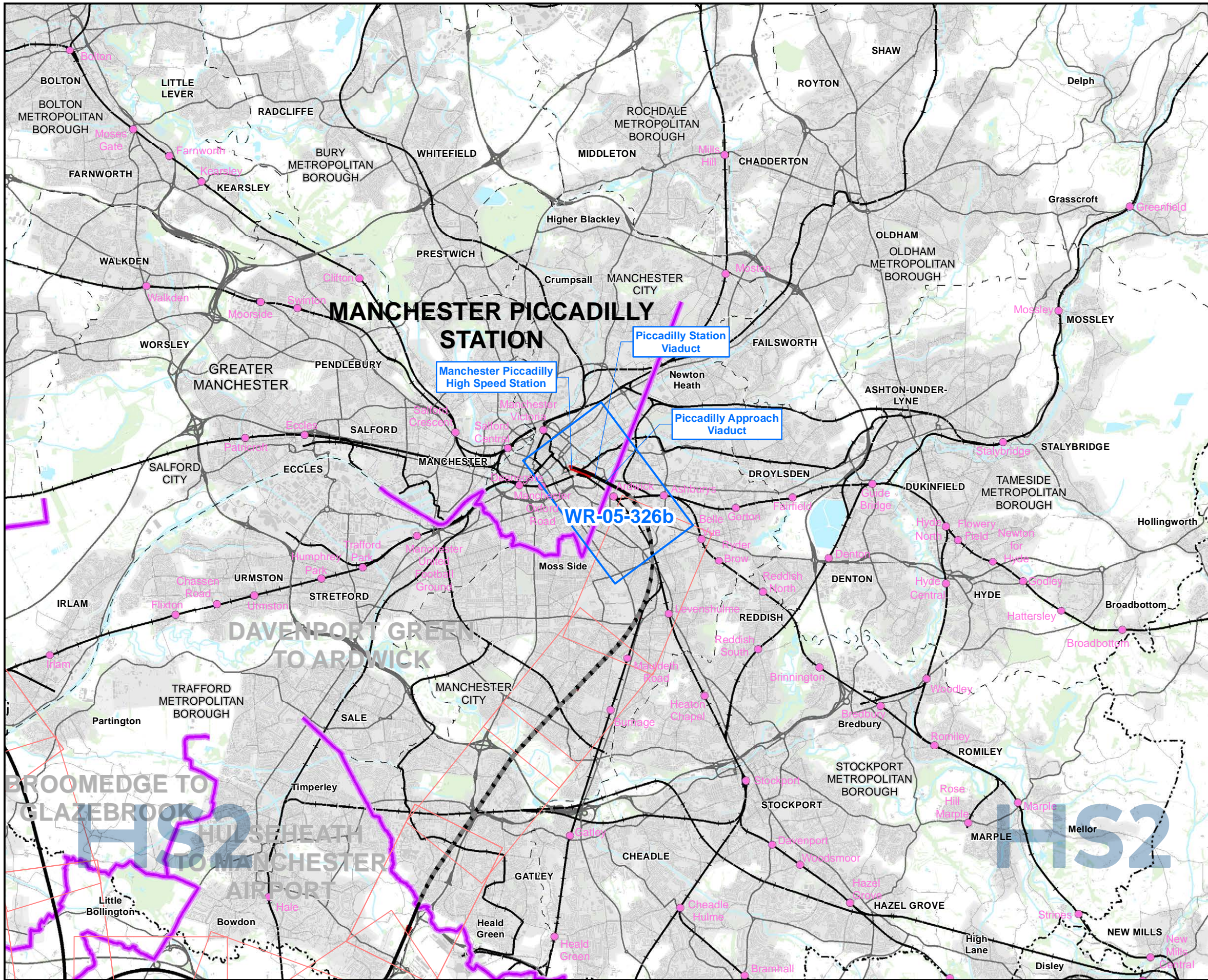
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: WR-03-310b
 Map Name: Water Framework Directive
 Community Area MA08: Manchester Piccadilly Station

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Metres



Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-05-INDEX-MA08**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 100 including Climate Change (1%+CC)
 Annual Probability of River Flooding
 Community Area MA08:
 Manchester Piccadilly Station

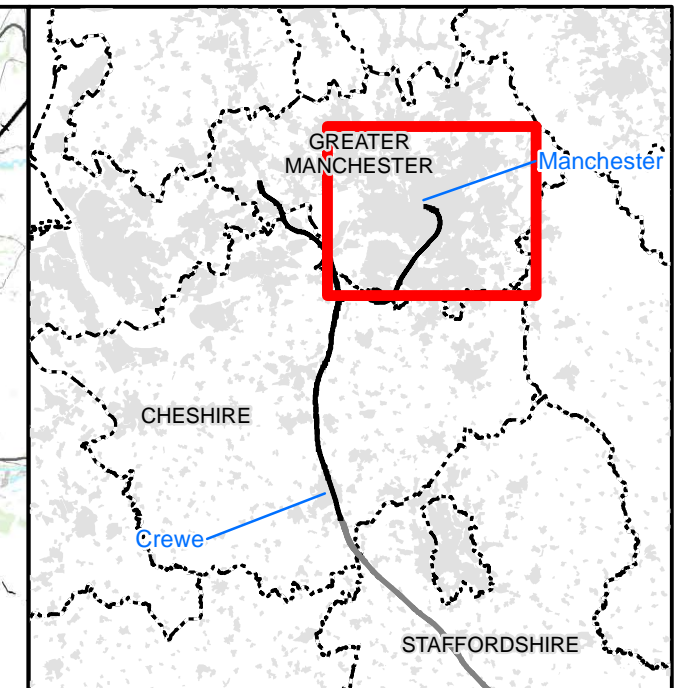
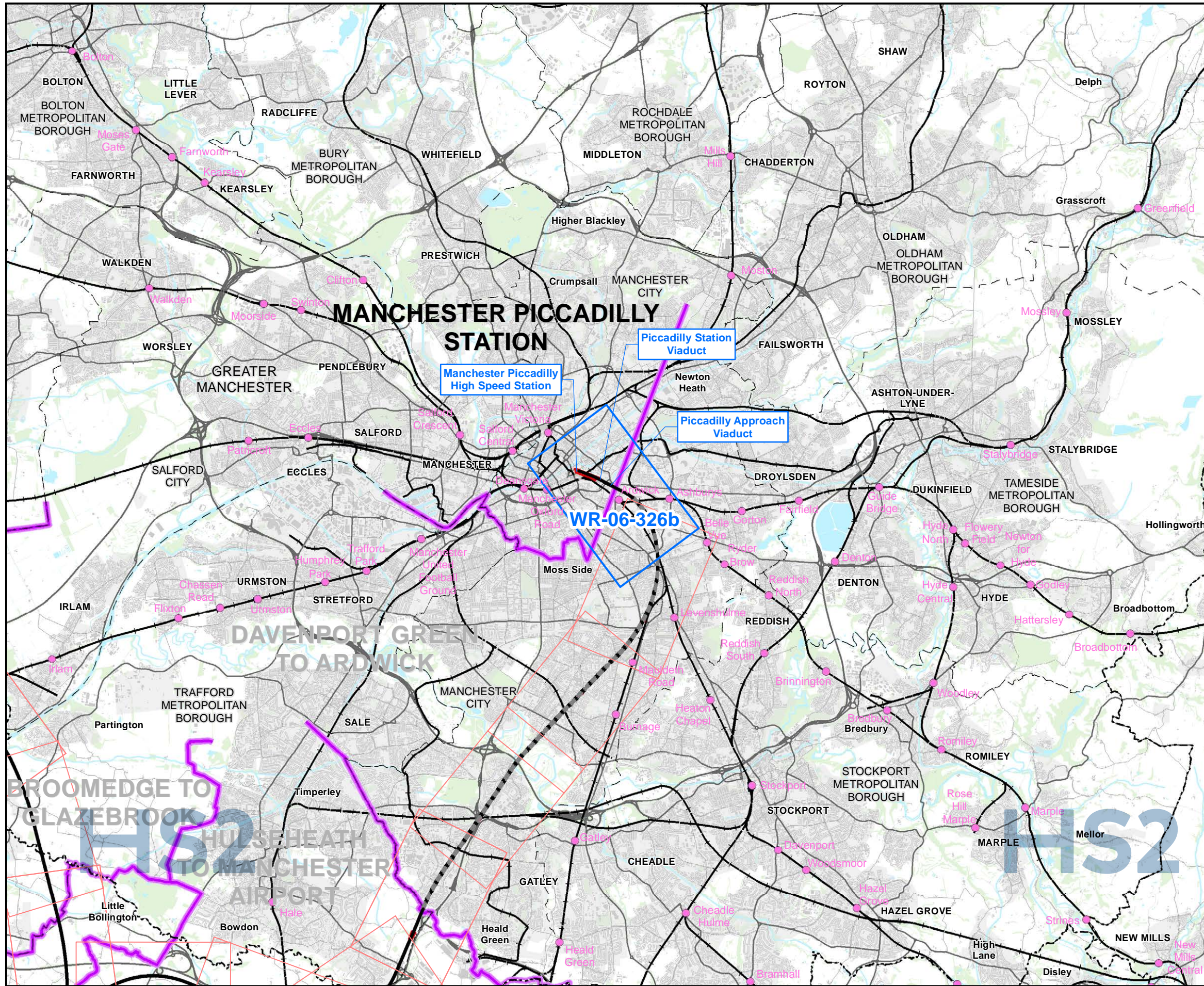
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Map Series Information:

