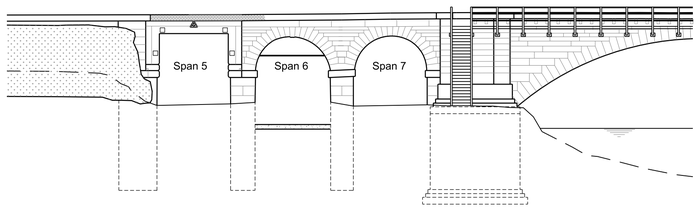
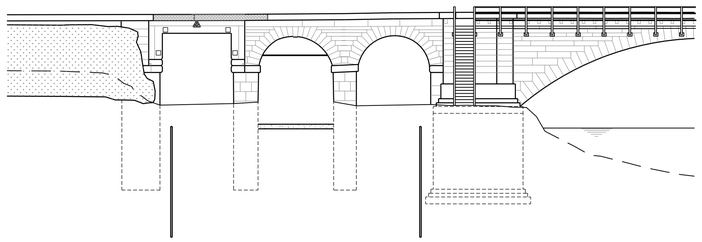


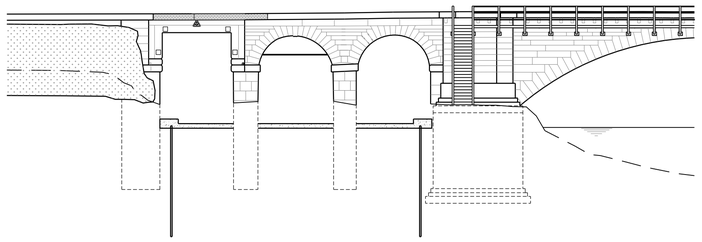
Stage 1 - Relocate footbridge stairs to full access to span 7 and install slab in span 6 with height restriction

Scale 1:200



Stage 2 - Micropiles installed

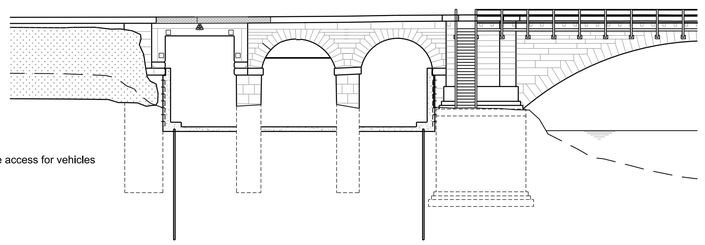
Scale 1:200



Stage 3 - Pilecaps & slab installed

Scale 1:200

! Propping slab mitigates risk of river and canal spans spreading when portal and arches in spans 5,6 & 7 are demolished. Excavate hit and miss to minimise risk of different support to piers.



! Maintain safe access for vehicles

Stage 4 - Walls and dowels into existing

Scale 1:200

! Possessions required

Stage 5 - Temp support to services above

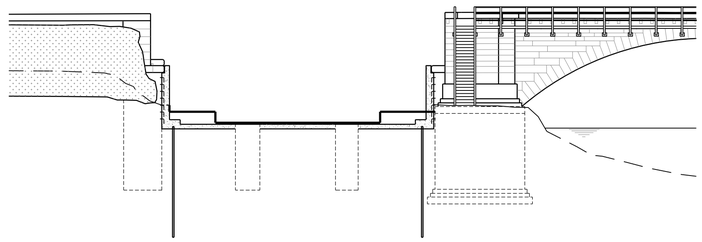
Scale 1:200

! Support structure to be clear of vehicle swept paths and supported clear of demolition zone

Stage 6 - Construct cill beams and superstructure offline

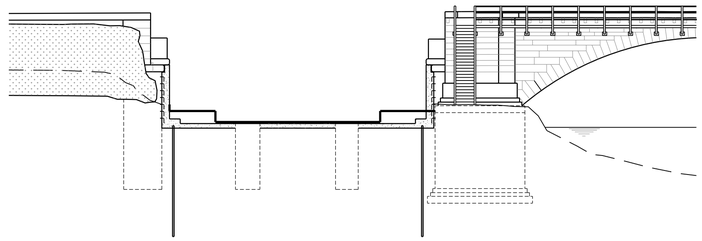
Scale 1:200

! Demolition - Maintain cable service support structure



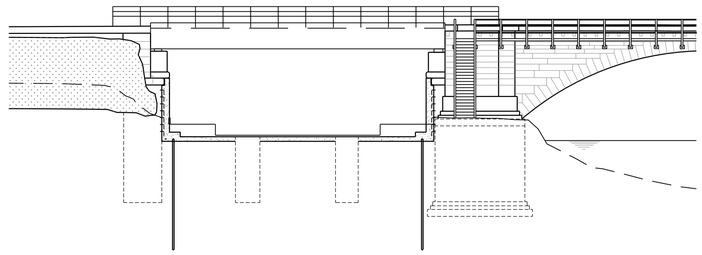
Stage 7 - Lift track and ballast, demolish superstructure, make good tops of piers

Scale 1:200



Stage 8 - Lift in precast cills and dowel to piers

Scale 1:200



Stage 9 - Install beams and drive in superstructure

Scale 1:200

Notes

1. Do not scale from this drawing, only stated dimensions to be used.
2. NR have advised that the signal cables and the points & crossings located over Spans 5, 6 and 7 may be in a condition that would not allow their re-use after lifting to allow for span demolition.This would place a significant proportion of the cost of replacement onto the scheme.

Key to symbols

! Indicates H&S risk

Reference drawings

F296/22701 - F296 WCML Bridges & Structures Programme 1997/98, Walton Old Junction to Earlstown Line, Bridge No1, Walton Viaduct Structural Defects.

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Title

Stage 2b Feasibility Study
Structure 2 - Walton Viaduct
Construction Sequence

Designed	R. Mathews	—	Eng check	O. Lucas	OL
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
AS SHOWN	PRE	P	STD

Drawing Number

382900-MMD-07-XX-CD-S-2202

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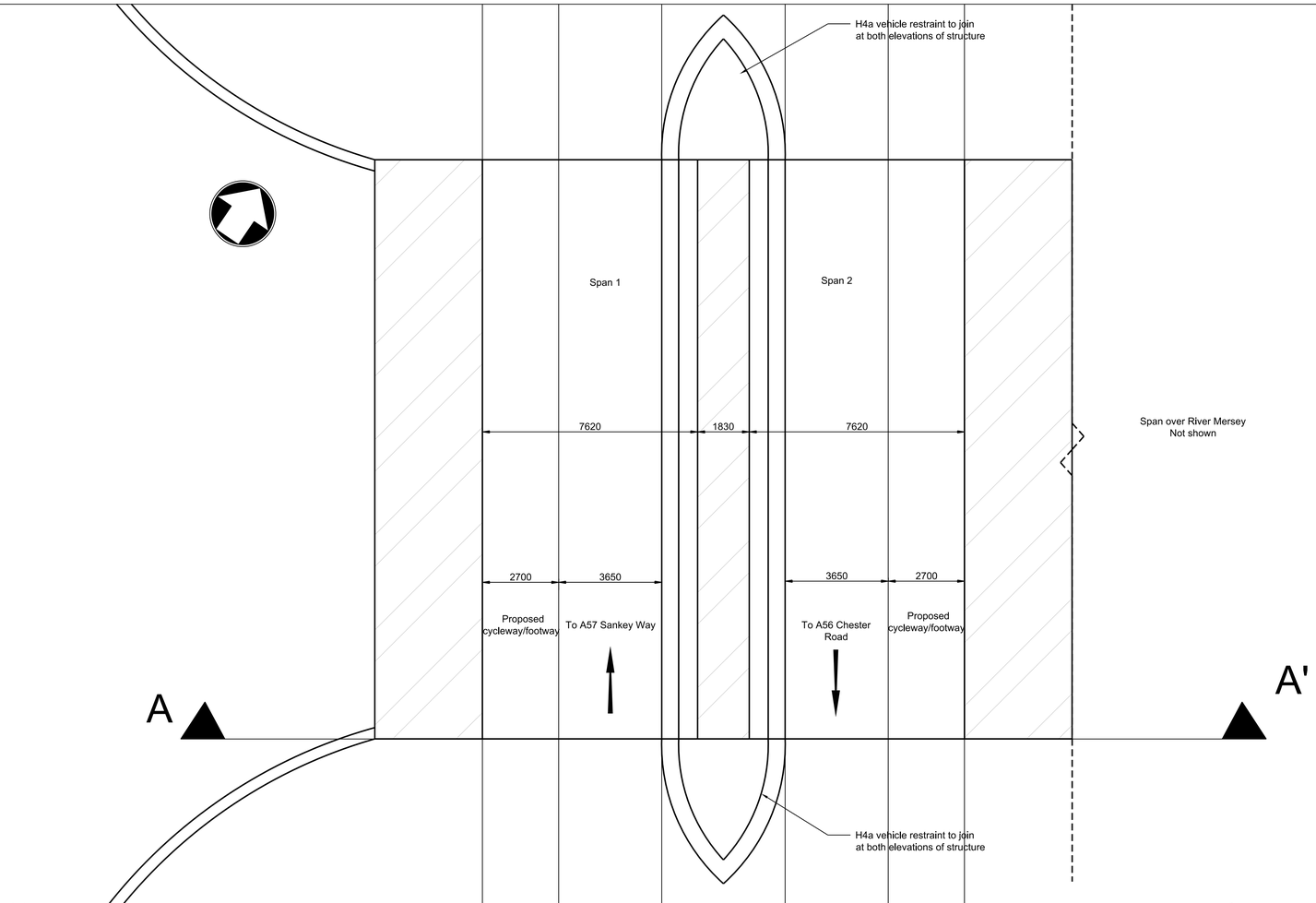
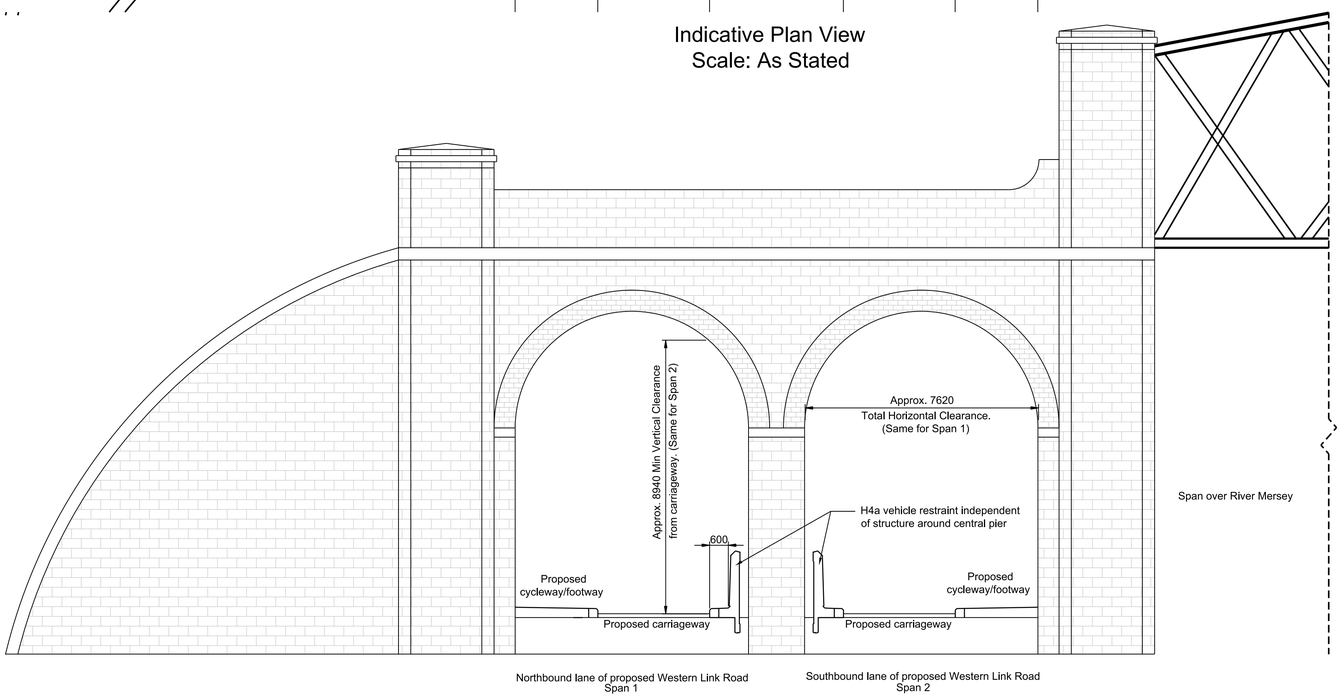


