

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and
Additional Provision 4 Environmental Statement

Volume 5 | Technical appendices map book
Water resources

October 2015

SES3 and AP4 ES 3.5.2.11

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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.

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Map series name	WR-02 - Groundwater Baseline
Map series description	<i>These maps show geology and hydrogeological features such as aquifers and groundwater abstractions that are referred to in the Environmental Impact Assessment (EIA).</i>
Community Forum Area name	
CFA 04 – Kilburn (Brent) to Old Oak Common	x
CFA 05 – Northolt Corridor	x
CFA 06 – South Ruislip to Ickenham	x
CFA 07 – Colne Valley	x
CFA 08 – The Chalfonts and Amersham	✓
CFA 09 – Central Chilterns	✓
CFA 10 – Dunsmore, Wendover and Halton	x
CFA 11 – Stoke Mandeville and Aylesbury	x
CFA 12 – Waddesdon and Quainton	x
CFA 13 – Calvert, Steeple Claydon, Twyford and Chetwode	x
CFA 14 – Newton Purcell to Brackley	x
CFA 15 – Greatworth to Lower Boddington	x
CFA 16 – Ladbroke and Southam	x
CFA 17 – Offchurch and Cubbington	x
CFA 18 – Stoneleigh, Kenilworth and Burton Green	x
CFA 19 – Coleshill Junction	x
CFA 20 – Curdworth to Middleton	x
CFA 21 – Drayton Bassett, Hints and Weeford	x
CFA 22 – Whittington to Handsacre	x
CFA 23 – Balsall Common and Hampton-in-Arden	x
CFA 24 – Birmingham Interchange and Chelmsley Wood	x
CFA 25 – Castle Bromwich and Bromford	x
CFA 26 – Washwood Heath to Curzon Street	x
Off-route – Heathrow Express (HEX) Depot Relocation	x
Off-route – Modifications to WCML between Lichfield and Colwich	x

Mapping explanatory notes

Structure of the HS2 Supplementary Environmental Statement 3 and Additional Provision 4 Environmental Statement

The Supplementary Environmental Statement 3 (SES3) and Additional Provision 4 Environmental Statement (AP4 ES) comprises:

- Non-technical summary (NTS). This provides a summary in non-technical language of the SES3 (Part 1) and AP4 ES (Part 2) and of any likely significant environmental effects, both beneficial and adverse, which are new or different to those reported in the High Speed 2 (HS2) Phase One Environmental Statement (ES) submitted to Parliament in November 2013 in support of the hybrid Bill ('the Bill') for Phase One of HS2 (hereafter referred to as 'the main ES') as updated by subsequent SES and AP ES documents;
- Volume 1: Introduction to the SES3 and AP4 ES. This introduces the supplementary environmental information and design changes included within the SES3 and amendments, which have resulted in the need to amend the Bill, within the AP4 ES. It also explains any changes to the scope, methodology, assumptions and limitations required for the environmental assessment;
- Volume 2: CFA reports and Map Books. These describe the supplementary environmental information and design changes included within the SES3 (Part 1) and amendments within the AP4 ES (Part 2). Any new or different likely significant environmental effects arising from these changes and amendments in each CFA, compared to those reported in the main ES, as updated by SES and SES2 documents (and SES3 for the AP4 amendments) are reported. The AP1, AP2 and AP3 amendments are also taken into account where relevant. In addition, the main local alternatives that have been considered are described, where relevant;
- Volume 3: Route-wide effects. This reports new or different likely significant route-wide effects arising from the supplementary environmental information and design changes included within the SES3 (Part 1) and amendments within the AP4 ES (Part 2) compared to those reported in the main ES as updated by SES and SES2 (and SES3 for the AP4 amendments). The AP1, AP2 and AP3 amendments are also taken into account where relevant;
- Volume 4: Off-route effects. This reports new or different likely significant off-route effects arising from the supplementary environmental information included within the SES3 and an amendment within the AP4 ES compared to those reported in the main ES as updated by SES and SES2 (and SES3 for the AP4 amendment). The AP1, AP2 and AP3 amendments are also taken into account where relevant;
- Volume 5: Appendices and Map Books. This contains environmental information and associated maps in support of the other volumes of the SES3 and AP4 ES; and
- Glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES and AP ES reports, compared to those included in the main ES.

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 SES3 and AP4 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 SES3 and AP4 ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XX+YYY. E.g. 77+000 or 158+500.

Chainage (known as reference chainage) is referenced from Euston Station, which is 0+000, and the value presented is in metres. E.g. 77+000 refers to the point, 77,000m, or 77km, 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 1:10,000, 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 sheet layout

Each map in Volume 2 is presented twice, with the main ES map (published November 2013) on the left hand page and the SES₃ and AP₄ ES map on the right. For the CT-05 and CT-06 map series, the SES₃ and AP₄ ES map is annotated with different coloured clouds which highlight the areas of change. The coloured text box provides a brief description of the design change and amendment, and gives the SES₃ and AP₄ ES reference number. Only maps which have been amended as a result of the SES₃ and AP₄ ES are included within the map books. Other design changes which are within the existing limits of the Bill and do not result in new or different likely significant effects are also shown on the maps, but are not indicated by a cloud. The below table highlights the coloured clouds used, and their description.

Cloud / text box colour	Description
Blue	Design changes relating to the SES ₃ (Part 1 of each Volume 2 CFA report).
Red	Proposed amendments relating to AP ₄ (Part 2 of each Volume 2 CFA report).
Grey	Proposed amendments and design changes relating to previous APs and SESs, provided for reference.

Each Volume 5 map is annotated to describe the change to a receptor or significant effect, and to give the SES₃ and AP₄ ES reference number. For more detailed information about the SES₃ and AP₄ ES annotation, refer to the map series legend. Only maps which have been amended as a result of the SES₃ and AP₄ ES are included within the map book. Changes to receptors or significant effects relating to previous APs and SESs are also provided for reference.

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 right hand side of the page, and the West Midlands to the left.

The exception to this, are map series LV-03 and LV-04, 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 the West Midlands to the top.

Map books

In total there are 35 map books which make up the SES₃ and AP₄ ES, spread across volumes 2, 4 and 5. A list of the titles is provided below for reference.

Name	Name
Volume 2 Community forum area map book: CFA ₄ Kilburn (Brent) to Old Oak Common	Volume 2 Community forum area map book: CFA ₂₃ Balsall Common and Hampton-in-Arden
Volume 2 Community forum area map book: CFA ₅ Northolt Corridor	Volume 2 Community forum area map book: CFA ₂₄ Birmingham Interchange and Chelmsley Wood
Volume 2 Community forum area map book: CFA ₆ South Ruislip to Ickenham	Volume 2 Community forum area map book: CFA ₂₅ Castle Bromwich and Bromford
Volume 2 Community forum area map book: CFA ₇ Colne Valley	Volume 2 Community forum area map book: CFA ₂₆ Washwood Heath to Curzon Street
Volume 2 Community forum area map book: CFA ₈ The Chalfonts and Amersham	Volume 4 Off-route effects map book
Volume 2 Community forum area map book: CFA ₉ Central Chilterns	Volume 5 Technical appendices map book: Agriculture, forestry and soils
Volume 2 Community forum area map book: CFA ₁₀ Dunsmore, Wendover and Halton	Volume 5 Technical appendices map book: Air quality
Volume 2 Community forum area map book: CFA ₁₁ Stoke Mandeville and Aylesbury	Volume 5 Technical appendices map book: Community
Volume 2 Community forum area map book: CFA ₁₂ Waddesdon and Quainton	Volume 5 Technical appendices map book: Cultural heritage
Volume 2 Community forum area map book: CFA ₁₃ Calvert, Steeple Claydon, Twyford and Chetwode	Volume 5 Technical appendices map book: Ecology
Volume 2 Community forum area map book: CFA ₁₄ Newton Purcell to Brackley	Volume 5 Technical appendices map book: Land quality
Volume 2 Community forum area map book: CFA ₁₅ Greatworth to Lower Boddington	Volume 5 Technical appendices map book: Landscape and visual
Volume 2 Community forum area map book: CFA ₁₆ Ladbroke and Southam	Volume 5 Technical appendices map book: Socio-economics
Volume 2 Community forum area map book: CFA ₁₇ Offchurch and Cubbington	Volume 5 Technical appendices map book: Sound, noise and vibration
Volume 2 Community forum area map book: CFA ₁₈ Stoneleigh, Kenilworth and Burton Green	Volume 5 Technical appendices map book: Traffic and transport
Volume 2 Community forum area map book: CFA ₁₉ Coleshill Junction	Volume 5 Technical appendices map book: Water resources
Volume 2 Community forum area map book: CFA ₂₀ Curdworth to Middleton	Volume 5 Technical appendices map book: Cross-topic appendix 1 - Committed developments
Volume 2 Community forum area map book: CFA ₂₂ Whittington to Handsacre	