The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.

Main Map Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area

Map Number **WR-06-INDEX-MA08**

Map Name
 Index Map of:
 Modelled Baseline and Post Development Flood
 Extent 1 in 20 (5%) Annual Probability of River
 Flooding

Community Area MA08:
 Manchester Piccadilly Station

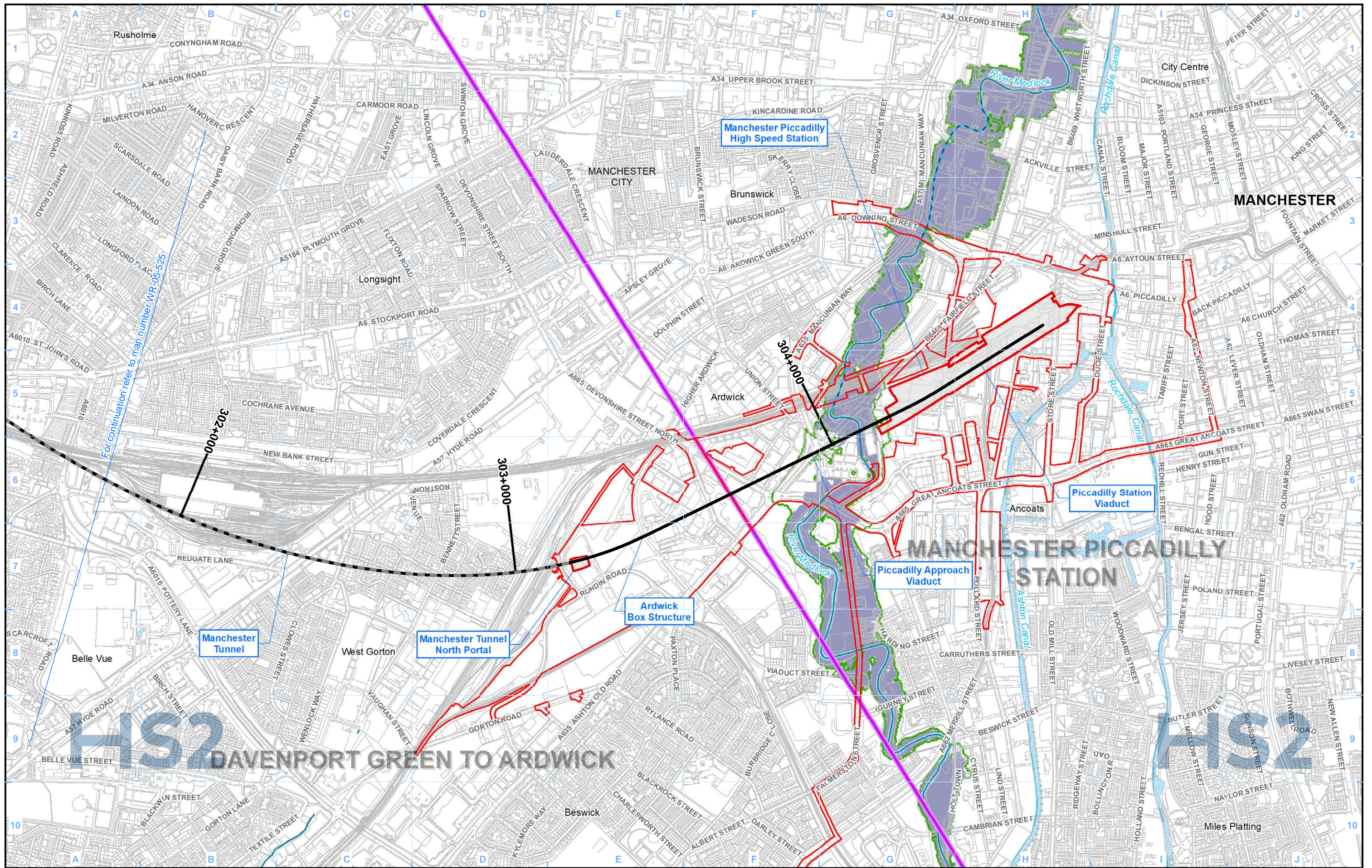
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Legend	
	Route in tunnel
	Route on surface
	Depot, station, headhouse or portal building
	Land potentially required during construction
	Community area boundary
	County boundary
	District/Borough boundary
	Watercourse
	Culverted watercourse
	Canal
	Canal tunnel
	Open water
	Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
	Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number	WR-05-326b
Map Name	Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
Community Area MA08: Manchester Piccadilly Station	