Indicative Plan View
Scale: As Stated



Indicative Sectional View A-A'
Scale: As Stated

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0300
4. This Sketch is an indicative general arrangement for the highway configuration through West Coast Main Line River Mersey Viaduct. Only stated dimensions are to be used. Remaining dimensions have been scaled from Network Rail Viaduct over River Mersey General Drawing and should only be considered indicative.

Location Plan
Scale 1:5000

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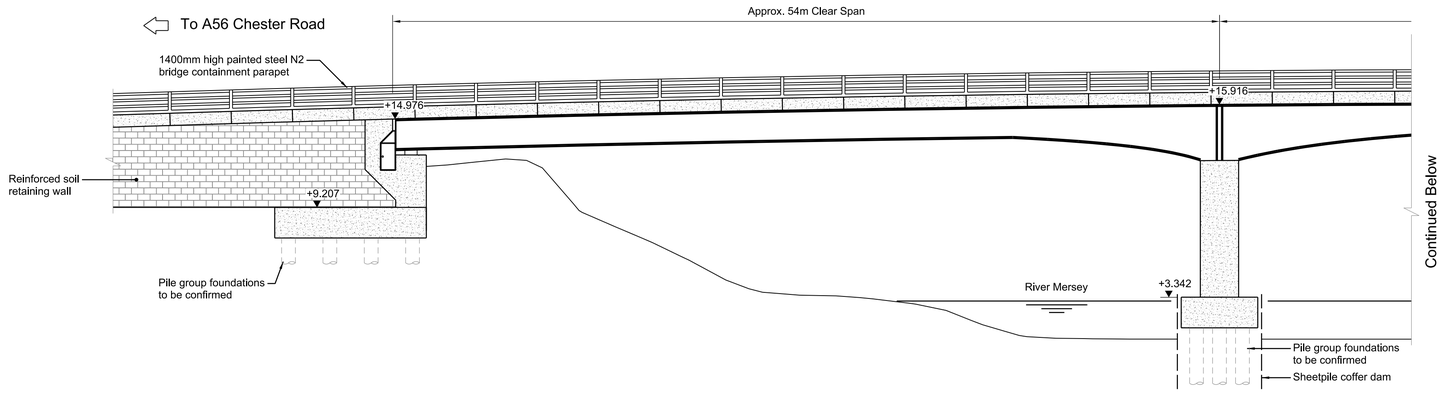
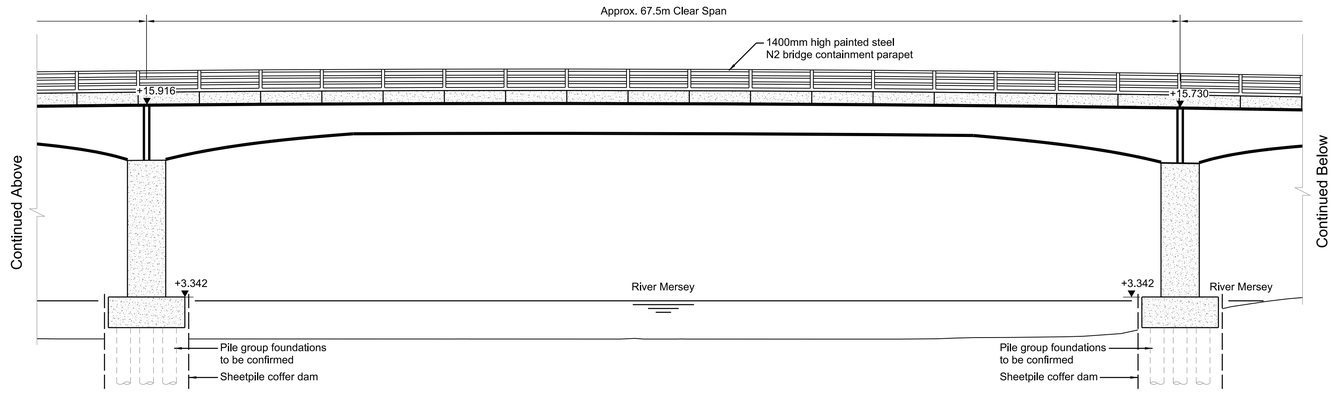
Title
Stage 2b Feasibility Study
Structure 3 WCML Viaduct
Indicative Proposed General Arrangement

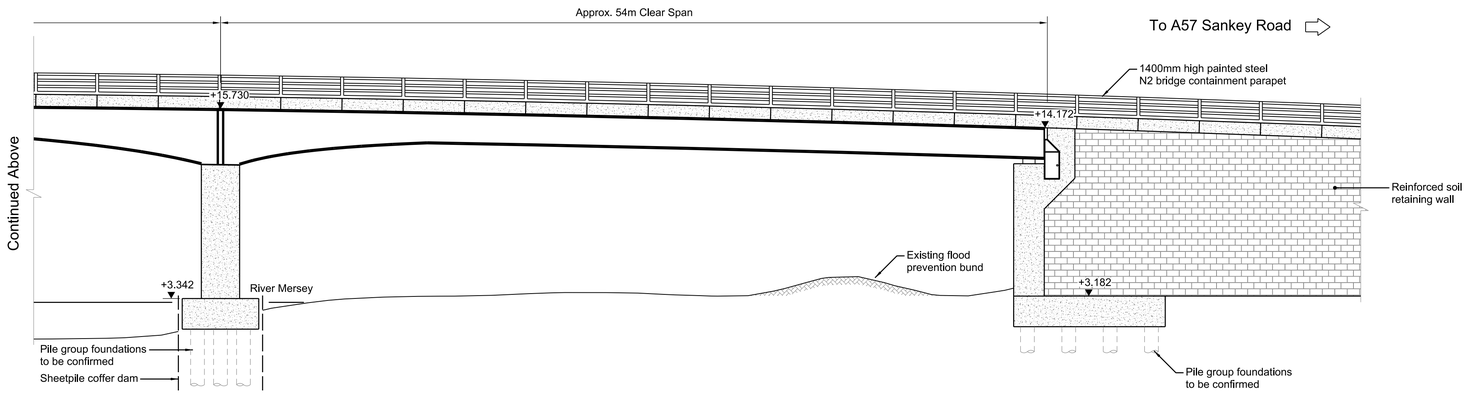
Designed	O.Lucas		Eng check	R.Mathews	
Drawn	D.Dolan		Coordination	O.Lucas	
Dwg check	O.Lucas		Approved	R.Langley	

Scale at A1	Status	Rev	Security
NTS	PRE	X	STD

Drawing Number
382900-MMD-07-XX-CD-2300







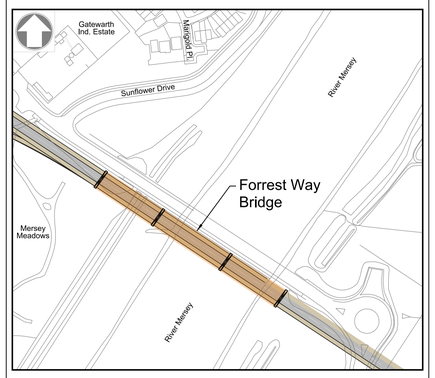
Indicative Bridge Elevation

SCALE 1:200

1:200 0 10m 20m

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying Structure Summary Sheet - Document ref: 382900-MMD-07-XX-RP-S-0400.
4. New crossing to be located adjacent to existing Forrest Way bridge. Location to be determined at detailed design stage.



