



Environmental Constraints Report

Western Link

03 November 2017

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Abbreviations

Abbreviation	Definition
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food, and Rural Affairs
DfT	Department for Transport
EA	Environment Agency
EC	European Community
GIS	Geographic Information Systems
JNCC	Joint Nature Conservation Committee
km	Kilometre
LDF	Local Development Framework
LNR	Local Nature Reserve
m	Metre
MAGIC	Multi-agency Geographic Information for Countryside
NCA	National Character Area
NIA	Noise Important Area
NNR	National Nature Reserve
NO2	Nitrogen Dioxide
NPPF	National Planning Policy Framework
OBC	Outline Business Case
OS	Ordnance Survey
PPG	Planning Policy Guidance
SAC	Special Areas of Conservation
SINC	Site of Important to Nature Conservation
SM	Scheduled Monuments
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
TPO	Tree Preservation Order
TWAO	Transport and Works Act Order
WBC	Warrington Borough Council
WCA	Wildlife and Countryside Act
WCML	West Coast Main Line
WFD	Water Framework Directive
WHS	World Heritage Sites

1 Introduction

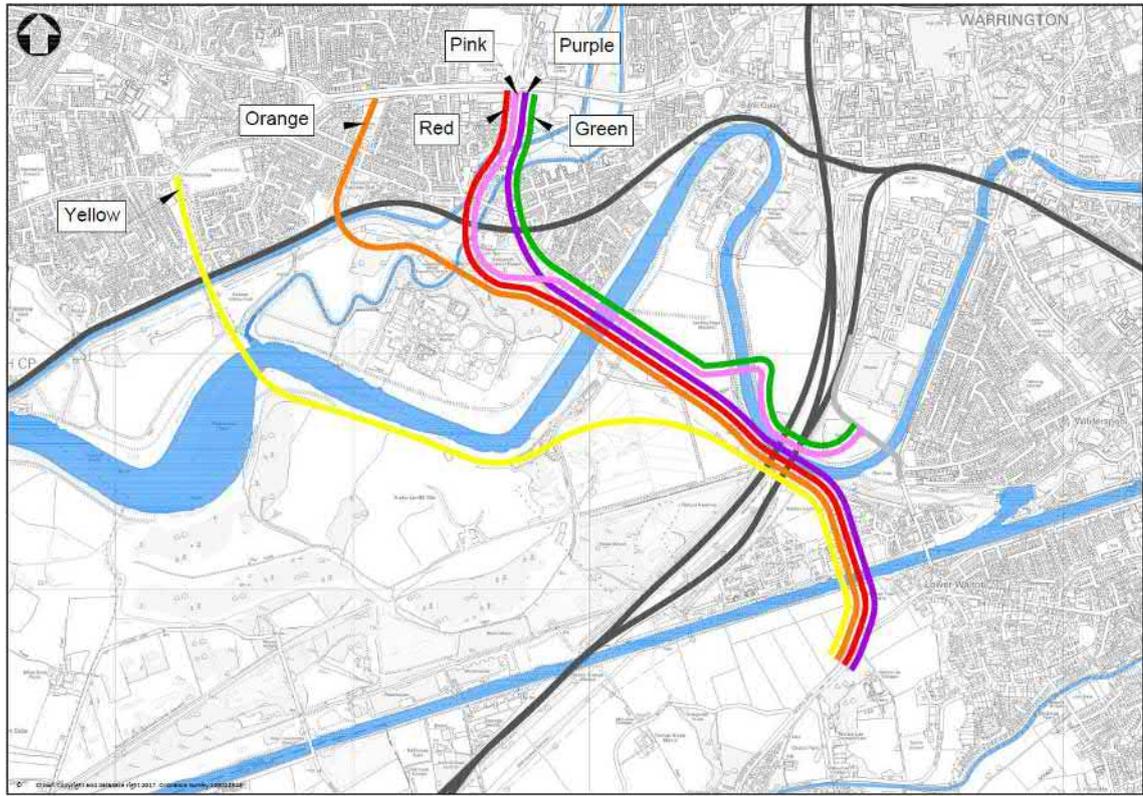
1.1 Background Information

- 1.1.1 Warrington is one of the most economically successful towns in the UK at present. Its rapid growth can, in part, be attributed to its strategic location between Manchester and Liverpool in the heart of the Northern Powerhouse, its prime strategic connectivity, the entrepreneurial character of its citizens and businesses, its attractiveness to outward investment, and its cultural offerings (Adopted Local Plan Core Strategy, Warrington Borough Council, 2014).
- 1.1.2 Warrington is well connected to the Strategic Highway Network, with the M62 motorway to the north of the town, the M6 to the east, and the M56 to the south. The rationale behind the development of this scheme is that it will address a range of transport issues within Warrington, including providing additional resilience to town centre congestion whilst also acting as a catalyst for economic growth and unlocking land immediately south-west of the town centre for housing and employment.

1.2 Scheme Description

- 1.2.1 Warrington Borough Council have received funding from the Department for Transport (DfT) to develop an Outline Business Case (OBC) for the Western Link Scheme (henceforth known as “The Scheme”). The overall aims of The Scheme are to:
- Address the steady rise in congestion levels that are a result of Warrington’s recent rapid economic growth, particularly in the town centre; and
 - Open up new development land to support continued economic investment in central Warrington.
- 1.2.2 Historically, the River Mersey, Manchester Ship Canal and West Coast Main Line (WCML) railway have acted as barriers that create traffic ‘pinch points’ on the transfer network. Consequently, traffic between north and south Warrington must go through the town centre, leading to serious congestion problems.
- 1.2.3 The Scheme involves the construction of a single carriageway connecting Chester Road (A56) located to the south of Warrington, to Sankey Way (A57) located to the north west of Warrington town centre. There were several proposed route options under consideration, with Figure 1 showing the location and overview of the proposed study area and the potential route options of The Scheme. The route options have been split into six options; Yellow, Orange, Red, Pink, Purple, and Green, A similar naming convention has been used within the Mott MacDonald Stage 2 Scheme Assessment Report (WL-MMD-07-XX-RP-D-0003) and a full breakdown of the route options and Scheme development also contained within the aforementioned Scheme Assessment Report compiled by Mott MacDonald in November 2017. Following the Stage 2A assessment of the six route options, the Red Route is to be progressed to the design stage. The Red Route will henceforth be referred to as “the Preferred Route”.

Figure 1: Overview of Proposed Scheme Route Options



Source: Mott MacDonald, 2017

1.3 Purpose of Report

1.3.1 The purpose of this report is to provide an initial assessment (using publicly available information) of the environmental and ecological features, both along and, within 500m of the proposed route options for the Western Link Scheme. The 500m buffer applied, is to capture any features outside of the site extent, which may be influenced by the proposed works. Given the nature of the scheme, and the sensitivity of the local area, 500m is considered an appropriate distance, and has been widely used in other transportation schemes. This buffer zone will henceforth be referred to as the "Study Area". The report also looks at the routes selected to be taken forward to Stage 2A, and finally assess the Preferred Route, alongside suggestions and recommendations for this route.

The aims of this assessment are to:

- Collate available information on the environmental baseline conditions for the study area (including the 500m buffer surrounding the proposed route options);
- Identify and assess the sensitivity of any environmental sites, features, or constraints within or adjacent to the study areas;
- Provide recommendations on mitigation and compensation measures and, as appropriate, for more detailed environmental investigations;
- Capture environmental baseline information within ArcGIS;
- Undertake qualitative risk scoring for the impact on the identified environmental sites and features; and

- Produce an environmental risk map.

1.4 Scheme Development

1.4.1 This section has been included to outline the route optioneering process from Scheme inception to Preferred Option selection. The following summarises the steps taken to produce the Preferred Route for this Scheme. This Environmental Constraints Report was produced primarily for the Stage 1 Option Development Assessment, where it looked at the wider study area to give an overview of the environmental constraints present. The report was subsequently updated at Stage 2A to illustrate the differences between the six coloured route options and facilities the progression to one Preferred Route Option.

Stage 0 – Option Development

1.4.2 Following the identification of problems and objectives for the Scheme, 26 improvement strategy options were developed which consisted of 16 highway corridor options to the west of Warrington Town Centre and 10 non-corridor options. Further details on this stage of the optioneering process can be found in the Stage 2 Scheme Assessment Report (WL-MMD-07-XX-RP-D-0003). During this stage, the 26 options were reduced to 10 highway corridors and 3 non-corridor options for further assessment.

Stage 1 – Option Development

1.4.3 The next stage of the assessment process took the 10 highway corridors and through various workshops and options development exercises, identified, in total, 41 options. These, together with the 3 non-corridor options (44 options in total), were taken forward to the Stage 1 Scheme Assessment Report, with the purpose of this report being to identify environmental, engineering, economic and traffic advantages, disadvantages, and constraints associated with the 44 options. Following this assessment, a further INSET Stage 1 Sift process was undertaken producing the six final options shown in Figure 1.

Stage 2A

1.4.4 The purpose of the Stage 2A Assessment Report was to highlight the advantages, disadvantages and constraints of the six proposed routes in a similar fashion to the Stage 1 Assessment Report with the output being a preferred route to be taken forward to the detailed design stage.

Stage 2B

1.4.5 Once a preferred route has been chosen, the purpose of the Stage 2B options development process, from an environmental perspective, is to highlight the constraints and risks to the proposed route and provide recommendations for potential mitigation and further surveys to encapsulate the environmental risk and opportunities facing the Scheme.

1.5 Sources of Information

- 1.5.1 The following data sources were used to compile information included within the Geographic Information Systems (GIS) maps:
- The multi-agency Geographic Information for Countryside (MAGIC) website;
 - The Environment Agency website;
 - Current Ordnance Survey (OS) (Landranger 109) and aerial photography;

- Department for Environment, Food, and Rural Affairs(Defra) Air Quality Management Areas (AQMA);
- DEFRA Noise Management website;
- English Heritage – National Heritage List for England; and
- Forestry Commission GIS database.

1.5.2 This assessment has considered all environmental information present both along the proposed route options and the 500m buffer.

2 Methodology

2.1 Environmental Baseline

- 2.1.1 The environmental baseline has been established using publicly available information, such as Ordnance Survey mapping, local planning policy documentation and environmental data sets from government agencies. The baseline environmental data has been captured within GIS, the outputs of which include a series of environmental constraints plans and an environmental risk map to highlight the location of high risk environmental constraints in relation to the scheme. These maps are contained within Appendix A. This report presents the findings of the environmental desk study and risk mapping exercise.
- 2.1.2 The following methods have been implemented in the assessment:
- A review of the existing designated sites and features within 500m of the proposed scheme;
 - Identification of any Special Areas of Conservation (SAC) designated for bats, within 10km of the site; and
 - A review of the information regarding local and national planning and policy, planning and frameworks, and action plans from a range of data sources including: Multi-agency Geographic Information for the Countryside (MAGIC) (<http://magic.defra.gov.uk/>) and the JNCC (<http://jncc.defra.gov.uk/>). Further data sources that have been consulted are listed in Appendix C.
- 2.1.3 To produce this report, the environmental information has been assessed within 500m of the proposed route options. Further buffer zones for internationally and nationally designated sites have been included in the mapping, in line with Chartered Institute of Ecology and Environmental Management (CIEEM) guidance (2016), as they will require further consideration and consenting if these sites are present within 2km and 10km of the proposed route.

2.2 Desk Study

- 2.2.1 The desk study involved compiling a range of data sets to present environmental and planning constraints plans to inform on the environmental and ecological restrictions on the proposed route options. The following information is presented on several maps to highlight areas which pose a significant constraint to the proposed route options. The following designations have been included:

National Designations

- Designated Ecological sites:
 - Special Areas of Conservation (SAC);
 - Special Protection Areas (SPA);
 - Ramsar Sites;
 - Sites of special Scientific Interest (SSSIs).
 - National Nature Reserves (NNRs);
- Cultural Heritage Features:
 - Listed buildings and their settings;
 - Scheduled Monuments (SMs);
 - World Heritage Sites (WHS);

- Registered Battlefields; and
- Registered Parks and Gardens.
- DEFRA Noise Important Areas (NIAs);
- National Parks;
- Areas of Outstanding Natural Beauty (AONBs);
- Ancient Woodland;
- Watercourses and waterbodies;
- Environment Agency (EA) Flood Zones 2 and 3;
- Agricultural Land Classifications.

Local Designations:

- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWS)
- Local Authority boundaries;
- Sites of Importance to Nature Conservation (SINCs);
- Conservation Areas and locally-listed buildings;
- Tree Preservation Orders (where available);
- AQMAs; and
- Historic and Authorised Landfill.

2.3 Environmental Legislative Context and Policy Framework

2.3.1 The proposals must comply with a range of international and national legislation; these will need to be considered in more detail as The Scheme progresses. Some of the key pieces of legislation include the following:

- Wildlife and Countryside Act 1981 (WCA);
 - The WCA consolidates (and amends) existing national legislation in order to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Birds Directive in the UK. This is complemented by The Conservation of Habitats and Species Regulations 2010 (as amended). These regulations transposed the European Habitats Directive listed above into National Law.
- European community (EC) Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive, 1992) as amended (92/43/EEC);
- EC Directive on the Conservation of Wild Birds (Birds Directive, 1979) as amended (79/409/EEC);
- The Natural Environment and Rural Communities Act (2006) which provides that ‘any public body or statutory undertaker in England and Wales must have regard to the purpose of conservation of biological diversity in the exercise of their functions’. Section 41 of the Act states that the Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State’s opinion are of principal importance for the purpose of conserving biodiversity.
- The Countryside and Rights of Way Act (2000) provides for public access on foot to certain types of land, amends the law relating to public rights of way, increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

- Directive 2008/50/EC on ambient air quality and cleaner air for Europe, as implemented in UK law by the Air Quality Standards Regulations, 2010;
- Environmental Protection Act, 1990;
- The Ancient Monuments and Archaeological Areas Act, 1979;
- Planning (Listed Buildings and Conservation Area Act), 190;
- Water Resources Act 1991 (as amended 2009) – establishes the regime to conserve, manage and control pollution of water resources; and
- Water Framework Directive (WFD) (2000/60/EC), as implemented in UK law by the Water Environment (England and Wales) Regulations 2003.

Planning Legislation Context

- 2.3.2 The National Planning Policy Framework (NPPF) and guidance within the Planning Policy Guidance (PPG) form the national policy guidance development for England. The NPPF (March 2012) sets out the Government's planning policies for England and how these are expected to be applied. The golden thread running through the NPPF is the principle of sustainable development – making economic, environmental, and social progress for this and future generations. The NPPF constitutes guidance for consenting authorities and decision-makers, and is a material consideration in determining planning applications. The NPPF does not change the statutory status of the development plan as the starting point for decision making.
- 2.3.3 Local Planning requirements will need to be considered as the scheme is developed. The proposed route options lie within the Local Planning Authority of Warrington Borough Council and their local development policies will need to be taken into account when assessing the environmental constraints of The Scheme.
- 2.3.4 The Warrington Borough Council's Local Plan Core Strategy was adopted in July 2014, and forms the primary planning policy document for the Borough. Supplementary planning documents support it by providing further details and guidance on how some policies within the Local Plan Core Strategy are to be implemented. The Local Plan supersedes the Local Development Framework (LDF). The following policies contained within the Local Plan Core Strategy have been highlighted for their relevance to The Scheme:
- Policy CS4: Overall Spatial Strategy – Transport
- 2.3.5 *'Effort should be aimed at reducing the proportion of car-borne commuting and education trips made during peak periods and tackling the most congested parts of the Strategic Road Network notably the M6, M56 and M62.'*
- Policy CS5: Overall Spatial Strategy – Green Belt
- 2.3.6 *'Development should maintain the general extent of the Green Belt. Development Proposals within the Green Belt will be approved where they accord with relevant national policies'*
- Policy MP1: General Transport Principles
- 2.3.7 *'To secure sustainable development, the Council and its partners will support proposals where they mitigate the impact of development or improve the performance of Warrington's Transport Networks, including the Strategic Road Network, by delivering site specific infrastructure which will support the proposed level of development.'*
- Policy MP7: Transport Assessments and Travel Plans
- 2.3.8 *'The council will require all development to demonstrate that it will not significantly harm highway safety and that trips generated by the development can adequately be served by*

Warrington’s Transport Network. Development should also identify where there are any significant effects on Warrington’s Transport Network and/or the environment and ensure appropriate mitigation measures including any necessary transport infrastructure are in place before the development is used or occupied.’

2.4 Environmental Risk Map

2.4.1 The GIS environmental constraints maps and the risk maps maintain the same 500m boundary to enable both present and future interpretation of perceived environmental risk to be assessed.

2.4.2 A qualitative risk score of between 0 and 10 was assigned to each constraint included within the risk mapping exercise. The risk scores were banded to determine the magnitude of risk as shown in Table 1 below.

Table 1: Risk Category Definition

Risk	Risk Category
High Risk	8 – 10
Medium Risk	5 – 7
Low Risk	1 – 4
No Risk	0

2.4.3 Further information on the environmental scoring scale can be found in Appendix B.

2.5 Limitations

2.5.1 The production of an environmental constraints and feasibility study is limited by a number of factors:

- The extent of the study is based upon the proposed route options displayed on Figure 1. These routes could change as constraints are investigated and the design process progresses;
- The GIS mapping contains information on environmental constraints obtained through open source datasets and does not contain spatial information on all possible environmental features/receptors within the study area;
- The quality of the information provided by the suppliers;
- No detail OS map interpretation or survey work has been undertaken to inform GIS analysis;
- The GIS maps do not contain information on residential properties and individual businesses;
- The source information used within the GIS analysis is assumed to be correct at the time of publications.

3 Environmental Constraints

3.1 Introduction

3.1.1 The purpose of this report is to discuss the potential environmental constraints facing the scheme and interpret the results of the desk based study.

3.2 Air Quality

3.2.1 Air Quality Management Areas (AQMAs) are designated by local authorities in areas where it is considered that the air quality objectives are likely to be exceeded for any of the pollutants being monitored.

3.2.2 Sensitive receptors for Air Quality have been defined as residential properties and facilities such as schools, medical establishments, or community facilities, which could be adversely affected during the construction and operation of the Scheme.

3.2.3 There are two AQMAs located within 500m of the Scheme that have the potential to be adversely impacted during construction or operation. Warrington AQMA No. 2 is located at SJ600879, 420m to the east of the Scheme. It is designated an AQMA for nitrogen dioxide (NO₂) and the source is listed as a County or Unitary Authority Road. Warrington AQMA Order No. 3 (2010) is located at SJ594882, 117m to the north of the Scheme. It is designated an AQMA for NO₂ and the source is listed as unspecified road transport.

3.2.4 An appraisal of the impact of the route options on air quality has been undertaken in accordance with WebTAG environmental guidance. Net Present Values (NPV) have been calculated indicating the potential cost or benefit of a particular route option to local and regional air quality. The outcome of this assessment for the six options assessed at this stage can be found in Table 2.

Table 2: Net-Present Value (NPV) results for the route options

Option	NPV (£)	WebTAG Rank
Pink Route	£ -422,529	-1
Green Route	£ -454,639	-1
Yellow Route	£ 141,742	1
Red Route	£ 217,037	1
Purple Route	£ 331,582	1
Orange Route	£ 1,353,969	3

3.2.5

Conclusions and Recommendations

3.2.6 The assessment illustrating that the Yellow route presents the best option, followed by the Red route, while the Orange route can be considered to be the worst route from an Air Quality perspective.

3.3 Archaeology and Heritage

Listed features

- 3.3.1 Heritage features can be listed because they have special architectural or historical interest. Listed features are protected by law and it is an offence to carry out any changes to the buildings or their settings without having received listed building consent from the appropriate authorities.
- 3.3.2 Table 3 details the listed buildings, which have the potential to be impacted by the Scheme, within 200m of the Scheme Options. There are seven features which have been listed under the Planning (Listed Buildings and Conservation Areas) Act 1990, as amended. A 200m buffer zone for heritage constraints is considered adequate for this stage of the assessment due to the urban context of the area in its current state. For locations of all listed buildings within 500m of the Scheme options, see the map included in Appendix A.5.

Table 3: Listed features within 200m of the scheme.

No	Name	Grade	Grid Ref
1	THE BLACK HORSE PUBLIC HOUSE	II	SJ 586 875
2	Monks Siding Signal Box	II	SJ 591 877
3	ROMAN CATHOLIC CHURCH OF THE SACRED HEART	II	SJ 597 881
4	TRANSPORTER BRIDGE TO PART OF JOSEPH CROSFIELD AND SONS LTD'S WORKS	II*	SJ 596 876
5	BARONET FARMHOUSE, WITH ATTACHED FARM BUILDINGS AND COBBLED YARD	II	SJ 601 863
6	CHURCH OF ST LUKE	II*	SJ 591 877
7	THOMASONS BRIDGE OVER BRIDGEWATER CANAL	II	SJ 591 847

Source: Historic England datasets via MAGIC. Accessed March 2017.

- 3.3.3 Listed features and their settings within 100m could potentially be impacted by the construction or operational phase of the scheme, specifically the Church of St Luke which is a Grade II*, could present a significant constraint to The Scheme.

Conservation Areas

- 3.3.4 Conservation Areas are considered to be areas that have a special architectural or historical interest. Building restrictions are imposed to protect the appearance of these areas. There are two conservation areas within 500m of the Scheme, details of which can be found in Table 4 below. Potential impacts on these conservation areas should be carefully investigated and managed. Demolition works in Conservation Areas are not proposed as part of the Scheme.

Table 4: Conservation Areas within 500m of the Scheme.

No.	Name	LPA	X Coordinates	Y Coordinates
1	Walton Village	Warrington	359720	385768
2	Town Hall	Warrington	359605	388154

Source: Historic England 2016.

Registered Parks and Gardens

- 3.3.5 There are no registered parks and gardens within 500m of the Scheme.

Scheduled Monuments

- 3.3.6 There is one scheduled monument within 500m of the Scheme located adjacent to the proposed route. Bank Quay transporter bridge is a large steel transporter bridge across the River Mersey, and is the world's only remaining rail transporter bridge having been used to carry wagons of cement from the works to the main line. The postcode for the monument is WA5 1AB. Consultation with Historic England will be required to quantify the potential impact to this structure.

Registered Battlefields

- 3.3.7 There are no registered battlefields within 500m of the Scheme.

Conclusions and recommendations

- 3.3.8 There are slight differences in the proximity of the route options proposed to various listed features located within the study area. Four of the current proposed routes (purple, orange, red and yellow) run closer to the Walton Village conservation area which contains a high volume of listed features, while the purple and green options are in close proximity to a Grade II listed building to north of the study area.
- 3.3.9 For the proposed Red route taken forward, the main risk from a historic environment perspective, is the routes proximity to the Walton Village Conservation Area to the south edge of the Scheme boundary. There are also a number of Grade II listed buildings in close proximity to the proposed route. Close consultation with the Local Planning Authority and Historic England should take place to ensure that an impact to these listed features and their settings are avoided where possible, and adequate mitigation to protect these features is implemented.

3.4 Contaminated Land

- 3.4.1 Warrington, and the North West of England is a heavily urbanised area with a long industrial history. Potential constraints relating to ground and groundwater contamination associated with historical land uses and ground stability are likely due to historical quarrying, landfill, and heavy industry in the area.
- 3.4.2 Due to the nature of the scheme there is potential for the contamination of land and controlled waters, as a result of the construction phase activities.

Historic Landfill

- 3.4.3 There are two sites of historic landfill within 500m of the Scheme, one of which, Gatewarth Farm (identified as containing inert, industrial, commercial and household waste), intersects with the Scheme. Details of the historic landfill sites can be found in Table 5 below. Intrusive ground investigations will be required to clarify the potential impacts.

Table 5: Historic Landfill sites within 500m of the Scheme

No.	Name	Type	Distance	X Coordinates	Y Coordinates
1	Liverpool Street / Road	Inert, Industrial	78m	358472	387555
2	Gatewarth Farm	Inert, Industrial, Commercial, Household	0m	357501	387066

Source: MAGIC, Defra 2017

Authorised Landfill

- 3.4.4 There is only one area of authorised landfill within 500m of the Scheme and it intersects directly with the proposed route. The Landfill site, Arpley Landfill, which is identified as being operated by 3C Waste Limited, is located in the Sankey Bridges area of Warrington (post code: WA4 6YZ). The potential risk of ground and groundwater contamination as a result of interactions between the Scheme and Arpley Landfill will need to be fully investigated as part of the option selection process.