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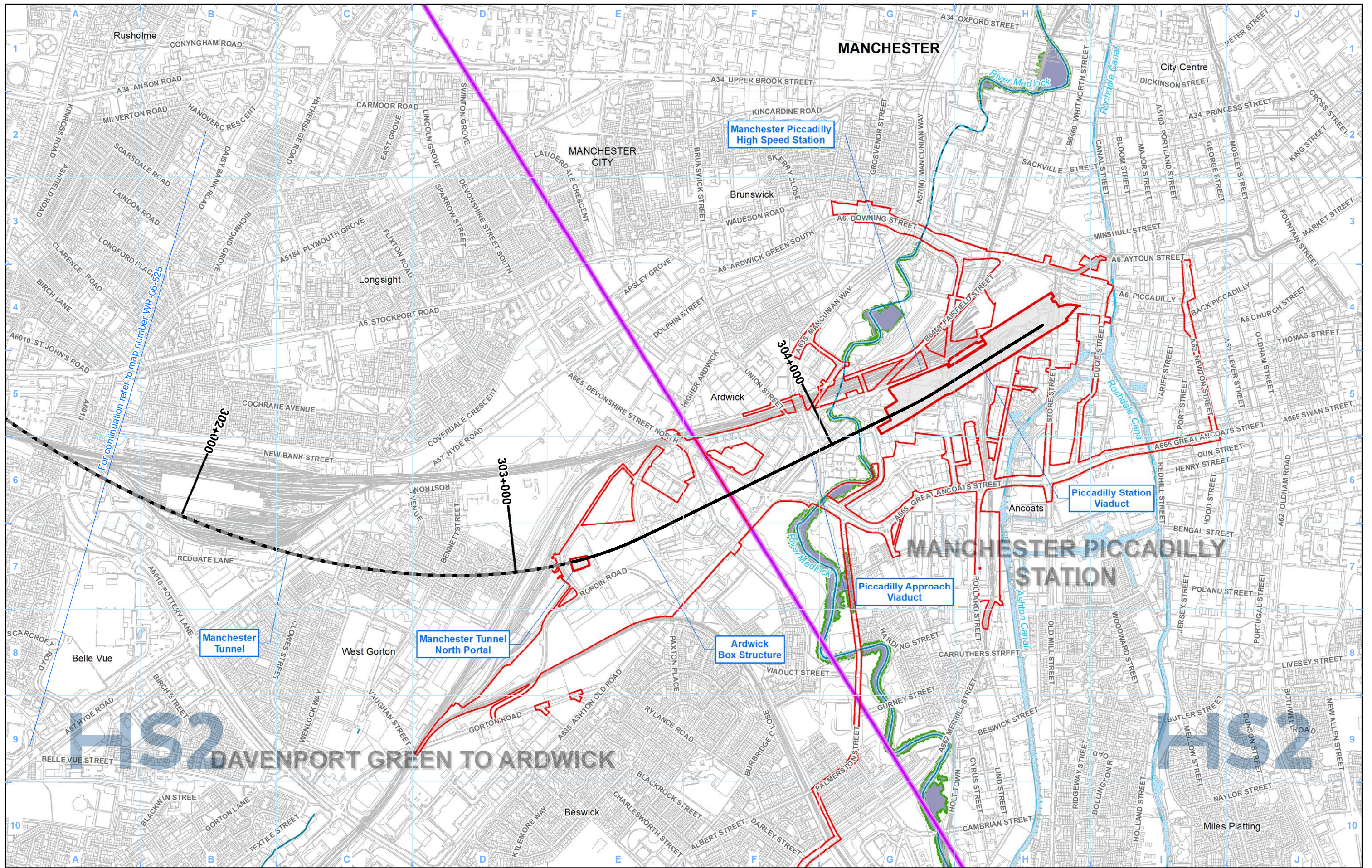
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Scale at A3: 1:10,000

Metres

Date: 16/09/21



Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: **WR-06-326b**

Map Name: **Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding**

Community Area MA08: **Manchester Piccadilly Station**

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Doc Number: **2DE01-MWJ-EV-MAP-M000-002363-P01**

Date: **14/10/21**

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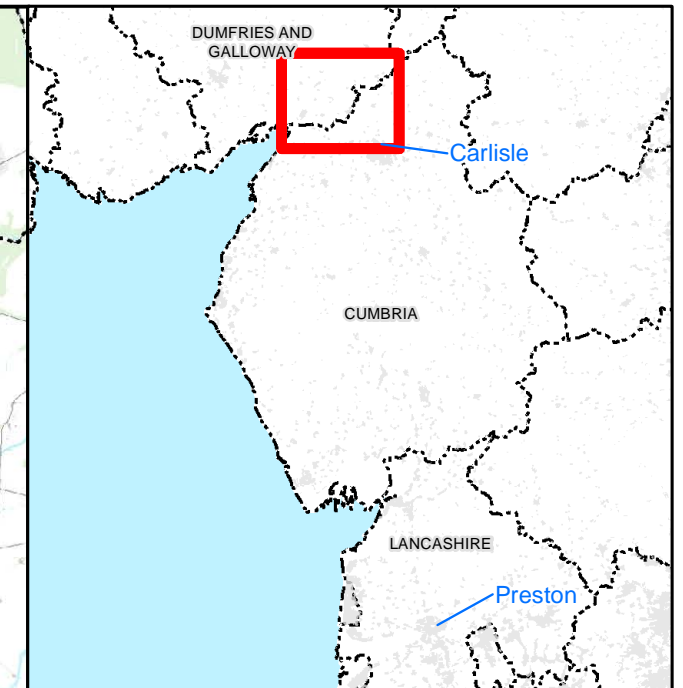
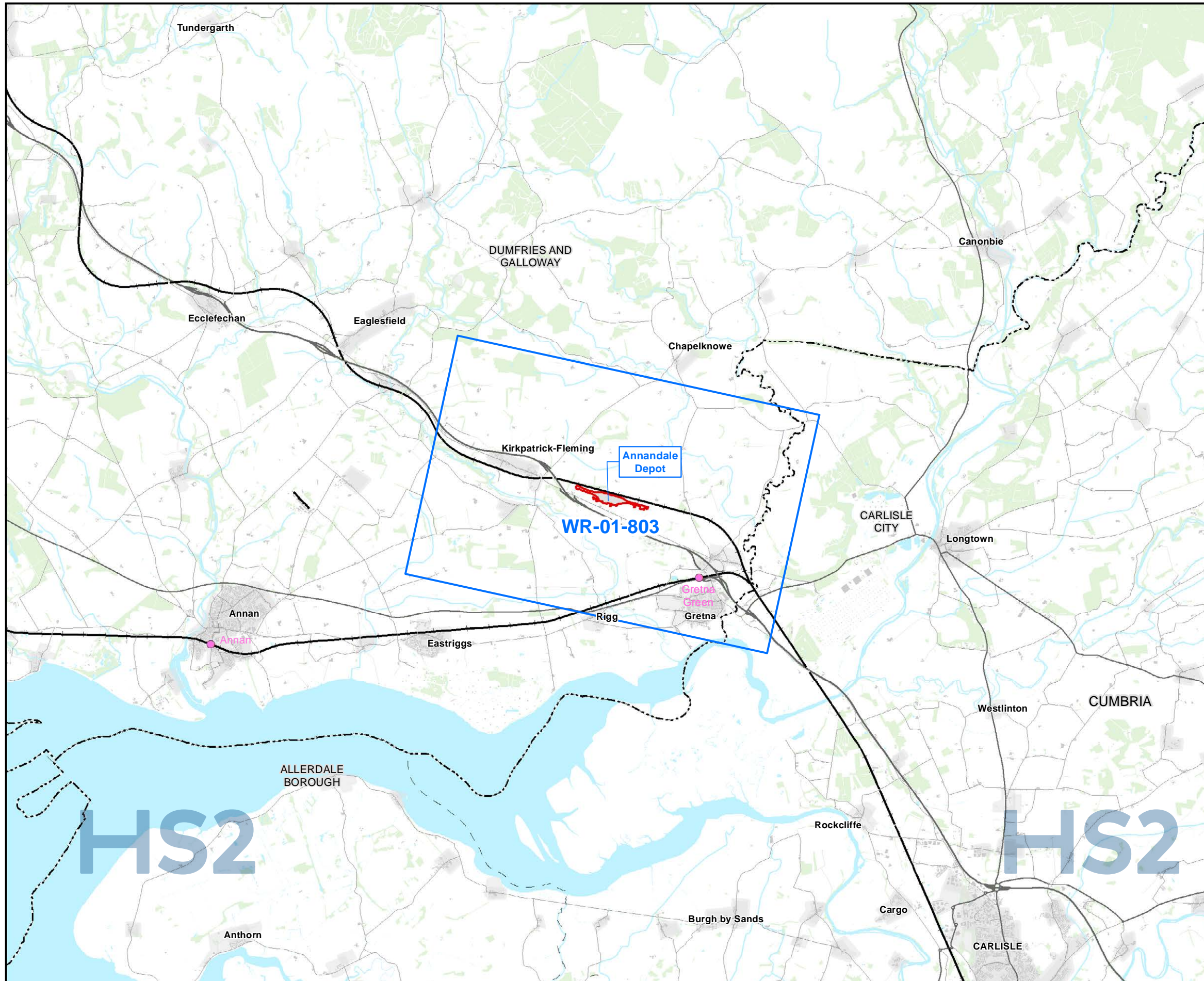
High Speed Rail (Crewe – Manchester) Environmental Statement

OR003: Annandale Depot

WR-01 - Surface Water Baseline

WR-02 - Groundwater Baseline

WR-03 - Water Framework Directive



Map Series Information:

This map series shows surface water features such as rivers, streams, ponds, canals and reservoirs, flood zones, and surface water abstractions. The design of the Proposed Scheme will be informed through stakeholder engagement and further engineering and environmental studies.

