

Preliminary Options Appraisal Report

Carrington Relief Road

CO00201388-AMEY-CRR-RP-0001

October 2020



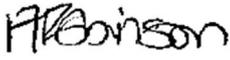
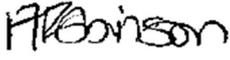
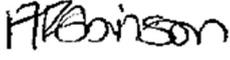
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1. Introduction

1.1 Background to the Project

Trafford Council is proposing to construct a new link road (known as Carrington Relief Road – **Figure 1** below) in the suburb of Carrington, to the north west of the Borough. The principle of the Carrington Relief Road has been shown on The Council’s adopted Unitary Development Plan since 2006 and also Policy ‘SL5 - Carrington’ in the Core Strategy (2012) which required new road infrastructure to relieve congestion on the existing A6144, and has remained an objective through several Council administrations to the present day.



Figure 1: Scheme Location Plan

A more detailed scheme location plan is also included in **Appendix A**.

Carrington, Partington and Sale West are also identified as key areas for regeneration in the Trafford Council Development Plan: Core Strategy document, adopted in 2012. These three locations are linked to the proposed Greater Manchester Spatial Framework (GMSF), New Carrington allocation and Carrington is identified as a Strategic Location (SL5) for change in the Core Strategy.

1.1.1 Greater Manchester Spatial Framework

Greater Manchester’s Plan for Homes, Jobs, and the Environment: Draft GMSF is the strategic spatial plan for Greater Manchester and sets out the strategic planning policy framework for the whole of the city-region and will provide the key strategic point of reference to guide developments across the city-region. A first draft of the GMSF was published in 2016.

This Plan is about creating jobs and improving infrastructure to ensure the future prosperity of Greater Manchester and focuses on making the most of Greater Manchester’s brownfield sites, prioritising redevelopment of town centres and other sustainable locations. It will also enable Greater Manchester to meet its Local Housing Need, promote a new approach to town centres, support wider strategies around clean air, walking and cycling and underpin the ambition to be a carbon neutral city-region by 2038. It supports the creation of resilient, liveable places where walking and cycling are the obvious choice for shorter journeys, where facilities and services are accessible and close at

hand and where the past dependency on the car is superseded by a reliable and responsive public transport system.

A revised Draft GMSF was published in January 2019 and consulted upon with over 17,000 responses, which have been used alongside the evidence base developed, to inform the current plan, GMSF 2020. This provides the opportunity to create the conditions for inclusive economic growth, provide opportunities for provision of much needed homes and protect and enhance the natural environment. Progressing this long-term Spatial Framework is therefore more important than ever to make sure Greater Manchester is on the right track to support the region's recovery, build back better and access the necessary investment for realising our ambitions.

New Carrington is identified as a strategic site in the 2020 Draft GMSF as GM Allocation 41 New Carrington (Draft GMSF 2020), which requires development to mitigate impact of traffic generated on the strategic, primary and local road network. **Figure 2** below shows New Carrington's strategic importance in the GMSF.