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Volume 5 | Data dictionary and definitions

October 2015

Data dictionary and definitions

Legend features	Definition	Source	Copyright
Bedrock geology	Soils or rocks older than Quaternary deposits. The data that comprises the geological theme of 'Bedrock' as depicted on the 1:50000 published map DiGMapGB-50. The legend on the full geological legend page (WR-02-LEGEND) comprises the LEX_RCS (a unique abbreviation to identify the rock), the rock name and its aquifer status.	British Geological Survey (BGS)	Derived from 1:50,000 scale BGS Digital Data under Licence 2012/062 British Geological Survey. © NERC.
Community forum boundary	The Environmental Statement has been split into 26 sections called Community Forum Areas.	High Speed Two (HS2) Ltd	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2015.
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 2015.
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	
District/Borough boundary	Ordnance Survey local authority boundary mapping.	Ordnance Survey	© Crown copyright. Reproduced by permission of Ordnance Survey Licence Number 100049190. Year of Publication 2015.
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 1:50000 published map DiGMapGB-50.	British Geological Survey (BGS)	Collins English Dictionary – Complete and Unabridged © HarperCollins Publishers 1991, 1994, 1998, 2000, 2003 Derived from 1:50,000 scale BGS Digital Data under Licence 2012/062 British Geological Survey. © NERC.
Groundwater discharge location	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 2015. All rights reserved.
Groundwater source protection zone	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	© Environment Agency copyright and/or database right 2015. All rights reserved.
Licensed groundwater abstraction (excluding public water supplies)	A groundwater abstraction licence issued by the Environment Agency, which abstracts more than 20 cubic metres a day. Data supplied as spreadsheet. Digitised within 2km. 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 2015. All rights reserved.
Route centreline - split by type (DES)	Represents the centreline of the proposed route, symbolised based on formation type.	High Speed Two (HS2) Ltd	
Superficial deposits	A geological deposit that was laid down during the Quaternary period. Such deposits were largely formed by river and glacial processes but may also include wind-blown deposits known as loess. The data that comprises the geological theme of 'Superficial' as depicted on the 1:50000 published map DiGMapGB-50. The legend on the full geological legend page (WR-02-LEGEND) comprises the LEX_RCS (a unique abbreviation to identify the rock), the rock name and its aquifer status.	British Geological Survey (BGS)	Derived from 1:50,000 scale BGS Digital Data under Licence 2012/062 British Geological Survey. © NERC.

Legend features	Definition	Source	Copyright
Unlicensed groundwater abstraction	<p>A private water supply from either a groundwater or 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.</p> <p>Data supplied as spreadsheet. Digitised within 2km.</p>	Environment Agency	© Environment Agency copyright and/or database right 2015. All rights reserved.

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Supplementary Environmental Statement 3 and
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Volume 5 | CFA8 The Chalfonts and Amersham
WR-02 - Groundwater Baseline

October 2015

Superficial Deposits

- Alluvium [ALV-CZPS] (Secondary A Aquifer)
- Alluvium [ALV-XCZSV] (Secondary A Aquifer)
- River terrace deposits, 1 to 2 [T1T2-XSV] (Secondary A Aquifer)
- Enfield silt member [ESI-XCZ] (Non-Productive Aquifer)
- Glaciofluvial deposits, devensian [GFDUD-XSV] (Secondary A Aquifer)
- Glaciolacustrine deposits, devensian [GLLDD-XCZ] (Non-Productive Aquifer)
- Kempton park gravel formation [KPGR-XSV] (Secondary A Aquifer)
- Langley silt member [LASI-XCZ] (Non-Productive Aquifer)
- Shepperton gravel member [SHGR-XSV] (Principal Aquifer)
- Till, devensian [TILLD-DMTN] (Non-Productive Aquifer)
- Till, devensian [TILLD-XDSV] (Non-Productive Aquifer)
- Finsbury gravel member [FIGR-XSV] (Secondary A Aquifer)
- Hackney gravel member [HAGR-XSV] (Secondary A Aquifer)
- Lynch hill gravel member [LHGR-XSV] (Secondary A Aquifer)
- Taplow gravel formation [TPGR-XSV] (Principal/ Secondary A Aquifer)
- Boyn hill gravel member [BHT-XSV] (Secondary A Aquifer)
- Bosworth clay member [BOSW-XCZ] (Non-Productive Aquifer)
- Black park gravel member [BPGR-XSV] (Secondary A Aquifer)
- Dunsmore gravel [DMG-XSV] (Secondary A Aquifer)
- Lowestoft formation [LOFT-DMTN] (Non-Productive Aquifer)
- Oadby member [ODT-DMTN] (Non-Productive Aquifer)
- Thrusington member [THT-DMTN] (Non-Productive Aquifer)
- Winter hill gravel (lacustrine deposits) [WHGLD-XSV] (Secondary A Aquifer)
- Winter hill gravel [WIHG-XSV] (Secondary A Aquifer)
- Westmill gravel member [WLGR-XSV] (Secondary A Aquifer)
- Dollis hill gravel member [DHGR-XSV] (Secondary A Aquifer)
- Gerrards cross gravel [GCGR-XSV] (Secondary A Aquifer)
- Glaciofluvial deposits, mid pleistocene [GFDMP-XSV] (Secondary A Aquifer)
- Glaciofluvial sheet deposits, mid pleistocene [GFSMP-XSV] (Secondary A Aquifer)
- Glaciofluvial terrace deposits, mid pleistocene [GFTMP-XSV] (Secondary A Aquifer)
- Glaciolacustrine deposits, mid pleistocene [GLLMP-XCZ] (Non-Productive Aquifer)
- Till, mid pleistocene [TILMP-DMTN] (Non-Productive Aquifer)
- Beaconsfield gravel [BDGR-XSV] (Secondary A Aquifer)
- Baginton sand and gravel formation [BGSXSV] (Secondary A Aquifer)
- Chorleywood gravel formation [CWGR-XSV] (Secondary A Aquifer)
- Glacial deposits [GDU-XCZS] (Aquifer)
- Glaciolacustrine deposits [GLLD-XCZ] (Non-Productive Aquifer)
- Holme pierrepont sand and gravel member [HPSG-XSV] (Secondary A Aquifer)
- Interglacial lacustrine deposits [IGLD-XCZ] (Non-Productive Aquifer)
- Kesgrave catchment subgroup [KGCA-XSV] (Aquifer)
- Princes risborough sand and gravel [PRSG-XSV] (Aquifer)
- Stanmore gravel formation [STGR-XSV] (Secondary A Aquifer)
- Wasperton sand and gravel member [WAT-XSV] (Secondary A Aquifer)
- Westland green gravel [WGGR-XSV] (Secondary A Aquifer)
- Alluvial fan deposits [ALF-V] (Secondary A Aquifer)
- Glaciofluvial deposits [GFDU-XSV] (Secondary A Aquifer)
- Head [HEAD-V] (Secondary (Undifferentiated) Aquifer)
- Head [HEAD-XCZ] (Secondary (Undifferentiated) Aquifer)
- Head [HEAD-XCZSV] (Secondary (Undifferentiated) Aquifer)
- Head, 1 [HEAD1-XCZSV] (Secondary (Undifferentiated) Aquifer)
- Lacustrine deposits [LDE-XCZS] (Non-Productive Aquifer)
- Peat [PEAT-P] (N/A Aquifer)
- River terrace deposits, 1 [RTD1-XSV] (Secondary A Aquifer)
- River terrace deposits, 2 [RTD2-XSV] (Secondary A Aquifer)
- River terrace deposits, 3 [RTD3-XSV] (Secondary A Aquifer)
- River terrace deposits, 4 [RTD4-XSV] (Secondary A Aquifer)
- River terrace deposits (undifferentiated) [RTDU-XSV] (Secondary A Aquifer)
- Sand and gravel of uncertain age and origin [SGAO-XSV] (Secondary A Aquifer)
- Tufa [TUFA-CATUFA] (Aquifer)
- Wolston sand and gravel [WOSG-XSV] (Secondary A Aquifer)
- Clay-with-flints formation [CWF-XCZSV] (Non-Productive Aquifer)