Main Map Legend	
Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets not included in this community area
Depot, station, headhouse or portal building	Community area boundary
Existing railway station	County/Unitary Authority boundary
District/Borough boundary	

Map Number	WR-01-INDEX-ADEP
Map Name	Index Map of: Surface Water Baseline
	Off-route ADEP: Annandale Depot

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Note: Not all data layers in the legend are represented on every map.

Bedrock Geology

BNT-MDLM	BARNSTONE MEMBER - MUDSTONE AND LIMESTONE, INTERBEDDED	HA-SDST	HALESOWEN FORMATION - SANDSTONE (Secondary A aquifer)	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE (Secondary A aquifer)
CTM-MDST	COTHAM MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	HANS-SDST	HANCHURCH SANDSTONE BED - SANDSTONE (Secondary A aquifer)	TUPR-SDST	TUPTON ROCK - SANDSTONE (Secondary A aquifer)
WBV-MDSI	WESTBURY FORMATION - MUDSTONE AND SILTSTONE (Secondary B aquifer)	HTS-SDST	HOLT TOWN SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WGF-SDST	WINGFIELD FLAGS - SANDSTONE (Secondary A aquifer)
WBV-MDST	WESTBURY FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)	SPPS-SDST	SPRINGPOOL SANDSTONE BED - SANDSTONE (Secondary A aquifer)	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE (Secondary A aquifer)
BAN-MDST	BLUE ANCHOR FORMATION - MUDSTONE (Secondary B aquifer)	WIT-LMST	WHITACRE MEMBER - LIMESTONE (Principal aquifer)	MGY-MDSC	ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE (Secondary A aquifer)
BCMU-DSLST	BRANSCOMBE MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary B aquifer)	WIT-MDSI	WHITACRE MEMBER - MUDSTONE AND SANDSTONE (Principal aquifer)	ETM-SDST	ETRURIA FORMATION - SANDSTONE (Secondary A aquifer)
BCMU-MDST	BRANSCOMBE MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	WIT-SDST	WHITACRE MEMBER - SANDSTONE (Principal aquifer)	ETM-STM	ETRURIA FORMATION - SANDSTONE AND MUDSTONE (Secondary A aquifer)
AS-SDSM	ARDEN SANDSTONE FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE (Principal Aquifer)	ACR-SDST	ACKTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	UNNAMED SANDSTONE OF YEADONIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE
AS-SDST	ARDEN SANDSTONE FORMATION - SANDSTONE (Secondary A aquifer)	AR-SDST	ACKWORTH ROCK - SANDSTONE (Secondary A aquifer)	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE
COT-SDST	COTGRAVE SANDSTONE MEMBER - SANDSTONE (Secondary A aquifer)	BADR-SDST	BADSWORTH ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
EDW-DSLST	EDWALTON MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	BYR-SDST	BRIERLEY ROCK - SANDSTONE (Secondary A aquifer)	ROSSE-SDST	ROSSENDALE FORMATION - SANDSTONE (Secondary A aquifer)
EDW-MDST	EDWALTON MEMBER - MUDSTONE (Secondary B aquifer)	DLT-SDST	DALTON ROCK - SANDSTONE (Secondary A aquifer)	RR-SDST	ROUGH ROCK - SANDSTONE (Secondary A aquifer)
WHT-HAMD	WILKESLEY HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	GH-SDST	GLASS HOUGHTON ROCK - SANDSTONE (Secondary A aquifer)	ASG-SDST	ASHOVER GRIT - SANDSTONE (Secondary A aquifer)
DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE (Secondary B aquifer)	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE (Secondary A aquifer)	CHG-SDST	CHATSWORTH GRIT - SANDSTONE (Secondary A aquifer)
BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE (Secondary B aquifer)	NEWR-SDST	NEWSTEAD ROCK - SANDSTONE (Secondary A aquifer)	EC-SDST	EAST CARLTON GRIT - SANDSTONE
BREE-BREC	BREEDON BRECCIA - BRECCIA (Secondary B aquifer)	NHSS-SDST	NEWTON HEATH SANDSTONE - SANDSTONE (Secondary A aquifer)	GSYG-SDST	GUISELEY GRIT - SANDSTONE
GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC (Secondary B aquifer)	NR-SDST	NOB END ROCK - SANDSTONE (Secondary A aquifer)	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE
GUN-MDST	GUNTHORPE MEMBER - MUDSTONE (Secondary B aquifer)	OPS-SDST	OPENSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)
GUN-SDST	GUNTHORPE MEMBER - SANDSTONE (Secondary B aquifer)	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MGCC-SDST	UNNAMED SANDSTONE OF MARSDENIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
GUN-SLST	GUNTHORPE MEMBER - SILTSTONE (Secondary B aquifer)	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	MGG-SDST	MIDGLEY GRIT - SANDSTONE
HEY-MDST	HELSEY SANDSTONE FORMATION - MUDSTONE (Principal aquifer)	RVR-SDST	RAVENFIELD ROCK - SANDSTONE (Secondary A aquifer)	RE-SDST	REDMIRES FLAGS - SANDSTONE
HEY-PESST	HELSEY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal aquifer)	WDR-SDST	WORSLEY DELF ROCK - SANDSTONE (Secondary A aquifer)	AD-SDST	ADDLETHORPE GRIT - SANDSTONE
HEY-SDST	HELSEY SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	WYR-SDST	WICKERSLEY ROCK - SANDSTONE (Secondary A aquifer)	AE-SDST	ADDINGHAM EDGE GRIT - SANDSTONE
NWHF-HAMD	NORTHWICH HALITE MEMBER - HALITE-STONE AND MUDSTONE (Unproductive)	ABR-SDST	ABDY ROCK - SANDSTONE (Secondary A aquifer)	DSS-SDST	DOUBLER STONES SANDSTONE - SANDSTONE
RDCF-MDSI	RADCLIFFE MEMBER - MUDSTONE AND SILTSTONE (Secondary B aquifer)	BAR-SDST	BARDSLEY ROCK - SANDSTONE (Secondary A aquifer)	HMSA-SDST	HIGH MOOR SANDSTONE - SANDSTONE
RDCF-MDST	RADCLIFFE MEMBER - MUDSTONE (Secondary Undifferentiated aquifer)	BNR-SDST	BARNSLEY ROCK - SANDSTONE	LPG-SDST	LOWER PLOMPTON GRIT - SANDSTONE
RDCF-SLST	RADCLIFFE MEMBER - SILTSTONE (Secondary B aquifer)	CRRO-SDST	CRIGGESTONE ROCK - SANDSTONE (Secondary A aquifer)	LRSS-SDST	LONG RIDGE SANDSTONE - SANDSTONE
SHSA-MDST	SHEPshed SANDSTONE MEMBER - MUDSTONE (Principal aquifer)	HMR-SDST	HAIGH MOOR ROCK - SANDSTONE (Secondary A aquifer)	MGCK-SDST	UNNAMED SANDSTONE OF KINDERSCOUTIAN AGE (IN MILLSTONE GRIT GROUP) - SANDSTONE (Secondary A aquifer)
SHSA-SDST	SHEPshed SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	HNC-SDST	HUNCLIFFE ROCK - SANDSTONE (Secondary A aquifer)	UPG-SDST	UPPER PLOMPTON GRIT - SANDSTONE
CHES-MDST	CHESTER FORMATION - MUDSTONE (Principal Aquifer)	HRR-SDST	HORBURY ROCK - SANDSTONE (Secondary A aquifer)	UF-SDST	UPPER FOLLIFOOT GRIT - SANDSTONE
CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY) (Principal Aquifer)	KNR-SDST	KENT'S ROCK - SANDSTONE	MORRI-MDSS	MORRIDGE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SCON	CHESTER FORMATION - SANDSTONE AND CONGLOMERATE, INTERBEDDED (Principal aquifer)	OR-SDST	OAKS ROCK - SANDSTONE (Secondary A aquifer)	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