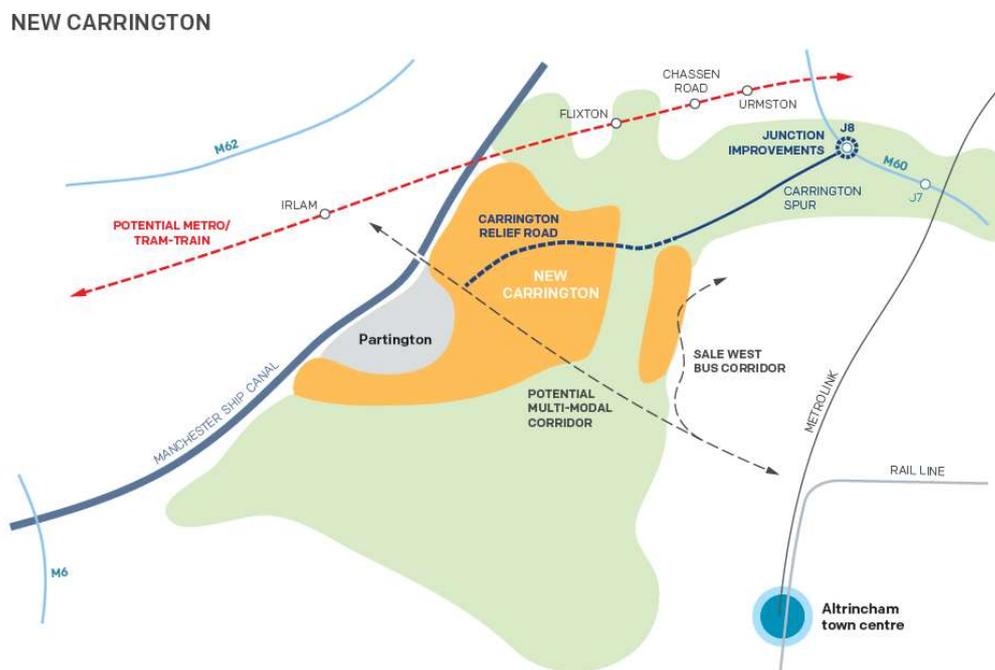


Figure 2: Image taken from Greater Manchester Combined Authority website for GMSF (Policy GM Strat 11 - Draft GMSF 2020 as figure 4.8)

The New Carrington site is an important strategic element of the GMSF Spatial Strategy as it is located within a strategically important area in Greater Manchester, close to Port Salford. It provides an opportunity to deliver a development of significant size and enable the redevelopment of a significant area of brownfield land, building upon the existing strategic allocation in the Trafford Core Strategy. The site will deliver a new community that links to the existing Carrington, Partington and Sale West areas and provides improved transport, social and green infrastructure. New development will create a distinct, attractive place which capitalises on the industrial history and prominent landscape features on the site.

The successful development of the site will require a coordinated approach between all landowners and developers. Trafford Council is therefore committed to working with stakeholders to bring forward a detailed Masterplan / Supplementary Planning Document which provides a framework for

the sustainable delivery of a new community at Carrington, Partington and Sale West. The delivery strategy must ensure that a mechanism is put in place to secure proportionate contributions from all developers within the New Carrington allocation and deliver the wide-ranging infrastructure required.

The relief road would add much needed capacity to the local transport network and would become the primary gateway to the development site from the M60 via the Carrington Spur. It would also relieve pressure on the A6144, which suffers from severe congestion in the peak periods, enhance the environment along the route by reducing air pollution and noise, as well as enabling other treatments to improve the quality of the streetscape for pedestrians and cyclists. These benefits alone are enough to justify investment in the scheme, but in addition the relief road acts as a spine road and opens-up connections to other parts of the site for road users, buses and cyclists.

1.1.2 New Carrington Locality Assessment

Trafford Council has commissioned a Locality Assessment for the proposed Greater Manchester Spatial Framework (GMSF), New Carrington allocation, referenced as GMA41 (Draft GMSF 2020), to identify and test network infrastructure interventions that will assist in delivering the New Carrington allocation, and address the concerns highlighted in the 2019 public consultation on the previous draft GMSF.

The Locality Assessment considers the overall development quantum proposed in phases for the New Carrington allocation, however detailed Transport Assessments will be required to support individual development proposals at the planning application stage.

Within the New Carrington allocation, it is acknowledged that there is a need for a new strategic network capacity improvement between Carrington and the Carrington Spur to support the development proposals. This link referenced as the Carrington Relief Road would need to reduce congestion and adverse environmental effects that are currently experienced along the A6144 Manchester Road corridor. The need for a link road to Carrington has been established in previous Trafford Local Plan documents, including the Trafford Core Strategy. Within the Locality Assessment, the modelling work has been based on a minimum impact provision for a new link road (single lane in either direction) and forms the Reference Case modelling scenario, noting that the exact alignment of the relief road will be the subject of further assessment. The outcome of this assessment has confirmed the need for a new link of the minimum capacity stated, with further future measures being required as the overall allocation is built out. **Figure 3** below shows the New Carrington Allocation boundary.