Bedrock Geology

- Bagshot formation - sand [BGS-SANDU] (Secondary A Aquifer)
- Claygate member - clay, silt and sand [CLGB-CLSISA] (Secondary A Aquifer)
- Claygate member - sand, silt and clay [CLGB-SSCL] (Secondary A Aquifer)
- London clay formation - clay and silt [LC-CLS] (Non-Productive Aquifer)
- London clay formation - clay, silt and sand [LC-CLSISA] (Non-Productive Aquifer)
- Thanet formation - sand [TAB-SANDU] (Secondary A Aquifer)
- Lambeth group - clay, silt and sand [LMBE-CLSISA] (Secondary A Aquifer)
- Seafoam chalk formation and newhaven chalk formation (undifferentiated) - chalk [SNCK-CHLK] (Principal Aquifer)
- Chalk rock member - chalk [CKR-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation - chalk [LECH-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation and seafoam chalk formation (undifferentiated) - chalk [LESE-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation, seafoam chalk formation and newhaven chalk formation (undifferentiated) - chalk [LSNCK-CHLK] (Principal Aquifer)
- New pit chalk formation - chalk [NPCH-CHLK] (Principal Aquifer)
- Glauconitic marl member - sandstone, glauconitic [GLML-GLSST] (Principal Aquifer)
- Holywell nodular chalk formation - chalk [HCK-CHLK] (Principal Aquifer)
- Holywell nodular chalk formation and new pit chalk formation (undifferentiated) - chalk [HNCK-CHLK] (Principal Aquifer)
- Melbourn rock member - chalk [MR-CHLK] (Principal Aquifer)
- Totterhoe stone member - chalk [TTST-CHLK] (Principal Aquifer)
- West melbury marly chalk formation - chalk [WMCH-CHLK] (Principal Aquifer)
- West melbury marly chalk formation and zig zag chalk formation (undifferentiated) - chalk [WZCK-CHLK] (Principal Aquifer)
- Zig zag chalk formation - chalk [ZZCH-CHLK] (Principal Aquifer)
- Gault formation - mudstone [GLT-MDST] (Non-Productive Aquifer)
- Gault formation and upper greensand formation (undifferentiated) - mudstone, siltstone and sandstone [GUGS-MDSS] (Non-Productive Aquifer)
- Upper greensand formation - siltstone and sandstone [UGS-SISD] (Non-Productive Aquifer)
- Lower greensand group - sandstone [LGS-SDST] (Secondary A Aquifer)
- Whitchurch sand formation - mudstone [WHS-MDST] (Secondary A Aquifer)
- Whitchurch sand formation - sandstone [WHS-SDST] (Secondary A Aquifer)
- Purbeck group - limestone and [subequal/subordinate] argillaceous rocks, interbedded [PB-LMAR] (Principal Aquifer)
- Portland group - limestone and calcareous sandstone [PL-LMCS] (Principal Aquifer)
- Portland sand formation - sandstone, calcareous [POSA-CALSST] (Secondary A Aquifer)
- Portland sand formation - limestone and calcareous sandstone [POSA-LMCS] (Secondary A Aquifer)
- Portland stone formation - limestone [POST-LMST] (Principal Aquifer)
- Kimmeridge clay formation - mudstone [KC-MDST] (Non-Productive Aquifer)
- Kimmeridge clay formation - siltstone and sandstone [KC-SISD] (Non-Productive Aquifer)
- Arngrove spiculite member - sandstone [AGSP-SDST] (Secondary A Aquifer)
- Amphill clay formation - mudstone [AMC-MDST] (Non-Productive Aquifer)
- Oakley member - limestone and mudstone, interbedded [OKLY-LSMD] (Secondary A Aquifer)
- Weymouth member - mudstone [WEY-MDST] (Non-Productive Aquifer)
- West walton formation and amphill clay formation (undifferentiated) - mudstone [WWAC-MDST] (Non-Productive Aquifer)
- West walton formation - limestone and [subequal/subordinate] argillaceous rocks, interbedded [WWB-LMAR] (Non-Productive Aquifer)
- West walton formation - mudstone [WWB-MDST] (Non-Productive Aquifer)
- Kellaways formation - sandstone, siltstone and mudstone [KLB-SDSM] (Secondary A Aquifer)
- Kellaways clay member - mudstone [KLC-MDST] (Secondary A Aquifer)
- Kellaways sand member - sandstone and siltstone, interbedded [KLS-SDSL] (Secondary A Aquifer)
- Peterborough member - mudstone [PET-MDST] (Non-Productive Aquifer)
- Stewartby member - mudstone [SBY-MDST] (Non-Productive Aquifer)
- Bladon member - limestone [BLAD-LMST] (Principal Aquifer)
- Bladon member - mudstone and limestone, interbedded [BLAD-MDLM] (Principal Aquifer)
- Blisworth clay formation - mudstone [BWC-MDST] (Principal Aquifer)
- Blisworth limestone formation - limestone [BWL-LMST] (Principal Aquifer)
- Corbrash formation - limestone [CB-LMST] (Secondary A Aquifer)
- Forest marble formation - limestone [FMB-LMST] (Secondary A Aquifer)
- Forest marble formation - limestone and mudstone, interbedded [FMB-LSMD] (Secondary A Aquifer)
- Great oolite group - limestone and [subequal/subordinate] argillaceous rocks, interbedded [GOG-LMAR] (Principal To Secondary B Aquifer)
- Sharp's hill formation - argillaceous rocks with subordinate sandstone and limestone [SHHB-ARSL] (Secondary A Aquifer)
- Taynton limestone formation - limestone, ooidal [TY-LMOOL] (Principal Aquifer)
- Wellingborough limestone member - limestone [WBRO-LMST] (Secondary A Aquifer)
- White limestone formation - limestone [WHL-LMST] (Principal Aquifer)
- Horsehay sand formation - sandstone [HYSA-SDST] (Secondary A Aquifer)
- Rutland formation - mudstone [RLD-MDST] (Secondary B Aquifer)
- Stamford member - sandstone and siltstone, interbedded [STAM-SDSL] (Secondary A Aquifer)
- Northampton sand formation - sandstone, limestone and ironstone [NS-SDLI] (Secondary A Aquifer)
- Whitby mudstone formation - mudstone [WHM-MDST] (Non-Productive Aquifer)
- Dyrham formation - siltstone and mudstone, interbedded [DYS-SIMD] (Secondary (Undifferentiated) Aquifer)
- Marlstone rock formation - ferruginous limestone and ironstone [MRB-FLIR] (Secondary A Aquifer)
- Marlstone rock formation - limestone, ferruginous [MRB-FLMST] (Secondary A Aquifer)
- Charmouth mudstone formation - limestone [CHAM-LMST] (Secondary (Undifferentiated) Aquifer)
- Charmouth mudstone formation - mudstone [CHAM-MDST] (Non-Productive Aquifer)
- Rugby limestone member - mudstone and limestone, interbedded [RLS-MDLM] (Secondary A Aquifer)
- Langport member - limestone [LPMB-LMST] (Secondary (Undifferentiated) Aquifer)
- Penarth group - argillaceous rock and [subequal/subordinate] limestone, interbedded [PNG-AROCLS] (Secondary B Aquifer)
- Penarth group - mudstone [PNG-MDST] (Secondary B Aquifer)
- Salford shale member - limestone [SASH-LMST] (Secondary B Aquifer)