Conclusions and Recommendations

- 3.4.5 A prominent ground risk to all the proposed route options is the presence of landfill sites across the study, which includes Arpley Landfill and Gatewarth Landfill. These landfill sites pose the greatest risk to the Yellow Route due to the length of the route which would pass through the two sites. Both the Orange and Pink Route pass through the Gatewarth Landfill, while the remaining Purple, Green and Red routes run adjacent to both Arpley and Gatewarth Landfill sites.

3.5 Ecology

- 3.5.1 The Western Link Scheme is located within a generally heavily urbanised area with mix of surface water, informal open land, derelict, industrial/commercial, and formal open green space. The Warrington Area and the North-West in general, is heavily urbanised, with areas of formal open green space present. With such range of land uses and potential habitats presents a range of ecological constraints what will require further consideration as part of the option process.
- 3.5.2 There is the potential for bat and bird presence within the buildings, structures, and suitable semi mature/mature trees within areas of green space. A section of the River Mersey crosses the study area with associated UK BAP priority Habitat. It is understood that the River Mersey has the potential to support protected and notable species including birds, otter, and fish such as salmon. Both direct and indirect impacts on the watercourse could directly affect those species which inhabit the river corridor.
- 3.5.3 Vegetation along the River Mersey and the railway lines (WCML and Chester Line) are likely to provide habitat corridors for species including badger, reptiles, bats, and birds. There will be an impact on vegetation and loss of habitat in developing the scheme and further assessment will be required to ensure impacts are managed with introduction of appropriate mitigation. The environmental constraints plans included in Appendix A shows there to be a number of ecological constraints surrounding and intersecting with the scheme. Locally designated wildlife sites and SINCs are seen to intersect with the proposed route options as well as areas designated as Grade 2 and 3 Agricultural Land. The route also comes within 500m of an area of Ancient Woodland to the south. Ancient Woodland is designated for its wildlife, soils, recreational value, cultural value, history, and contribution to landscapes. There are no statutory designated sites within 2km of the proposed scheme route options.
- 3.5.4 Further study, such as Phase 1 Habitat Surveys, a Preliminary Ecological Assessment (PEA) and a Habitats Regulations Screening Assessment (HRA) may be required to fully determine the habitats and species that are present at the site and plan appropriate mitigation to prevent loss of important biodiversity and significant impacts.

Conclusions and Recommendations

- 3.5.5 The PEA for produced for the Scheme outlines the potential for protected and notable species to be found within the study area as a whole, with each of the six route options intersecting with important habitats at various stages. It is therefore suggested that each of the six route options carry a similar risk to sensitive ecological receptors.

3.6 Landscape and Visual

- 3.6.1 The development has the potential to result in the loss or fragmentation of locally important landscapes or landscape elements, including recreational areas, open space, important green linkages, and mature trees, particularly trees within Conservation Areas.
- 3.6.2 There is the potential for the development to have an impact on the local urban townscape character. Adverse impacts on landscape or townscape character may include the loss of or degradation to important heritage features (e.g. bridges), open spaces or vegetation.
- 3.6.3 There is the potential for the development to have an impact on visual receptors in close proximity to the site. Visual receptors include residential receptors, road users, recreational users (e.g. of public parks, long distance footpaths, the River Mersey) and workers. Visual impacts on receptors may result from loss of open space / woodland opening up adverse views, new structures (e.g. rail and road infrastructure) intruding into views and new development closing off views which are currently open.
- 3.6.4 The Scheme lies within the Mersey Valley National Character Area (NCA). This NCA consists of a wide, low-lying river valley landscape focusing on the River Mersey, which this Scheme will cross. Urban and industrial developments line the banks of the River Mersey. Industrial infrastructure is often prominent in this NCA, with large-scale, highly visible development including chemical works and oil refineries. There is a dense communication network of major roads, railways, canals, and transmission lines. The potential impacts of a further road scheme on existing landscape of the area will need to be further investigated however there may be potential opportunities to enhance the local landscape through innovative design measures.

Conclusions and Recommendations

- 3.6.5 As each of the six route options involves the creation of a new highway across a significant section of the Mersey Estuary, there is minimal difference between the potential impacts resulting from each route option. Any proposed development on the scale of that suggested is likely to have adverse impacts to the surrounding landscape. It is recommended that the local planning authority and local interest groups are consulted with at the earliest opportunity, to provide a scheme with minimal noise and vibration impacts.

3.7 Noise and Vibration

- 3.7.1 Background noise levels will vary across the proposed route options. Towards the north and south ends of the study area, background noise can be expected to be slightly higher due to the industrial and residential land use, whilst in the centre of the study area background noise can be expected to be low due to the open space present.
- 3.7.2 Sensitive receptors for noise and vibration have been defined as residential properties and noise sensitive facilities such as schools, medical establishments, or community facilities, which could be adversely affected during the construction and operation of the Scheme. There are several potentially sensitive receptors within 200m of the project, including residential areas adjacent to the works area, which have the potential to be affected by noise and vibration effects, particularly during any necessary night-time works.

- 3.7.3 Table 6 below details the eight NIA that can be found within 500m of the scheme. The proposed route options intersect directly with one NIA as can be seen below. The source of all NIAs is listed as 'Road' and thus there are potential cumulative impacts associated with noise and the Western Link Scheme.

Table 6: Noise Important Areas within 500m of the Scheme

No.	NIA ID	Source	Asset Owner	Distance	X Coordinates	Y Coordinates
1	11022	Road	Warrington	0m	357256	387735
2	11021	Road	Warrington	27m	358103	388087
3	11020	Road	Warrington	39m	359473	388124
4	7085	Road	Warrington	43m	360134	385797
5	7084	Road	Warrington	254m	360134	385797
6	11025	Road	Warrington	279m	360099	385878
7	11023	Road	Warrington	360m	359605	388154
8	7083	Road	Warrington	459m	358711	388116

Source: Defra, 2017

- 3.7.4 There is the potential to have a positive impact on noise and vibration in the area however as one of the core aims of the scheme is to reduce traffic flows through the town centre, thus potentially reducing the noise impacts felt in the centre. Noise and vibration impacts should be investigated further to clarify the potential impacts and opportunities.
- 3.7.5 An appraisal of the impact of the route options on noise and vibration has been undertaken in accordance with WebTAG environmental guidance. Net Present Values (NPV) have been calculated indicating the potential cost of benefit of a particular route option to local and regional air quality. The outcome of this assessment for the six options assess at this stage can be seen in Table 7 below.

Table 7: Net-Present Value (NPV) results for the route options

Option	NPV (£)	Rank
Pink Route	-£18,612,017	-4
Green Route	-£15,589,776	-4
Yellow Route	-£22,482,687	-5
Red Route	-£19,061,769	-4
Purple Route	-£21,501,950	-5
Orange Route	-£14,412,491	-3

Conclusions and Recommendations

- 3.7.6 The assessment shows that the Orange route presents the least risk to noise and vibration followed by the Green route. The worst route in terms of negative NPV value is considered to be the Yellow Route followed closely by the Purple Route.

3.8 Traffic and Transport

- 3.8.1 The nature of the Scheme is such that one of the core aims is to reduce town centre traffic by creating an alternative route to bypass Warrington centre. The M6, M56 and M62 motorways intersect within the borough, providing good access to all parts of the region and beyond. The addition of a new road has the potential to positively impact traffic and transport in the area.

- 3.8.2 Traffic forecasting has taken place as part of the Stage 2a Scheme Assessment Report (WL-MMD-07-XX-RP-D-0003). The proposed Western Link scheme is forecast to carry around 26,610 and 30,980 vehicles per annual average weekday and without the scheme in place, it is suggested that an estimated 204,400 and 222,700 vehicles per annual average weekday crossing the town centre in 2026 and 2036. The traffic forecasting shows that all route options would reduce the levels of traffic crossing the town centre.

Conclusions and Recommendations

- 3.8.3 The traffic comparison shows the Purple Route providing the greatest reduction of flow through the town centre, followed by the Red Route. The Stage 2a economic appraisal of the six route options has identified the Red and Purple routes as the routes which provide the best value for money. Both of these Schemes provide a similar level of benefit however the Red Route provides the greatest level of future resilience.

3.9 Waste

- 3.9.1 Opportunities for waste reduction through innovative design features should be maximised. The Scheme is likely to produce large quantities of excavated materials and should be managed effectively to reduce the impact. Sustainable use of materials can help to reduce the carbon footprint of the Scheme.
- 3.9.2 Potential construction risks from a waste management perspective include finding sufficient landfill capacity to receive wastes generated by excavation activities and uncertainty with respect to future off-site disposal costs of solid waste. Potential operational effects include the pollution of controlled waste via leaching.

Conclusions and Recommendations

- 3.9.3 There are very little differences between the proposed six route options from a waste perspective. All route options are likely to generate substantial amounts of waste however, the design of the Scheme should look to minimise this where possible.

3.10 Water Environment

- 3.10.1 The EA flood map indicates that the Warrington area is within Flood Risk Zones with low to moderate risk of flooding. The route option identification process will be required to consider the national planning policy on flooding to steer development to areas of lower flood risk, and to ensure that development necessary in areas at risk of flooding is adequately protected.
- 3.10.2 Regardless of the type of development proposed in the area, all development must be constructed so that it is not at an unacceptable risk of flooding and that it does not cause a loss of flood plain storage or interruption of flood flow routing.
- 3.10.3 New structures over watercourses have the potential to cause afflux flooding to areas upstream by restricting the flow in the watercourse. These structures will need to take into account the flood level within the watercourse at that point so as to ensure that the new crossing does not cause afflux flooding upstream of the location. The bridge soffit(s) will need to be set above the design flood level and allow an additional freeboard – level to be agreed with EA/Warrington Borough Council (WBC). Any proposals which place bridge abutments in the flood plain will require more detailed consideration to ensure that the design does not impact on flood flows or flood storage.
- 3.10.4 A flood risk map can be found in Appendix A. The map shows that large areas of the proposed route options are covered by Environment Agency Flood Zones 2 and 3. Flood Zone 2 indicates

the land as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. Flood Zone 3 indicates the land as having a 1 in 100 or greater annual probability of river flooding; or having a 1 in 200 or greater annual probability of sea flooding. Particular attention should be paid to flood risk management and mitigation during the design phase of this scheme as the potential risk to The Scheme from flooding is considered to be high. There may be potential opportunities to mitigate flood risk through innovation design and drainage systems.

Conclusions and Recommendations

- 3.10.5 There are potential differences posed by the different route options due to the proximity of each route to watercourses in the area. Each route option crosses the River Mersey at least once as well as the Manchester Ship Canal, thus posing a risk both flooding, and the contamination of the watercourses. However, the Pink Route and Green Route options cross the River Mersey on two occasions, which may carry a potentially greater risk than the remaining route options which cross the River Mersey only once.

3.11 Outstanding Information

- 3.11.1 To further clarify the environmental constraints and opportunities further information regarding the Scheme is required. As the Scheme progresses and more information regarding the design, construction and operation becomes available, potential environmental constraints and impacts should be reviewed. The following information may be required before further environmental decision-making takes place:
- Final Scheme design for the Preferred Route;
 - Construction methodology – details about the method of construction, including detailed traffic management requirements, plant schedules, energy efficiency, generation of waste, potential for stockpiling of wastes, reuse of surplus material, choice of construction material and environmental design of work are under discussion and once details are confirmed, the effects will be assessed and action taken in accordance with this plan; and
 - Discharges of on-site generated waste waters from the construction zone, including potential landfill leachate. Details about discharge volumes and disposal options for discharges are not known and the environmental effects associated with these discharges have therefore not been assessed.

4 Conclusions and Recommendations

4.1 Conclusions

4.1.1 There are a number of environmental constraints which have the potential to impact the progression of the Scheme. The most high risk constraints are identified below with the potential impacts summarised.

Air Quality

4.1.2 The presence of two AQMAs within the Study Area, both designated for NO_x and associated with road emissions, means the design and construction of the Scheme should pay particular attention to emissions associated with the scheme and should implement mitigation to reduce impacts where possible. In addition to these AQMAs, there are numerous sensitive receptors in the area surrounding the scheme.

Flood Risk

4.1.3 Due to the presence of EA Flood Zones 2 and 3 across the proposed scheme there is likely to be a high level of flood risk associated with the Scheme. This risk should be investigated at the earliest possible opportunity through mechanisms such as undertaking a Flood Risk Assessment. Design workshops would help minimise flood risk through innovative design.

Noise and Vibration

4.1.4 Eight Defra Noise Important Areas are located within the Study Area of the scheme, all of which are attributed to road. The introduction of a further road scheme, particularly one of the scale of the Western Link, has the potential to compound noise impacts, particularly at the north and south reaches of the Scheme where road links are in close proximity to sensitive receptors in the form of residential and commercial properties.

Ecology

4.1.5 The proposed route intersects and comes within 500m of a number of locally and nationally important designated sites such as SINC's, Local Wildlife Sites and Ancient Woodland in addition to crossing various priority habitats such as mudflats and coastal salt marshes amongst others. Further study is required to investigate the potential habitats, protected species, and invasive species present at the site, in order to influence the design to have a positive impact on the ecological environment.

Contaminated Land

4.1.6 The route passes over areas of potentially contaminated land. The scale of the works is such that The Scheme has the potential to disturb contaminated land and potentially create pathways to sensitive receptors in the area, particularly the ecological designation associated with the River Mersey. As such, detail geotechnical assessment including ground investigations are to be undertaken to identify and manage risks to The Scheme, associated with contaminated land and pollution risk. Further details on the geotechnical and ground engineering constraints identified at the site can be found within the Geo-Environmental Phase 1 Desk Study Report, compiled by Mott MacDonald in April 2017 (report ref: 382900-WL-MMD-07-ZZ-RP-N-0001), and the Ground Investigations Report (382900-WL-MMD-07-ZZ-RP-N-0002 GIR).

4.2 Route Analysis

4.2.1 The comparison exercise undertaken for each topic illustrates the various similarities and differences between the routes. Multiple environmental constraints have been outlined, and the proposed Red Route to be taken forward as the preferred route for the proposed scheme, has the potential to cause significant environmental impacts. Where possible the six route options have been compared using the data available. The key constraints to this Scheme are the potential risk of flood, contaminated land, and the proximity of the proposed route to heritage constraints. The Scheme is also subject to a number of ecology, noise and vibration and air quality risks, which need to be further investigated as the design for the Scheme progresses.

4.3 Recommendations

4.3.1 The following recommendations include measures to be implemented at an early stage in the Scheme in order to reduce the likelihood of significant environmental impacts associated with the Scheme, to design-in adequate mitigation, and maximise environmental and sustainability opportunities for the scheme:

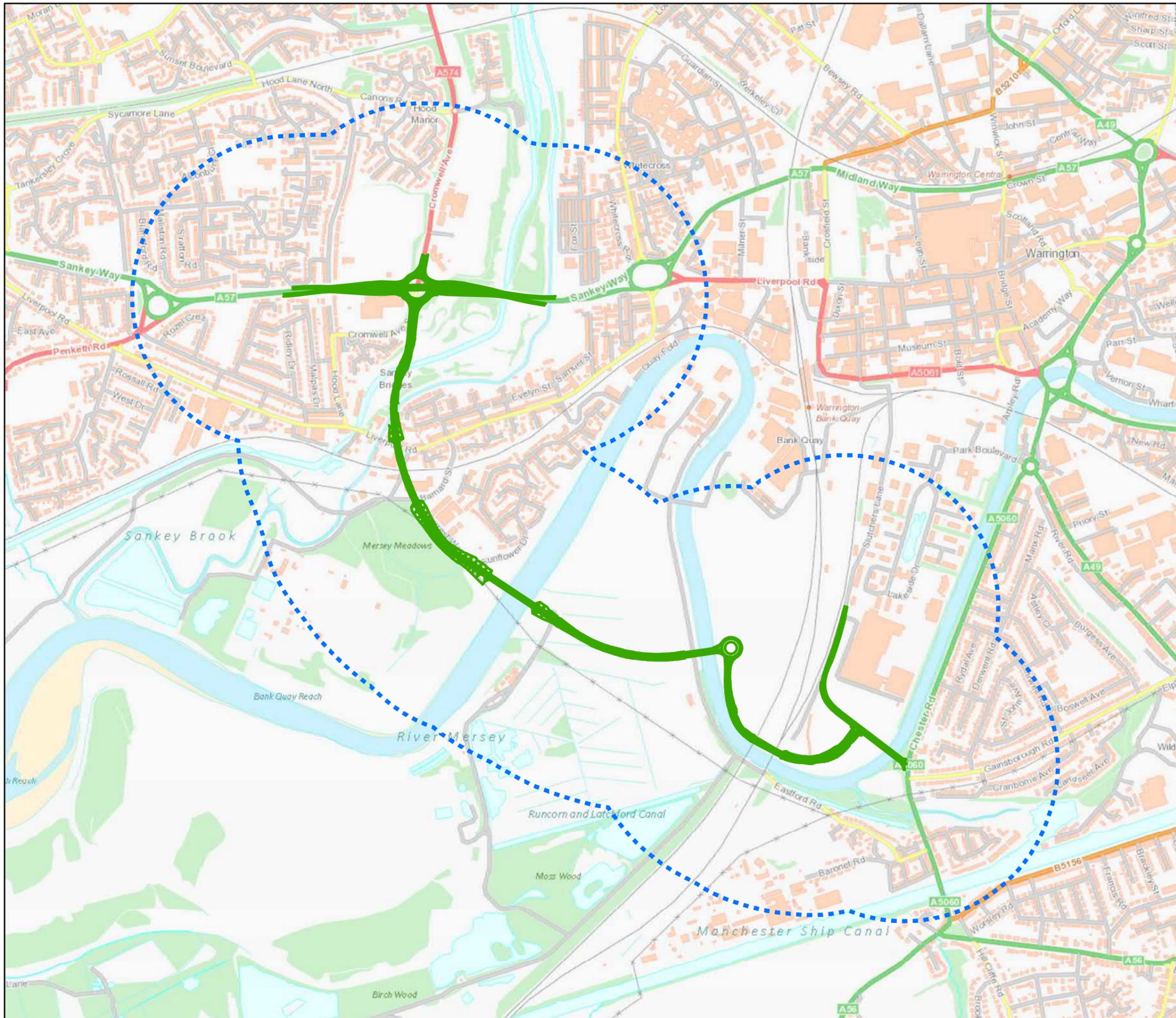
- Hold design and sustainability workshops during early stages of the design phase in order to introduce innovative features to help reduce environmental impacts and improve the sustainability performance of the Scheme, for example carbon calculation exercises, or scheme design workshops for resource efficiency;
- Consult with the Local Planning Authority, Statutory bodies such as Environment Agency, Natural England and Historic England, and other local stakeholders including local residents to help build a scheme that works for everyone; As the scheme progresses, undertake further, more in depth investigations into the environmental constraints identified, and the potential impacts, to identify specific constraints or risks and to establish a concrete baseline for environmental issues in the area;
- Undertake Ground Investigation studies to determine the contaminated land risk in the area surrounding the preferred option, and ensure that construction best practice is followed and appropriate mitigation is put in place to reduce the risk; and
- Develop environmental management documents, such as a Site Waste Management Plan (SWMP) and a Construction Environmental Management Plan (CEMP), to manage, control and mitigate against environmental impacts during the construction phase.

Appendices

A.	Environmental Constraints Plans	21
B.	Risk Scoring	27

A. Environmental Constraints Plans

A.1 Scheme Overview



- Legend**
- Green Route
 - - - 500m Buffer

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**Western Link
 Scheme Overview
 Green Route**