Location Plan

SCALE 1 : 2500

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Stage 2b Feasibility Study
Structure 4 - Forrest Way Bridge
General Arrangement

Designed	O. Lucas	—	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
As Shown	PRE	P	STD

Drawing Number

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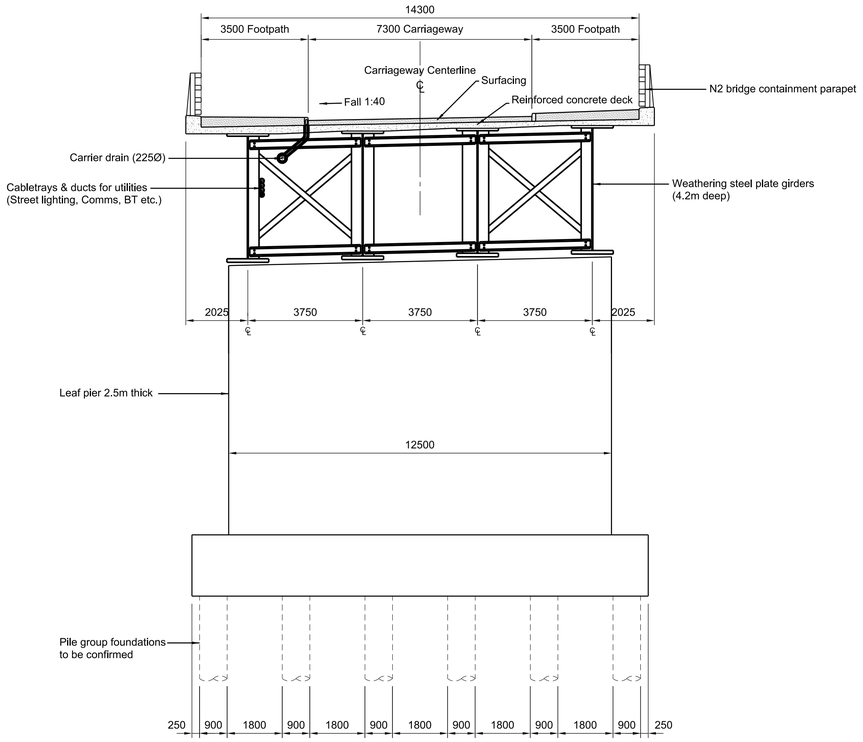
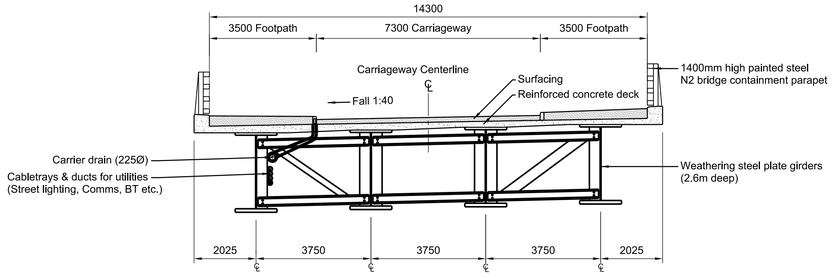


Indicative Section Through Deck @ Pier

SCALE 1:100

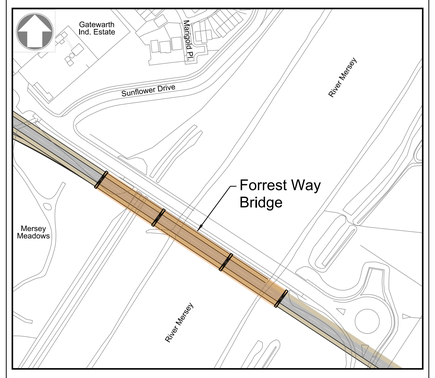


Indicative Section Through Deck @ Side & Centre Spans

SCALE 1:100

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying Structure Summary Sheet - Document ref: 382900-MMD-07-XX-RP-S-0400.
4. New crossing to be located adjacent to existing Forrest Way bridge. Location to be determined at detailed design stage.



Location Plan

SCALE 1 : 2500

1:100 0 5m 10m

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Title

Stage 2b Feasibility Study
Structure 4 - Forrest Way Bridge
Sections

Designed	O. Lucas	—	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
As Shown	PRE	P	STD

Drawing Number

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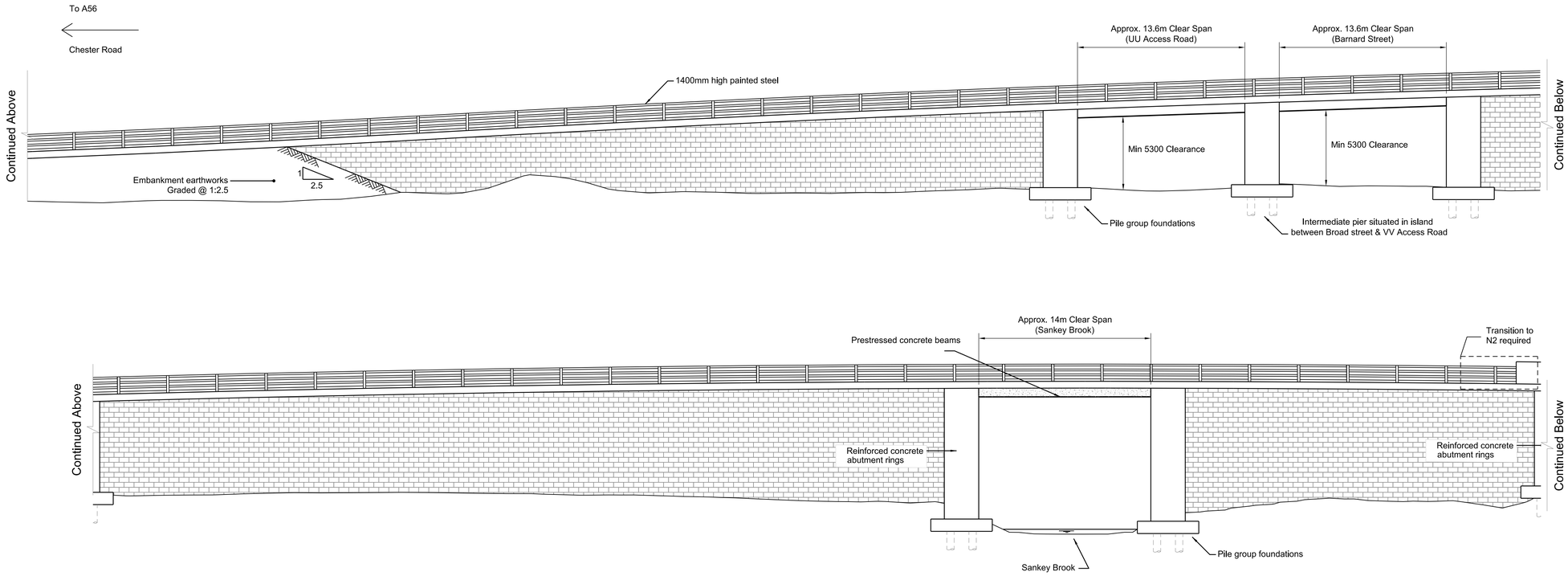
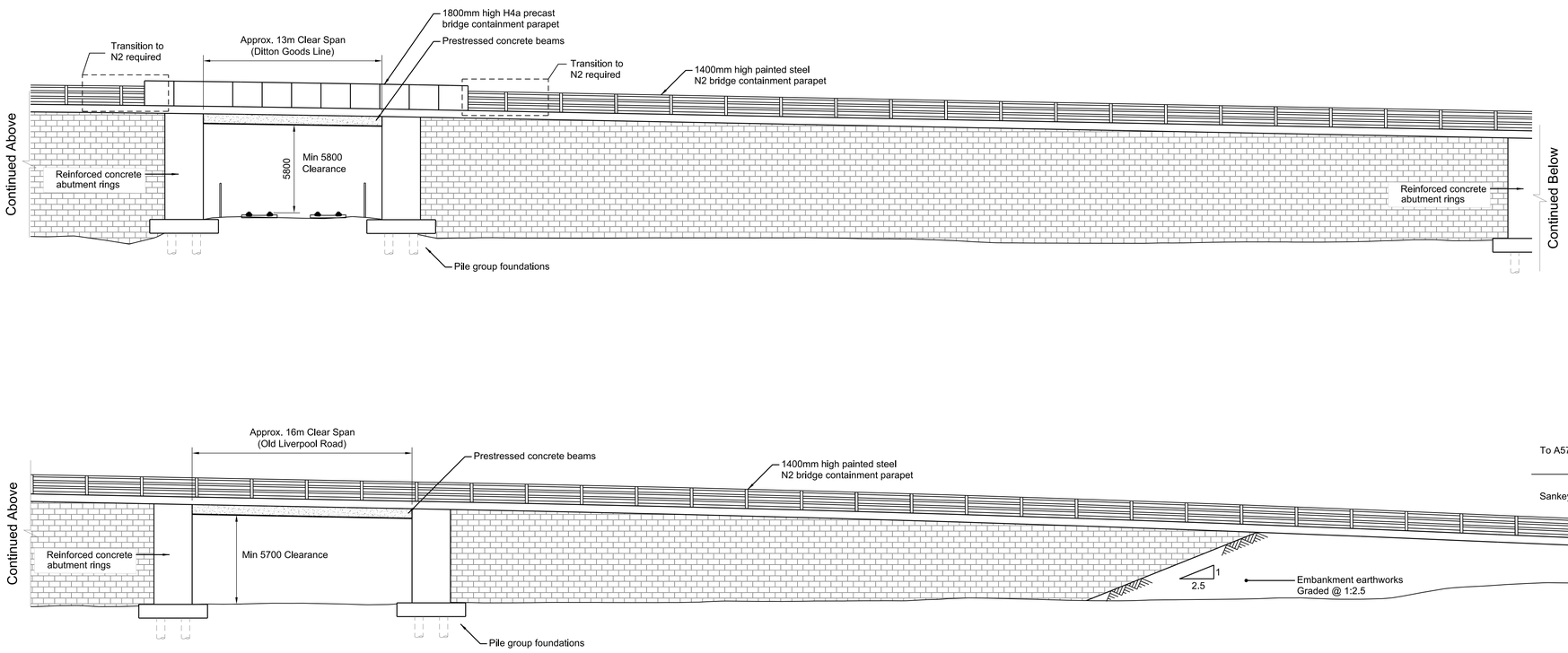
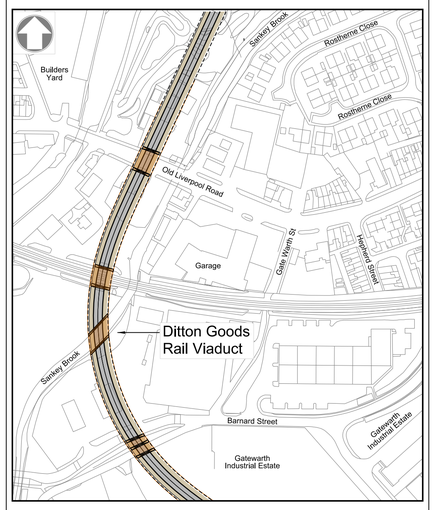




1:200 0 10m 20m

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0600.
4. Existing rail levels required to confirm bridge soffit levels.
5. Overall height of structure depends heavily on achieving min headroom presented by Network Rail. This sketch is based on 5.8m clearance between the underside of the beams and the tracks.
6. Existing Network Rail boundary lines required to confirm abutment locations.