- Salford shale member - mudstone [SASH-MDST] (Secondary B Aquifer)
- Westbury formation - mudstone [WBV-MDST] (Secondary (Undifferentiated) Aquifer)
- Westbury formation - sandstone [WBV-SDST] (Secondary (Undifferentiated) Aquifer)
- Wilmcote limestone member - mudstone and limestone, interbedded [WCT-MDLM] (Secondary (Undifferentiated) Aquifer)
- Blue anchor formation - mudstone and siltstone [BAN-MDSI] (Secondary (Undifferentiated) Aquifer)
- Blue anchor formation - mudstone [BAN-MDST] (Secondary (Undifferentiated) Aquifer)
- Arden sandstone formation - mudstone [AS-MDST] (Secondary (Undifferentiated) Aquifer)
- Arden sandstone formation - sandstone, siltstone and mudstone [AS-SDSM] (Secondary A Aquifer)
- Arden sandstone formation - siltstone and sandstone [AS-SISD] (Secondary A Aquifer)
- Weatheroak sandstone member - sandstone [WKS-SDST] (Aquifer)
- Gunthorpe member - siltstone, dolomitic [GUN-DSLST] (Aquifer)
- Gunthorpe member - mudstone [GUN-MDST] (Aquifer)
- Tarporley siltstone formation - siltstone, mudstone and sandstone [TPSF-SIMS] (Secondary B Aquifer)
- Bromsgrove sandstone formation - mudstone [BMS-MDST] (Principal Aquifer)
- Bromsgrove sandstone formation - sandstone, pebbly (gravelly) [BMS-PESST] (Principal Aquifer)
- Bromsgrove sandstone formation - sandstone [BMS-SDST] (Principal Aquifer)
- Kidderminster formation - conglomerate [KDM-CONG] (Principal Aquifer)
- Kidderminster formation - mudstone [KDM-MDST] (Principal Aquifer)
- Kidderminster formation - sandstone and conglomerate, interbedded [KDM-SCON] (Principal Aquifer)
- Mercia mudstone group - siltstone, dolomitic [MMG-DSLST] (Secondary (Undifferentiated) Aquifer)
- Mercia mudstone group - mudstone [MMG-MDST] (Secondary B Aquifer)
- Wildmoor sandstone formation - sandstone [WRS-SDST] (Principal Aquifer)
- Ashow formation - mudstone and sandstone [AW-MDSD] (Principal Aquifer)
- Ashow formation - sandstone [AW-SDST] (Principal Aquifer)
- Client formation - argillaceous rocks and [subequal/subordinate] breccia, interbedded [CLT-ARBR] (Secondary A Aquifer)
- Gibbet hill conglomerate bed - conglomerate [GHC-CONG] (Principal Aquifer)
- Hopwas breccia formation - breccia [HPBR-BREC] (Principal Aquifer)
- Hopwas breccia formation - breccia and sandstone, interbedded [HPBR-BRSS] (Principal Aquifer)
- Kenilworth sandstone formation - breccia [KHS-BREC] (Principal Aquifer)
- Kenilworth sandstone formation - mudstone [KHS-MDST] (Principal Aquifer)
- Kenilworth sandstone formation - sandstone [KHS-SDST] (Principal Aquifer)
- Alveley member - limestone [ALY-LMST] (Secondary A Aquifer)
- Alveley member - mudstone and sandstone [ALY-MDSD] (Secondary A Aquifer)
- Alveley member - mudstone [ALY-MDST] (Secondary A Aquifer)
- Alveley member - sandstone [ALY-SDST] (Secondary A Aquifer)
- Alveley member - sandstone and mudstone [ALY-STM] (Secondary A Aquifer)
- Allesley member - argillaceous rocks and [subordinate/subequal] sandstone and conglomerate, interbedded [ASY-ARSC] (Principal Aquifer)
- Allesley member - conglomerate [ASY-CONG] (Principal Aquifer)
- Allesley member - sandstone [ASY-SDST] (Principal Aquifer)
- Enville member - conglomerate [EN-CONG] (Secondary A Aquifer)
- Enville member - sandstone, conglomerate and [subordinate] argillaceous rocks [EN-SCAR] (Secondary A Aquifer)
- Enville member - sandstone with subordinate conglomerate, siltstone and mudstone [EN-SCSM] (Secondary A Aquifer)
- Enville member - sandstone [EN-SDST] (Secondary A Aquifer)
- Halesowen formation - limestone [HA-LMST] (Secondary A Aquifer)
- Halesowen formation - mudstone, siltstone and sandstone [HA-MDSS] (Secondary A Aquifer)
- Halesowen formation - sandstone [HA-SDST] (Secondary A Aquifer)
- Keresley member - argillaceous rocks and [subordinate/subequal] sandstone and conglomerate, interbedded [KRS-ARSC] (Principal Aquifer)
- Keresley member - conglomerate [KRS-CONG] (Principal Aquifer)
- Keresley member - limestone [KRS-LMST] (Principal Aquifer)
- Keresley member - sandstone [KRS-SDST] (Principal Aquifer)
- Tile hill mudstone formation - argillaceous rocks and [subequal/subordinate] sandstone, interbedded [TLM-ARSD] (Principal Aquifer)
- Tile hill mudstone formation - sandstone [TLM-SDST] (Principal Aquifer)
- Whitacre member - conglomerate [WIT-CONG] (Principal Aquifer)
- Whitacre member - limestone [WIT-LMST] (Principal Aquifer)
- Whitacre member - mudstone and sandstone [WIT-MDSD] (Principal Aquifer)
- Whitacre member - sandstone [WIT-SDST] (Principal Aquifer)
- Pennine middle coal measures formation - mudstone, siltstone and sandstone [PMCM-MDSS] (Secondary A Aquifer)
- Pennine middle coal measures formation - sandstone [PMCM-SDST] (Secondary A Aquifer)
- Thick coal (south staffordshire) - coal [THIC-COAL] (Secondary A Aquifer)
- Pennine lower coal measures formation - mudstone, siltstone and sandstone [PLCM-MDSS] (Secondary A Aquifer)
- Pennine lower coal measures formation - sandstone [PLCM-SDST] (Secondary A Aquifer)
- Pennine lower coal measures formation and pennine middle coal measures formation (undifferentiated) - mudstone, siltstone and sandstone [PLMC-MDSS] (Secondary A Aquifer)
- Etruria formation - conglomerate [ETM-CONG] (Secondary A Aquifer)
- Etruria formation - mudstone, sandstone and conglomerate [ETM-MDSC] (Secondary A Aquifer)
- Etruria formation - sandstone [ETM-SDST] (Secondary A Aquifer)
- Unnamed igneous intrusion, westphalian - microgabbro [UICW-MCGB] (Aquifer)
- Rough rock - sandstone [RR-SDST] (Aquifer)
- Millstone grit group [see also migr] - mudstone, siltstone and sandstone [MG-MDSS] (Aquifer)
- Millstone grit group [see also migr] - sandstone [MG-SDST] (Aquifer)
- Coalbrookdale formation - mudstone [CBRD-MDST] (Secondary B Aquifer)
- Rubery sandstone member - sandstone [RBS-SDST] (Secondary B Aquifer)
- Midlands minor intrusive suite - lamprophyres [MMI-LMPY] (Aquifer)
- Monks park shale formation - mudstone [MPSH-MDST] (Secondary B Aquifer)
- Merevale shale formation - mudstone [MVSH-MDST] (Secondary B Aquifer)