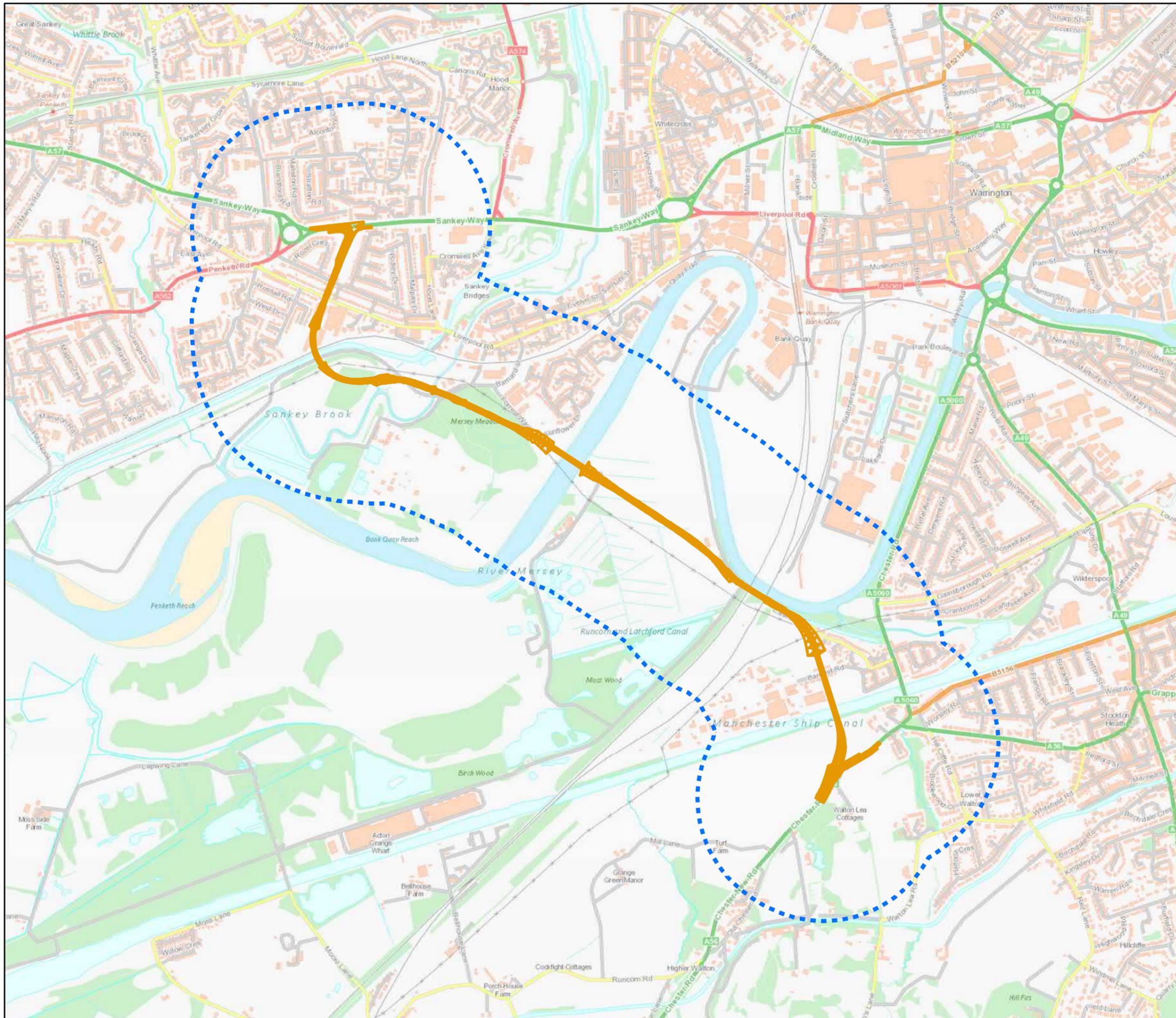
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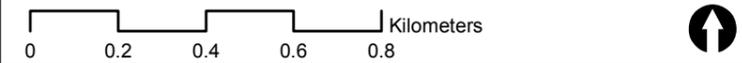
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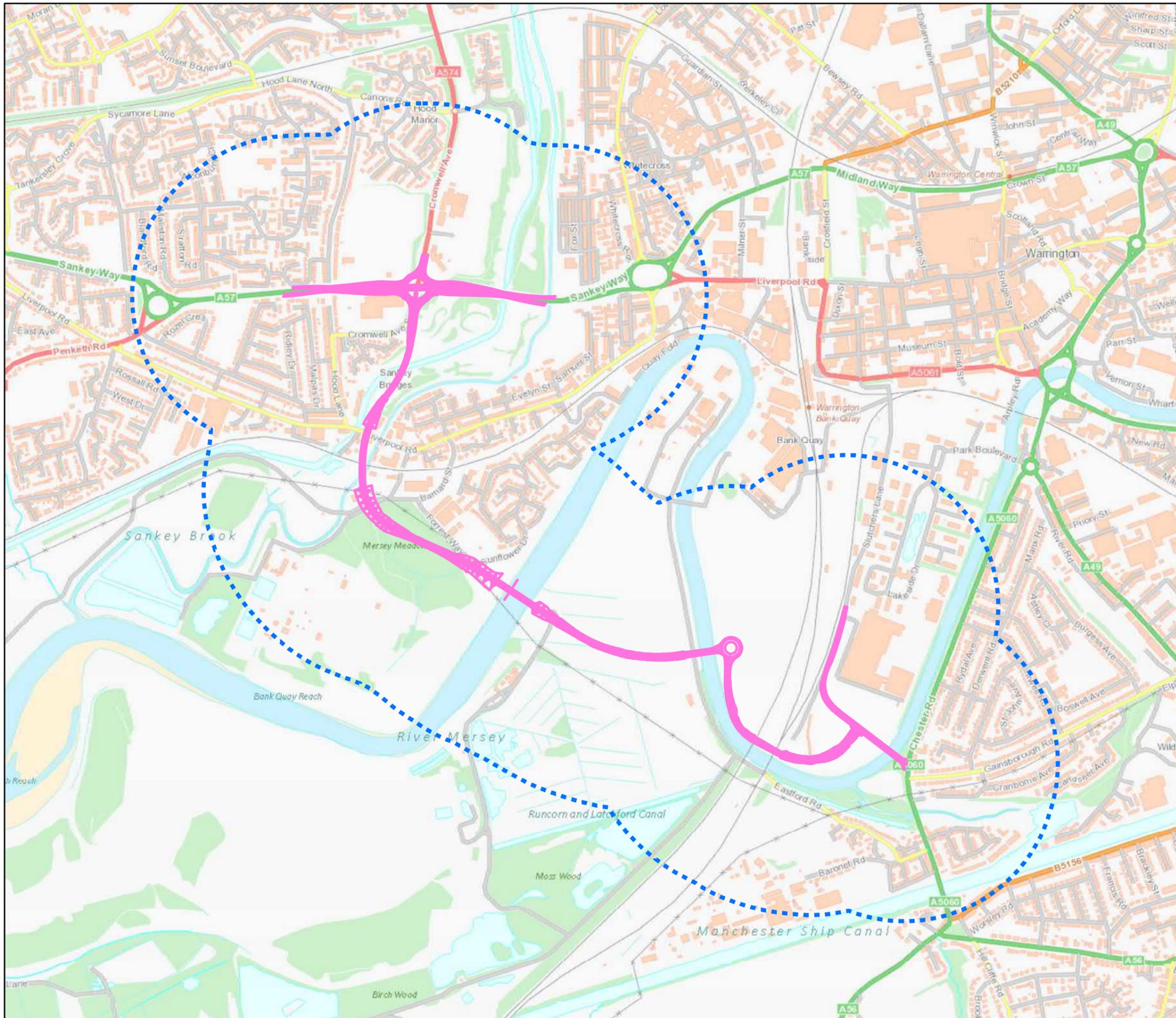
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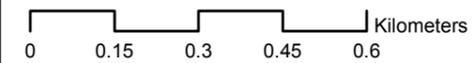
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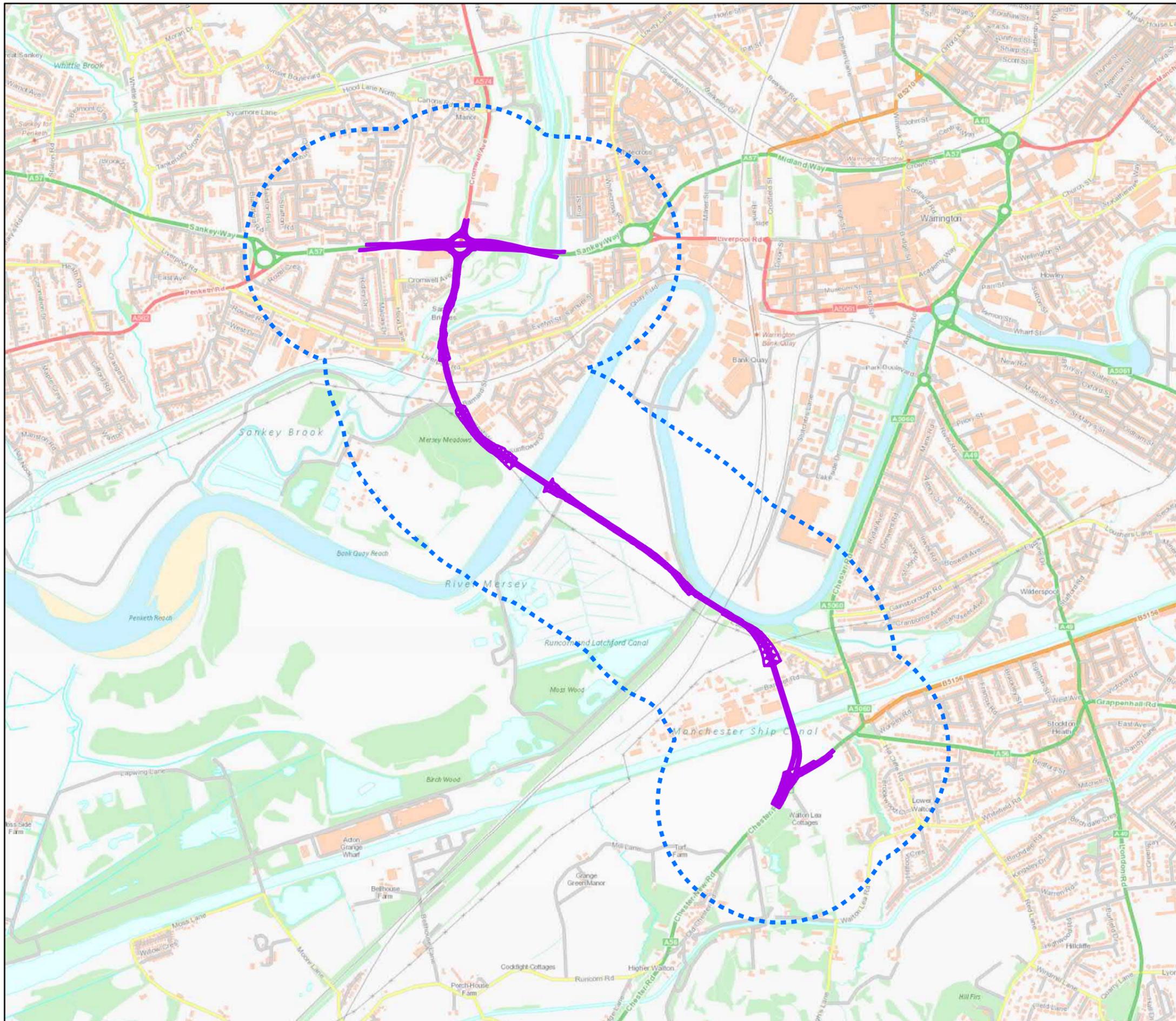
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 Scheme Overview
 Pink Route**

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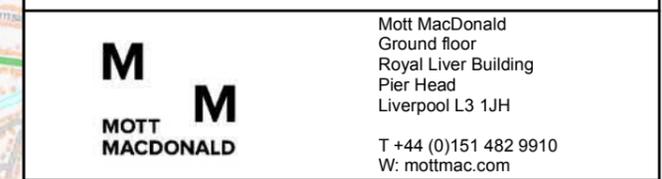
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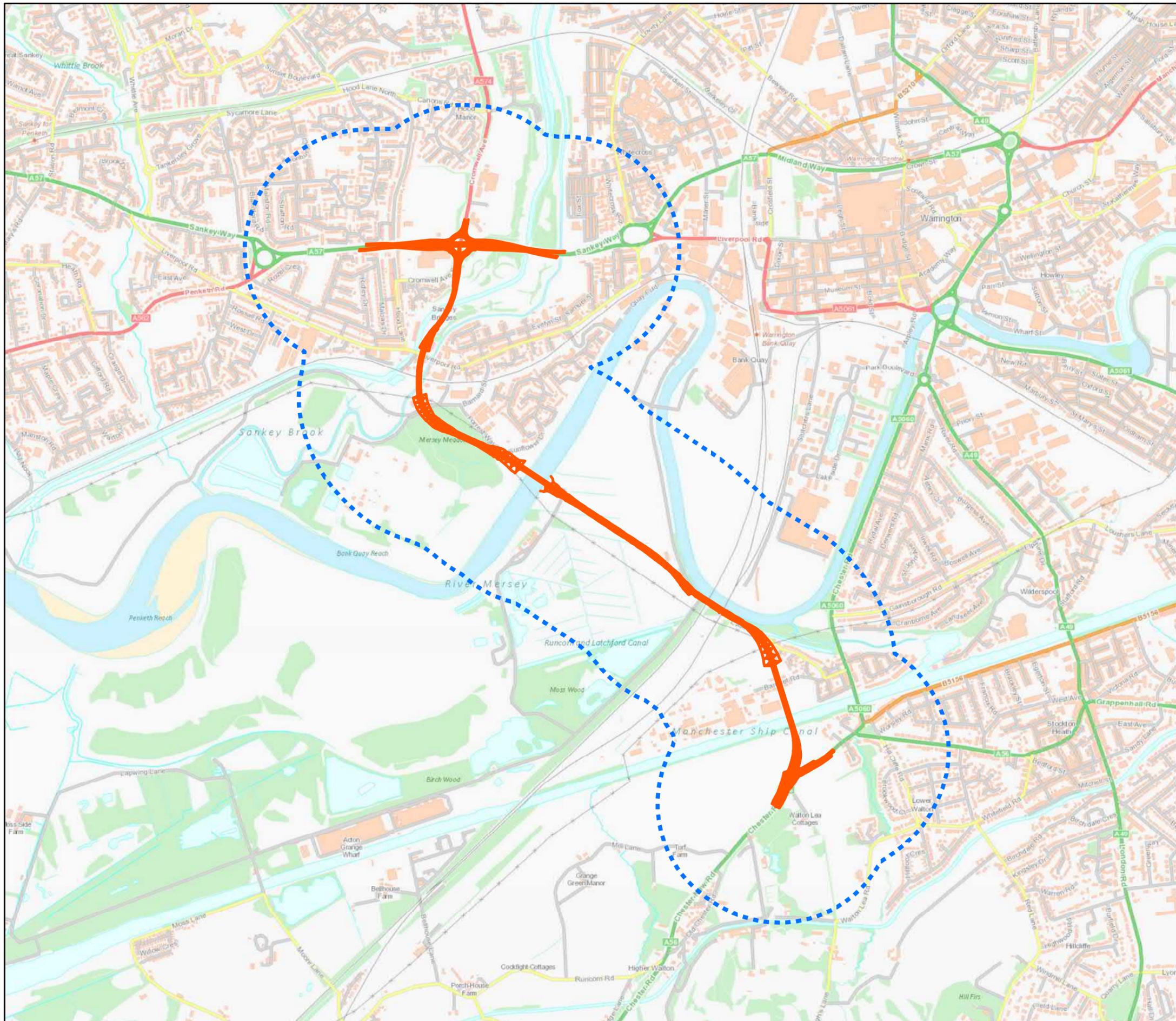
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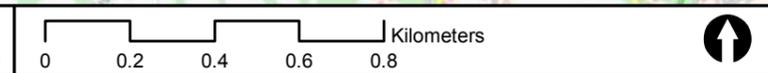
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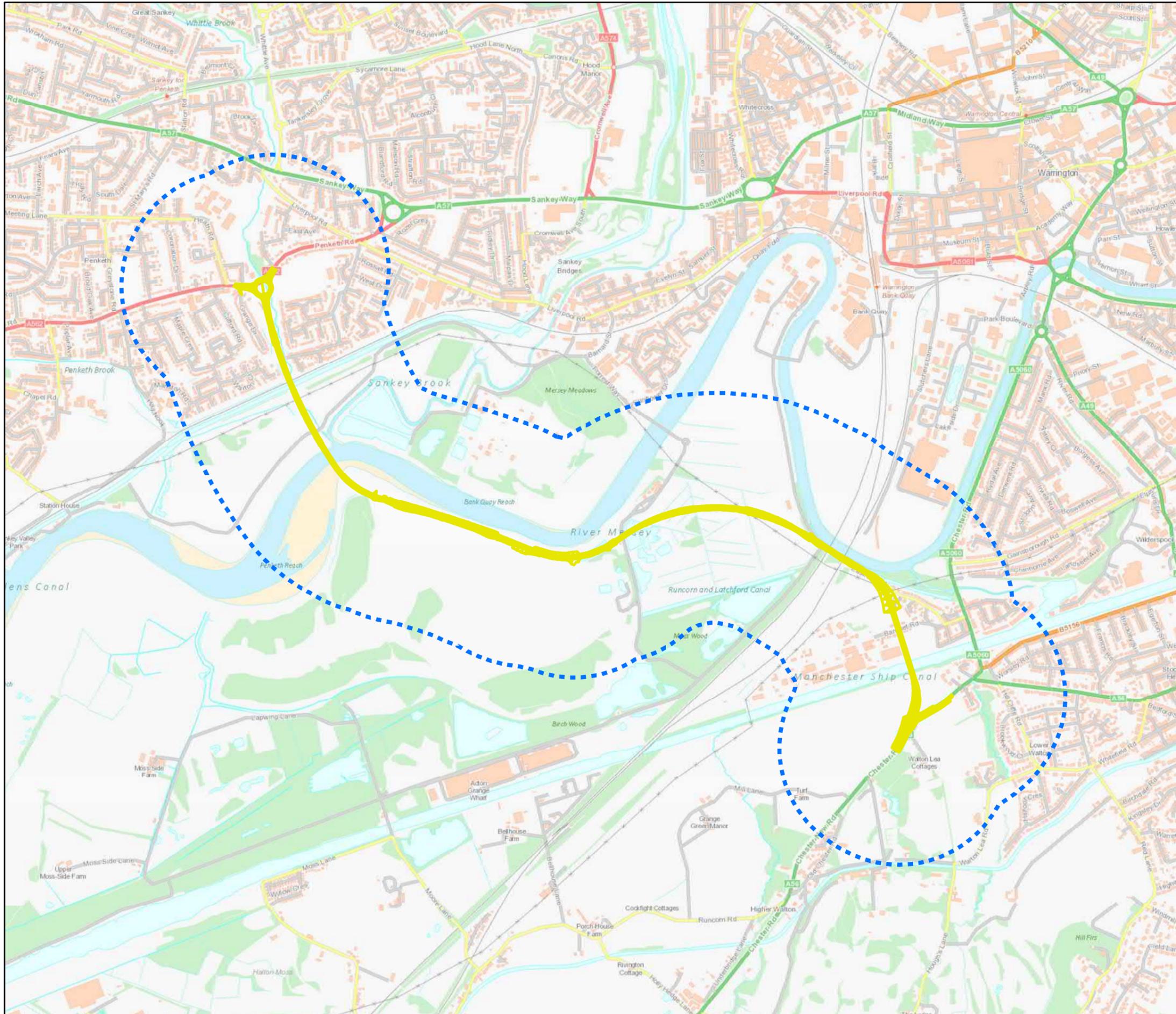
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Western Link Scheme Overview

Red Route

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Legend

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**Western Link
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 Yellow Route**

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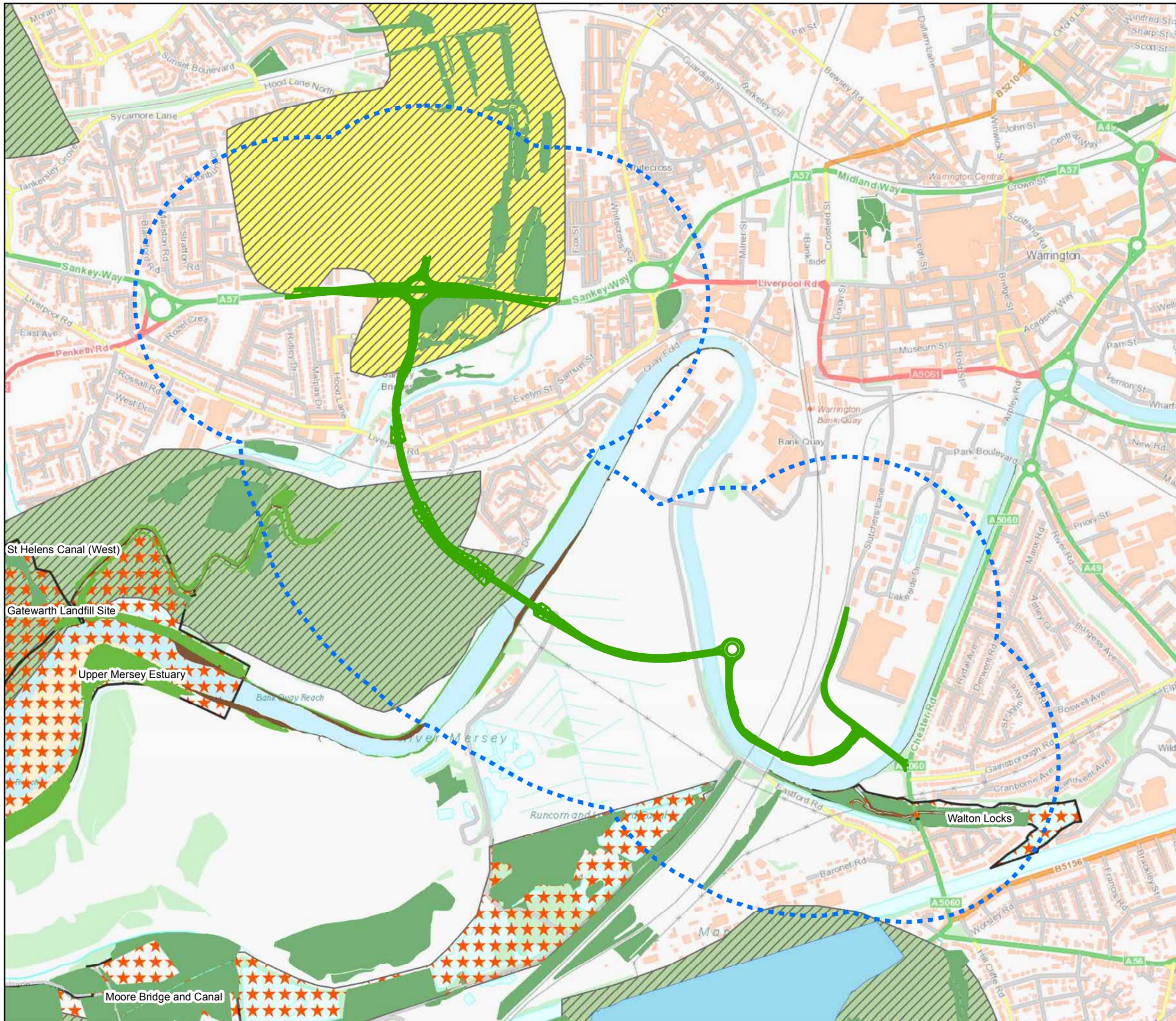
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A.2 Ecological Constraints



Legend

- Green Route
- 500m Buffer

Preliminary Ecological Constraints

- Ancient Woodland
- Environmental Stewardship Agreement Area
- Site of Importance to Nature Conservation
- Local Wildlife Site
- Grade 2 Agricultural Land Class
- Grade 3 Agricultural Land Class

Priority Habitats

- Coastal saltmarsh
- Deciduous woodland
- Mudflats

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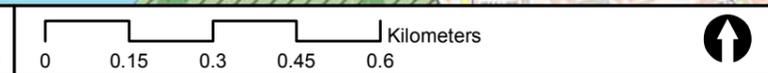
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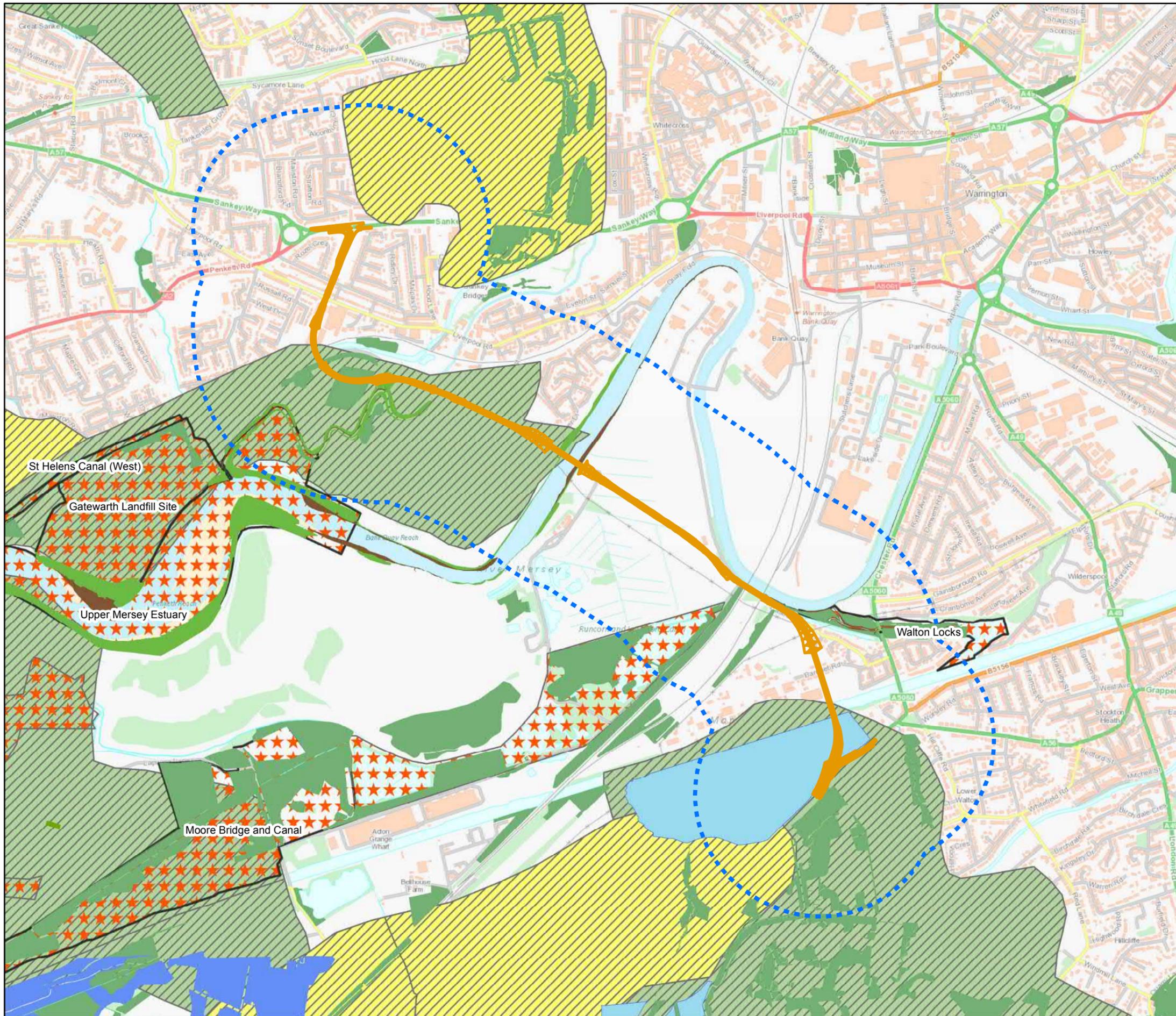
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 Ecological Constraints
 Green Route**

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Legend

- Orange Route
- 500m Buffer

Preliminary Ecological Constraints

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- Grade 3 Agricultural Land Class

Priority Habitats

- Coastal and floodplain grazing marsh
- Coastal saltmarsh
- Deciduous woodland
- Lowland heathland
- Mudflats
- Traditional orchard