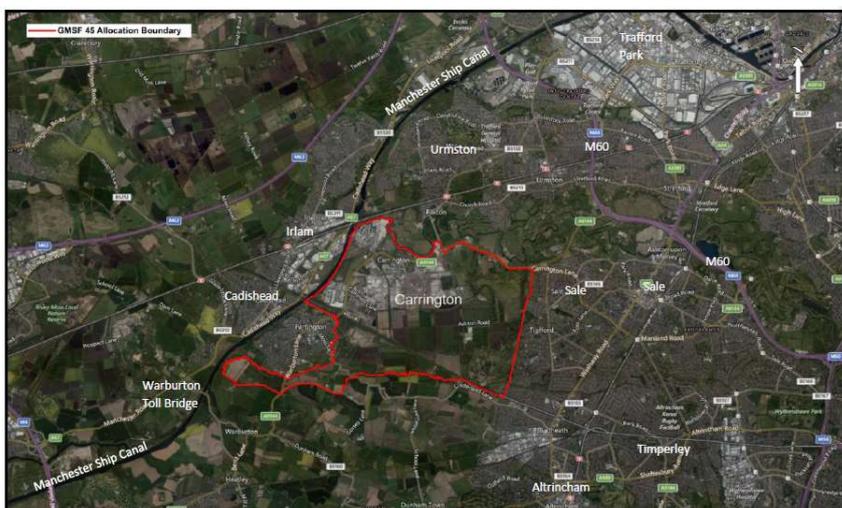


Figure 3: GMA41 New Carrington Allocation boundary

1.1.3 New Carrington Masterplan

A Masterplan framework for the New Carrington site has been prepared by Trafford Council, working in partnership with key landowners on the allocation. **Figure 4** on the following page refers to this Masterplan. The majority of landowners on the site include HIMOR (Carrington Ltd), Manchester United Football Club, National Grid, National Trust, Redrow and United Utilities.

This vision for New Carrington will deliver holistic regeneration for Partington, Carrington and Sale West, through significant housing, industry and warehousing, manufacturing, new community facilities and green infrastructure, in addition to strategic road infrastructure improvements. New Carrington has the potential to meet significant Greater Manchester-wide housing and employment needs, in a sustainable location, on a brownfield site, which will also deliver localised regeneration and place-making benefits.

The primary purpose of this masterplan document is to support the delivery of the strategic development site allocation in the GMSF. The masterplan indicates how the site can be delivered in terms of timescales and phasing, to assist in the delivery of much needed housing, employment and infrastructure. It takes account of the GMSF evidence base documents and the draft GMSF 2020 New Carrington policy has been informed by the Masterplan.

Current master-planning for the sites envisages the scheme being delivered within three primary phases and is an ongoing process. The phasing of development will also need to be considered alongside the delivery of infrastructure and a high-level infrastructure phasing schedule has been prepared as part of the New Carrington Locality Assessment. The development and infrastructure phasing will be developed further as part of future master-planning for the New Carrington allocation.

Phase 1 development parcels comprise HIMOR owned land, which have the benefit of current planning permissions for both housing and employment. The first phase is now being implemented by HIMOR, with the remainder of the employment land being built out following the successful completion and letting of the initial employment site. These require some minor improvements to the A6144, when the developments hit a specific trigger, to ease the flow of traffic at the intersection with Isherwood Road and to enable access to the development sites, but without the need for any additional infrastructure such as a relief road. Notwithstanding this mandated network improvement, the extra traffic generated at these sites has the potential to add to existing congestion, the number of HGV's and reduction in journey time reliability, eventually leading to a worsening situation.

Phase 2 of the development, and subsequently Phase 3 requires the implementation of a new relief road as well as well as other significant transport infrastructure improvements. Feasibility work on a prospective relief road has already received the support of Homes England and Transport for Greater Manchester through provisional grants made through the Housing Infrastructure Fund and the Regional Growth Fund. These appraisals have satisfied the requirements to demonstrate that this phase of development of the relief road is key to unlocking the growth potential in New Carrington, and without it the proposed housing and employment would not be viable beyond phase 1 of the Masterplan.

The Masterplan therefore outlines the phased development of the different sites and the transport infrastructure improvements are integral to how this will be accomplished.



Figure 4: New Carrington Masterplan Proposal 2020

1.2 Strategic Fit

The proposed investment is consistent with the National Planning Policy Framework, geared towards sustainable development of housing and employment, including the provision of a high-quality cycle and pedestrian routes designed to attract commuting and other active travel trips.

The proposal, which includes the provision of new transport infrastructure in the form of the relief road, will allow regeneration and redevelopment of an existing brownfield site and contribute to creation of new jobs and development of new homes. It is therefore clear that this proposal will support the Greater Manchester Spatial Framework.

This proposal will contribute to achieving a range of both the 'place' objectives and the overarching strategic objectives identified in the Trafford Core Strategy. The delivery of the new link road will mitigate the impact of development on the existing highway network and improvements to public transport and active travel infrastructure will also enhance the sustainability of the area.