Map Number
WR-02 - Legend

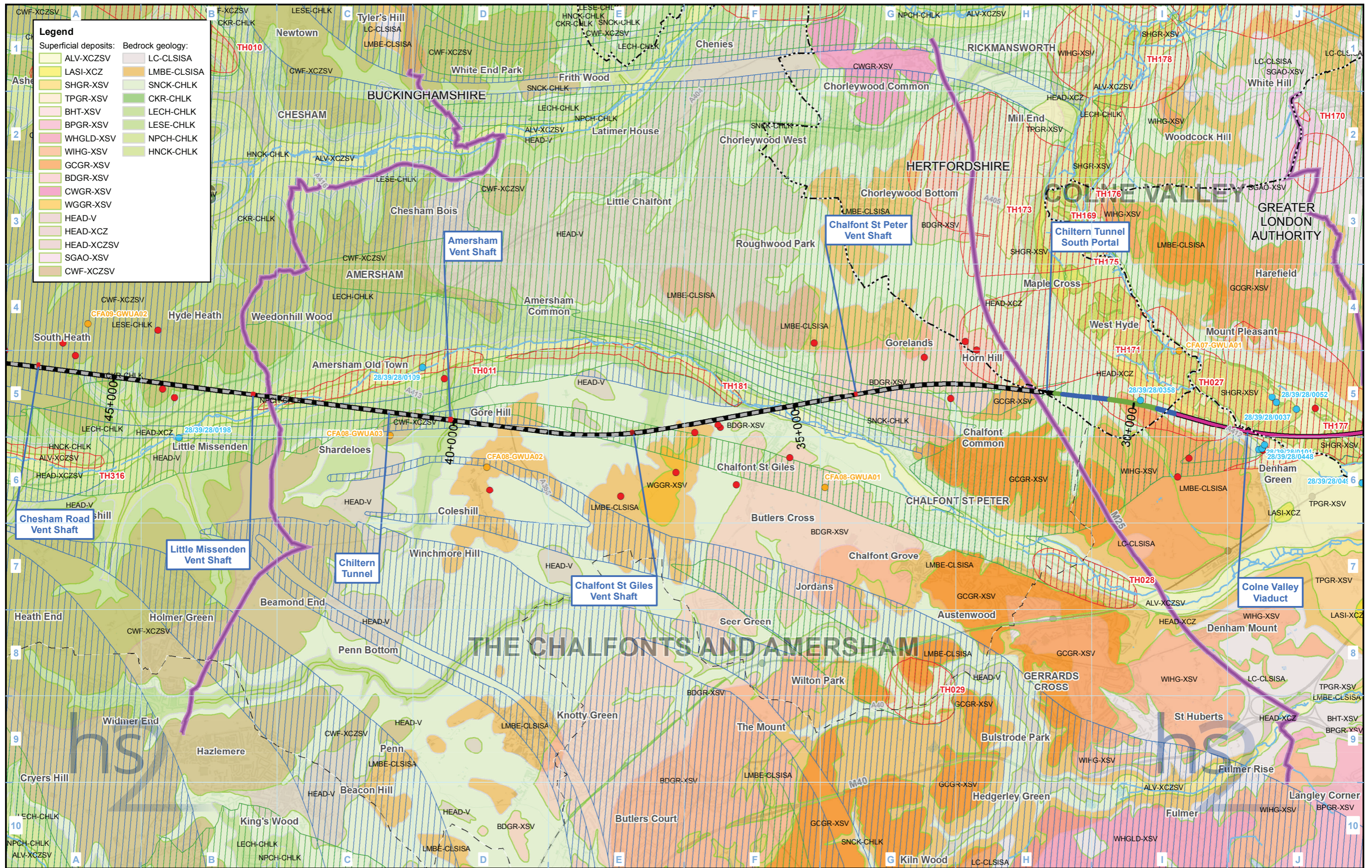
Map Name
WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status SES3 and AP4 ES



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Legend	
Superficial deposits:	Bedrock geology:
ALV-XCZSV	LC-CLSISA
LASI-XCZ	LMBE-CLSISA
SHGR-XSV	SNCK-CHLK
TPGR-XSV	CKR-CHLK
BHT-XSV	LECH-CHLK
BPGR-XSV	LESE-CHLK
WHGLD-XSV	NPCH-CHLK
WIHG-XSV	HNCK-CHLK
GCGR-XSV	
BDGR-XSV	
CWGR-XSV	
WGGR-XSV	
HEAD-V	
HEAD-XCZ	
HEAD-XCZSV	
SGAO-XSV	
CWF-XCZSV	

Legend	
Route on embankment	Depot, station, headhouse or portal building
Route in bored tunnel	Community forum boundary
Route in cutting	County boundary
Route in green tunnel	District/Borough boundary
Route in retaining wall	Licensed groundwater abstraction (excluding public water supplies)
Route in station	Unlicensed groundwater abstraction
Tunnel portal	Groundwater discharge location
Route on viaduct	

Groundwater source protection zone:	
	Zone 1
	Zone 2
	Zone 3
	Geological fault line

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

Map Number	WR-02-008
Map Name	Groundwater Baseline SES3 and AP4 ES
Community Forum Area CFA8: The Chalfonts and Amersham	

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HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and
Additional Provision 4 Environmental Statement