Location Plan

SCALE 1 : 2500

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Title

Stage 2b Feasibility Study
Structure 5 - Ditton Goods Rail Viaduct
General Arrangement

Designed	O. Lucas	—	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
AS SHOWN	PRE	P	STD

Drawing Number

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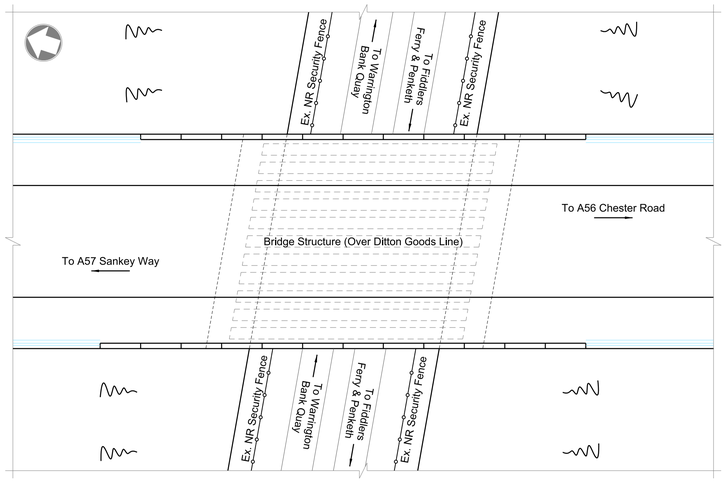
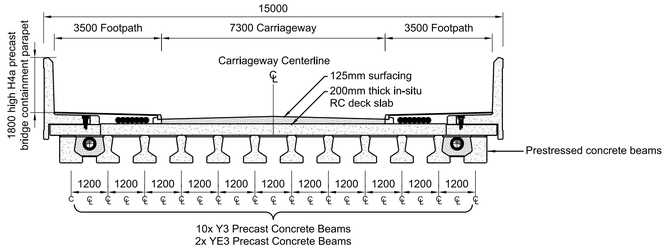


Indicative Bridge Plan (Section Over Ditton Goods Line)

SCALE 1:200



Indicative Section Through Deck

(Section over Ditton Goods Line)

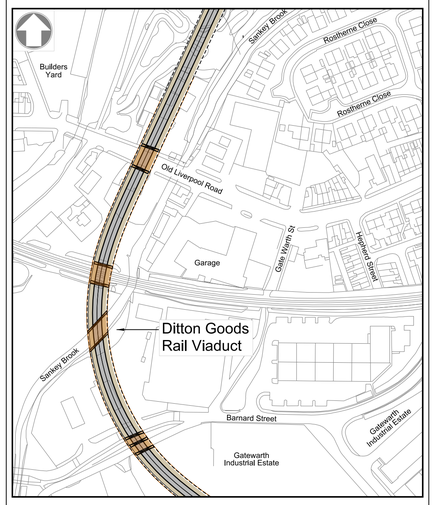
SCALE 1:100

1:200 0 10m 20m

1:100 0 5m 10m

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0600.



Location Plan

SCALE 1 : 2500

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Title

Stage 2b Feasibility Study
Structure 5 - Ditton Goods Rail Viaduct
Sections

Designed	O. Lucas	—	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
As Shown	PRE	P	STD

Drawing Number

382900-MMD-07-XX-CD-S-2501

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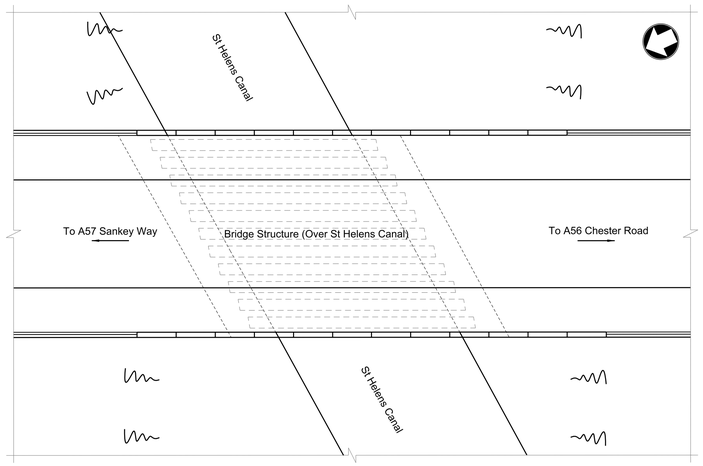
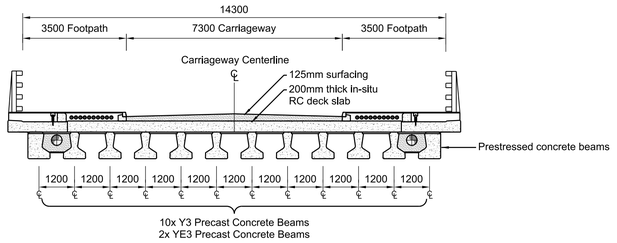


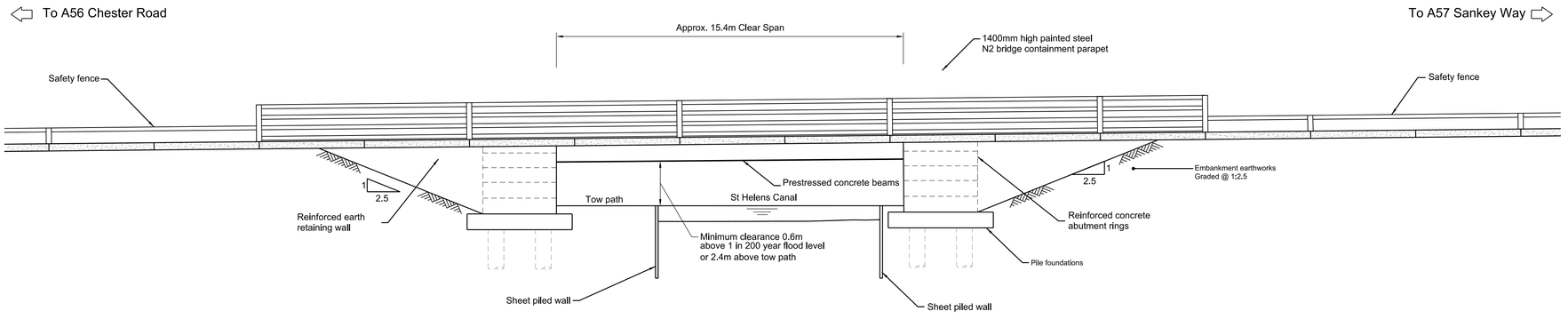
Indicative Bridge Plan

SCALE 1:200



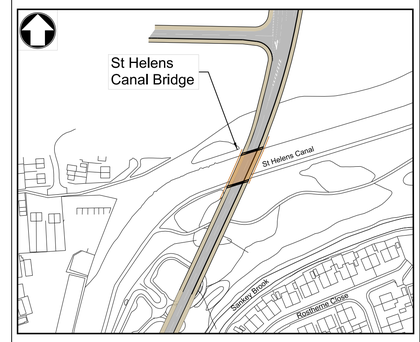
Indicative Section Through Deck

SCALE 1:100



Indicative Bridge Elevation

SCALE 1:100



Location Plan

SCALE 1 : 2500

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0700

1:200 0 10m 20m

1:100 0 5m 10m

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Stage 2b Feasibility Study
Structure 6 - St Helens Canal
General Arrangement

Designed	O. Lucas	---	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
	PRE	P	STD

Drawing Number

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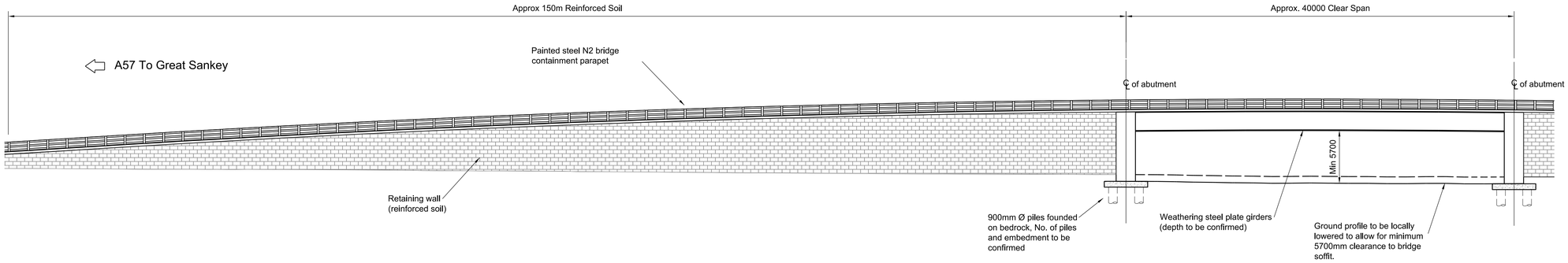
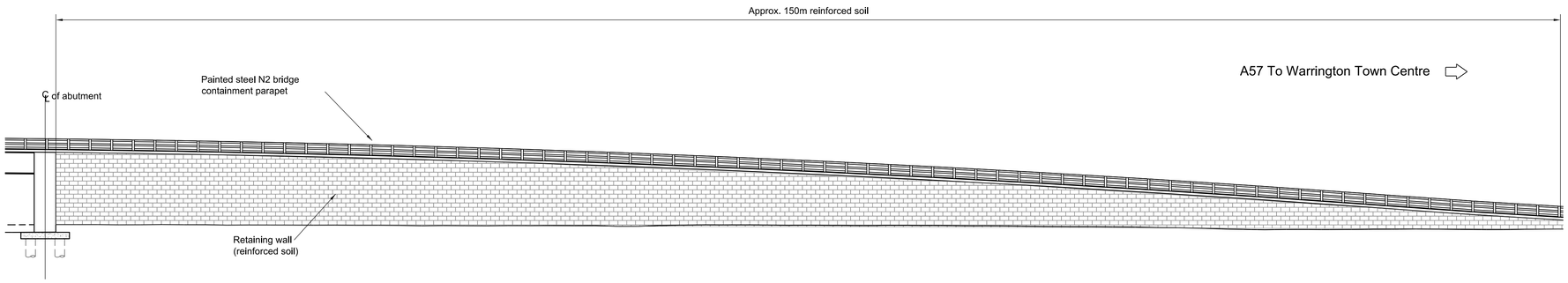