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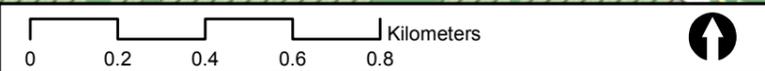
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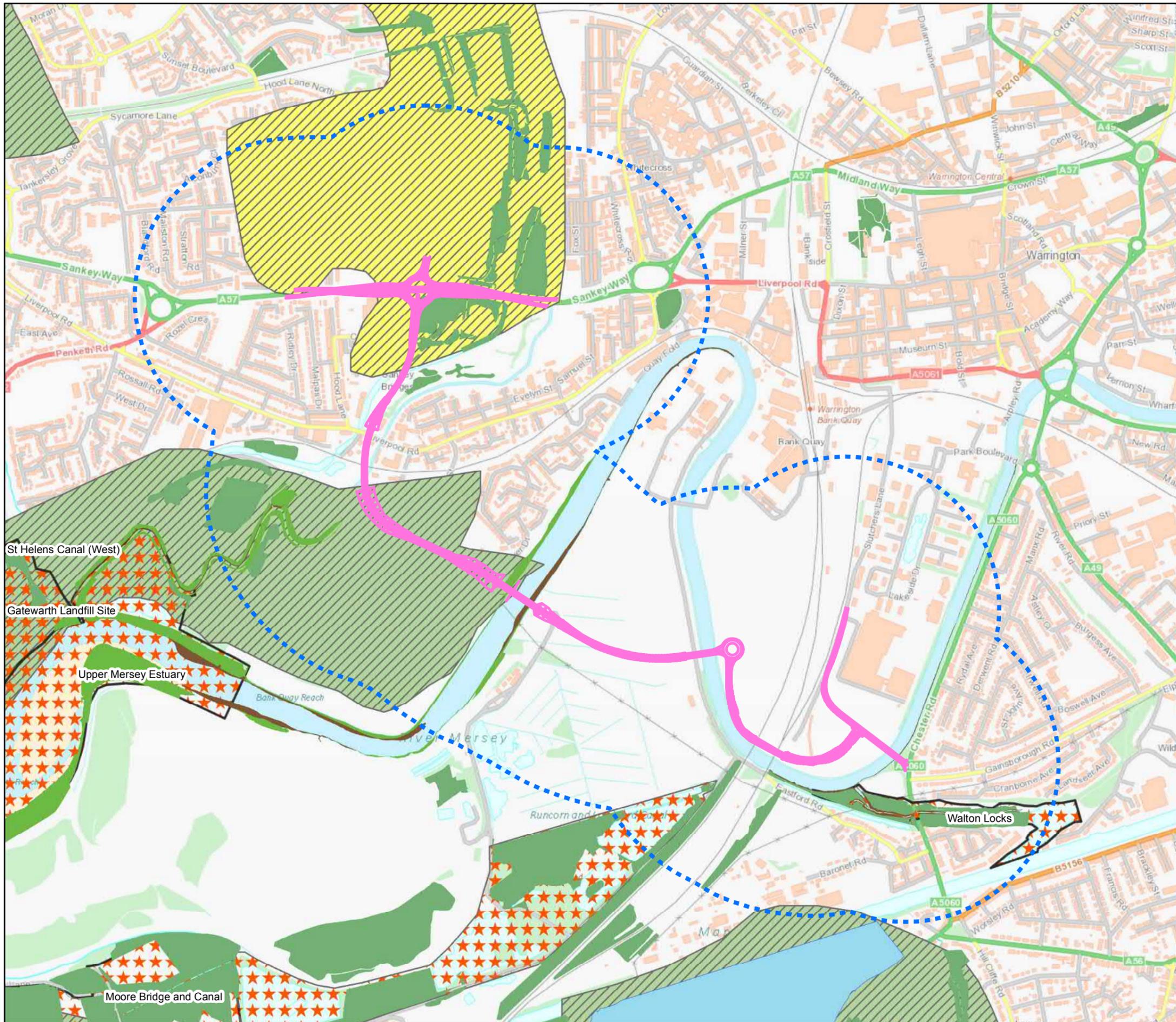
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Western Link Ecological Constraints Orange Route

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02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





Legend

- Pink Route
- 500m Buffer

Preliminary Ecological Constraints

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- Grade 3 Agricultural Land Class

Priority Habitats

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- Mudflats

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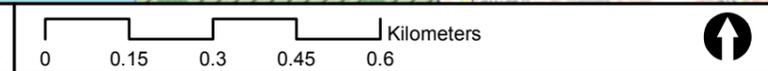
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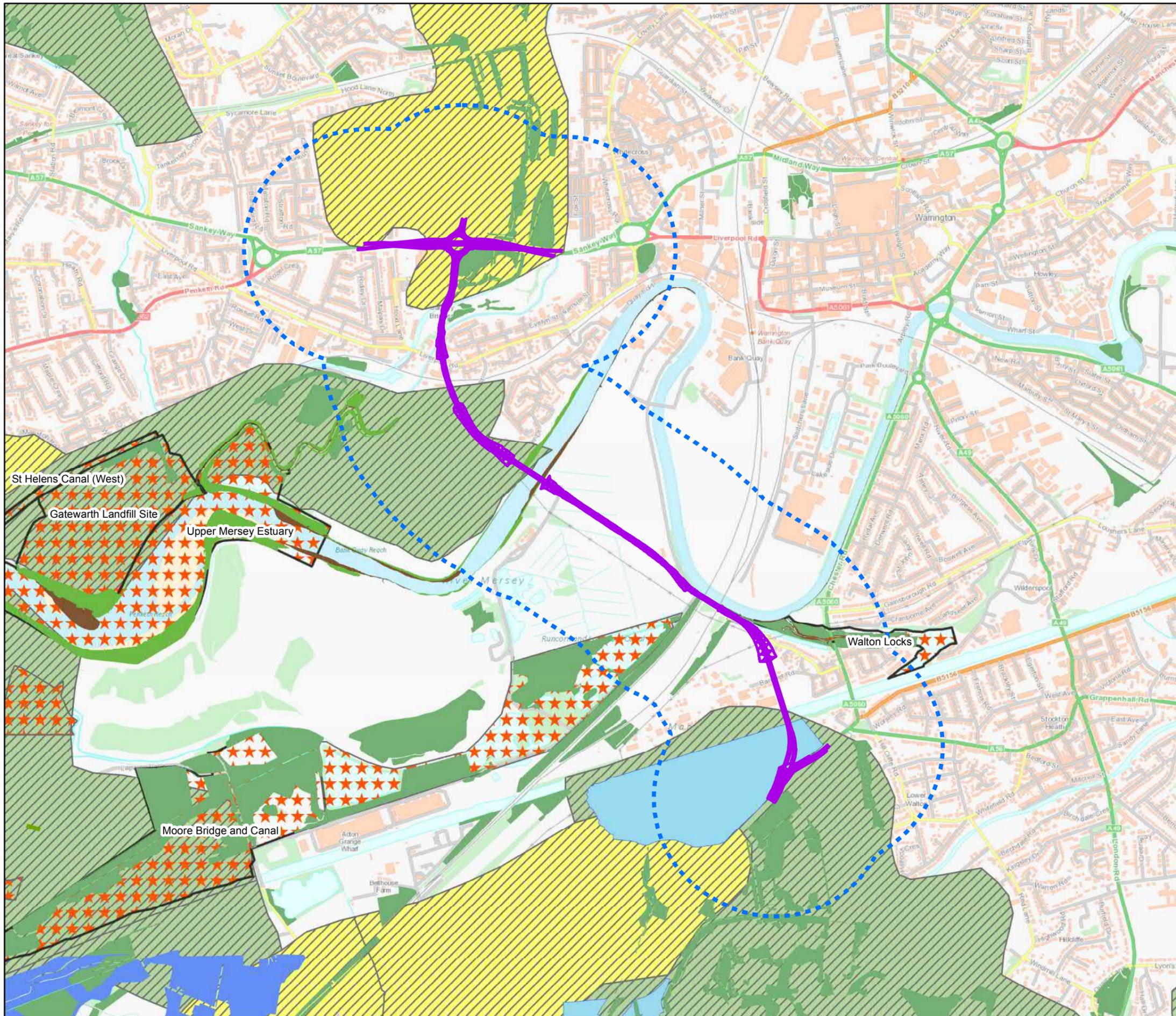
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02	02/11/2017	CS	Preferred Route	CS	AS	JH
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- Legend**
- Purple Route
 - - - 500m Buffer
- Preliminary Ecological Constraints**
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- Priority Habitats**
- Coastal and floodplain grazing marsh
 - Coastal saltmarsh
 - Deciduous woodland
 - Lowland heathland
 - Mudflats
 - Traditional orchard

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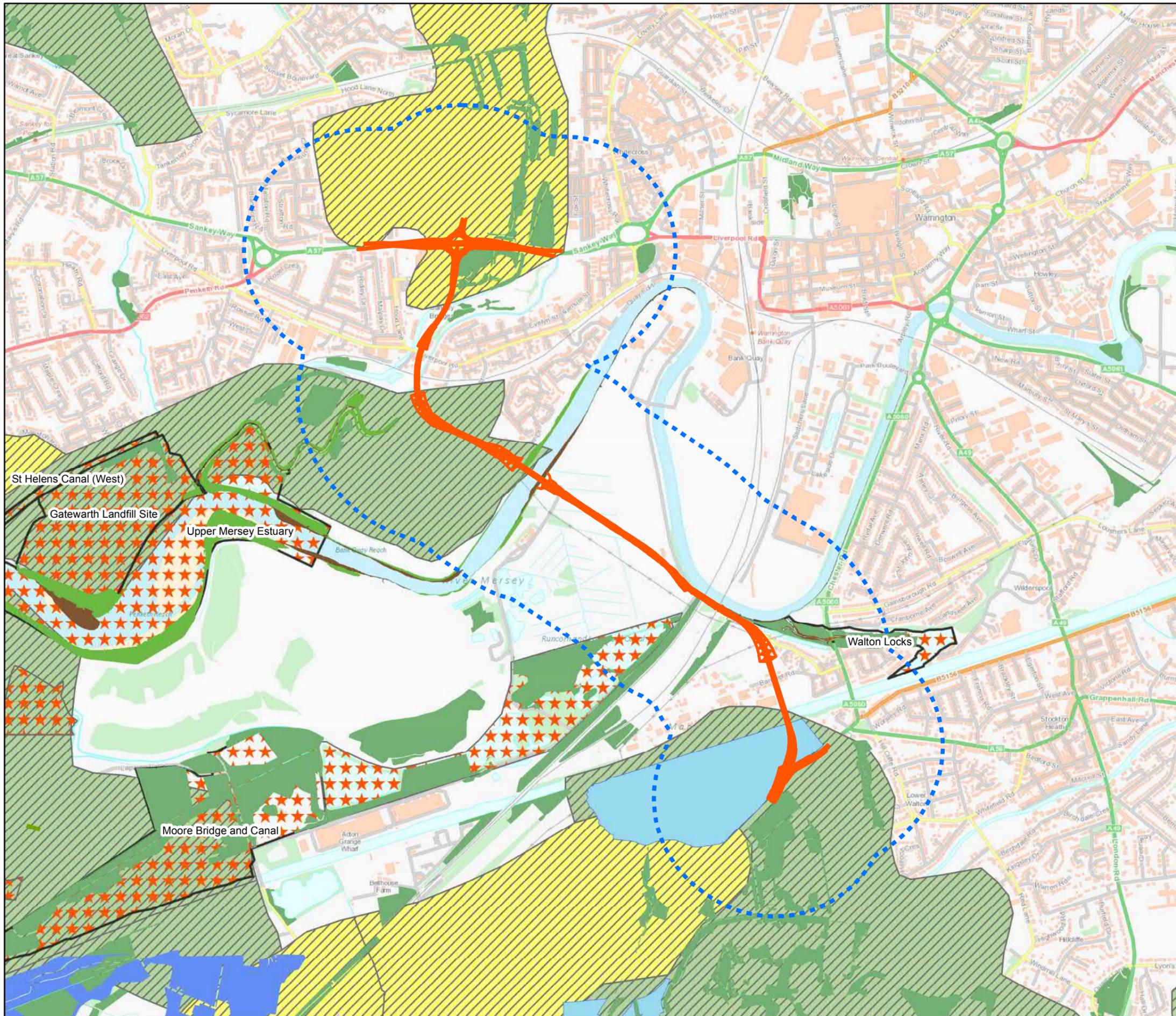
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Western Link Ecological Constraints Purple Route

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- Legend**
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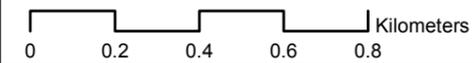
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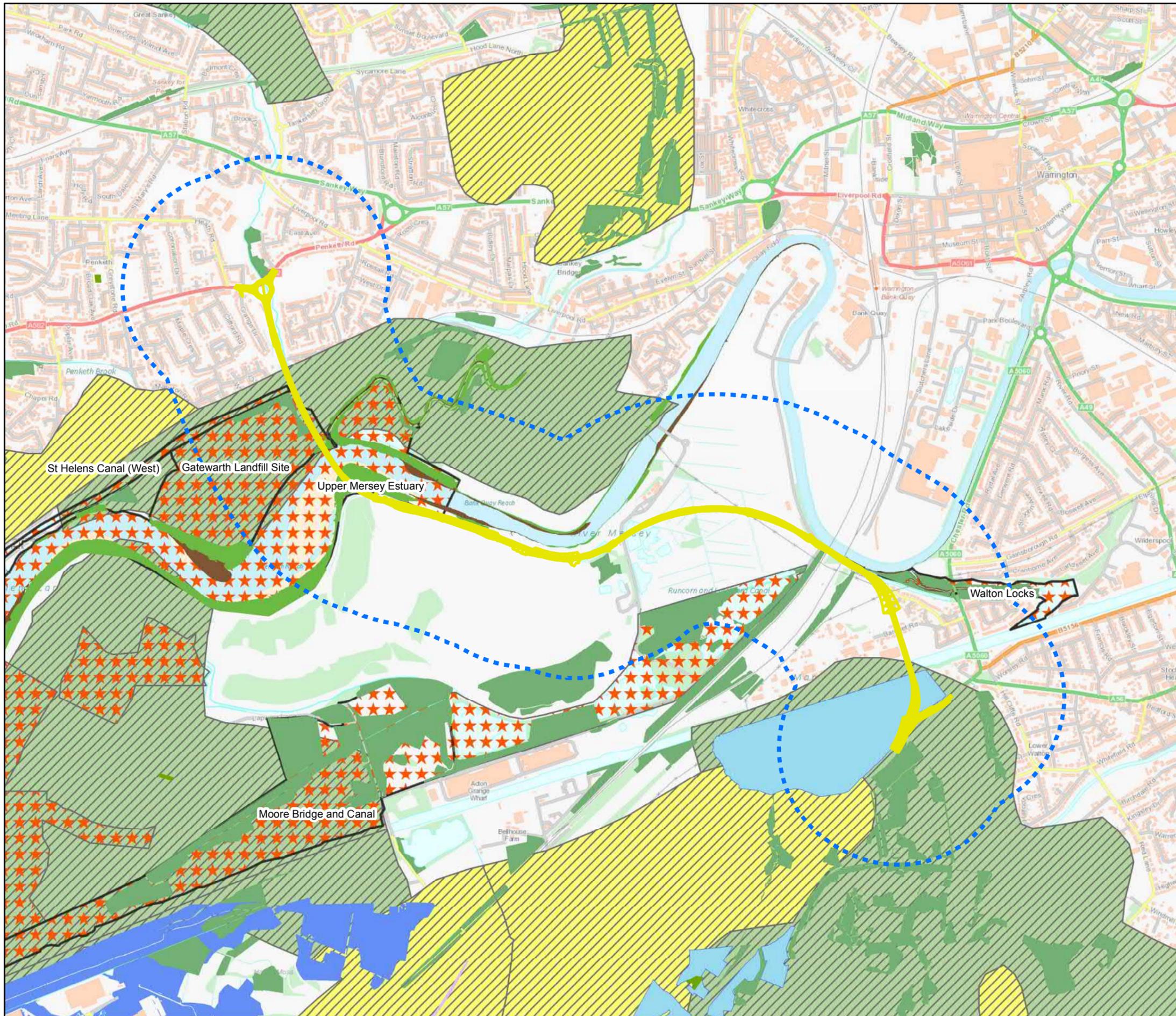
**Western Link
 Ecological Constraints
 Red Route**

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- Legend**
- Yellow Route
 - - - 500m Buffer
- Preliminary Ecological Constraints**
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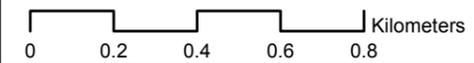
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**Western Link
 Ecological Constraints
 Yellow Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH

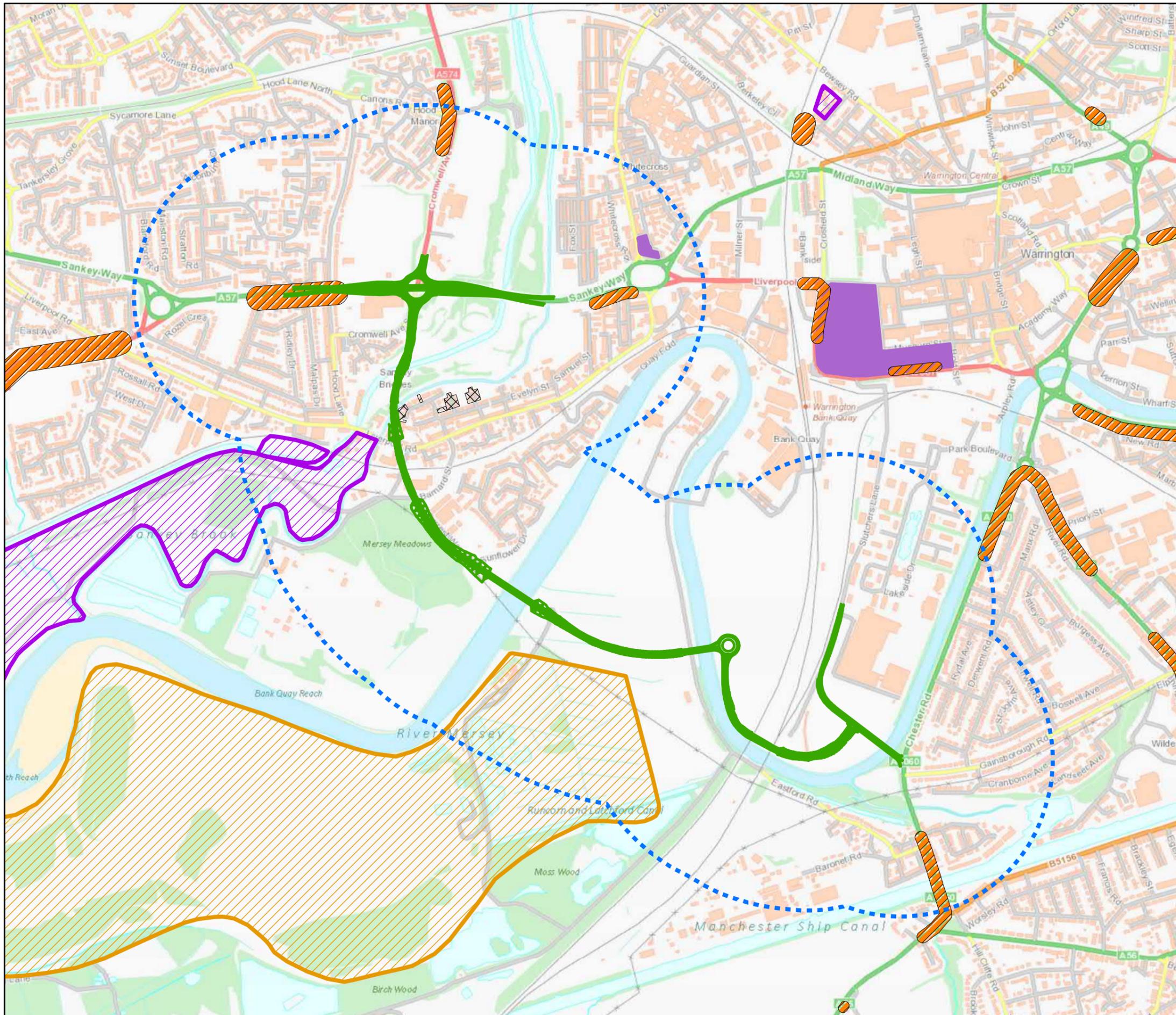
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Scale at A3
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Drawing No.
 WL-MMD-07-ZZ-GS-J-1002

A.3 Pollution Constraints



Legend

- Green Route
- 500m Buffer

Preliminary Pollution Constraints

- Potentially Contaminated Land
- Historic Landfill
- Registered Landfill
- Noise Important Areas
- Air Quality Management Area

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WARRINGTON
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**Western Link
 Pollution Constraints
 Green Route**

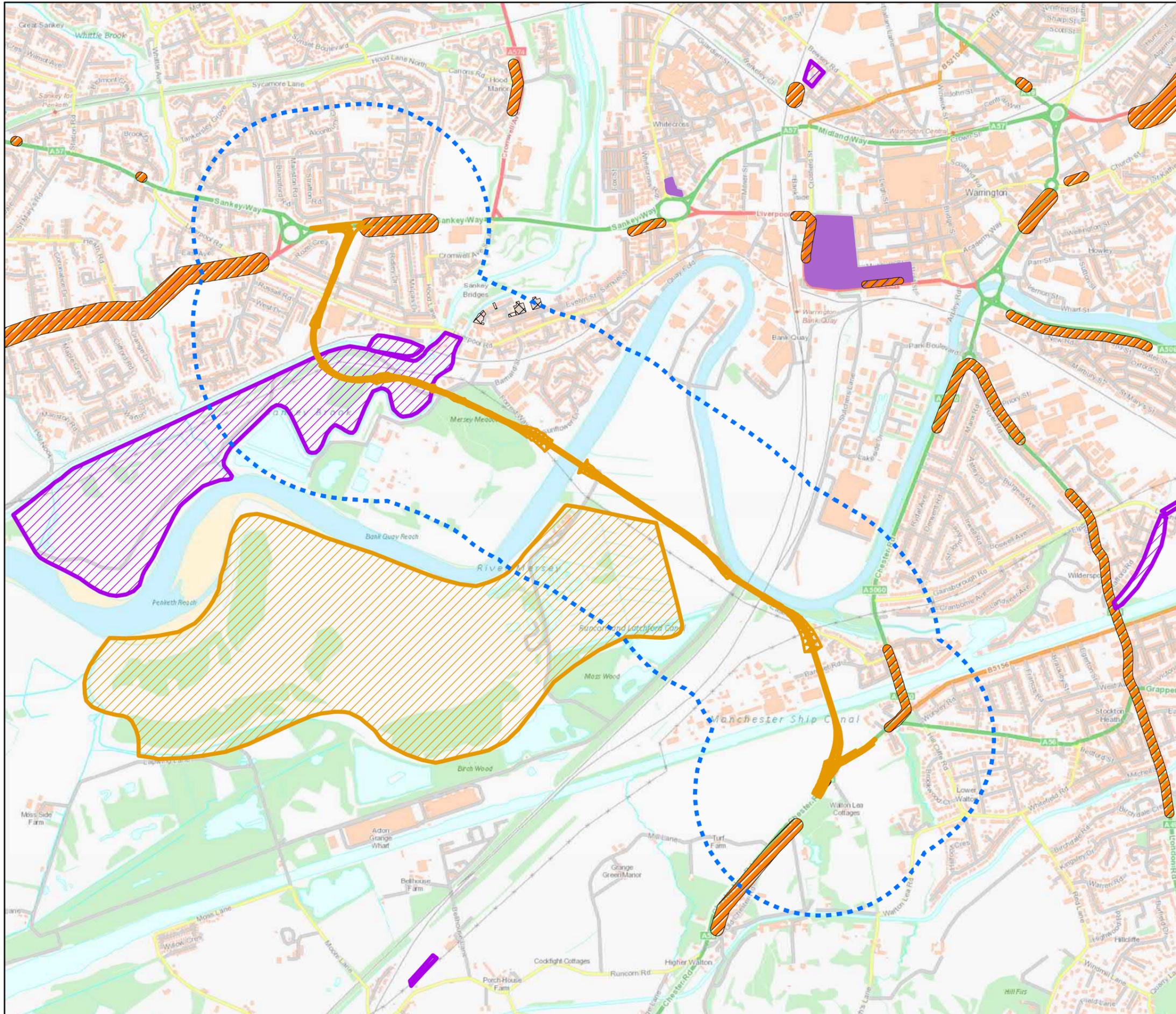
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02	02/11/2017	CS	Preferred Route	CS	AS	JH
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Scale at A3
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Drawing No.
 WL-MMD-07-ZZ-GS-J-1003