Volume 5 | CFA9 Central Chilterns
WR-02 - Groundwater Baseline

October 2015

Superficial Deposits

- Alluvium [ALV-CZPS] (Secondary A Aquifer)
- Alluvium [ALV-XCZSV] (Secondary A Aquifer)
- River terrace deposits, 1 to 2 [T1T2-XSV] (Secondary A Aquifer)
- Enfield silt member [ESI-XCZ] (Non-Productive Aquifer)
- Glaciofluvial deposits, devensian [GFDUD-XSV] (Secondary A Aquifer)
- Glaciolacustrine deposits, devensian [GLLDD-XCZ] (Non-Productive Aquifer)
- Kempton park gravel formation [KPGR-XSV] (Secondary A Aquifer)
- Langley silt member [LASI-XCZ] (Non-Productive Aquifer)
- Shepperton gravel member [SHGR-XSV] (Principal Aquifer)
- Till, devensian [TILLD-DMTN] (Non-Productive Aquifer)
- Till, devensian [TILLD-XDSV] (Non-Productive Aquifer)
- Finsbury gravel member [FIGR-XSV] (Secondary A Aquifer)
- Hackney gravel member [HAGR-XSV] (Secondary A Aquifer)
- Lynch hill gravel member [LHGR-XSV] (Secondary A Aquifer)
- Taplow gravel formation [TPGR-XSV] (Principal/ Secondary A Aquifer)
- Boyn hill gravel member [BHT-XSV] (Secondary A Aquifer)
- Bosworth clay member [BOSW-XCZ] (Non-Productive Aquifer)
- Black park gravel member [BPGR-XSV] (Secondary A Aquifer)
- Dunsmore gravel [DMG-XSV] (Secondary A Aquifer)
- Lowestoft formation [LOFT-DMTN] (Non-Productive Aquifer)
- Oadby member [ODT-DMTN] (Non-Productive Aquifer)
- Thrusington member [THT-DMTN] (Non-Productive Aquifer)
- Winter hill gravel (lacustrine deposits) [WHGLD-XSV] (Secondary A Aquifer)
- Winter hill gravel [WIHG-XSV] (Secondary A Aquifer)
- Westmill gravel member [WLGR-XSV] (Secondary A Aquifer)
- Dollis hill gravel member [DHGR-XSV] (Secondary A Aquifer)
- Gerrards cross gravel [GCGR-XSV] (Secondary A Aquifer)
- Glaciofluvial deposits, mid pleistocene [GFDMP-XSV] (Secondary A Aquifer)
- Glaciofluvial sheet deposits, mid pleistocene [GFSMP-XSV] (Secondary A Aquifer)
- Glaciofluvial terrace deposits, mid pleistocene [GFTMP-XSV] (Secondary A Aquifer)
- Glaciolacustrine deposits, mid pleistocene [GLLMP-XCZ] (Non-Productive Aquifer)
- Till, mid pleistocene [TILMP-DMTN] (Non-Productive Aquifer)
- Beaconsfield gravel [BDGR-XSV] (Secondary A Aquifer)
- Baginton sand and gravel formation [BGSXSV] (Secondary A Aquifer)
- Chorleywood gravel formation [CWGR-XSV] (Secondary A Aquifer)
- Glacial deposits [GDU-XCZS] (Aquifer)
- Glaciolacustrine deposits [GLLD-XCZ] (Non-Productive Aquifer)
- Holme pierrepont sand and gravel member [HPSG-XSV] (Secondary A Aquifer)
- Interglacial lacustrine deposits [IGLD-XCZ] (Non-Productive Aquifer)
- Kesgrave catchment subgroup [KGA-XSV] (Aquifer)
- Princes risborough sand and gravel [PRSG-XSV] (Aquifer)
- Stanmore gravel formation [STGR-XSV] (Secondary A Aquifer)
- Wasperton sand and gravel member [WAT-XSV] (Secondary A Aquifer)
- Westland green gravel [WGGR-XSV] (Secondary A Aquifer)
- Alluvial fan deposits [ALF-V] (Secondary A Aquifer)
- Glaciofluvial deposits [GFDU-XSV] (Secondary A Aquifer)
- Head [HEAD-V] (Secondary (Undifferentiated) Aquifer)
- Head [HEAD-XCZ] (Secondary (Undifferentiated) Aquifer)
- Head [HEAD-XCZSV] (Secondary (Undifferentiated) Aquifer)
- Head, 1 [HEAD1-XCZSV] (Secondary (Undifferentiated) Aquifer)
- Lacustrine deposits [LDE-XCZS] (Non-Productive Aquifer)
- Peat [PEAT-P] (N/A Aquifer)
- River terrace deposits, 1 [RTD1-XSV] (Secondary A Aquifer)
- River terrace deposits, 2 [RTD2-XSV] (Secondary A Aquifer)
- River terrace deposits, 3 [RTD3-XSV] (Secondary A Aquifer)
- River terrace deposits, 4 [RTD4-XSV] (Secondary A Aquifer)
- River terrace deposits (undifferentiated) [RTDU-XSV] (Secondary A Aquifer)
- Sand and gravel of uncertain age and origin [SGAO-XSV] (Secondary A Aquifer)
- Tufa [TUFA-CATUFA] (Aquifer)
- Wolston sand and gravel [WOSG-XSV] (Secondary A Aquifer)
- Clay-with-flints formation [CWF-XCZSV] (Non-Productive Aquifer)

Bedrock Geology

- Bagshot formation - sand [BGS-SANDU] (Secondary A Aquifer)
- Claygate member - clay, silt and sand [CLGB-CLSISA] (Secondary A Aquifer)
- Claygate member - sand, silt and clay [CLGB-SSCL] (Secondary A Aquifer)
- London clay formation - clay and silt [LC-CLSI] (Non-Productive Aquifer)
- London clay formation - clay, silt and sand [LC-CLSISA] (Non-Productive Aquifer)
- Thanet formation - sand [TAB-SANDU] (Secondary A Aquifer)
- Lambeth group - clay, silt and sand [LMBE-CLSISA] (Secondary A Aquifer)
- Seafoam chalk formation and newhaven chalk formation (undifferentiated) - chalk [SNCK-CHLK] (Principal Aquifer)
- Chalk rock member - chalk [CKR-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation - chalk [LECH-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation and seafoam chalk formation (undifferentiated) - chalk [LESE-CHLK] (Principal Aquifer)
- Lewes nodular chalk formation, seafoam chalk formation and newhaven chalk formation (undifferentiated) - chalk [LSNCK-CHLK] (Principal Aquifer)
- New pit chalk formation - chalk [NPCH-CHLK] (Principal Aquifer)
- Glauconitic marl member - sandstone, glauconitic [GLML-GLSST] (Principal Aquifer)
- Holywell nodular chalk formation - chalk [HCK-CHLK] (Principal Aquifer)
- Holywell nodular chalk formation and new pit chalk formation (undifferentiated) - chalk [HNCK-CHLK] (Principal Aquifer)
- Melbourn rock member - chalk [MR-CHLK] (Principal Aquifer)
- Totterhoe stone member - chalk [TTST-CHLK] (Principal Aquifer)
- West melbury marly chalk formation - chalk [WMCH-CHLK] (Principal Aquifer)
- West melbury marly chalk formation and zig zag chalk formation (undifferentiated) - chalk [WZCK-CHLK] (Principal Aquifer)
- Zig zag chalk formation - chalk [ZZCH-CHLK] (Principal Aquifer)
- Gault formation - mudstone [GLT-MDST] (Non-Productive Aquifer)
- Gault formation and upper greensand formation (undifferentiated) - mudstone, siltstone and sandstone [GUGS-MDSS] (Non-Productive Aquifer)
- Upper greensand formation - siltstone and sandstone [UGS-SISD] (Non-Productive Aquifer)
- Lower greensand group - sandstone [LGS-SDST] (Secondary A Aquifer)
- Whitchurch sand formation - mudstone [WHS-MDST] (Secondary A Aquifer)
- Whitchurch sand formation - sandstone [WHS-SDST] (Secondary A Aquifer)
- Purbeck group - limestone and [subequal/subordinate] argillaceous rocks, interbedded [PB-LMAR] (Principal Aquifer)
- Portland group - limestone and calcareous sandstone [PL-LMCS] (Principal Aquifer)
- Portland sand formation - sandstone, calcareous [POSA-CALSST] (Secondary A Aquifer)
- Portland sand formation - limestone and calcareous sandstone [POSA-LMCS] (Secondary A Aquifer)
- Portland stone formation - limestone [POST-LMST] (Principal Aquifer)
- Kimmeridge clay formation - mudstone [KC-MDST] (Non-Productive Aquifer)
- Kimmeridge clay formation - siltstone and sandstone [KC-SISD] (Non-Productive Aquifer)
- Arngrove spiculite member - sandstone [AGSP-SDST] (Secondary A Aquifer)
- Amphill clay formation - mudstone [AMC-MDST] (Non-Productive Aquifer)
- Oakley member - limestone and mudstone, interbedded [OKLY-LMMD] (Secondary A Aquifer)
- Weymouth member - mudstone [WEY-MDST] (Non-Productive Aquifer)
- West walton formation and amphill clay formation (undifferentiated) - mudstone [WWAC-MDST] (Non-Productive Aquifer)
- West walton formation - limestone and [subequal/subordinate] argillaceous rocks, interbedded [WWB-LMAR] (Non-Productive Aquifer)
- West walton formation - mudstone [WWB-MDST] (Non-Productive Aquifer)
- Kellaways formation - sandstone, siltstone and mudstone [KLB-SDSM] (Secondary A Aquifer)
- Kellaways clay member - mudstone [KLC-MDST] (Secondary A Aquifer)
- Kellaways sand member - sandstone and siltstone, interbedded [KLS-SDSL] (Secondary A Aquifer)
- Peterborough member - mudstone [PET-MDST] (Non-Productive Aquifer)
- Stewartby member - mudstone [SBY-MDST] (Non-Productive Aquifer)
- Bladon member - limestone [BLAD-LMST] (Principal Aquifer)
- Bladon member - mudstone and limestone, interbedded [BLAD-MDLM] (Principal Aquifer)
- Blisworth clay formation - mudstone [BWC-MDST] (Principal Aquifer)
- Blisworth limestone formation - limestone [BWL-LMST] (Principal Aquifer)
- Combrash formation - limestone [CB-LMST] (Secondary A Aquifer)
- Forest marble formation - limestone [FMB-LMST] (Secondary A Aquifer)
- Forest marble formation - limestone and mudstone, interbedded [FMB-LMMD] (Secondary A Aquifer)
- Great oolite group - limestone and [subequal/subordinate] argillaceous rocks, interbedded [GOG-LMAR] (Principal To Secondary B Aquifer)
- Sharp's hill formation - argillaceous rocks with subordinate sandstone and limestone [SHHB-ARSL] (Secondary A Aquifer)
- Taynton limestone formation - limestone, ooidal [TY-LMOOL] (Principal Aquifer)
- Wellingborough limestone member - limestone [WBRO-LMST] (Secondary A Aquifer)
- White limestone formation - limestone [WHL-LMST] (Principal Aquifer)
- Horsehay sand formation - sandstone [HYSA-SDST] (Secondary A Aquifer)
- Rutland formation - mudstone [RLD-MDST] (Secondary B Aquifer)
- Stamford member - sandstone and siltstone, interbedded [STAM-SDSL] (Secondary A Aquifer)
- Northampton sand formation - sandstone, limestone and ironstone [NS-SDLI] (Secondary A Aquifer)
- Whitby mudstone formation - mudstone [WHM-MDST] (Non-Productive Aquifer)
- Dyrham formation - siltstone and mudstone, interbedded [DYS-SIMD] (Secondary (Undifferentiated) Aquifer)
- Marlstone rock formation - ferruginous limestone and ironstone [MRB-FLIR] (Secondary A Aquifer)
- Marlstone rock formation - limestone, ferruginous [MRB-FLMST] (Secondary A Aquifer)
- Charmouth mudstone formation - limestone [CHAM-LMST] (Secondary (Undifferentiated) Aquifer)
- Charmouth mudstone formation - mudstone [CHAM-MDST] (Non-Productive Aquifer)
- Rugby limestone member - mudstone and limestone, interbedded [RLS-MDLM] (Secondary A Aquifer)
- Langport member - limestone [LPMB-LMST] (Secondary (Undifferentiated) Aquifer)
- Penarth group - argillaceous rock and [subequal/subordinate] limestone, interbedded [PNG-AROCLS] (Secondary B Aquifer)
- Penarth group - mudstone [PNG-MDST] (Secondary B Aquifer)
- Salford shale member - limestone [SASH-LMST] (Secondary B Aquifer)