CHES-SDST	CHESTER FORMATION - SANDSTONE (Principal aquifer)	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	MG-SDST	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - SANDSTONE (Secondary A aquifer)
SIM-DSLST	SIDMOUTH MUDSTONE FORMATION - SILTSTONE, DOLOMITIC (Secondary Undifferentiated aquifer)	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	EYL-LMST	EYAM LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
SIM-MDST	SIDMOUTH MUDSTONE FORMATION - MUDSTONE (Secondary B aquifer)	PMR-SDST	PEMBERTON ROCK - SANDSTONE (Secondary A aquifer)	EYLK-LMST	EYAM LIMESTONES FORMATION (KNOLL-REEF) - LIMESTONE
TPSF-MDSI	TARPORLEY SILTSTONE FORMATION - MUDSTONE AND SILTSTONE (Secondary Undifferentiated aquifer)	PR-SDST	PEEL HALL ROCK - SANDSTONE (Secondary A aquifer)	MO-LMST	MONSAL DALE LIMESTONE FORMATION - LIMESTONE
TPSF-MDSS	TARPORLEY SILTSTONE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary B aquifer)	THR-SDST	TOP HARD ROCK - SANDSTONE (Secondary A aquifer)	TIL-LMST	TICKNALL LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
TPSF-MDST	TARPORLEY SILTSTONE FORMATION - MUDSTONE (Secondary B aquifer)	TR-SDST	THORNHILL ROCK - SANDSTONE (Secondary A aquifer)	BSG-MDSS	BOWLAND SHALE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)
TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE (Secondary A aquifer)	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	FV-TUF	FALLGATE VOLCANIC FORMATION - TUFF (Secondary B aquifer)
TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE (Secondary B aquifer)	BLR-SDST	BLENFIRE ROCK - SANDSTONE (Secondary A aquifer)	WDF-LSMD	WIDMERPOOL FORMATION - LIMESTONE AND MUDSTONE, INTERBEDDED (Secondary A aquifer)
TPSF-SISD	TARPORLEY SILTSTONE FORMATION - SILTSTONE AND SANDSTONE (Secondary B aquifer)	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WDF-MDST	WIDMERPOOL FORMATION - MUDSTONE (Secondary Undifferentiated aquifer)
KNSF-SDST	KINNERTON SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE (Secondary A aquifer)	CLHD-DLMDM	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE, MUDMOUND (Principal aquifer)
MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE (Secondary B aquifer)	CHBR-SDST	CHAMBER ROCK - SANDSTONE (Secondary A aquifer)	CLHD-DOLO	CLOUD HILL DOLOSTONE FORMATION - DOLOSTONE (Principal aquifer)
WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	CLRK-SDST	CLIFTON ROCK - SANDSTONE (Secondary A aquifer)	MI-DOLO	MILLDALE LIMESTONE FORMATION - DOLOSTONE (Principal aquifer)
WRS-SDST	WILDMOOR SANDSTONE MEMBER - SANDSTONE (Principal aquifer)	CRS-SDST	CRAWSHAW SANDSTONE - SANDSTONE (Secondary A aquifer)	MI-LMST	MILLDALE LIMESTONE FORMATION - LIMESTONE (Principal aquifer)
BTH-DOLMST	BROTHERTON FORMATION - LIMESTONE, DOLOMITIC (Principal Aquifer)	DHR-SDST	DEEP HARD ROCK - SANDSTONE (Secondary A aquifer)	MMI-LMPY	MIDLANDS MINOR INTRUSIVE SUITE - LAMPROPHYRES (Secondary B aquifer)
CDF-CAMDST	CADEBY FORMATION - MUDSTONE, CALCAREOUS (Principal aquifer)	EF-SDST	ELLAND FLAGS - SANDSTONE (Secondary A aquifer)	MPSH-MDST	MONKS PARK SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-DOLO	CADEBY FORMATION - DOLOSTONE (Principal Aquifer)	ER-SDST	EMLEY ROCK - SANDSTONE (Secondary A aquifer)	MVSH-MDST	MEREVALE SHALE FORMATION - MUDSTONE (Secondary B aquifer)
CDF-MDST	CADEBY FORMATION - MUDSTONE (Principal aquifer)	GM-SDST	GREENMOOR ROCK - SANDSTONE (Secondary A aquifer)	BLK-VCBR	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-CAMDST	EDLINGTON FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VCSST	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE (Secondary B aquifer)	GR-SDST	GRENSIDE SANDSTONE - SANDSTONE (Secondary A aquifer)	BLK-VLSS	BLACKBROOK RESERVOIR FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE (Secondary B aquifer)	KKBS-SDST	KIRKBURTON SANDSTONE - SANDSTONE (Secondary A aquifer)	CMBT-VCCLST	BRADGATE FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE (Secondary B aquifer)	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE (Secondary A aquifer)	CMCL-PYRBR	CHARNWOOD LODGE VOLCANIC FORMATION - PYROCLASTIC-BRECCIA (Secondary B aquifer)
MOI-BREC	MOIRA FORMATION - BRECCIA (Principal aquifer)	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	CMCL-VCBR	CHARNWOOD LODGE VOLCANIC FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
MOI-MDST	MOIRA FORMATION - MUDSTONE (Principal aquifer)	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE (Secondary A aquifer)	CVB-PYRBR	CADEMAN VOLCANIC BRECCIA MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
ROX-CAMDST	ROXBY FORMATION - MUDSTONE, CALCAREOUS (Secondary B aquifer)	PKR-SDST	PARKGATE ROCK - SANDSTONE (Secondary A aquifer)	GYA-AND	GRIMLEY ANDESITE - ANDESITE (Secondary B aquifer)
SSG-SDST	SHERWOOD SANDSTONE GROUP - SANDSTONE (Principal Aquifer)	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE (Secondary A aquifer)	IVH-TFASST	IVES HEAD FORMATION - TUFFACEOUS-SANDSTONE (Secondary B aquifer)
CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE (Principal aquifer)	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	IVH-VCSST	IVES HEAD FORMATION - VOLCANIC-BRECCIA (Secondary B aquifer)
HPBR-BREC	HOPWAS BRECCIA FORMATION - BRECCIA (Principal aquifer)	PLCM-MDST	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE (Secondary A aquifer)	KHT-PYRBR	KITE HILL TUFF MEMBER - PYROCLASTIC-BRECCIA (Secondary B aquifer)
HPBR-BRSS	HOPWAS BRECCIA FORMATION - BRECCIA AND SANDSTONE, INTERBEDDED (Principal aquifer)	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE (Secondary A aquifer)	PLD-VCBR	PELDAR DACITE BRECCIA - VOLCANIC-BRECCIA (Secondary B aquifer)
YWS-SDST	YELLOW SANDS FORMATION - SANDSTONE (Principal Aquifer)	RHR-SDST	RAVENHEAD ROCK - SANDSTONE (Secondary A aquifer)	SQB-VCBR	SOUTH QUARRY BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-MDSD	ALVELEY MEMBER - MUDSTONE AND SANDSTONE (Secondary A aquifer)	SBF-SDST	SOFT BED FLAGS - SANDSTONE (Secondary A aquifer)	YVR-VCBR	SWANNYMOTE BRECCIA MEMBER - VOLCANIC-BRECCIA (Secondary B aquifer)
ALY-SDST	ALVELEY MEMBER - SANDSTONE (Secondary A aquifer)	SBR-SDST	SLACK BANK ROCK - SANDSTONE (Secondary A aquifer)	SYP-DA	SHARPLEY PORPHYRITIC DACITE - DACITE (Secondary B aquifer)
GML-LMST	GREAT MINE LIMESTONE - LIMESTONE (Secondary A aquifer)	SR-SDST	SILKSTONE ROCK - SANDSTONE (Secondary A aquifer)		
HA-LMST	HALESOWEN FORMATION - LIMESTONE (Principal aquifer)	STNR-SDST	STANNINGLEY ROCK - SANDSTONE (Secondary A aquifer)		
HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE (Secondary A aquifer)	TKS-SDST	THICK STONE - SANDSTONE (Secondary A aquifer)		