- Legend**
- Orange Route
 - 500m Buffer

- Preliminary Pollution Constraints**
- Potentially Contaminated Land
 - Historic Landfill
 - Registered Landfill
 - Noise Important Areas
 - Air Quality Management Area

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**Western Link
 Pollution Constraints
 Orange Route**

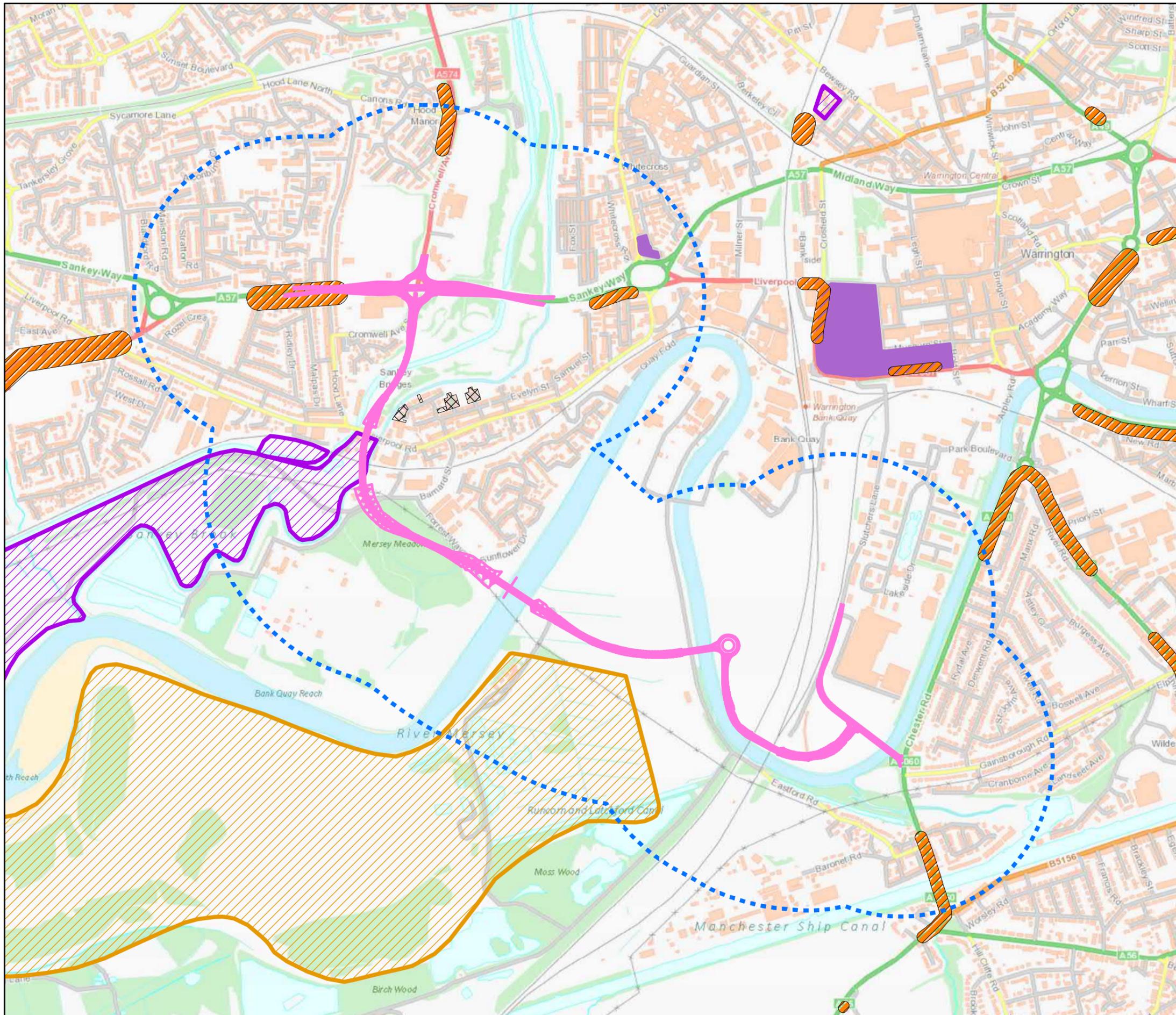
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Drawing No.
 WL-MMD-07-ZZ-GS-J-1003



Legend

- Pink Route
- 500m Buffer

Preliminary Pollution Constraints

- Potentially Contaminated Land
- Historic Landfill
- Registered Landfill
- Noise Important Areas
- Air Quality Management Area

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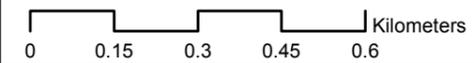
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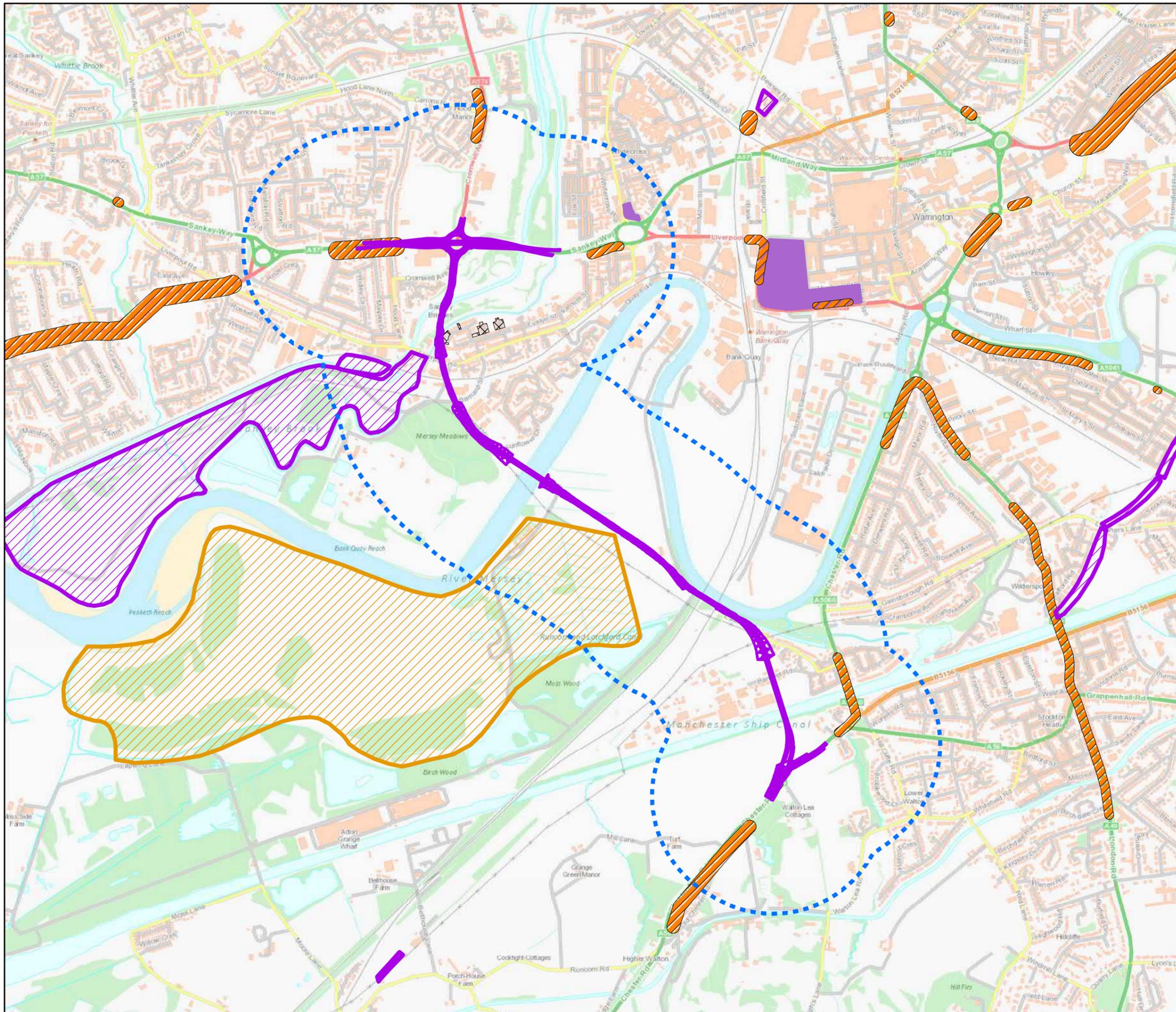
**Western Link
 Pollution Constraints
 Pink Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH



Scale at A3
 1:12,660

Drawing No.
 WL-MMD-07-ZZ-GS-J-1003



- Legend**
- Purple Route
 - - - 500m Buffer

- Preliminary Pollution Constraints**
- Potentially Contaminated Land
 - Historic Landfill
 - Registered Landfill
 - Noise Important Areas
 - Air Quality Management Area

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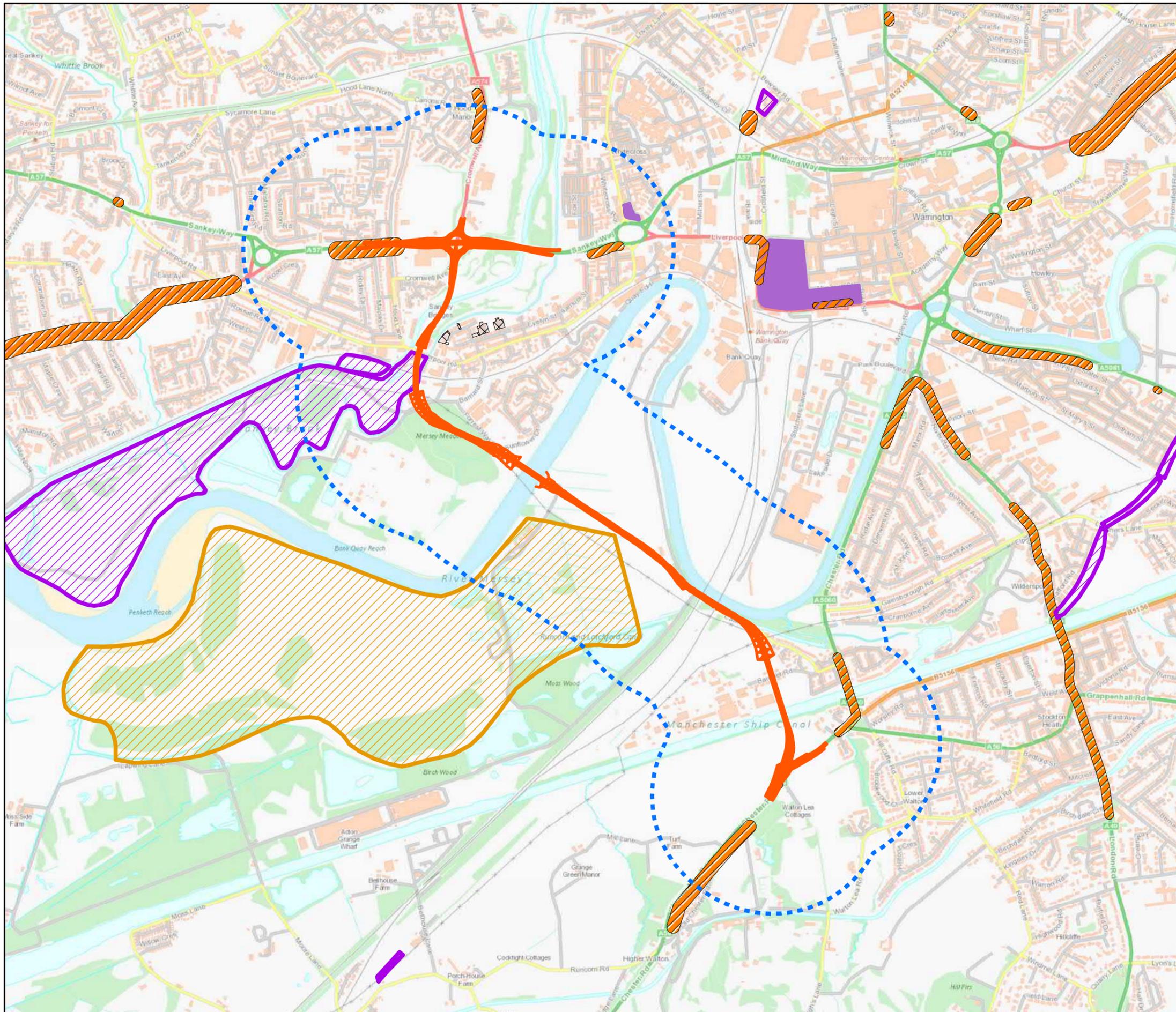
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**Western Link
 Pollution Constraints
 Purple Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





- Legend**
- Red Route
 - 500m Buffer

- Preliminary Pollution Constraints**
- Potentially Contaminated Land
 - Historic Landfill
 - Registered Landfill
 - Noise Important Areas
 - Air Quality Management Area

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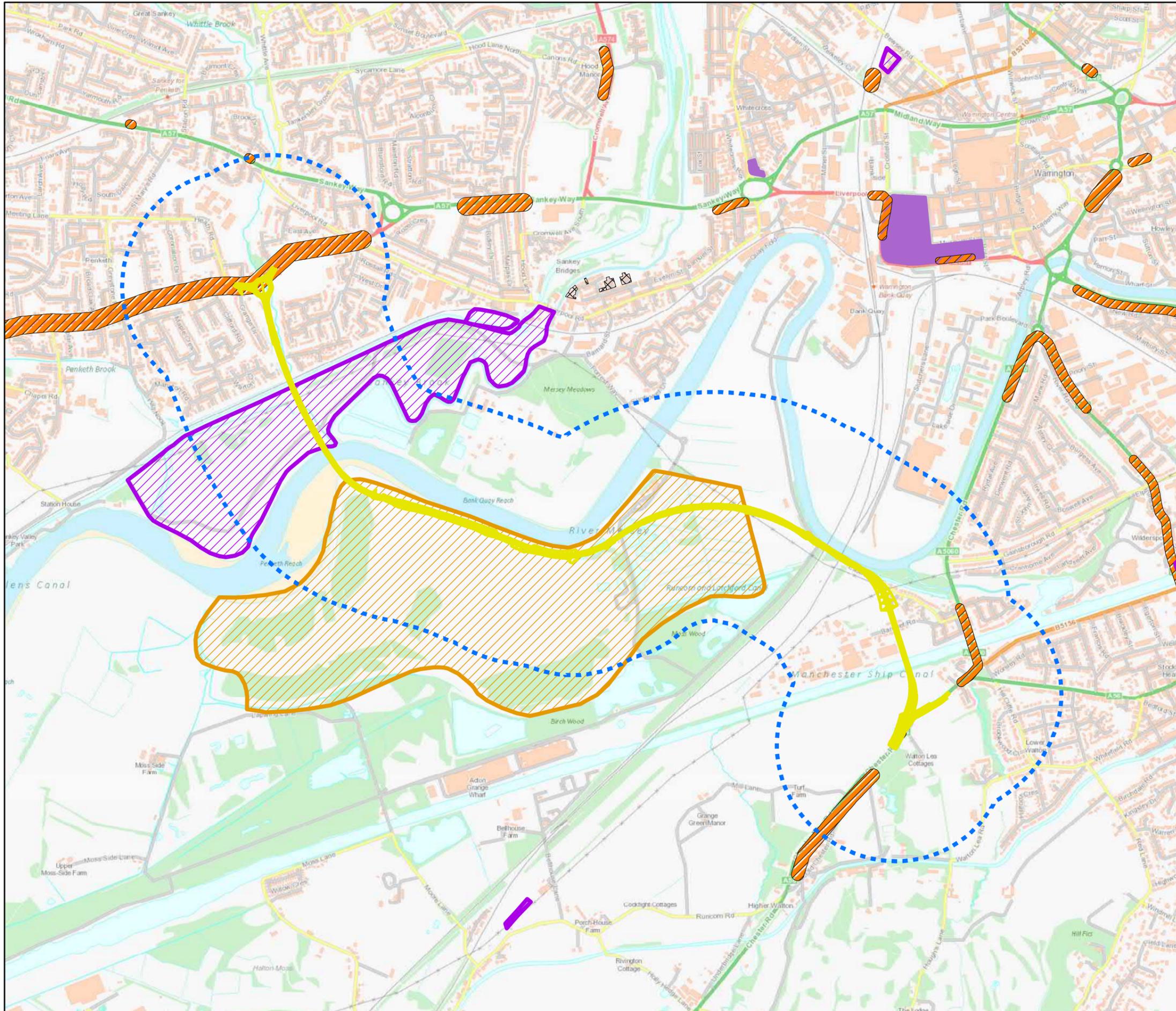
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**Western Link
 Pollution Constraints
 Red Route**

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02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





- Legend**
- Yellow Route
 - - - 500m Buffer

- Preliminary Pollution Constraints**
- Potentially Contaminated Land
 - Historic Landfill
 - Registered Landfill
 - Noise Important Areas
 - Air Quality Management Area

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**Western Link
 Pollution Constraints
 Yellow Route**

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01	23/05/2017	CS	For Information	CS	AS	JH

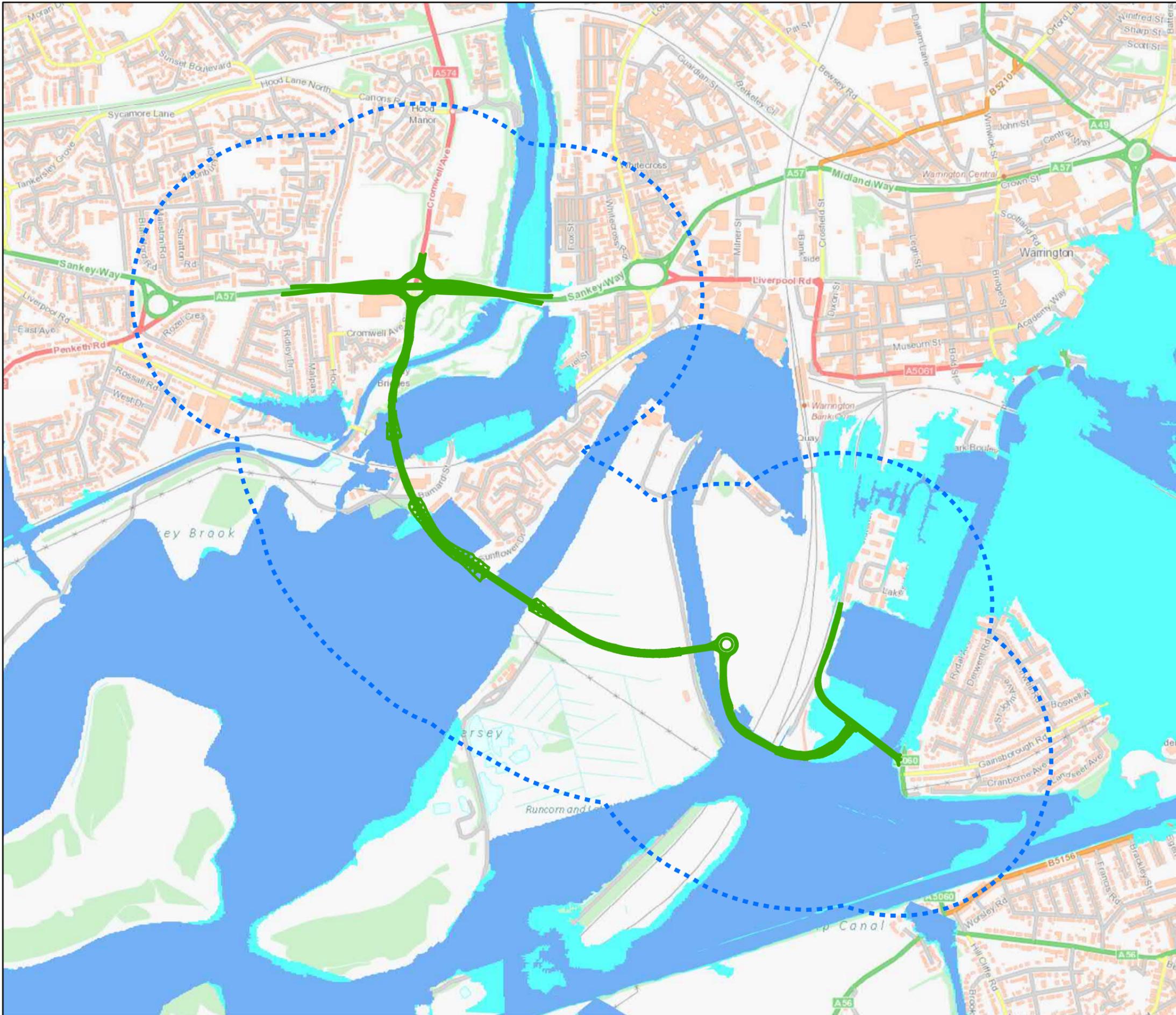
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Drawing No.
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A.4 Flooding Constraints



Legend

- Green Route
- - - 500m Buffer

Environment Agency Flood Zones

- Flood Zone 3
- Flood Zone 2

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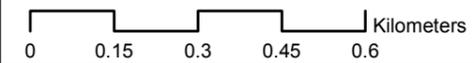
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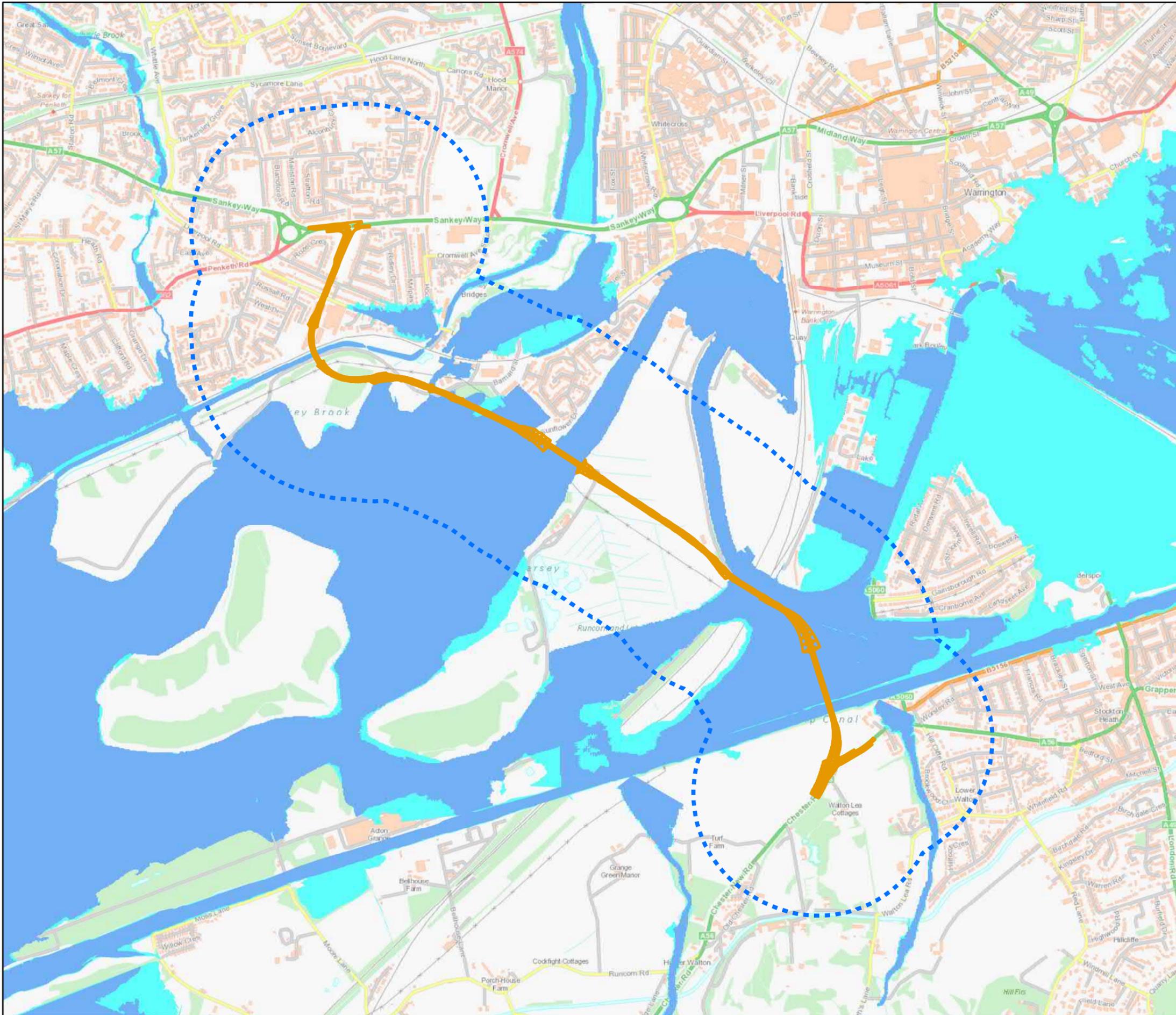
**Western Link
 Flood Constraints
 Green Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
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01	23/05/2017	CS	For Information	CS	AS	JH