- Salford shale member - mudstone [SASH-MDST] (Secondary B Aquifer)
- Westbury formation - mudstone [WBV-MDST] (Secondary (Undifferentiated) Aquifer)
- Westbury formation - sandstone [WBV-SDST] (Secondary (Undifferentiated) Aquifer)
- Wilmcote limestone member - mudstone and limestone, interbedded [WCT-MDLM] (Secondary (Undifferentiated) Aquifer)
- Blue anchor formation - mudstone and siltstone [BAN-MDSI] (Secondary (Undifferentiated) Aquifer)
- Blue anchor formation - mudstone [BAN-MDST] (Secondary (Undifferentiated) Aquifer)
- Arden sandstone formation - mudstone [AS-MDST] (Secondary (Undifferentiated) Aquifer)
- Arden sandstone formation - sandstone, siltstone and mudstone [AS-SDSM] (Secondary A Aquifer)
- Arden sandstone formation - siltstone and sandstone [AS-SISD] (Secondary A Aquifer)
- Weatheroak sandstone member - sandstone [WKS-SDST] (Aquifer)
- Gunthorpe member - siltstone, dolomitic [GUN-DSLST] (Aquifer)
- Gunthorpe member - mudstone [GUN-MDST] (Aquifer)
- Tarporley siltstone formation - siltstone, mudstone and sandstone [TPSF-SIMS] (Secondary B Aquifer)
- Bromsgrove sandstone formation - mudstone [BMS-MDST] (Principal Aquifer)
- Bromsgrove sandstone formation - sandstone, pebbly (gravelly) [BMS-PESST] (Principal Aquifer)
- Bromsgrove sandstone formation - sandstone [BMS-SDST] (Principal Aquifer)
- Kidderminster formation - conglomerate [KDM-CONG] (Principal Aquifer)
- Kidderminster formation - mudstone [KDM-MDST] (Principal Aquifer)
- Kidderminster formation - sandstone and conglomerate, interbedded [KDM-SCON] (Principal Aquifer)
- Mercia mudstone group - siltstone, dolomitic [MMG-DSLST] (Secondary (Undifferentiated) Aquifer)
- Mercia mudstone group - mudstone [MMG-MDST] (Secondary B Aquifer)
- Wildmoor sandstone formation - sandstone [WRS-SDST] (Principal Aquifer)
- Ashow formation - mudstone and sandstone [AW-MDSD] (Principal Aquifer)
- Ashow formation - sandstone [AW-SDST] (Principal Aquifer)
- Client formation - argillaceous rocks and [subequal/subordinate] breccia, interbedded [CLT-ARBR] (Secondary A Aquifer)
- Gibbet hill conglomerate bed - conglomerate [GHC-CONG] (Principal Aquifer)
- Hopwas breccia formation - breccia [HPBR-BREC] (Principal Aquifer)
- Hopwas breccia formation - breccia and sandstone, interbedded [HPBR-BRSS] (Principal Aquifer)
- Kenilworth sandstone formation - breccia [KHS-BREC] (Principal Aquifer)
- Kenilworth sandstone formation - mudstone [KHS-MDST] (Principal Aquifer)
- Kenilworth sandstone formation - sandstone [KHS-SDST] (Principal Aquifer)
- Alveley member - limestone [ALY-LMST] (Secondary A Aquifer)
- Alveley member - mudstone and sandstone [ALY-MDSD] (Secondary A Aquifer)
- Alveley member - mudstone [ALY-MDST] (Secondary A Aquifer)
- Alveley member - sandstone [ALY-SDST] (Secondary A Aquifer)
- Alveley member - sandstone and mudstone [ALY-STM] (Secondary A Aquifer)
- Allesley member - argillaceous rocks and [subordinate/subequal] sandstone and conglomerate, interbedded [ASY-ARSC] (Principal Aquifer)
- Allesley member - conglomerate [ASY-CONG] (Principal Aquifer)
- Allesley member - sandstone [ASY-SDST] (Principal Aquifer)
- Enville member - conglomerate [EN-CONG] (Secondary A Aquifer)
- Enville member - sandstone, conglomerate and [subordinate] argillaceous rocks [EN-SCAR] (Secondary A Aquifer)
- Enville member - sandstone with subordinate conglomerate, siltstone and mudstone [EN-SCSM] (Secondary A Aquifer)
- Enville member - sandstone [EN-SDST] (Secondary A Aquifer)
- Halesowen formation - limestone [HA-LMST] (Secondary A Aquifer)
- Halesowen formation - mudstone, siltstone and sandstone [HA-MDSS] (Secondary A Aquifer)
- Halesowen formation - sandstone [HA-SDST] (Secondary A Aquifer)
- Keresley member - argillaceous rocks and [subordinate/subequal] sandstone and conglomerate, interbedded [KRS-ARSC] (Principal Aquifer)
- Keresley member - conglomerate [KRS-CONG] (Principal Aquifer)
- Keresley member - limestone [KRS-LMST] (Principal Aquifer)
- Keresley member - sandstone [KRS-SDST] (Principal Aquifer)
- Tile hill mudstone formation - argillaceous rocks and [subequal/subordinate] sandstone, interbedded [TLM-ARSD] (Principal Aquifer)
- Tile hill mudstone formation - sandstone [TLM-SDST] (Principal Aquifer)
- Whitacre member - conglomerate [WIT-CONG] (Principal Aquifer)
- Whitacre member - limestone [WIT-LMST] (Principal Aquifer)
- Whitacre member - mudstone and sandstone [WIT-MDSD] (Principal Aquifer)
- Whitacre member - sandstone [WIT-SDST] (Principal Aquifer)
- Pennine middle coal measures formation - mudstone, siltstone and sandstone [PMCM-MDSS] (Secondary A Aquifer)
- Pennine middle coal measures formation - sandstone [PMCM-SDST] (Secondary A Aquifer)
- Thick coal (south staffordshire) - coal [THIC-COAL] (Secondary A Aquifer)
- Pennine lower coal measures formation - mudstone, siltstone and sandstone [PLCM-MDSS] (Secondary A Aquifer)
- Pennine lower coal measures formation - sandstone [PLCM-SDST] (Secondary A Aquifer)
- Pennine lower coal measures formation and pennine middle coal measures formation (undifferentiated) - mudstone, siltstone and sandstone [PLMC-MDSS] (Secondary A Aquifer)
- Etruria formation - conglomerate [ETM-CONG] (Secondary A Aquifer)
- Etruria formation - mudstone, sandstone and conglomerate [ETM-MDSC] (Secondary A Aquifer)
- Etruria formation - sandstone [ETM-SDST] (Secondary A Aquifer)
- Unnamed igneous intrusion, westphalian - microgabbro [UICW-MCGB] (Aquifer)
- Rough rock - sandstone [RR-SDST] (Aquifer)
- Millstone grit group [see also migr] - mudstone, siltstone and sandstone [MG-MDSS] (Aquifer)
- Millstone grit group [see also migr] - sandstone [MG-SDST] (Aquifer)
- Coalbrookdale formation - mudstone [CBRD-MDST] (Secondary B Aquifer)
- Rubery sandstone member - sandstone [RBS-SDST] (Secondary B Aquifer)
- Midlands minor intrusive suite - lamprophyres [MMI-LMPY] (Aquifer)
- Monks park shale formation - mudstone [MPSH-MDST] (Secondary B Aquifer)
- Merevale shale formation - mudstone [MVSH-MDST] (Secondary B Aquifer)