Elevation A
1:200 -



Elevation A
1:200 -

Notes

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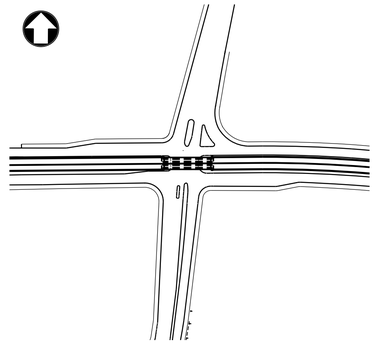
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0700



Location Plan
Scale 1:2500

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Title
Stage 2b Feasibility Study
Structure 7 - A57 Cromwell Ave Flyover
General Arrangement

Designed	O. Lucas	---	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
	PRE	P	STD

Drawing Number
382900-MMD-07-XX-CD-S-2700

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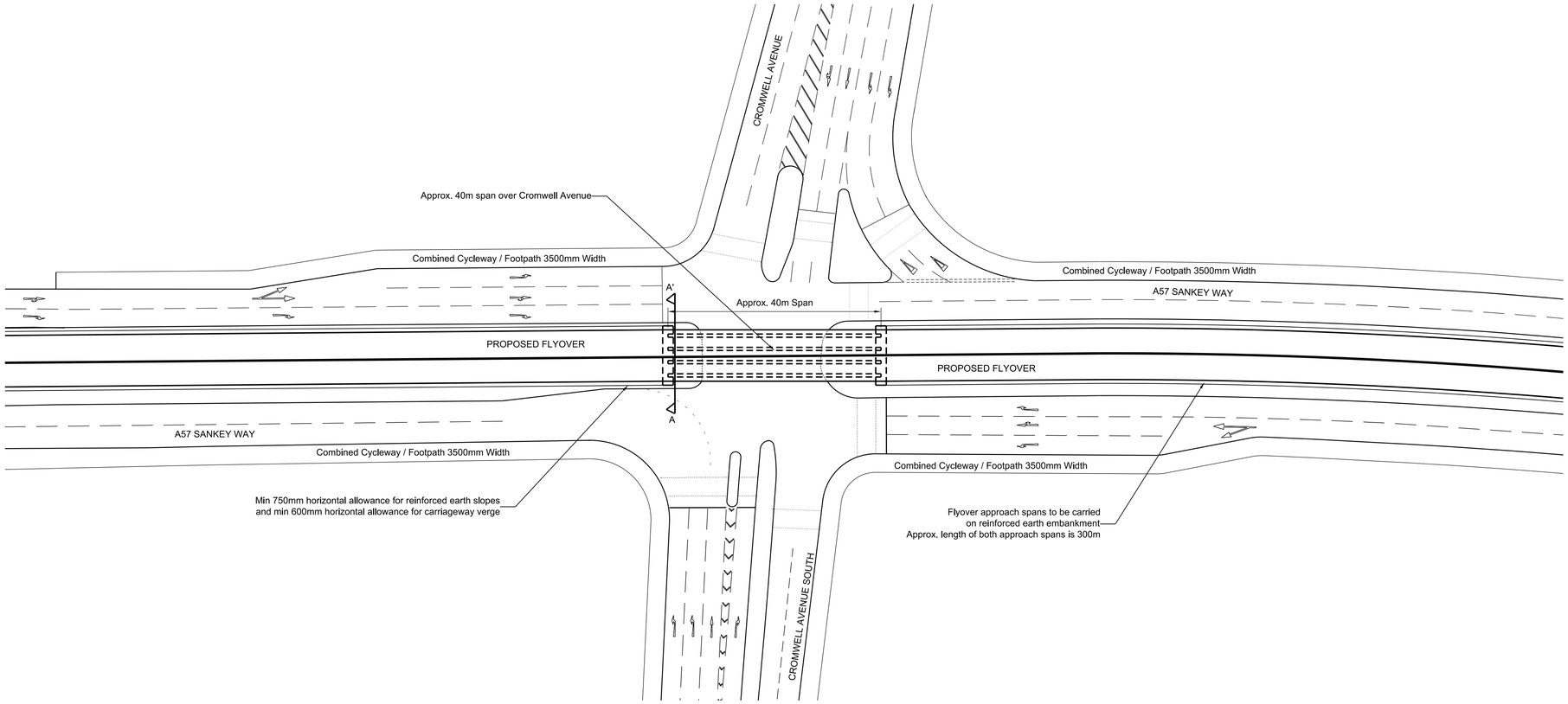
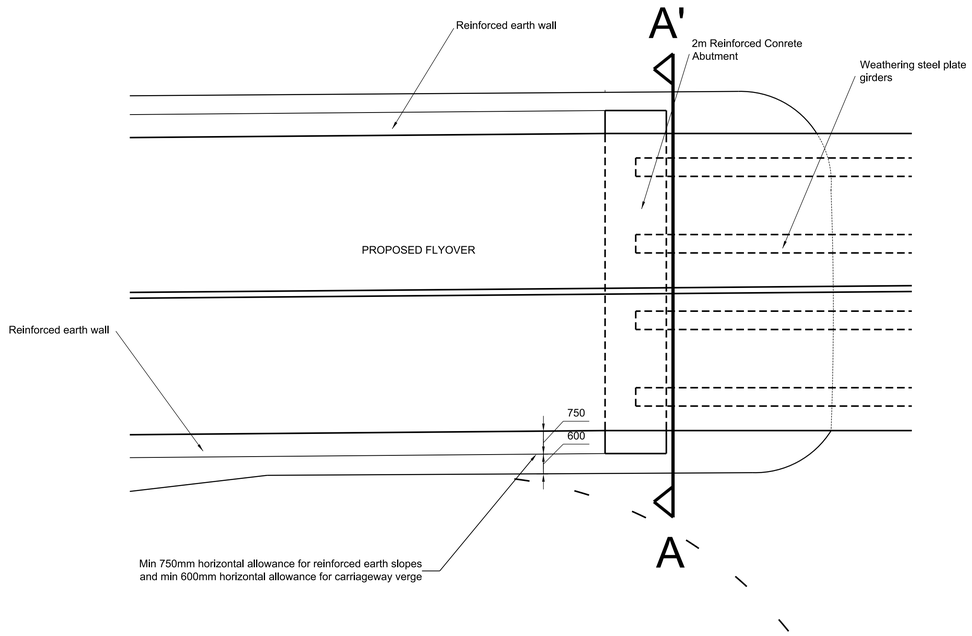
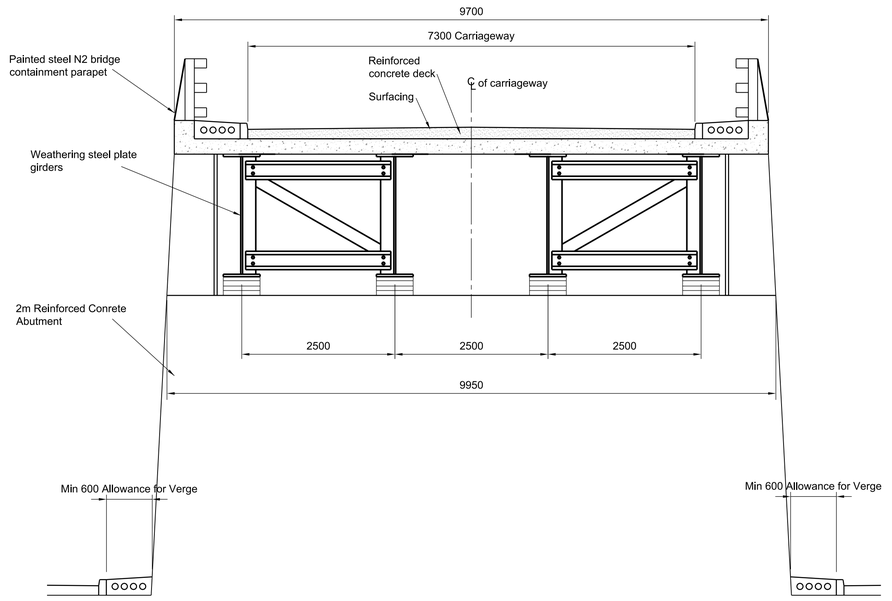


Indicative Plan View
Proposed Flyover Junction
Scale 1:500



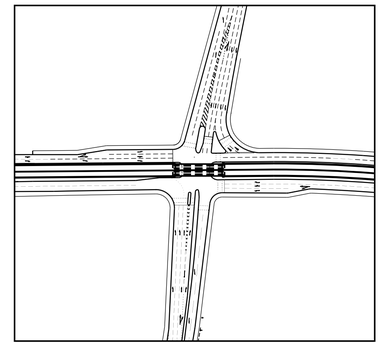
Indicative Plan View
West Abutment
Scale 1:100



Indicative Section Through Deck at West Abutmen
Section A-A'
Scale 1:50

Notes

1. All dimensions in millimetres unless noted otherwise.
2. Do not scale from this drawing, only stated dimensions to be used.
3. This sketch should be read in conjunction with accompanying structures summary sheet. Document Ref: WL-MMD-07-XX-RP-S-0700



Location Plan
Scale 1:2500

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client
Warrington Borough Council
New Town House
Buttermarket Street
Warrington
WA1 2NH

Title
Stage 2b Feasibility Study
Structure 7 - A57 Cromwell Ave Flyover
Sections

Designed	O. Lucas	---	Eng check	R. Mathews	RM
Drawn	O. Lucas	OL	Coordination	O. Lucas	OL
Dwg check	R. Mathews	RM	Approved	R. Langley	RJL

Scale at A1	Status	Rev	Security
AS SHOWN	PRE	P	STD

Drawing Number
382900-MMD-07-XX-CD-S-2701

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Horizontal Scale = 1:1000,Vertical Scale = 1:100