Scale at A3
 1:12,650

Drawing No.
 WL-MMD-07-ZZ-GS-J-1004



Legend

- Orange Route
- 500m Buffer

Environment Agency Flood Zones

- Flood Zone 3
- Flood Zone 2

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**Western Link
 Flood Constraints
 Orange Route**

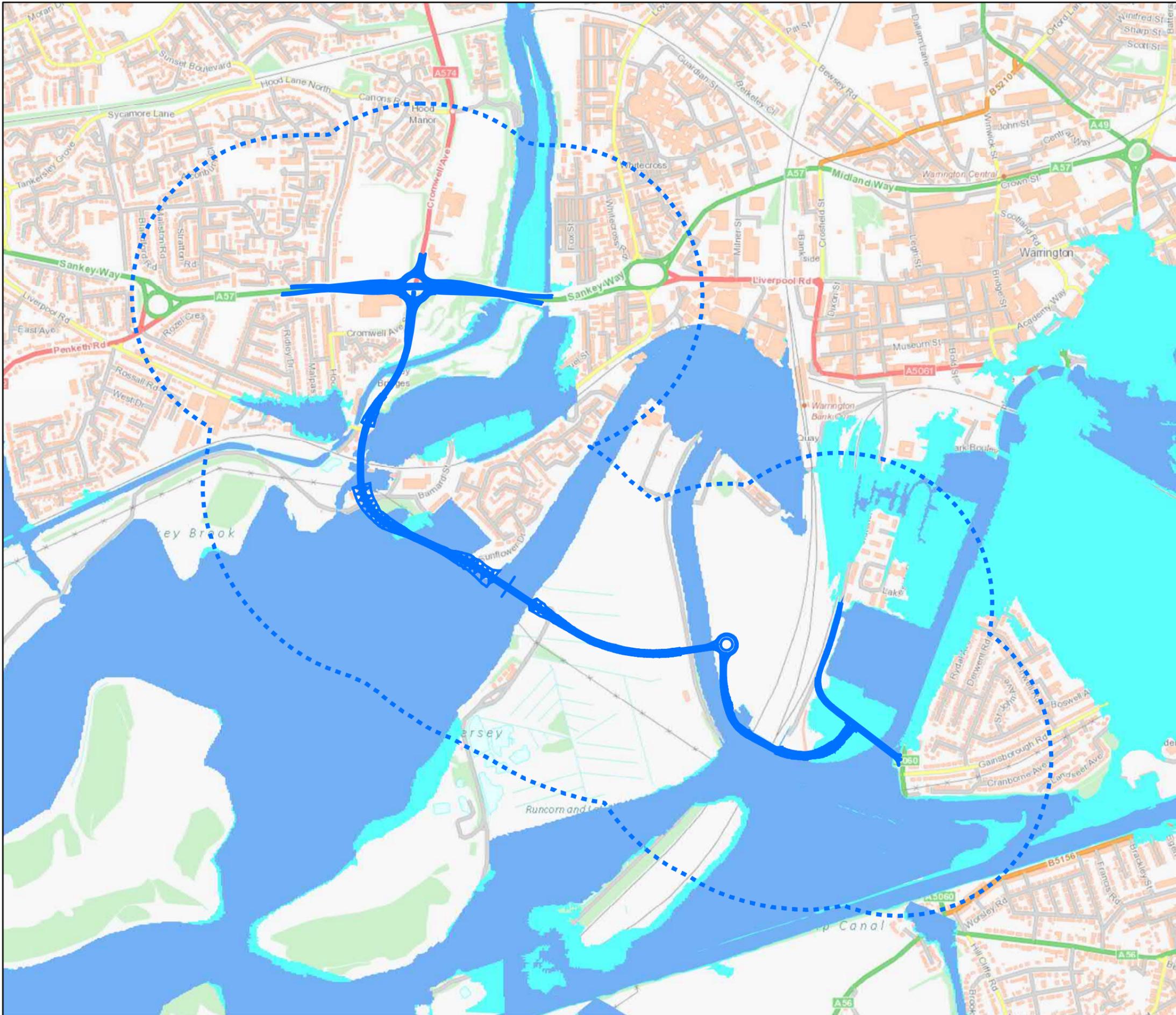
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02	02/11/2017	CS	Preferred Route	CS	AS	JH
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Scale at A3
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Drawing No.
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Legend

- Pink Route
- - - 500m Buffer

Environment Agency Flood Zones

- Flood Zone 3
- Flood Zone 2

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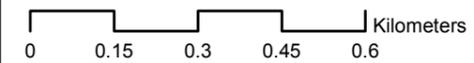
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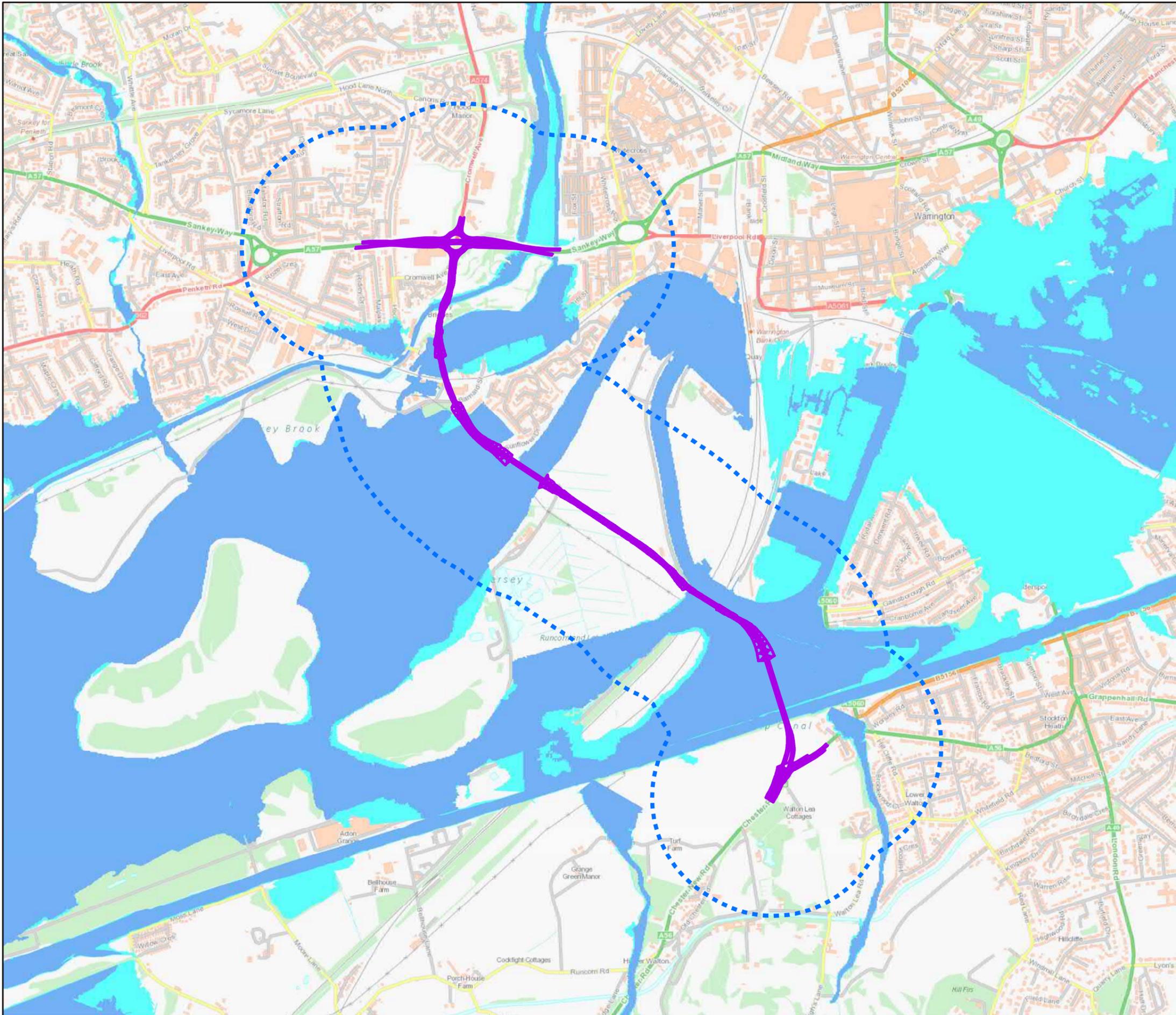
**Western Link
 Flood Constraints
 Pink Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
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01	23/05/2017	CS	For Information	CS	AS	JH



Scale at A3
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Drawing No.
 WL-MMD-07-ZZ-GS-J-1004



Legend

-  Purple Route
-  500m Buffer

Environment Agency Flood Zones

-  Flood Zone 3
-  Flood Zone 2

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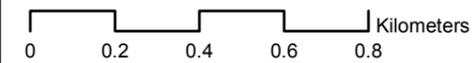
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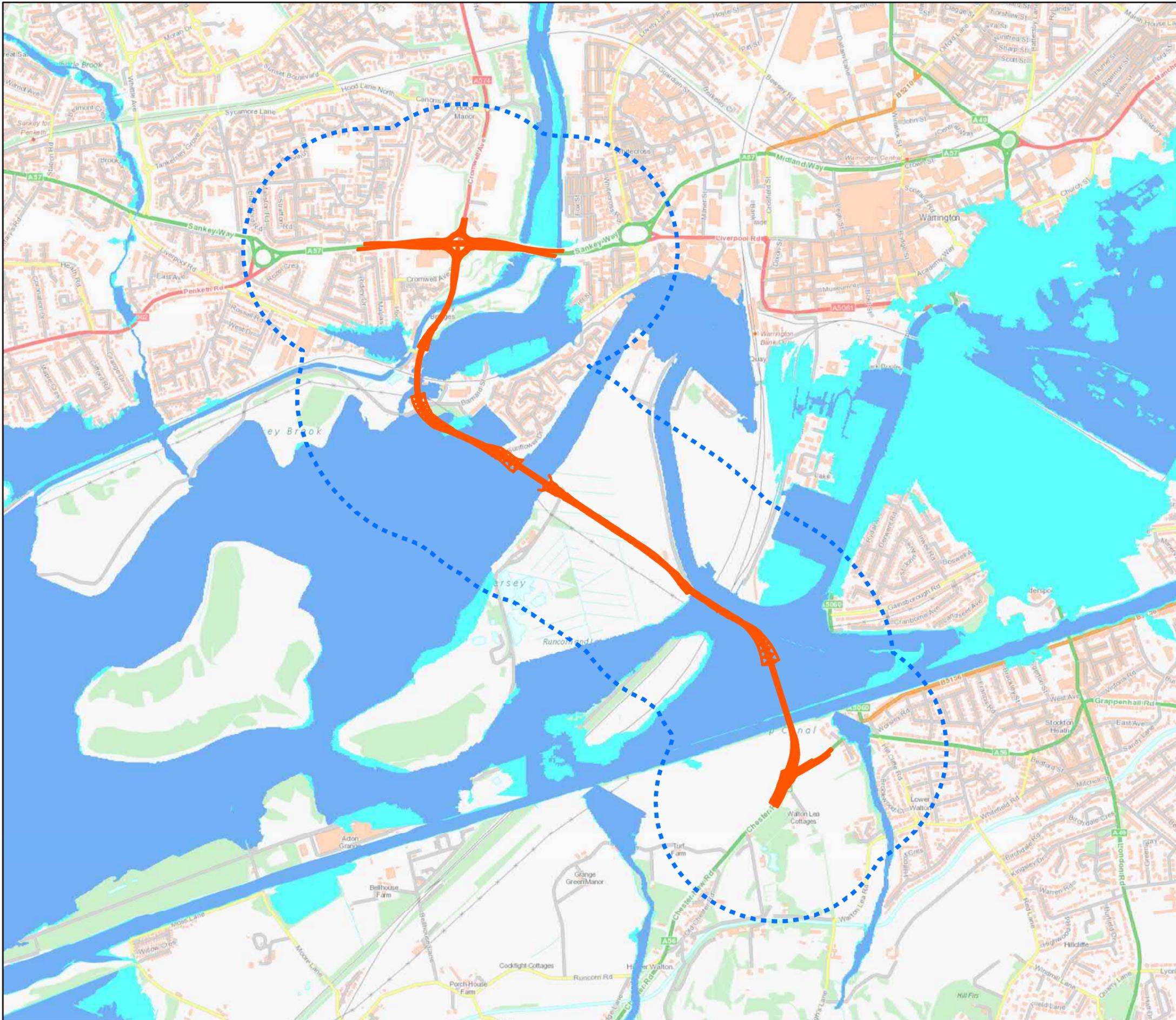
**Western Link
 Flood Constraints
 Purple Route**

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01	23/05/2017	CS	For Information	CS	AS	JH



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Drawing No.
 WL-MMD-07-ZZ-GS-J-1004



Legend

- Red Route
- 500m Buffer

Environment Agency Flood Zones

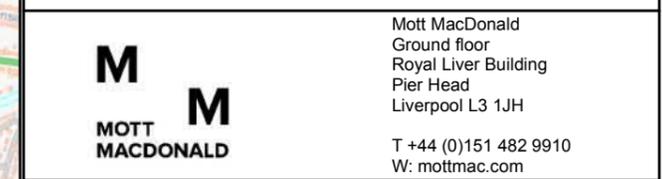
- Flood Zone 3
- Flood Zone 2

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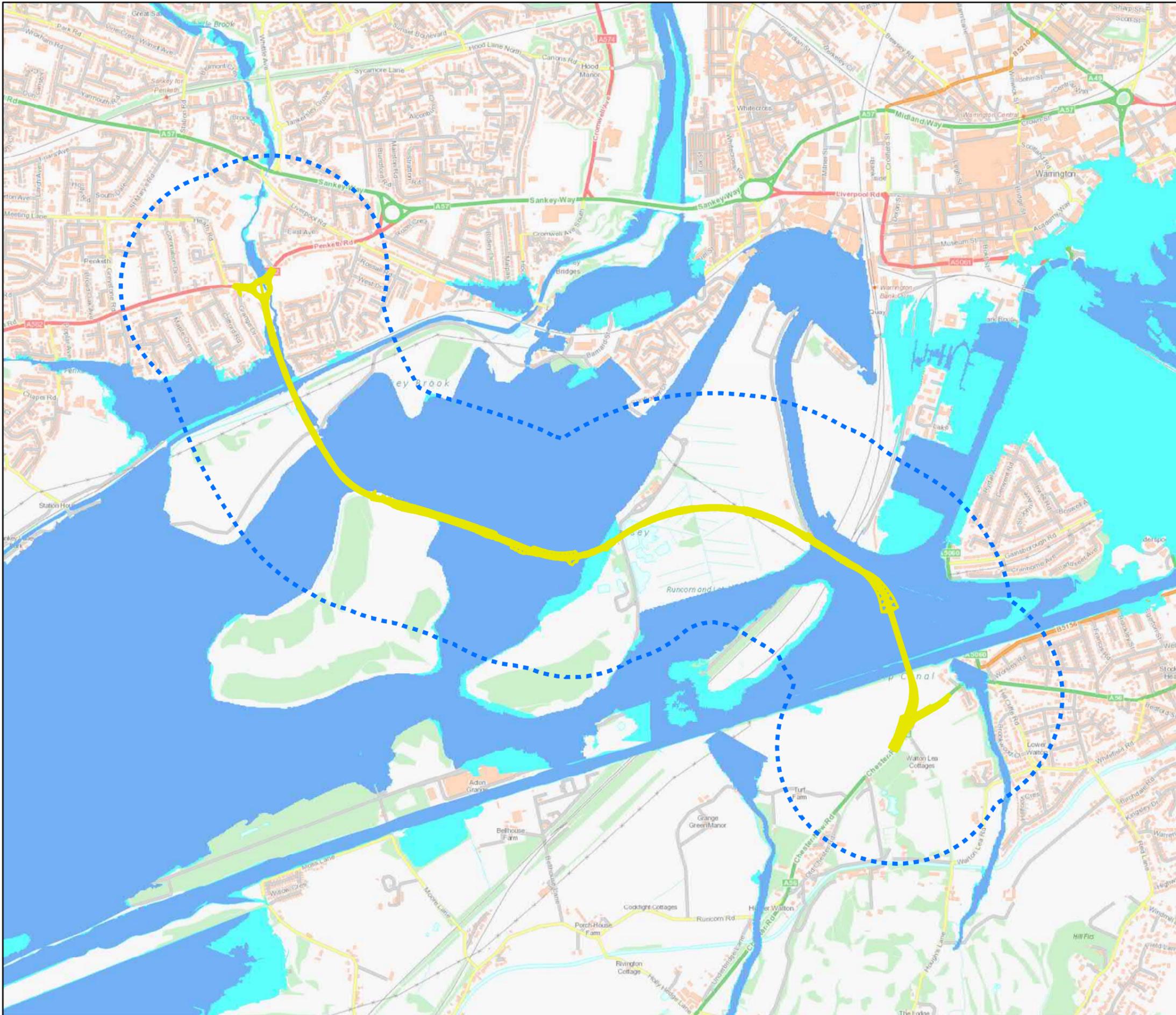
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**Western Link
 Flood Constraints
 Red Route**

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01	23/05/2017	CS	For Information	CS	AS	JH



Legend

- Yellow Route
- 500m Buffer

Environment Agency Flood Zones

- Flood Zone 3
- Flood Zone 2

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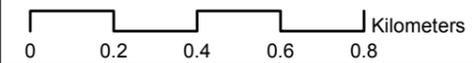
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**Western Link
 Flood Constraints
 Yellow Route**

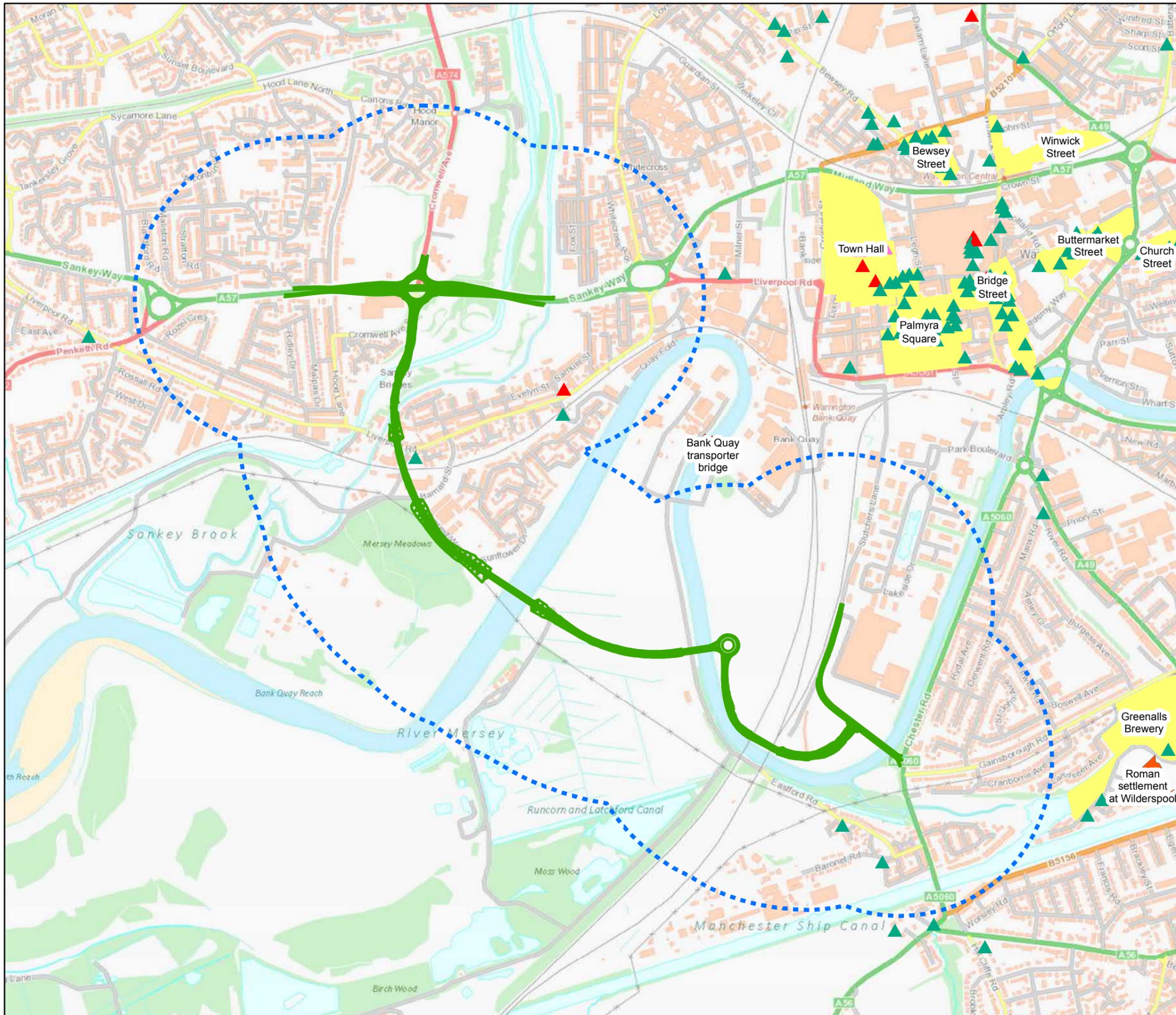
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01	23/05/2017	CS	For Information	CS	AS	JH



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 1:16,940

Drawing No.
 WL-MMD-07-ZZ-GS-J-1004

A.5 Heritage Constraints



Legend

- Green Route
- 500m Buffer

Statutory Heritage Constraints

- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Scheduled Monument
- Conservation Area