Map Number **WR-02 - Legend**

Map Name **WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status**



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Superficial Deposits

ALV-XCZ	ALLUVIUM - CLAY AND SILT (Secondary A aquifer)
ALV-XCZSV	ALLUVIUM - CLAY, SILT, SAND AND GRAVEL (Secondary A aquifer)
ALV-XVSZC	ALLUVIUM - GRAVEL, SAND, SILT AND CLAY (Secondary A aquifer)
LABD-XSV	LACUSTRINE BEACH DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
TFD-XCZS	TIDAL FLAT DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
BREI-S	BREIGHTON SAND FORMATION - SAND (Secondary A aquifer)
ESKRM-CSV	ESCRICK MORaine MEMBER - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFICD-XSV	GLACIOFLUVIAL ICE CONTACT DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GFTDD-XSV	GLACIOFLUVIAL TERRACE DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
GLLDD-C	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY (Secondary A aquifer)
GLLDD-S	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - SAND (Secondary A aquifer)
GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT (Unproductive)
HEM-CZ	HEMINGBROUGH GLACIOLACUSTRINE FORMATION - CLAY, SILTY (Unproductive)
HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL (Secondary A aquifer)
SSA-S	SHIRDLEY HILL SAND FORMATION - SAND (Secondary A aquifer)
SYSG-XSV	SYSTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
TILDI-DMTN	TILL, DEVENSIAN (IRISH SEA ICE) - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-CSVZ	TILL, DEVENSIAN - CLAY, SANDY, GRAVELLY, SILTY (Secondary Undifferentiated aquifer)
TILLD-DMTN	TILL, DEVENSIAN - DIAMICTON (Secondary Undifferentiated aquifer)
TILLD-XCS	TILL, DEVENSIAN - CLAY AND SAND (Secondary A aquifer)
TILLD-XCSV	TILL, DEVENSIAN - CLAY, SAND AND GRAVEL (Secondary B aquifer)
TILLD-XDSV	TILL, DEVENSIAN - DIAMICTON, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
VYORK-CSV	VALE OF YORK FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
VYORK-SV	VALE OF YORK FORMATION - SAND, GRAVELLY
WASG-XSV	WANLIP MEMBER - SAND AND GRAVEL (Secondary A aquifer)
YORKM-SV	YORK MORaine MEMBER - SAND, GRAVELLY
BISG-XSV	BIRSTALL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
BOSG-XSV	BORROWASH SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
OKSG-XSV	OCKBROOK SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
BOSW-XCZ	BOSWORTH CLAY MEMBER - CLAY AND SILT (Secondary Undifferentiated aquifer)
HRT-CSV	HARROGATE TILL FORMATION - CLAY, SANDY, GRAVELLY (Secondary Undifferentiated aquifer)
ODT-DMTN	OADBY MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
THT-DMTN	THRUSINGTON MEMBER - DIAMICTON (Secondary Undifferentiated aquifer)
GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
GLLMP-XCZS	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - CLAY, SILT AND SAND (Unproductive)
GLLMP-XSV	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL (Secondary A aquifer)
TILMP-DMTN	TILL, MID PLEISTOCENE - DIAMICTON (Secondary Undifferentiated aquifer)
BSSG-XSV	BEESTON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
EMSG-XSV	EAGLE MOOR SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ETSG-XSV	ETWALL SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary Undifferentiated aquifer)
GDU-XCZS	GLACIAL DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
GLDD-XCZS	GLACIOLACUSTRINE DELTAIC DEPOSITS - CLAY, SILT AND SAND (Secondary B aquifer)
GLLD-XCZ	GLACIOLACUSTRINE DEPOSITS - CLAY AND SILT (Unproductive)
GLLD-XSV	GLACIOLACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HETD-XSV	HEMINGTON MEMBER - SAND AND GRAVEL (Secondary A aquifer)
HETD-XZV	HEMINGTON MEMBER - SILT AND GRAVEL (Secondary A aquifer)
HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER - SAND AND GRAVEL (Secondary A aquifer)
ALF-XCZS	ALLUVIAL FAN DEPOSITS - CLAY, SILT AND SAND (Secondary A aquifer)
ALF-XCZSV	ALLUVIAL FAN DEPOSITS - CLAY, SILT, SAND AND GRAVEL
ALF-XSV	ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ALF-XSZ	ALLUVIAL FAN DEPOSITS - SAND AND SILT (Secondary A aquifer)
ALTD-XSV	ALLENTON TERRACE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
ANSG-XSV	ANKER SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
GFDU-XSV	GLACIOFLUVIAL DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
HEAD-B	HEAD - BOULDERS (Secondary Undifferentiated aquifer)
HEAD-DMTN	HEAD - DIAMICTON (Secondary B aquifer)
HEAD-XCSV	HEAD - CLAY, SAND AND GRAVEL (Secondary A aquifer)
HEAD-XCZSV	HEAD - CLAY, SILT, SAND AND GRAVEL (Secondary Undifferentiated aquifer)
LDE-XCZ	LACUSTRINE DEPOSITS - CLAY AND SILT (Secondary Undifferentiated aquifer)
LDE-XCZS	LACUSTRINE DEPOSITS - CLAY, SILT AND SAND (Secondary Undifferentiated aquifer)
LDE-XSV	LACUSTRINE DEPOSITS - SAND AND GRAVEL (Secondary A aquifer)
LNSG-XSV	LEEN SAND AND GRAVEL - SAND AND GRAVEL (Secondary A aquifer)
PEAT-P	PEAT - PEAT (Unproductive)
RTD1-XSV	RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL (Secondary A aquifer)
RTD2-XSV	RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL (Secondary A aquifer)
RTD3-XSV	RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL (Secondary A aquifer)
RTDU-XSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND AND GRAVEL (Secondary A aquifer)
TUFA-CATUFA	TUFA - TUFA, CALCAREOUS (Secondary A aquifer)