Notes

1. Geological boundaries are extrapolated from a limited number of boreholes and are intended for visualization purposes only.
2. This drawing should be read in conjunction with MML Report *Western Link Ground Investigation Report* 382900-WL-MMD-07-ZZ-RP-N-0002.
3. Red route alignment from MML model 382900-MMD-07-XX-M2-D-0027 *Preferred Route - Red (16 August 2017)*
4. Red route vertical profile from MML model 382900-MMD-07-XX-M2-D-0036 *Preferred Route - Red Route Long Section (30 August 2017)*

Key to symbols

- Vertical Highway Profile
- Dredge Deposits
- Made Ground (Granular)
- Made Ground (Cohesive)
- Tidal Flat Deposits
- Glaciofluvial Deposits
- Glacial Till
- Sherwood Sandstone Group

Reference drawings

1. 382900-MMD-07-XX-M2-D-0027 *Preferred Route - Red*
2. 382900-MMD-07-XX-M2-D-0036 *Preferred Route - Red Route Long Section*

Rev	Date	Drawn	Description	Ch'k'd	App'd
S2.1	09/10/2017	CD	First Issue	AC	NAH

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Client

WARRINGTON Borough Council

Title

Western Link
Red Route Geological Long Section

Designed	A Carins	AC	Eng check	N Haynes	NAH
Drawn	C Dowson	CD	Coordination	A Carins	AC
Dwg check	A Carins	AC	Approved	N Haynes	NAH

Scale at A0	Status	Rev	Security
1:2000	S	2.1	STD

Drawing Number

WL-MMD-07-ZZ-CD-N-0012

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Terrain 3

Terrain 2

Terrain 1

Liverpool Road Landfill (1976-1977)

Gatewarth Farm Landfill Site (1968-1989)

Arpley Landfill Site (1997 - present)

Bellhouse Lane Landfill (licence dates unknown)

WARRINGTON

Penketh

Sankey Bridges

Bank Quay

Whitecross

Hood Manor

Howley

Latchford

Wilderspool

Stockton Heath

Lower Walton

Cobbs

Hillcliffe

Appleton Park

High Warren

Golf Course

Halton Moss

Moore

Norton Marsh

Moss Side

River Mersey

Manchester Ship Canal

Notes

1. This drawing should be read in conjuction with MML Phase 1 Geo-environmental Desk Study Report WL-MMD-07-RP-ZZ-RP-N-0001.
2. Route options are based MML Drawing Western Link Route Options: Short List WL-MMD-07-SK-ZZ-T003-S0 (13 June 2017).
3. The illustrated geotechnical constraints have been derived from the high level datasets described in 'Reference Drawings' below. Further instrusive ground investigation will be required to refine the risks in relation to site-specific ground conditions and engineering proposals.

Key to Symbols

- Study Area
- Potentially Expansive Ground
- Landfill Site
- Potentially Compressible Ground

Reference drawings

1. Open source LIDAR Composite Digital Terrain Model
2. Landmark 1:10,000 scale Historic Landuse Database (HLUD)
3. Superficial geology and bedrock geology themes from BGS DigMapGB-10 mapping
4. Landmark site-sensitivity data

Rev	Date	Drawn	Description	Ch'k'd	App'd
02	27/09/2017	AC	For Information	NAH	NAH
01	25/04/2017	AC	For Information	NAH	NAH

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Title

Western Link
Geotechnical Constraints Plan

Designed	AC		Eng Check	NAH	
Drawn	AC		Coordination	AC	
GIS Check			Approved	NAH	

Scale at A1	Status	Rev
1:10,000	INF	P02

Drawing No.
382900-WL-MMD-07-ZZ-GS-N-0003

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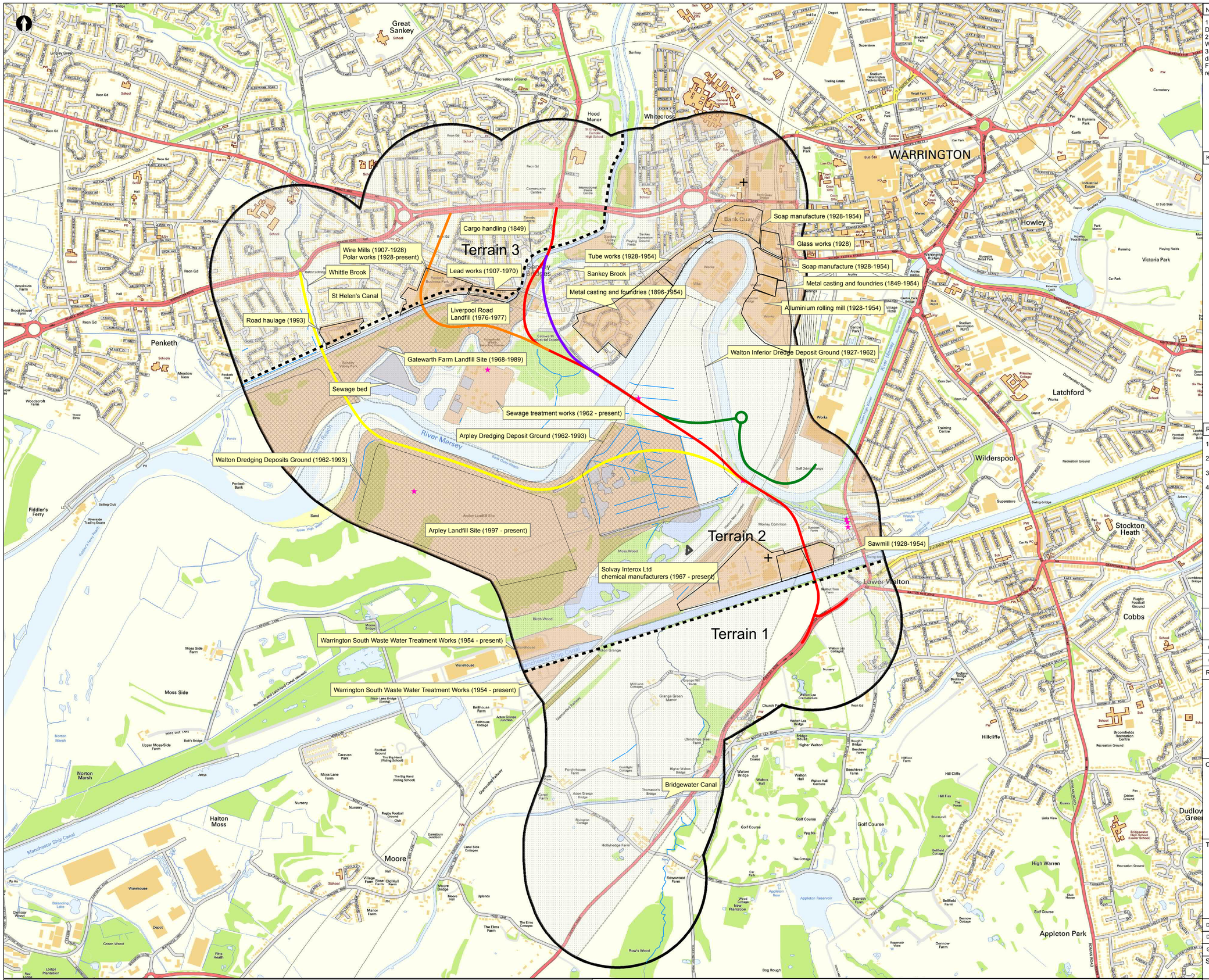

Notes

1. This drawing should be read in conjuction with MML Phase 1 Geo-environmental Desk Study Report WL-MMD-07-ZZ-RP-N-0001.
2. Route options are based MML Drawing Western Link Route Options: Short List WL-MMD-07-SK-ZZ-T003-S0 (13 June 2017).
3. The illustrated geo-environmental constraints have been derived from the high level datasets described in 'Reference Drawings' below.
Further instrusive ground investigation will be required to refine the risks in relation to site-specific ground conditions and engineering proposals.

Key to Symbols

- COMAH Site
- Pollution Incident
- Surface Water
- Potentially Contaminated Land
- Principal Aquifer
- Landfill
- Study Area

Reference drawings

1. Open source LIDAR Composite Digital Terrain Model
2. Landmark 1:10,000 scale Historic Landuse Database (HLUD)
3. Superficial geology and bedrock geology themes from BGS DigMapGB-10 mapping
4. Landmark site-sensitivity data

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02	27/09/2017	AC	For Information	NAH	NAH
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Warrington Borough Council

Title

Western Link
Geo-environmental Constraints Plan

Designed	AC		Eng Check	NAH	
Drawn	AC		Coordination	AC	
GIS Check			Approved	NAH	

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Status: INF
Rev: PO2

Drawing No.
382900-WL-MMD-07-ZZ-GS-N-0004

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0 250 500 750 1,000 Metres

Overview

Legend

- Scheme Boundary
- Temporary Landtake
- Preferred Route 500m Buffer

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Western Link
Scheme Overview

Rev	Date	Drawn	Description	GIS chk	Ch'k'd	App'd
02	13/09/2017	CS	Preferred Route	CS	AS	JH
01	23/05/2017	CS	For Information	CS	AS	JH