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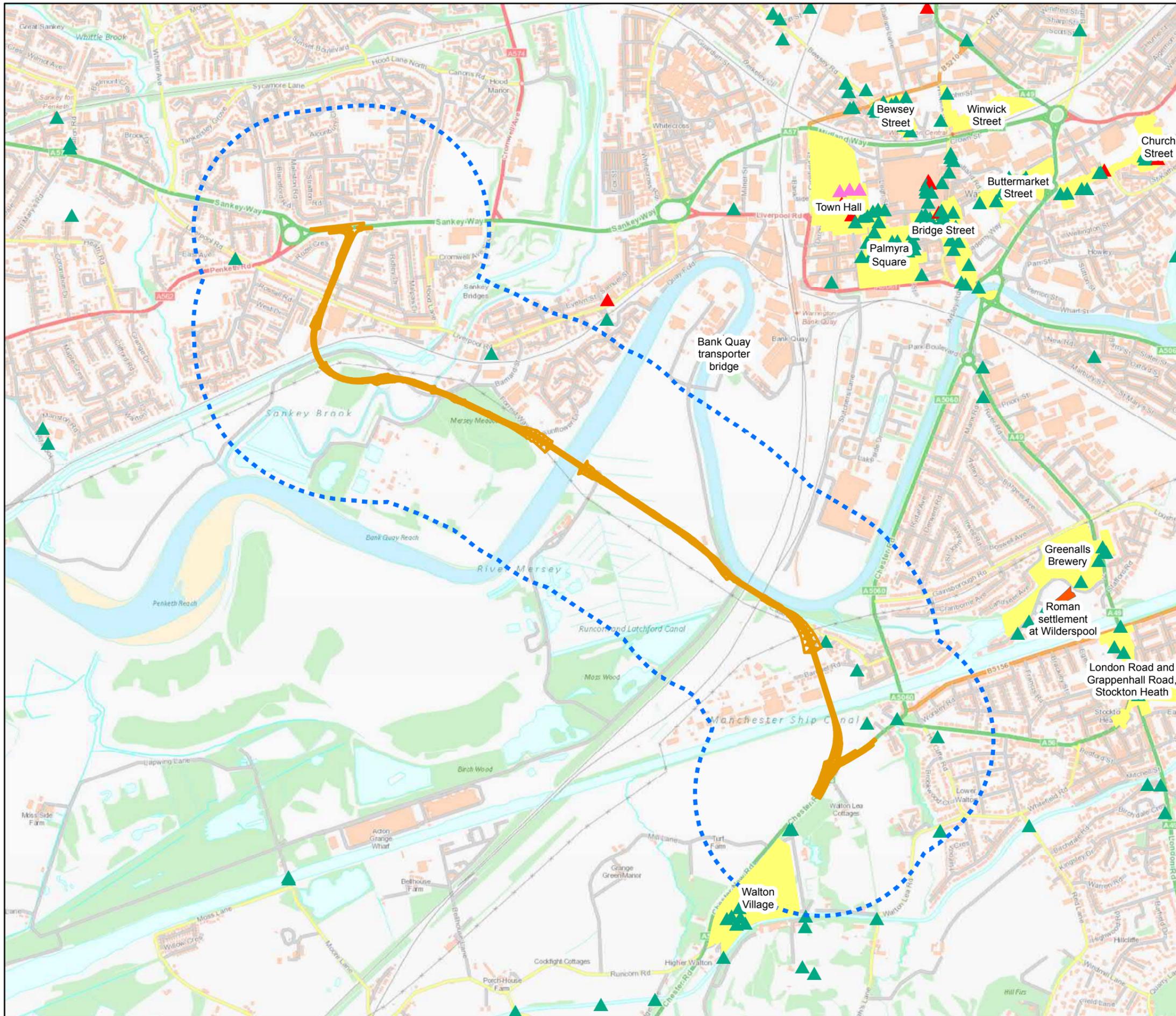
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**Western Link
Statutory Heritage Constraints
Green Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH



Legend

- Orange Route
- - - 500m Buffer

Statutory Heritage Constraints

- ▲ Grade I Listed Building
- ▲ Grade II Listed Building
- ▲ Grade II* Listed Building
- Scheduled Monument
- Conservation Area

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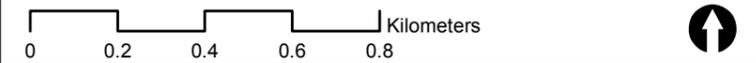
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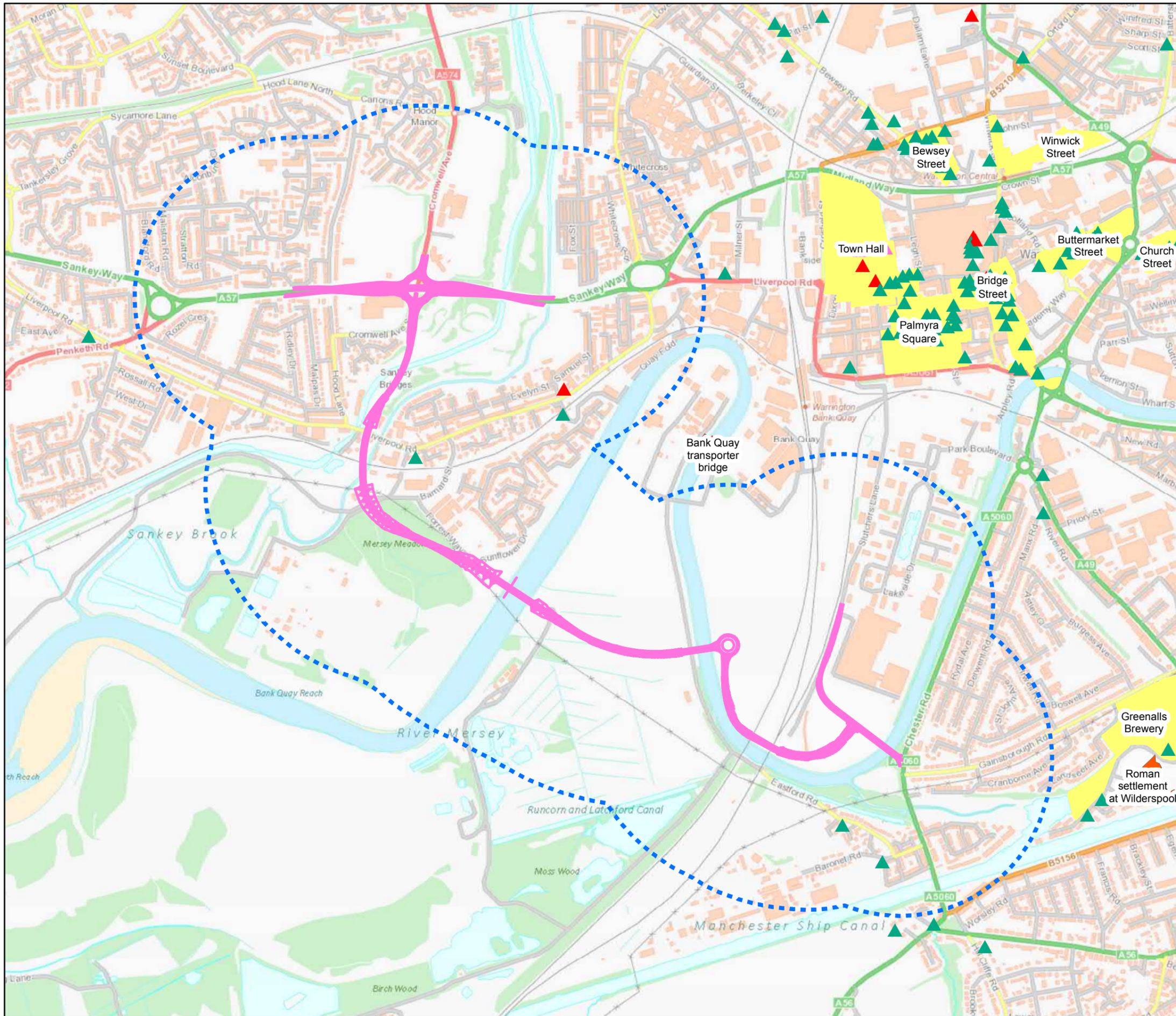
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**Western Link
Statutory Heritage Constraints
Orange Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





Legend

- Pink Route
- 500m Buffer

Statutory Heritage Constraints

- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Scheduled Monument
- Conservation Area

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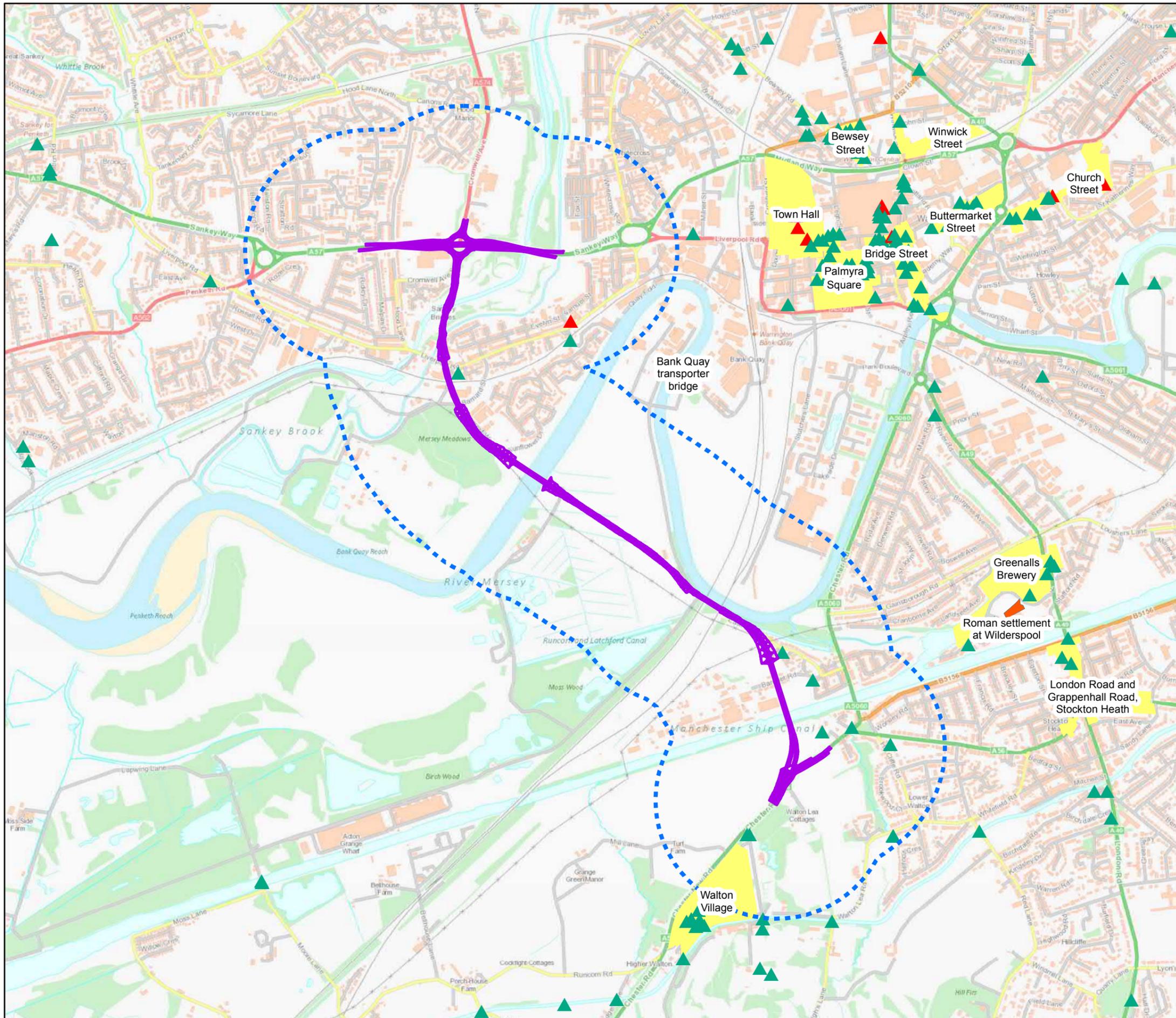
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**Western Link
Statutory Heritage Constraints
Pink Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





Legend

- Purple Route
- 500m Buffer

Statutory Heritage Constraints

- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Scheduled Monument
- Conservation Area

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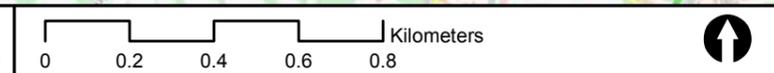
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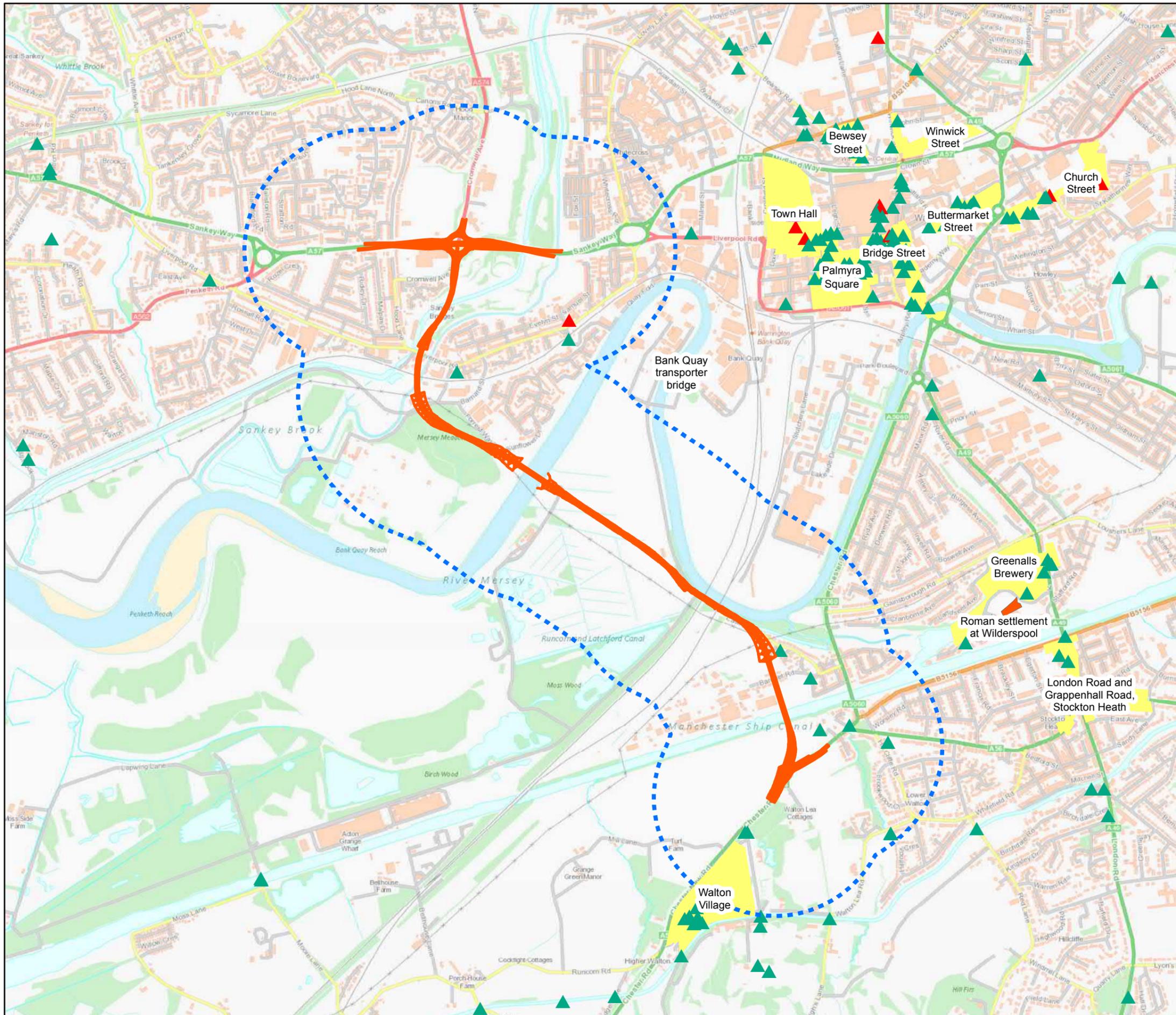
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**Western Link
Statutory Heritage Constraints
Purple Route**

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





Legend

- Red Route
- - - 500m Buffer

Statutory Heritage Constraints

- ▲ Grade I Listed Building
- ▲ Grade II Listed Building
- ▲ Grade II* Listed Building
- █ Scheduled Monument
- █ Conservation Area

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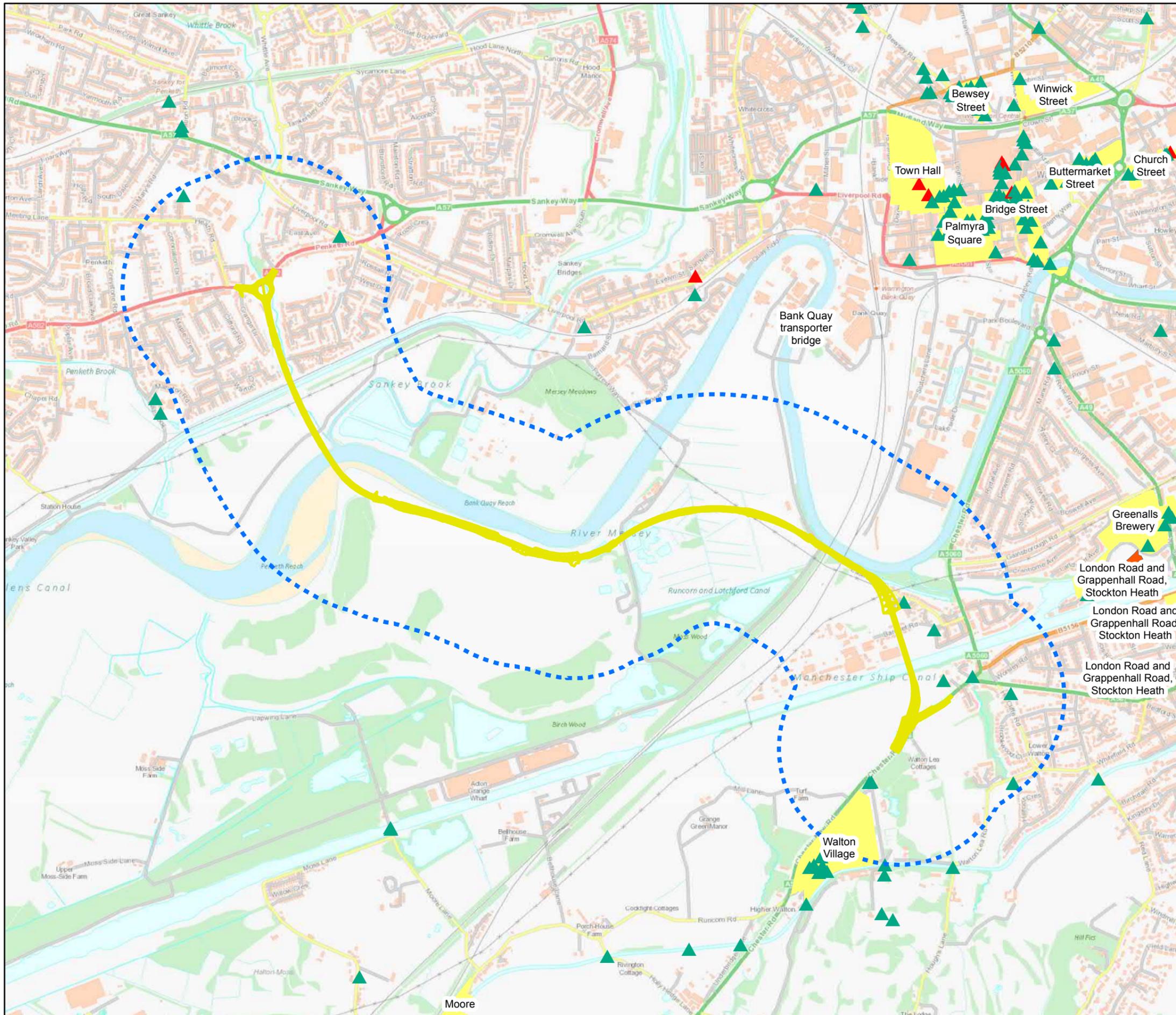
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Western Link Statutory Heritage Constraints Red Route

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH





Legend

- Yellow Route
- 500m Buffer

Statutory Heritage Constraints

- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Scheduled Monument
- Conservation Area

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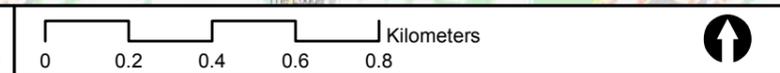
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Western Link Statutory Heritage Constraints Yellow Route

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
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01	23/05/2017	CS	For Information	CS	AS	JH

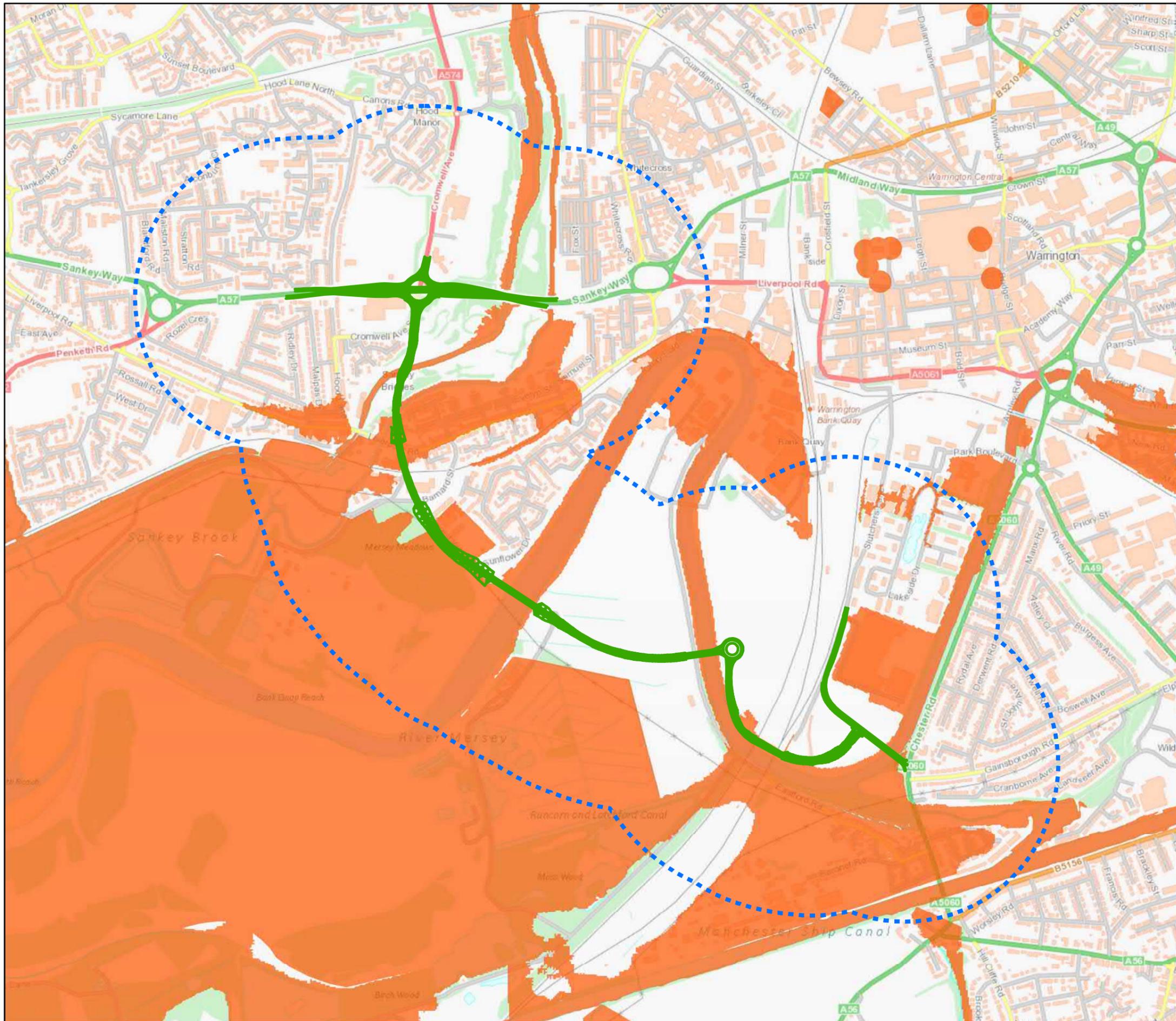
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Scale at A3
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Drawing No.
WL-MMD-07-ZZ-GS-J-1005

A.6 High Risk Constraints



Legend

- Green Route
- - - 500m Buffer
- High Risk Environmental Constraints

High risk constraints are classified as constraints which may pose a risk to engineering design or the success of the TWAO Application. High risk constraints specific to this Scheme include; land in Flood Zone 3, historic and authorised landfill, and grade I and II* listed buildings.