Map Number
WR-02 - Legend

Map Name
WR-02 - Full Geological Legend with Rock Unit Names and Aquifer Status SES3 and AP4 ES



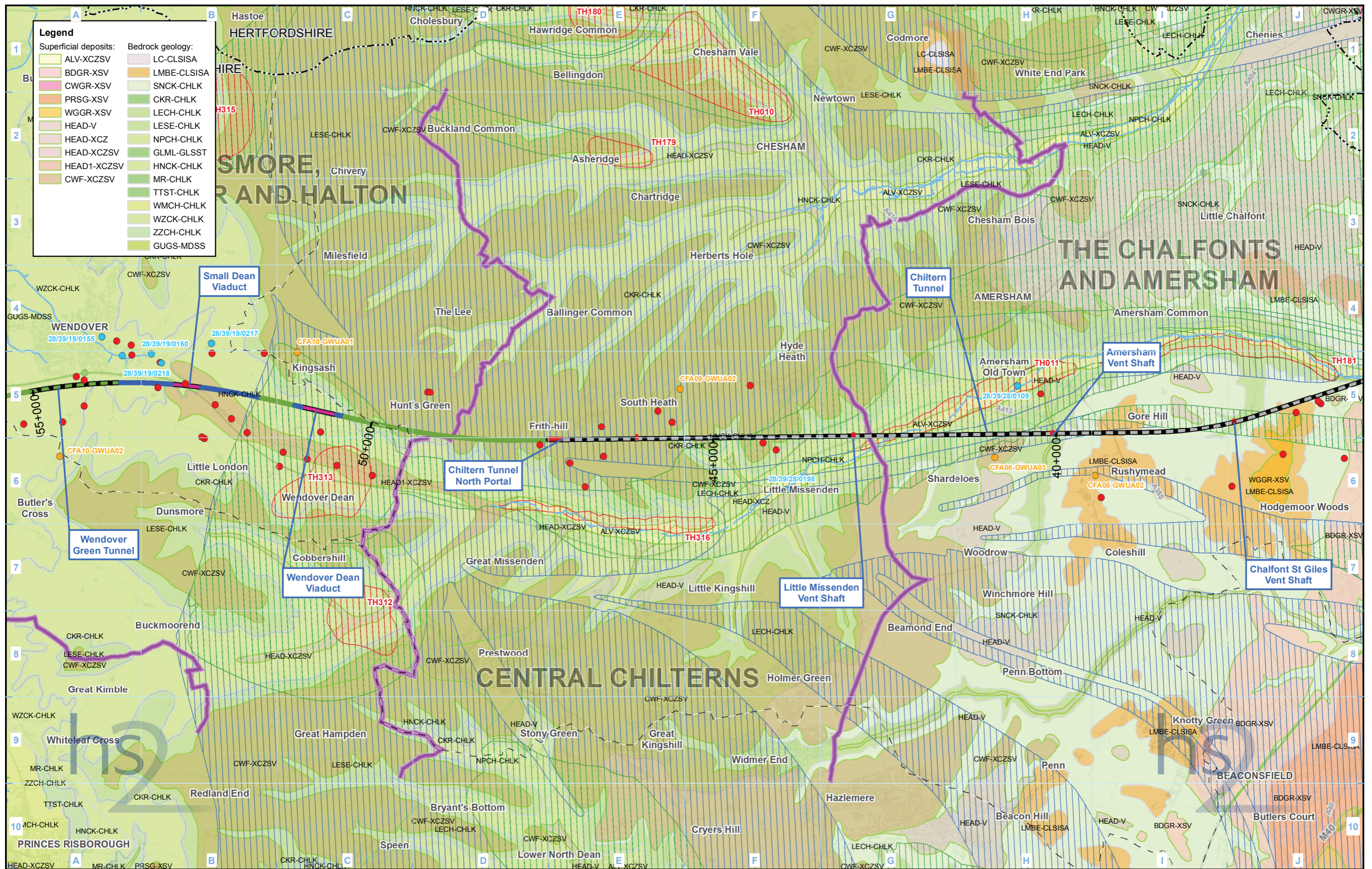
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Doc Number: C250-ARP-EV-MAP-000-002558-AP04-P01

Date: 17/09/15



Legend

Superficial deposits:	Bedrock geology:
ALV-XCZSV	LC-CLSISA
BDGR-XSV	LMBE-CLSISA
CWGR-XSV	SNCK-CHLK
PRSG-XSV	CKR-CHLK
WGGR-XSV	LECH-CHLK
HEAD-V	LESE-CHLK
HEAD-XCZ	NPCH-CHLK
HEAD-XCZSV	GLML-GLSST
HEAD1-XCZSV	HNCK-CHLK
CWF-XCZSV	MR-CHLK
	TTST-CHLK
	WMCH-CHLK
	WZCK-CHLK
	ZZCH-CHLK
	GUGS-MDSS

Legend

Route on embankment	Depot, station, headhouse or portal building
Route in bored tunnel	Community forum boundary
Route in cutting	County boundary
Route in green tunnel	District/Borough boundary
Route in retaining wall	Licensed groundwater abstraction (excluding public water supplies)
Route in station	Unlicensed groundwater abstraction
Tunnel portal	Groundwater discharge location
Route on viaduct	

Groundwater source protection zone:

Zone 1
Zone 2
Zone 3
Geological fault line

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

Map Number: **WR-02-009**

Map Name: **Groundwater Baseline SES3 and AP4 ES**

Community Forum Area CFA9: Central Chilterns

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Scale at A3: 1:50,000

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