This proposal is also consistent with, and makes a clear contribution towards, the programmes set out in the Greater Manchester Transport Strategy (2040). It is also consistent with the Delivery Plan 2020-25 which was published in 2019, alongside the Draft GMSF and a final version will be published in Autumn 2020. This document includes specific reference to the Carrington Relief Road as a scheme which can be delivered in the next five years.

1.3 Purpose and Context of the Report

This report has been developed at a point where The Council has adopted full control of identifying the necessary network improvements that support its overall GMSF strategy. Previously, conceptual and feasibility work on developing a prospective layout for a new relief road has been undertaken by private developer partners. The Council would be the promoter of any new project, and it has therefore elected to draw a line under previous work undertaken and take a fresh independent look at how the overall network improvements could be met and how a new link could be provided. This

report, whilst taking advantage of technical work previously undertaken, is a new independent assessment of a prospective scheme in the most up-to-date scenario.

Carrying out an appraisal at this stage gives The Council an ideal opportunity to validate or challenge any previous assumptions and, more importantly, enables a period of design development with much improved public participation.

It is important to make clear that at this relatively early stage of project development, this appraisal has considered high-level engineering criteria with the aim of primarily identifying options which can reasonably be ruled out at this stage.

Examples of certain limitations of detail include not being able to fully take advantage of site geotechnical survey data, or detailed environmental site surveys. These were delayed due to the Lockdown. In these and similar situations, the report relies on established data which, whilst sufficient for the purposes of this study, would inevitably need further detailed investigation at the appropriate time.

Where the scope of the report is limited by the need to carry out further design and assessment work, it will identify what those should be in any options which are shortlisted or recommended for further evaluation.

The routes that are under consideration are shown on the plan contained in **Appendix B** - Proposed Route Options A to F. These are a combination of previously considered routes, and newly identified prospective routes that were developed to challenge previously adopted layouts.

1.4 Scheme Objectives

In carrying out an assessment of potential options, it is important to record the overall objectives of any scheme based on extensive work undertaken to date. This work has included the development of the Core Strategy, the GMSF and Masterplan, and from these processes a wide range of problems were identified, over and above a simplistic need for additional road capacity. These objectives can therefore be summarised as follows:

- Providing access and capacity within the transport network to enable the housing and employment growth;
- Improved public transport and active travel provision to existing areas which are poorly served and to housing and employment growth areas;
- Reduction in traffic using the A6144 Manchester Road through Carrington village and using the Isherwood Road / Manchester Road Junction;
- Improved journey times across Carrington, between Common Lane and Isherwood Road;
- Improved cycling connectivity, including reduced journey times and journey ambience between the Carrington Spur and Common Lane.

These objectives were defined collaboratively with key stakeholders, including HIMOR and in discussion with TfGM. Early work developing the options has been undertaken in conjunction with major landowners and developers, and traffic modelling has demonstrated that the proposed relief road will be necessary to provide sufficient network capacity to redevelop the brownfield sites.

The scheme is to be designed to enable development to take place by addressing the following issues:

- Local congestion on the highway network affects road users, stemming from limited capacity and a lack of alternative routes;

- The Carrington and Partington areas being historically poorly served by public transport and existing services being affected by congestion and this infrastructure provision requires significant improvement;
- Clear evidence from the Planning process that further development will be impossible as the existing network is at capacity or over-capacity;
- A legacy of industrial and waste land use in the area which pose challenges in developing the land for housing or employment purposes;
- Poor cycle and walking infrastructure in the area which limits the provision for healthier active lifestyles;
- Evidence that growing congestion will lead to worsening air quality as queuing traffic increases; and
- Evidence in favour of redesign of junctions, reallocation of through traffic to more suitable routes drawing heavy traffic away from existing communities and to provide the opportunity to reduce collisions.

2. Technical Appraisal

2.1 Scheme Location

The A6144 Manchester Road is a single carriageway road subject to a 30 to 40mph speed limit. It passes through the New Carrington allocation and forms part of the Key Route Network and Primary Resilient Network managed by TfGM. The A6144 is heavily trafficked: providing the primary route from the M6 motorway to Partington and other urban areas to the south-west, to Carrington and Urmston to the north and Sale West, and to the Greater Manchester conurbation and the M60 motorway at Junction 8 to the east via Carrington Spur.

The existing A6144 is of varying width and has poor horizontal alignment with sub-standard bends. A number of minor roads and accesses branch off this route. Footways and verges are available along the majority of the route; whilst provision is improved through the middle section of the route.