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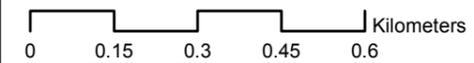


**Western Link
 High Risk Constraints**

Green Route

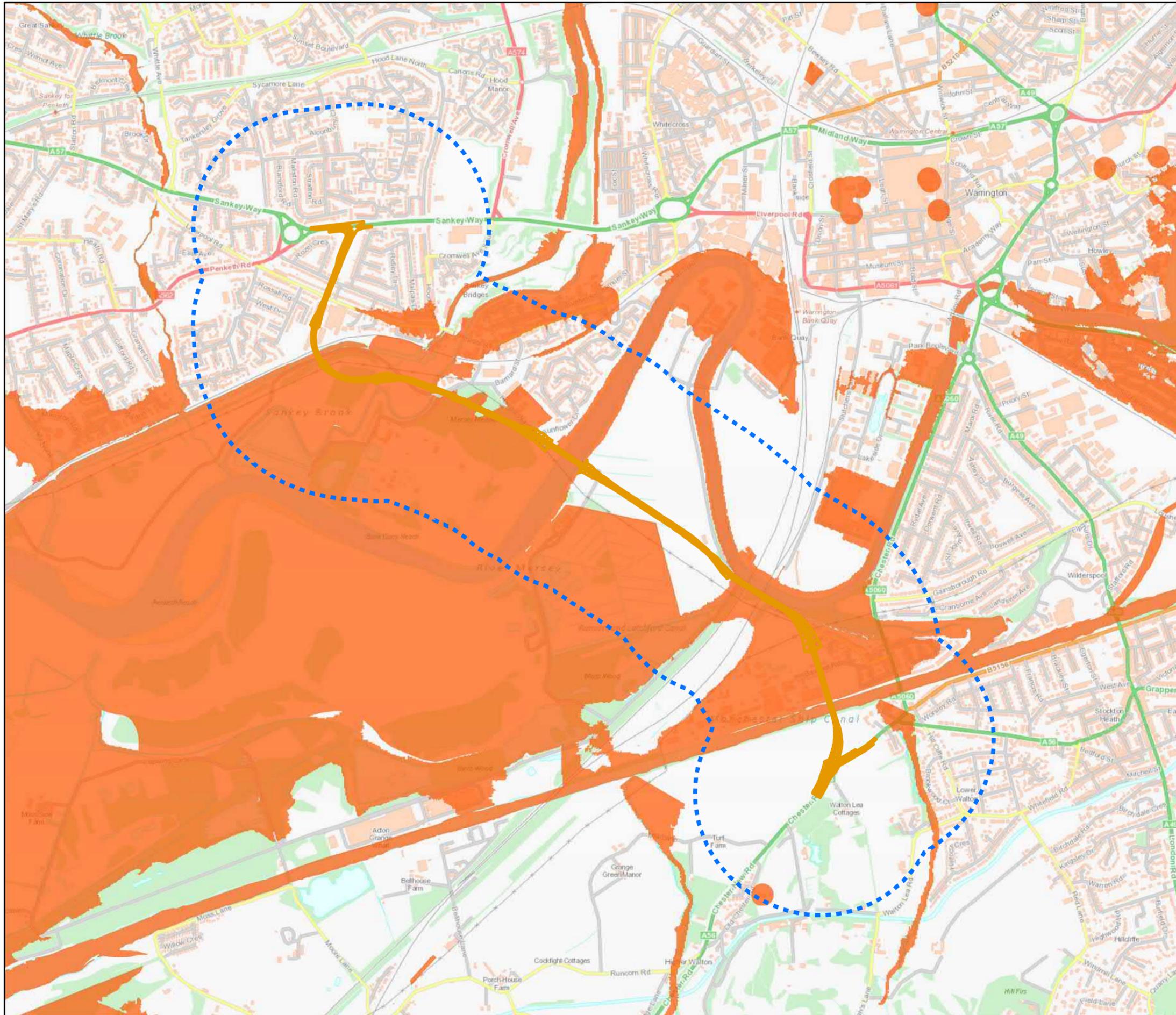
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02	02/11/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH

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Scale at A3
 1:12,670

Drawing No.
 WL-MMD-07-ZZ-GS-J-1006



Legend

- Orange Route
- 500m Buffer
- High Risk Environmental Constraints

High risk constraints are classified as constraints which may pose a risk to engineering design or the success of the TWAO Application. High risk constraints specific to this Scheme include; land in Flood Zone 3, historic and authorised landfill, and grade I and II* listed buildings.

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**Western Link
 High Risk Constraints**

Orange Route

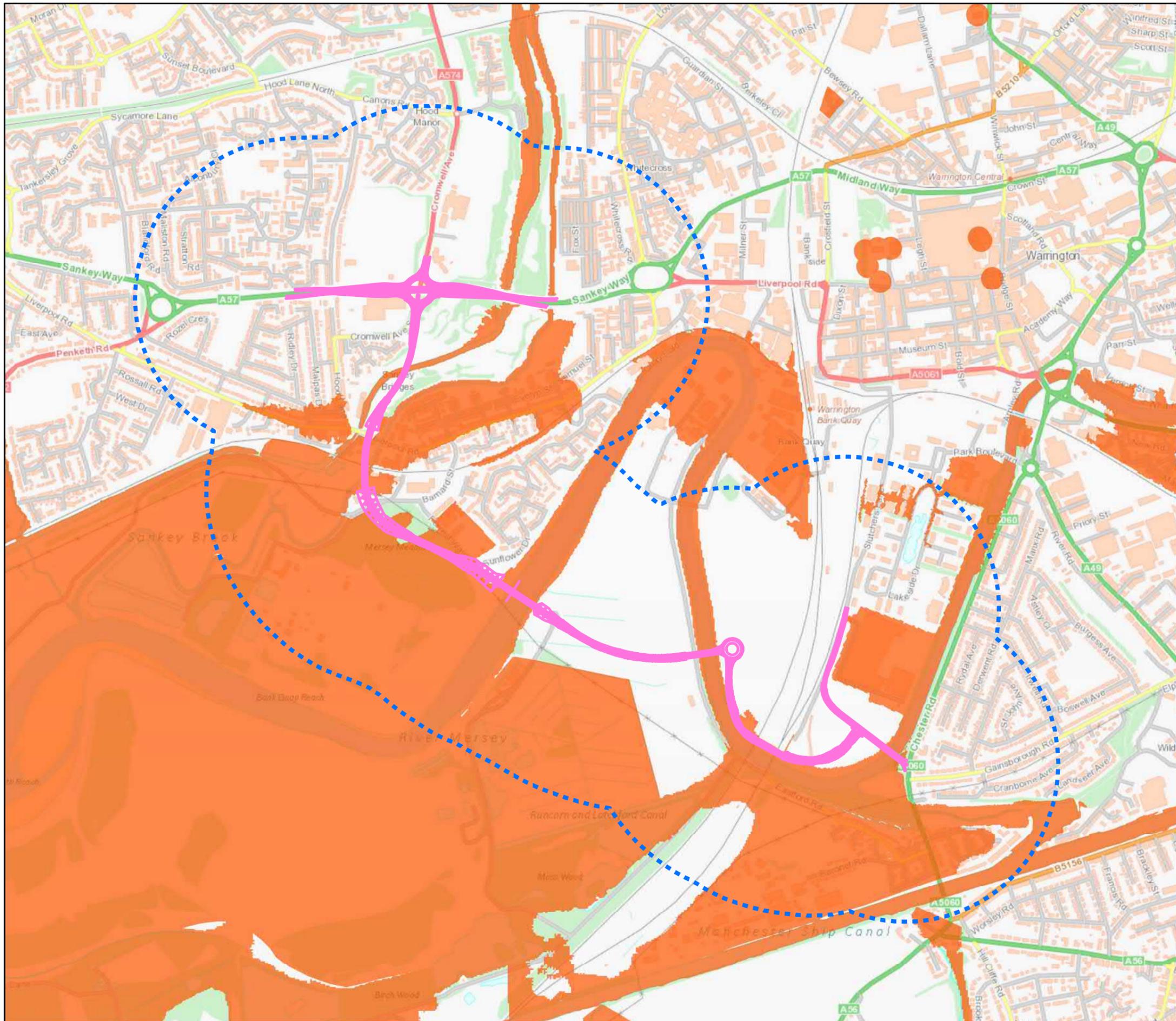
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Scale at A3
 1:16,180

Drawing No.
 WL-MMD-07-ZZ-GS-J-1006



Legend

-  Pink Route
-  500m Buffer
-  High Risk Environmental Constraints

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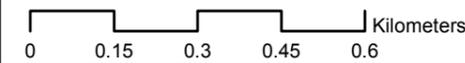


**Western Link
High Risk Constraints**

Pink Route

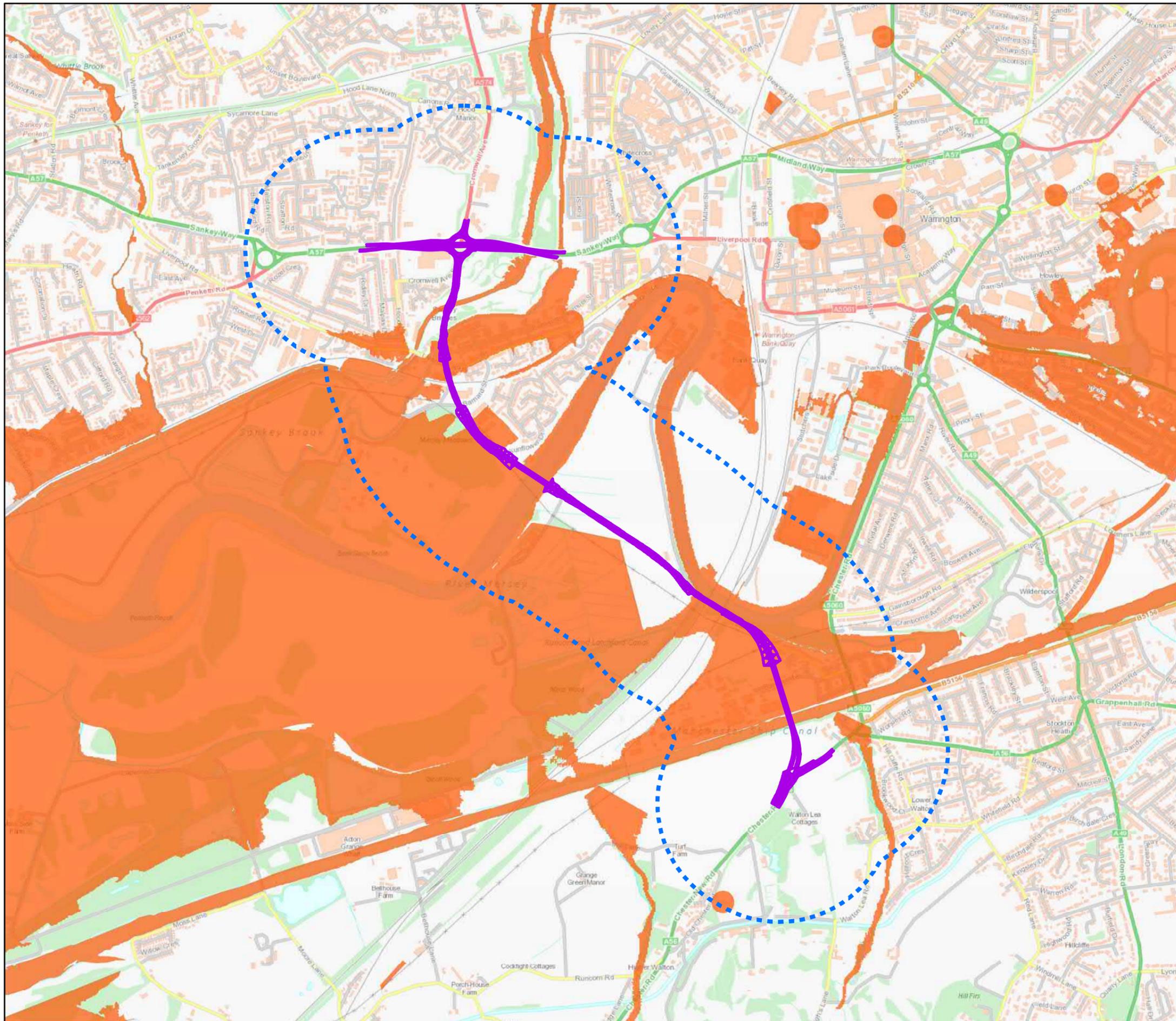
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Scale at A3
1:12,670

Drawing No.
WL-MMD-07-ZZ-GS-J-1006



Legend

- Purple Route
- 500m Buffer
- High Risk Environmental Constraints

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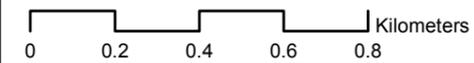


**Western Link
High Risk Constraints**

Purple Route

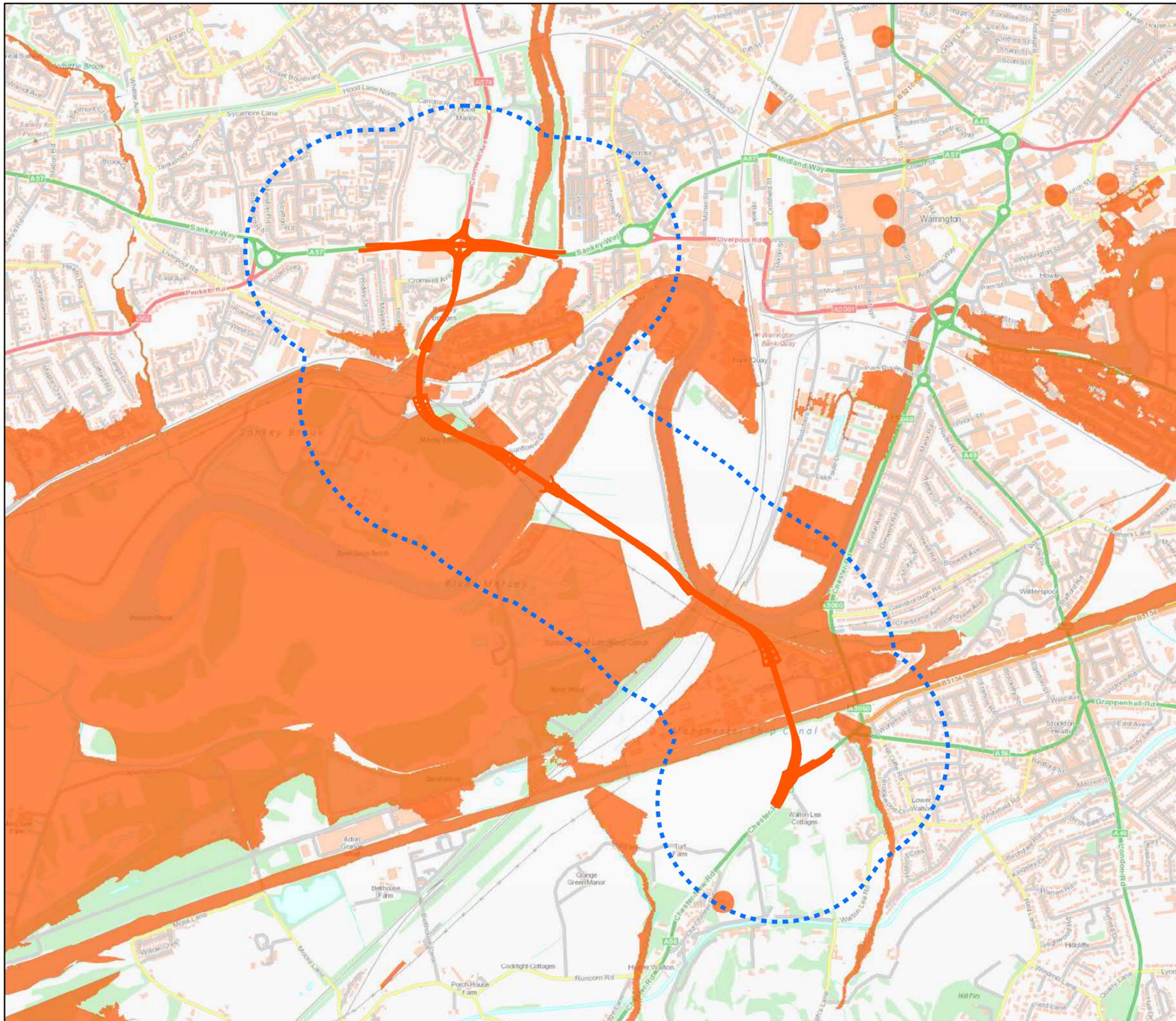
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Scale at A3
1:16,730

Drawing No.
WL-MMD-07-ZZ-GS-J-1006



Legend

- Red Route
- 500m Buffer
- High Risk Environmental Constraints

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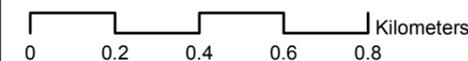


**Western Link
High Risk Constraints**

Red Route

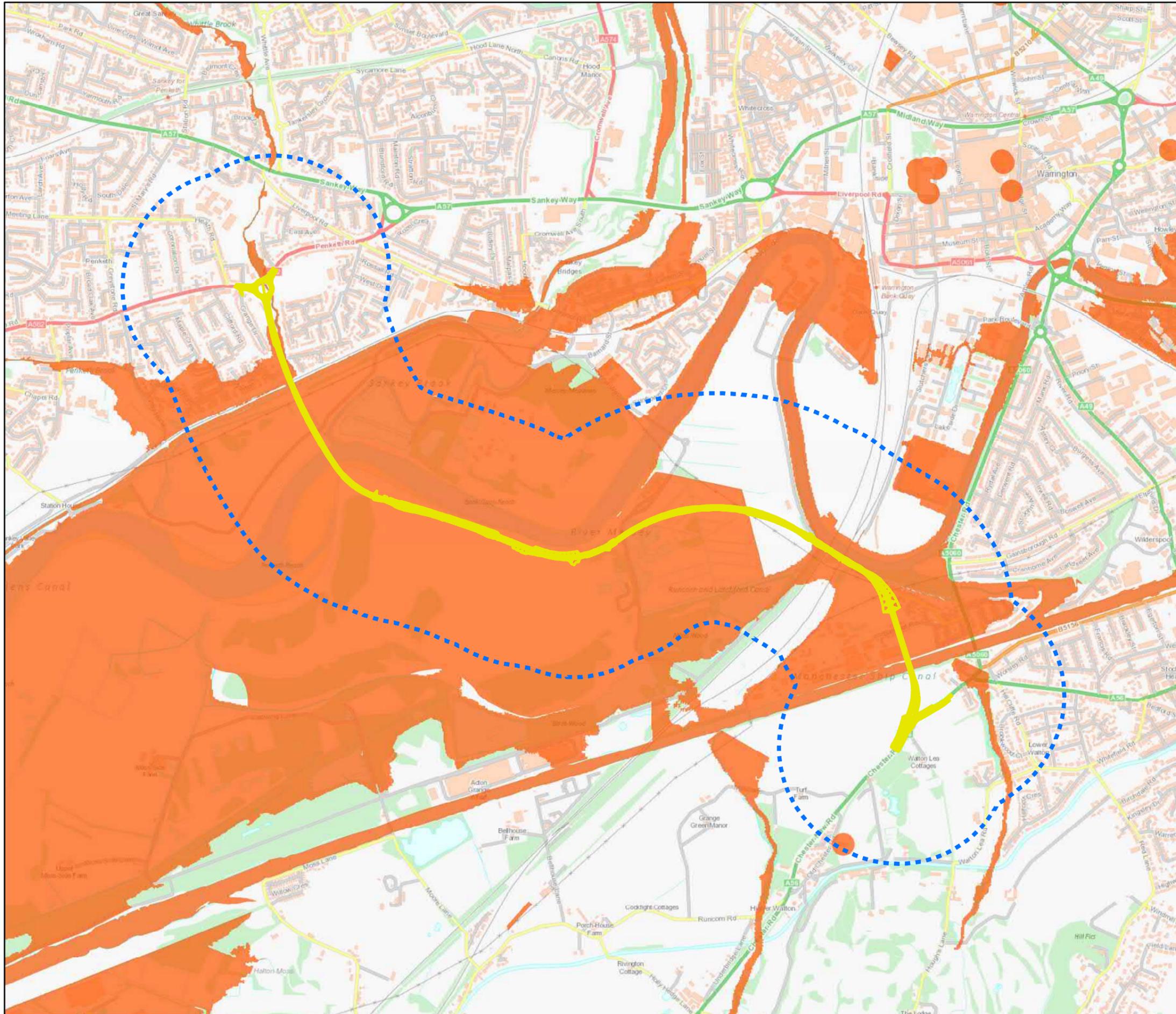
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Scale at A3
1:16,730

Drawing No.
WL-MMD-07-ZZ-GS-J-1006



Legend

- Yellow Route
- - - 500m Buffer
- High Risk Environmental Constraints

High risk constraints are classified as constraints which may pose a risk to engineering design or the success of the TWAO Application. High risk constraints specific to this Scheme include; land in Flood Zone 3, historic and authorised landfill, and grade I and II* listed buildings.

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Western Link High Risk Constraints

Yellow Route

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Scale at A3
1:16,940

Drawing No.
WL-MMD-07-ZZ-GS-J-1006

B. Risk Scoring

B.1.1 The following tables show the risk scoring used as part of this assessment.

Table 8: Risk scoring scale used to assess each criteria

Risk Score	Qualification of risk score
0	No perceived risk to engineering design No perceived risk to success of Transport and Works Act Order (TWAO) application Land in Flood zone 1
1 – 4	Low risk to engineering design (environmental risks can be successfully designed out or mitigated using standard techniques) Low risk to success of TWAO application
5 – 7	Medium risk to engineering design (environmental risks cannot be avoided, but can be mitigated/compensated) Likely to require detailed consultation, studies and/or detailed mitigation measures to mitigate environmental risk Medium risk to success of TWAO application Land in Flood zone 2
8- 10	High risk to engineering design (environmental risks cannot be avoided or adequately mitigated/compensated) High risk to success of TWAO application Land in Flood Zone 3

Table 9: Risk scoring for all environmental receptors

Designation/Feature Description	Included/Excluded	Environmental Theme	Risk Score	Risk Magnitude	Notes on Risk Score
Area of Outstanding Natural Beauty (AONB)	Included	Flora and Fauna	8	High	
Agricultural Land Classification (Grade 1)	Included	Land Use	4	Low	
Agricultural Land Classification (Grade 2)	Included	Land Use	4	Low	
Agricultural Land Classification (Grade 3)	Included	Land Use	4	Low	
Agricultural Land Classification (Grade 4/5)	Excluded	Land Use			Not considered an environmental risk
Air Quality Management Area	Included	Air Quality	2	Low	
Ancient Woodland	Included	Flora and Fauna	6	Medium	
Artificial Ground	Included	Ground Conditions and Contaminated Land	10	High	
Bridges and Other Structures	Included	Other Notable Features	4	Low	

Designation/Feature Description	Included/Excluded	Environmental Theme	Risk Score	Risk Magnitude	Notes on Risk Score
Conservation Areas	Included	Cultural Heritage	4	Low	
Country Park	Included	Landscape	6	Medium	
Contaminated Land	Included	Ground Conditions and Contaminated Land	7	Medium	
Defra Noise Important Areas	Included	Noise Quality	5	Medium	
Flood Zone 2	Included	Water Environment	7	Medium	
Flood Zone 3	Included	Water Environment	10	High	
Flood Defence	Included	Water Environment	8	High	
Greenbelt	Included	Landscape	2	Low	
Historic Landfill	Included	Ground Conditions and Contaminated Land	7	Medium	
Landfill	Included	Ground Conditions and Contaminated Land	8	High	
Listed Buildings Grade I	Included	Cultural Heritage	9	High	
Listed Buildings Grade II*	Included	Cultural Heritage	8	High	
Listed Buildings Grade II	Included	Cultural Heritage	5	Medium	
Local Nature Reserve (LNR)	Included	Flora and Fauna	6	Medium	
Mine Entry	Included	Ground Conditions and Contaminated Land	10	High	
National Nature Reserve (NNR)	Included	Flora and Fauna	7	Medium	
Overhead Power Lines	Included	Other Notable Feature	2	Low	
Public Rights of Way	Included	Other Notable Features	7	Medium	
RAMSAR Site	Included	Flora and Fauna	9	High	
Registered Battlefields	Excluded	Cultural Heritage	8	High	
Registered Parks and Gardens	Included	Cultural Heritage	6	Medium	
Risk of Flooding from Rivers and Sea – Very Low	Included	Water Environment	0	Low	
Risk of Flooding from Rivers and Sea – Low	Included	Water Environment	0	Low	
Risk of Flooding from Rivers and Sea – Medium	Included	Water Environment	5	Medium	

Designation/Feature Description	Included/Excluded	Environmental Theme	Risk Score	Risk Magnitude	Notes on Risk Score
Risk of Flooding from Rivers and Sea - High	Included	Water Environment	8	High	
Special Area of Conservation (SAC)	Included	Flora and Fauna	10	High	
Special Protection Area	Included	Flora and Fauna	10	High	
Site of Biological Importance	Included	Flora and Fauna	6	Medium	
Site of Special Scientific Interest (SSSI)	Included	Flora and Fauna	8	High	
Tree protection Order (TPO)	Included	Flora and Fauna	6	Medium	
World Heritage Sites	Excluded	Cultural Heritage	10	High	