Map Number WR-02 - Legend

Map Name
WR-02 - Full Geological
Legend with Rock Unit
Names and Aquifer Status



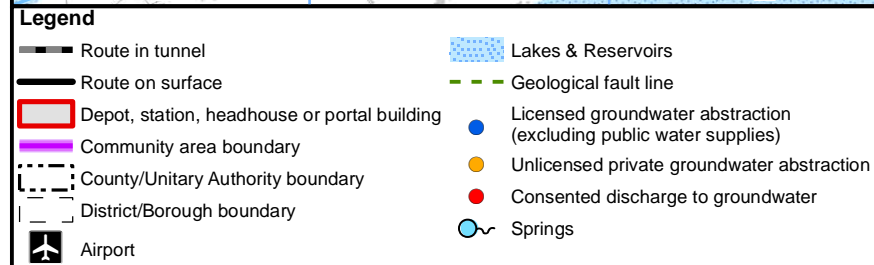
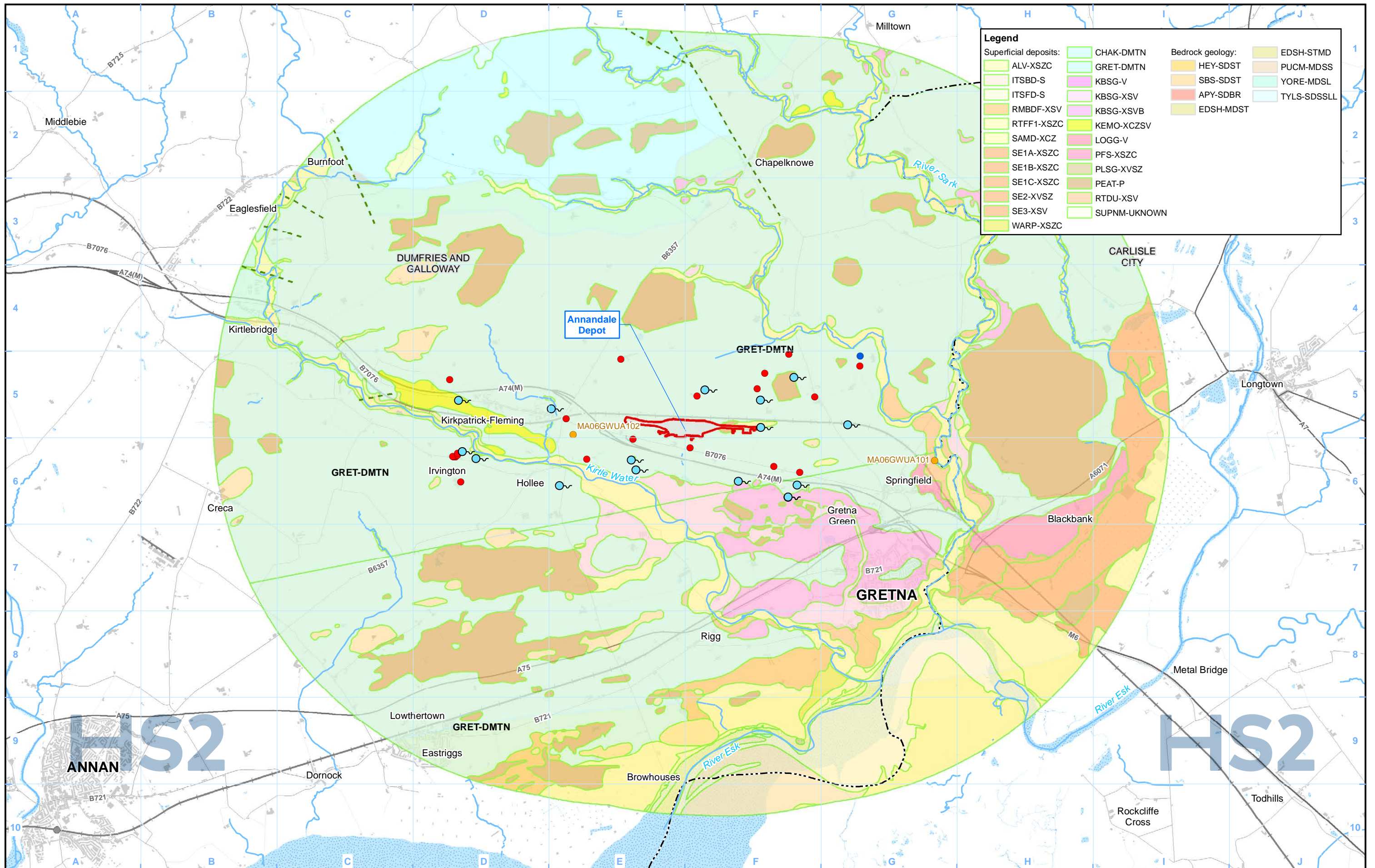
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Date: 13/08/21



For full geological legend including strata names and aquifer status please refer to WR-02 - Legend