The A6144 Carrington Spur link is a single 50mph route that connects the signalised junction at Banky Lane / Carrington Lane with the M60 Junction 8. This route is bounded by agricultural lands with minimal access points and no formal footways located along this route. Along the Carrington Spur there is a bridge crossing the River Mersey approximately 500 metres from the M60 Junction 8.

Other roads in the locality are generally of lower classification and standard. Isherwood Road is a 40mph rural route that heads south from the Flixton Crossroads signalised junction and terminates at the private entry close to the Manchester United Training Facility. Moss Lane is also a single carriageway road subject to a 30mph speed limit that passes through the southern part of the allocation. In the Partington urban area, Moss Lane is a traffic calmed residential street, whilst further east it merges into an unclassified rural lane of approximately 5.0 to 5.5 metres and connects with Sinderland Lane towards Altrincham. It forms part of Trafford's Primary Resilient Network suggesting it is well used and an important route locally.

As their designations suggest, both the A6144 Manchester Road, Carrington Spur and Moss Lane / Sinderland Lane have key local functions. This is in addition to being identified as an abnormal load route.

These routes currently carry significant volumes of traffic; along the A6144 Manchester Road, an AADT of circa 14,326 is typical; the Carrington Spur typically carries 18,402 AADT; and Moss Lane / Sinderland Lane accommodates 7,500 AADT. In transport modelling terms, the A6144 is 'at and above capacity' during peak periods and the Isherwood Road / Flixton Road / Manchester Road crossroad is also the 'most complained about' junction on Trafford Councils network.

Figure 5 on the following page provides reference to the network locations identified within this section.



Figure 5: Scheme location plan

2.2 Design Parameters

This section defines the standards by which a prospective relief road will need to be built. The layout of the scheme route options is to be in accordance with the Design Manual for Roads and Bridges (DMRB), which provides a reference for all the current standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways. While the relief road won't be designated as a trunk road, the design standards are the most appropriate that apply.

It should be noted that all route options will be assessed for suitability against the same design parameters as outlined below.

- (a) Carrington Relief Road would be designed as an urban primary distributor road. Speed limits would be determined by considering key factors such as road environment and existing traffic speeds, accident record, road geometry, road function and environment. This will be considered during the outline design and therefore doesn't impact the options appraisal.

- (b) **Highway Type & Design**

In accordance with **CD 109 (Highway Link Design) Table 2.5**, the Minimum Design Speed for a primary distributor is 70A kph (40mph) which has set the horizontal alignment parameters in-line with Table 2.10 of CD 109. An extract of table 2.10 from CD 109 is shown in **Figure 6** below. The Design Speed for the full length of Carrington Relief Road has therefore will be set at 70A kph.

This table will be used to determine the site stopping distances, overtaking stopping distances, horizontal and vertical curvature. All route options referred to in this report have been drawn up using the horizontal curvature parameters and therefore these parameters will not be used to determine their suitability, rather used for further development and analysis of options taken forward to the outline design stage.

Table 2.10 Design speed related parameters

Design speed kph	120	100	85	70	60	50	V2/R
Stopping sight distance (metres)							
Desirable minimum	295	215	160	120	90	70	-
One step below desirable minimum	215	160	120	90	70	50	-
Horizontal curvature (metres)							
Minimum R* with adverse camber and without transitions	2880	2040	1440	1020	720	520	5
Minimum R* with superelevation of 2.5%	2040	1440	1020	720	510	360	7.07
Minimum R* with superelevation of 3.5%	1440	1020	720	510	360	255	10
Desirable minimum R (superelevation 5%)	1020	720	510	360	255	180	14.14
One step below desirable Minimum R (superelevation 7%)	720	510	360	255	180	127	20
Two steps below desirable minimum radius (superelevation 7%)	510	360	255	180	127	90	28.28
Vertical curvature							
Desirable minimum* crest K value	182	100	55	30	17	10	-
One step below desirable min crest K value	100	55	30	17	10	6.5	-
Desirable minimum sag K value	37	26	20	20	13	9	-
Overtaking sight distances							
Full overtaking sight distance FOSD (metres)	-	580	490	410	345	290	-
FOSD overtaking crest K value	-	400	285	200	142	100	-
* Not recommended for use in the design of single carriageways (see Section 9)							
The V ² /R values shown above simply represent a convenient means of identifying the relative levels of design parameters, irrespective of design speed.							

Figure 6: Extract of Table 2.10 from CD 109

(c) **Road Geometry**

The following DMRB standards will be used to determine the road geometry during the outline design stage of options taken forward from this appraisal.