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Scale at A3
1:15,000

Drawing No.
WL-MMD-07-ZZ-GS-J-0001

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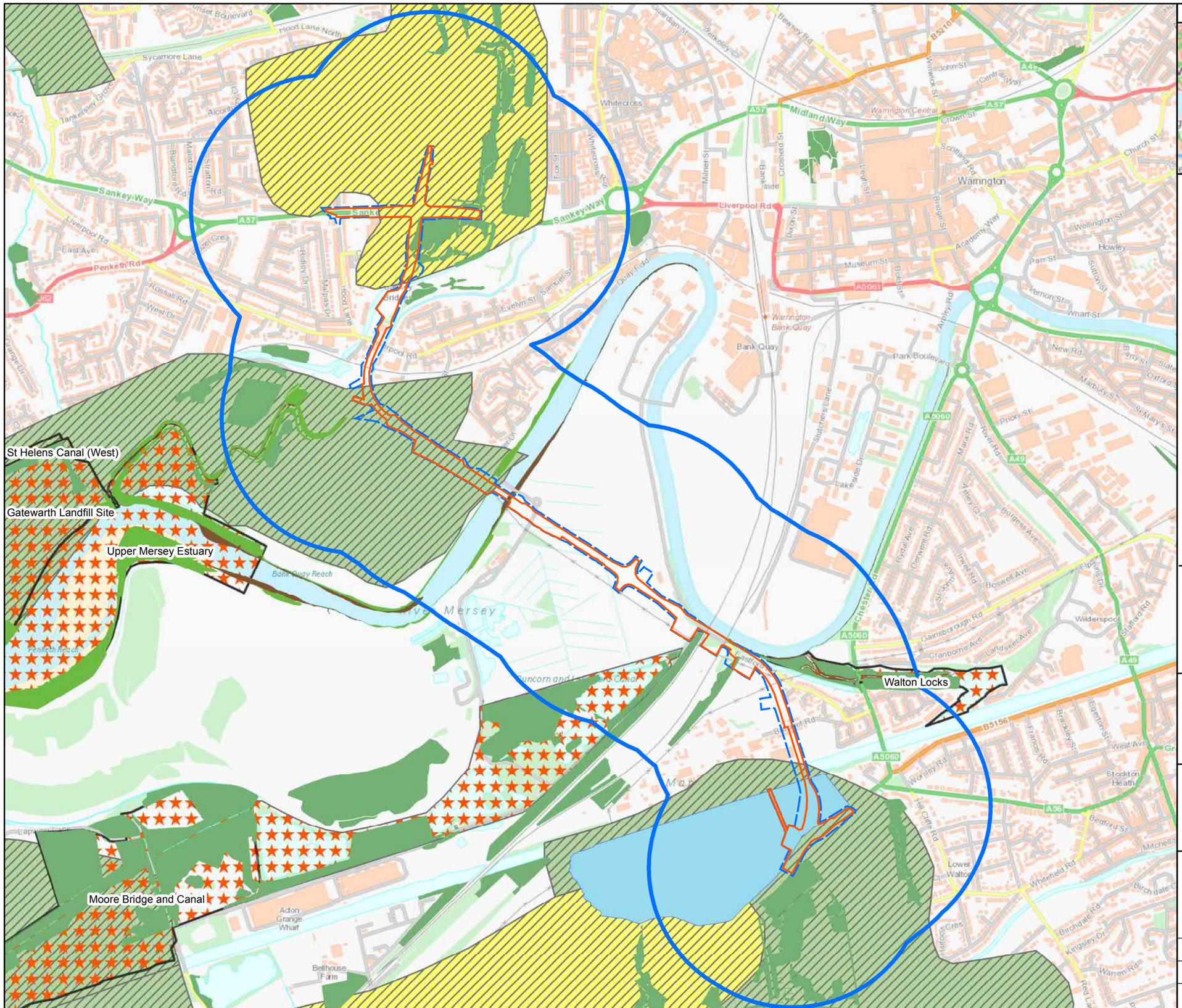

Overview

Legend

- Scheme Boundary
- Temporary Landtake
- Preferred 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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Western Link
Ecological Constraints

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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0 0.2 0.4 0.6 0.8 Kilometers

Scale at A3
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Drawing No.
WL-MMD-07-ZZ-GS-J-0002

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Overview

Legend

- Scheme Boundary
- Temporary Landtake

Preliminary Pollution Constraints

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

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Pollution Constraints

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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-0003

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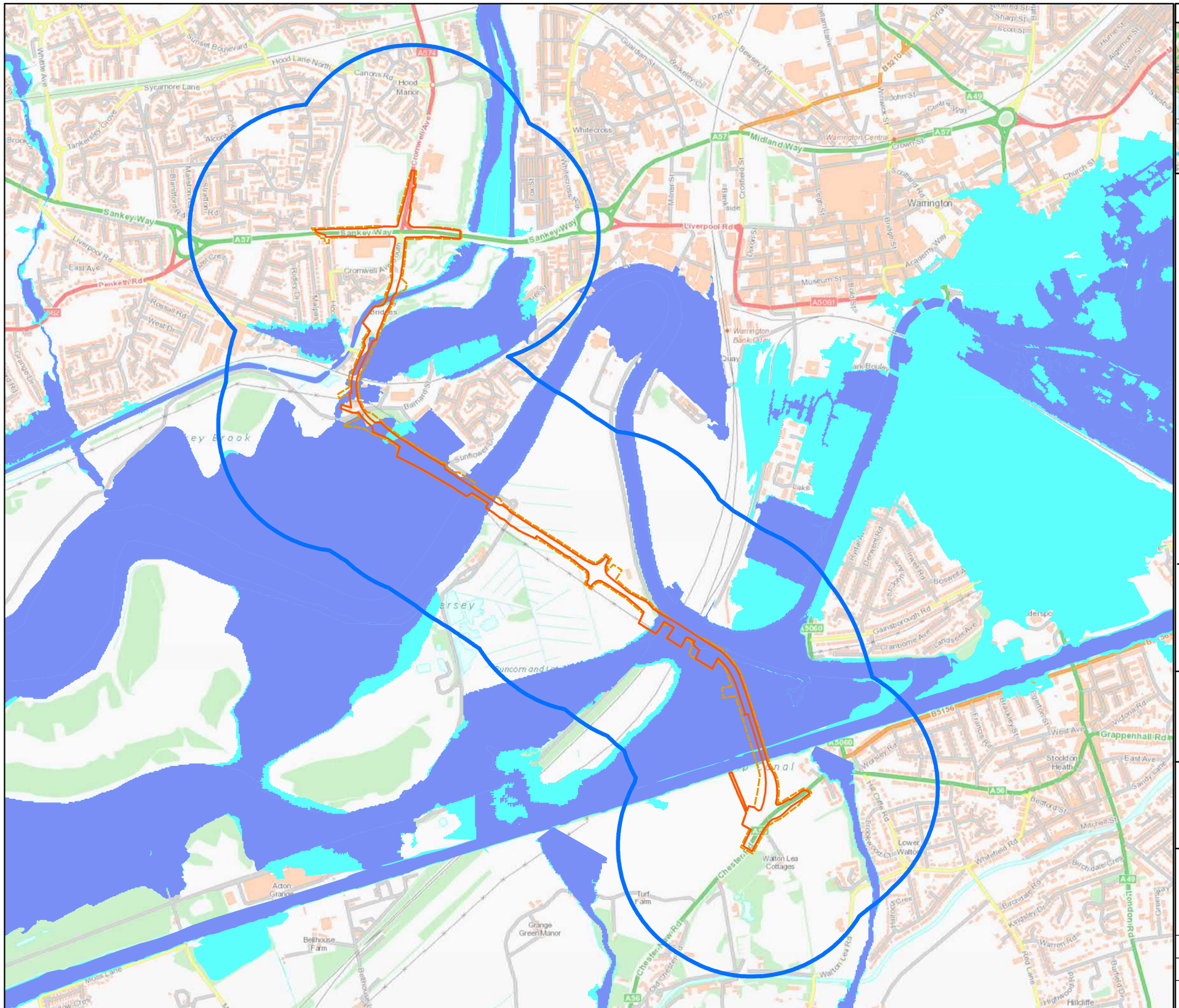

Overview

Legend

- Scheme Boundary
- Temporary Landtake
- Preferred Route 500m Buffer

Environment Agency Flood Zones

- Flood Zone 3
- Flood Zone 2

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Western Link
Flood Constraints

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WL-MMD-07-ZZ-GS-J-0004

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Bewsey Street
Winwick Street
Church Street
Town Hall
Buttermarket Street
Bridge Street
Palmyra Square
Bank Quay transporter bridge
Greenalls Brewery
Roman settlement at Wilderspool
London Road and Grappenhall Road, Stockton Heath
Walton Village

Overview

Legend

- Scheme Boundary
- Temporary Landtake
- Preferred 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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Western Link
Statutory Heritage Constraints

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1:15,000

Drawing No.
WL-MMD-07-ZZ-GS-J-0005

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Overview

Legend

- Scheme Boundary
- Temporary Landtake
- Preferred 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

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0 0.2 0.4 0.6 0.8 Kilometers

Scale at A3
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Drawing No.
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GCN
• Newt fencing and pitfall traps
• Scoping for receptor site
• Pond and habitat creation

Reptile
•Reptile fence and pitfall traps for exclusion/translocation
•Scoping for receptor site
•Habitat creation
NVC
•Translocation of protected species
•Habitat creation to offset

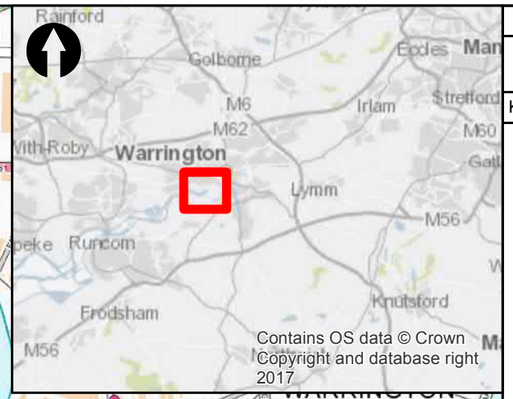
Reptile
•Reptile fence and pitfall traps for exclusion/translocation
•Scoping for receptor site
•Habitat creation
NVC
•Translocation of protected species
•Habitat creation to offset

Japanese Knotweed

Wintering and breeding bird surveys required

Japanese Knotweed

Bat Roost creation – bat house/ bat box



Key to Symbols

Legend

Scheme Boundary

Temporary Landtake

Specific mitigation cannot be established without further investigation. Further surveys which might be required include; Great Crested Newt surveys, Reptile surveys, a National Vegetation Survey, and Bat surveys.