Map Number: WR-02-803

Map Name: Groundwater Baseline

Off-route ADEP: Annandale Depot

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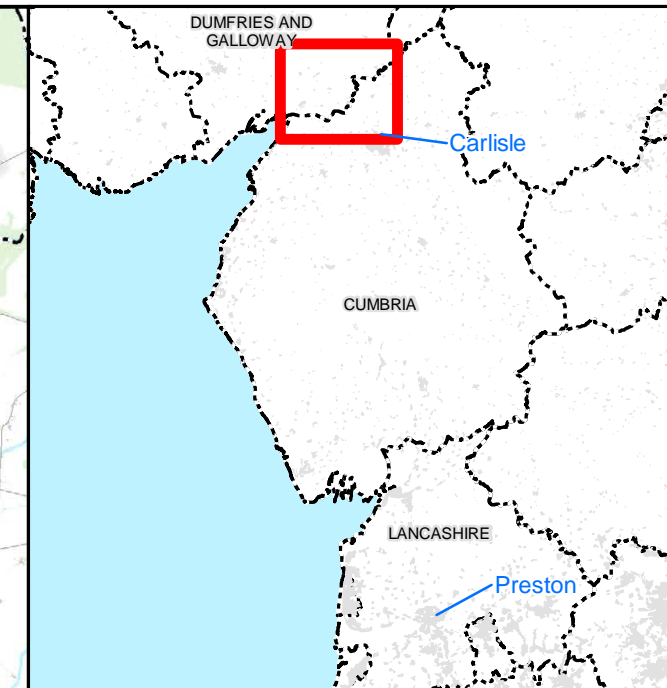
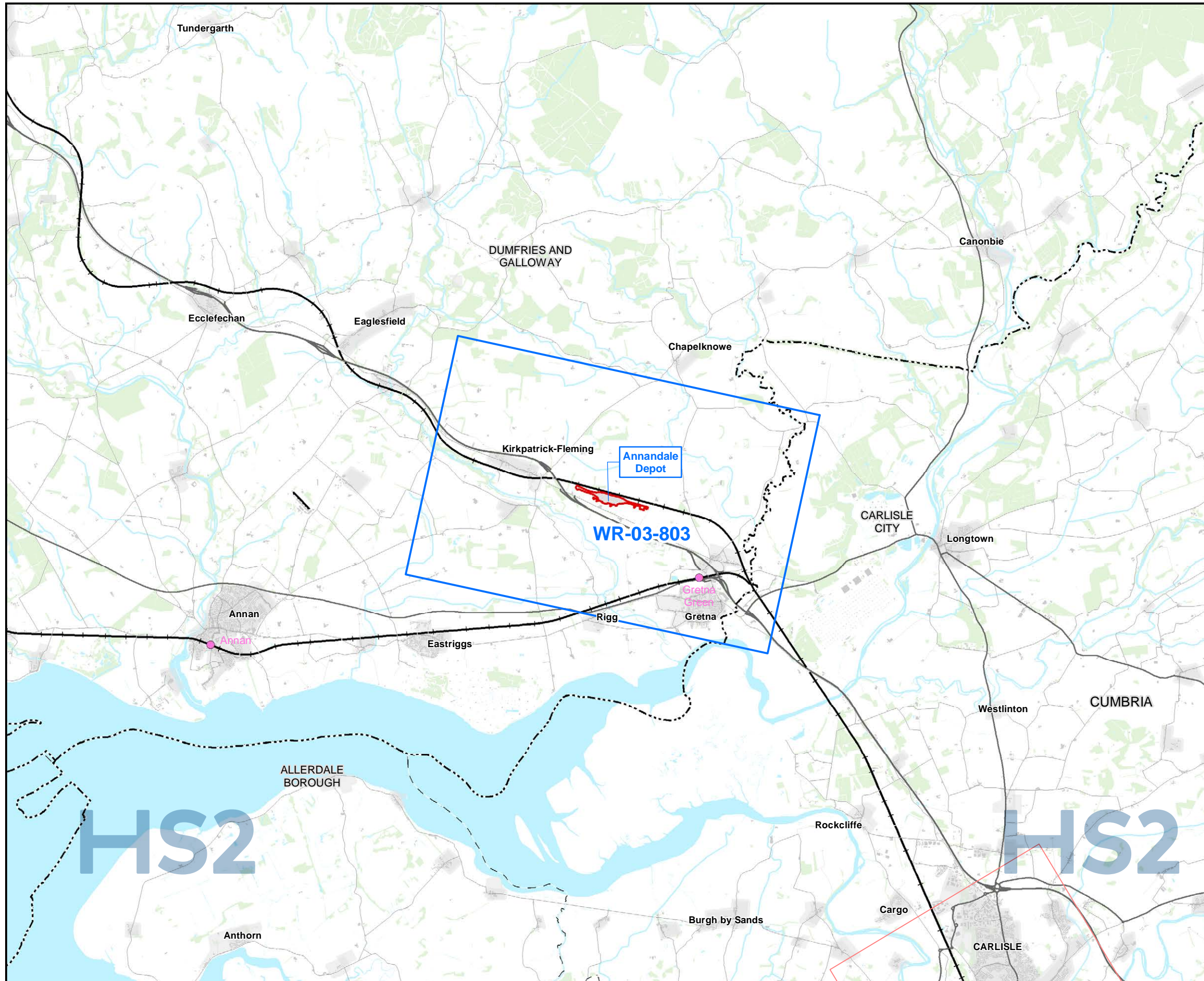
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Date: 12/08/21

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Map Series Information:

This map series shows water bodies, their Water Framework Directive current status and associated ecological features.

Main Map Legend

Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets not included in this community area
Depot, station, headhouse or portal building	Community area boundary
Existing railway station	County/Unitary Authority boundary
District/Borough boundary	

Map Number	WR-03-INDEX-ADEP
Map Name	Index Map of: Water Framework Directive
Off-route ADEP:	Annandale Depot

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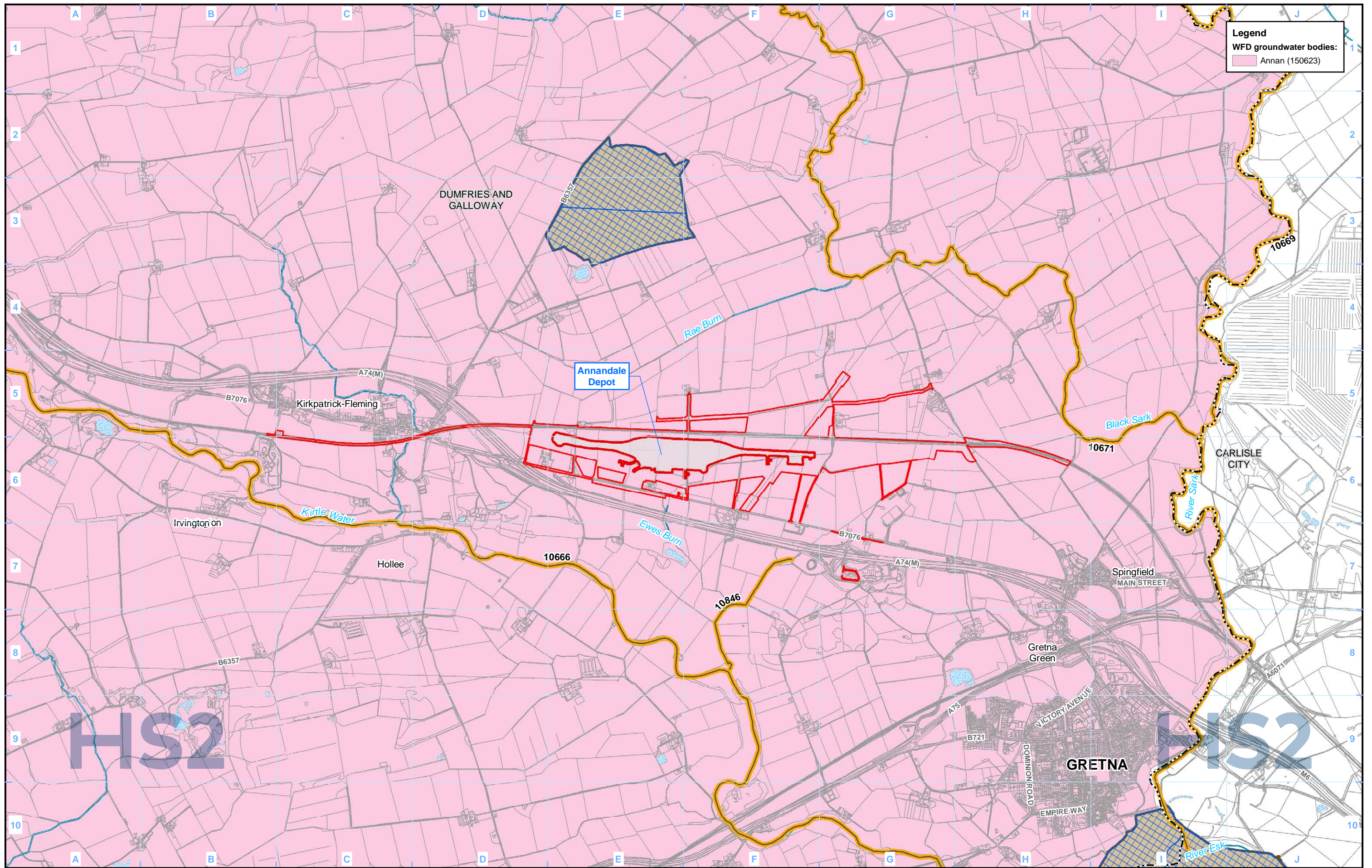
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Note: Not all data layers in the legend are represented on every map.



Legend
 WFD groundwater bodies:
 Annan (150623)

Legend

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County/Unitary Authority boundary
- District/Borough boundary

- Canal
- Canal tunnel
- Watercourse
- Culverted watercourse
- Lakes & Reservoirs
- Airport

WFD Surface Water Bodies
 Overall Status Classification (2015 RBMP Cycle 2):

- Good
- Moderate
- Poor
- Bad

WFD Lakes
 Overall Status:

- Good
- Moderate
- Poor
- Bad

- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)

Map Number: **WR-03-803**

Map Name: **Water Framework Directive**

Off-route ADEP:
 Annandale Depot

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