REV	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
P2	14/09/2017	Preferred Route	CS	CS	AS
P1	20/07/2017	Draft	AC	JS	AS

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Client

WARRINGTON Borough Council

Project Title

Western Link

Drawing Title

Ecology Mitigation

Drawn	Checked	Approved
AC	JS	AS

Scale at A3	Status	Revision
1:11,000	INF	P1

Drawing No. 382900-MMD-07-ZZ-GIS-J-0007

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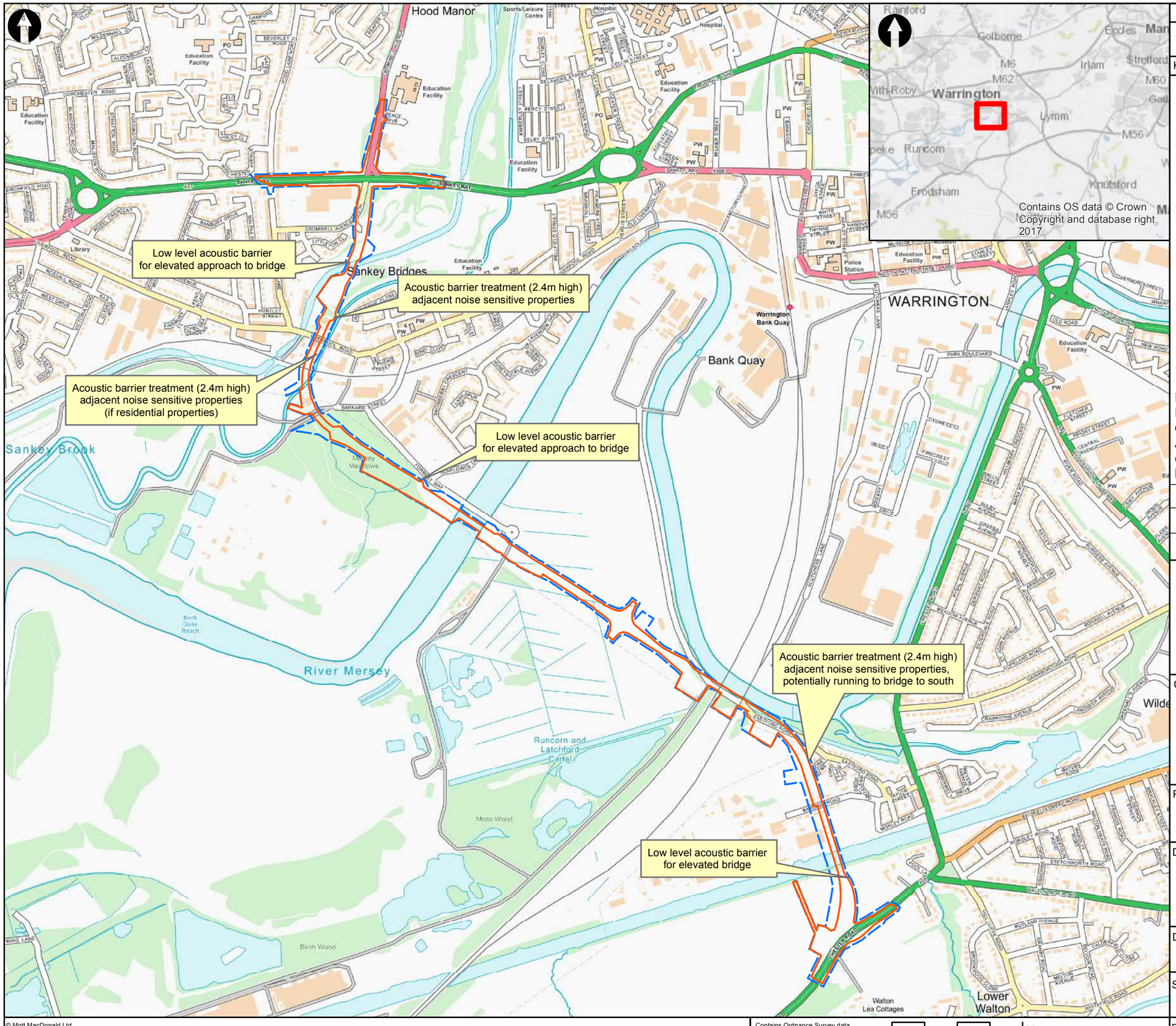

Key to Symbols

Legend

- Scheme Boundary
- Temporary Landtake

Notes:
Potential acoustic mitigation will be subject to outcome of modelling traffic assessment.
Acoustic protection to noise sensitive properties will comprise treatment to building (windows and ventilation), barriers or combination subject to noise levels.

REV	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
P2	14/09/17	Preferred Route	CS	CS	AS
P1	20/07/17	Draft	AC	JS	AS

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Client: WARRINGTON Borough Council

Project Title: Western Link

Drawing Title: Noise Mitigation

Drawn	Checked	Approved
AC	JS	AS
Scale at A3	**Status**	**Revision**
1:11,500	INF	P1

Drawing No. WL-MMD-07-ZZ-GS-J-0008

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0 100 200 300 400 Metres

Landscape Mitigation
Screening Planting: Approx Coverage = 27,939m2.
The following species are considered for all areas; Acer campestre, Alnus glutinosa, Betula pendula, Cornus sanguinea, Corylus avellane, Crataegus monogyna, Carpinus betulus, Ilex aquifolium, Prunus avium, Rosa rubiginosa, and Quercus robur.

Countryside: Approx Coverage = 20,786m2
Landscaperestoration to match existing character (return to farmer if possible). Strip topsoil and any usable top layers of subsoil and stockpile for use at a later stage, where possible.

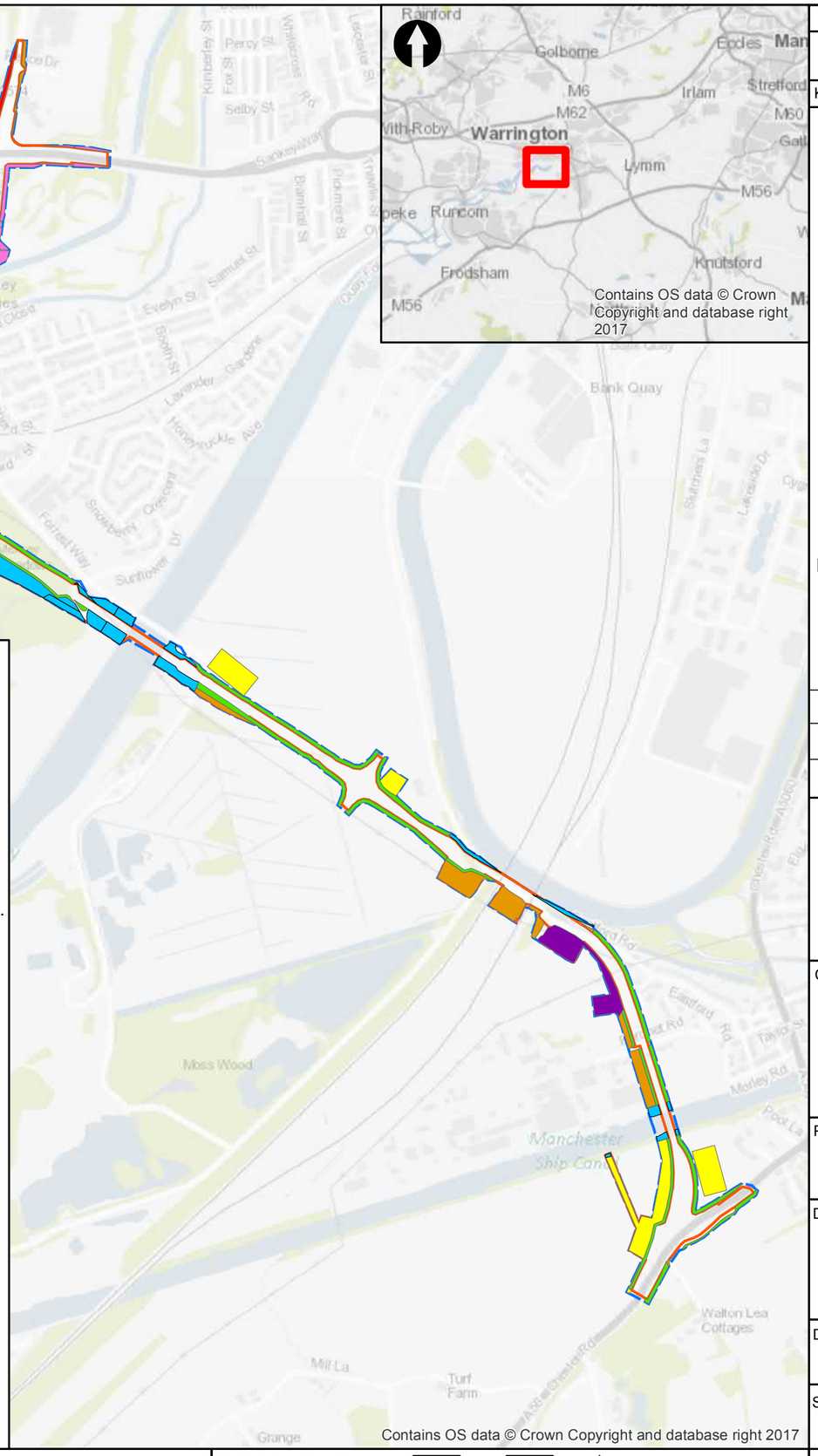
General Reinstatement: Approx Coverage = 19,271m2
Reinstate landscape area according to context – i.e. use tree and shrub species to match the existing. Part of these areas are likely to be grass and hard landscape elements, depending on location.

Morley Common: Approx Coverage = 8330m2
Landscape re-design required to ensure character is maintained after the northern edge has been altered for the works. Please consider siting the compound on the main grass area to ensure trees and planting are only removed where absolutely necessary.

Riverside: Approx Coverage = 16,375m2
Restore landscape area using a wet woodland/scrub mix comprising of the following species; Alnus glutinosa, Betula pendula, Populus nigra, Salix alba, Salix caprea, and Salix fragilis
Allow for planting of 20% of the area(s) using these additional trees and leave the rest of the space to regenerate naturally. Strip the topsoil and top layer of subsoil during the construction phase, before the initial works to the highway. Stock pile both soil types separately then re-use once the road works are complete before re-planting takes place.

Sankey Valley Park: Approx Coverage = 10,619m2
Retain and protect all landscape features as far as possible. Replace trees and mature shrubs on a like-for-like basis if lost due to the works. Reinstate grass areas and hard landscape areas/features as required.

Sports Ground: Approx Coverage = 11,374m2
Reinstate sports ground where damaged.
Note: a specialist should be consulted and specific build ups and land drainage used for repairing grass areas, to ensure that they are fit for purpose.



Key to Symbols

Legend

- Scheme Boundary
- Temporary Landtake

Landscape Mitigation Areas

- Countryside
- General Reinstatement
- Morley Common
- Riverside
- Sankey Valley Park
- Sports Ground
- Screening Planting

Notes:

REV	DATE	AMENDMENT DETAILS	ORIG	CHK'D	APP'D
P1	14/09/17	Draft	CM	JM	AS

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Project Title: Western Link

Drawing Title: Landscape Mitigation

Drawn	Checked	Approved
CM	JM	AS

Scale at A3	Status	Revision
1:11,500	INF	P1

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