- **CD 109 Rev 1** – Highway Link Design (formerly TD 9/93 Highway Link Design);
- **CD 127 Rev 1** – Cross-Sections and Headrooms (formerly TD 27/05 Cross-Sections and Headroom);
- **CD 123 Rev 1** – Geometric design of at-grade priority and signal-controlled Junctions (formerly TD 41/95, TD 42/95, TD 40/94, and those parts of TD 50/04 and TD 70/08 relating to priority and signal-controlled junctions.);

(d) **Non-motorised Users**

The following design guidance will also be used in the development of the scheme design, particularly in relation to access to public transport and for walking, cycling and horse riding:

Department for Transport:

- **CD 143 Rev 2** - Designing for walking, cycling and horse-riding (formerly Part 5 TA 90/05 The Geometric Design of Pedestrian, Cycle and Equestrian Routes).
- Local Transport Note 1/20 Cycle Infrastructure Design (July 2020)

- Making transport accessible for passengers and pedestrians - a guide to best practice on improving access to public transport and creating a barrier-free pedestrian environment (December 2005)

Sustrans:

- Design Manual Chapter 7 Junctions and crossings: cycle friendly design (draft February 2015).

Transport for Greater Manchester:

- Greater Manchester Cycling Design Guidance & Standards Version 2.0 (January 2014)
- 19-1369 Cyclops Technical guide
- Bee a Champion Nov 2019 – Urban Movement
- Bee Network Wayfinding
- Cycling for Everyone – Sustrans & Arup – July 2020

From the design standards and guidance listed above, the following road profile was determined for consistent option appraisal. All options detailed in this report and shown on plans have been drawn up using horizontal parameters and with this typical road profile.

Typically, a 7.3m carriageway width for the section between Manchester Road and Isherwood Road would be considered. The existing width of Carrington Spur is 10m and the section between Isherwood Road and Carrington Spur could be of the same width. A segregated shared use cycleway / footway would be provided on each side, typically 5 metres in width. The configuration of cycleways will be discussed with appropriate Officers in Trafford Council and TfGM to ensure that the developed scheme proposals take account of any local expectations and relevant strategic policies. This is indicated in **Figure 7** below as a typical cross section.

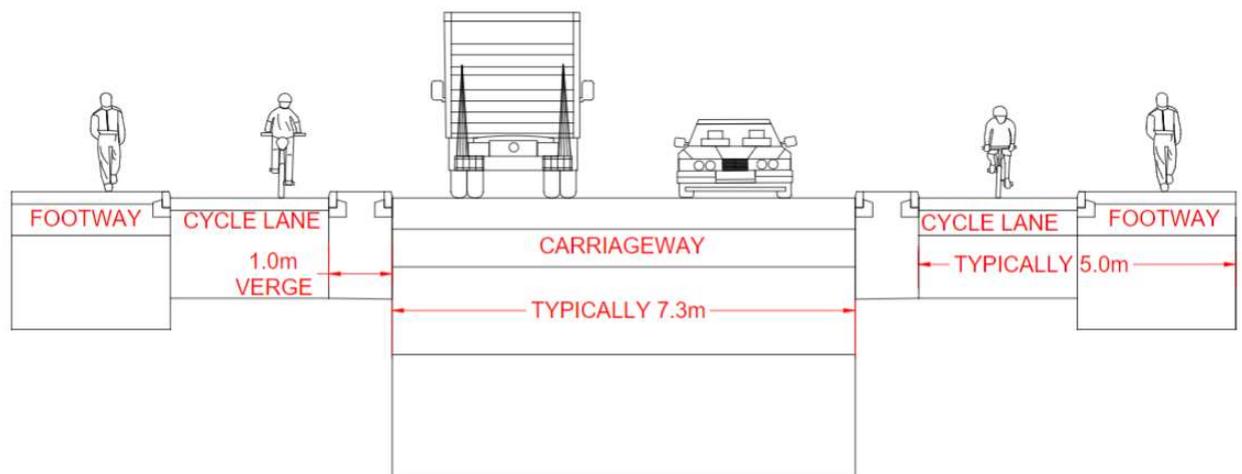


Figure 7: Typical Cross Section through the proposed relief road

2.3 Constraint Factors

2.3.1 Availability of Land

The land impacted by the various route options under consideration is a mix of industrial and agricultural land. To the west of Isherwood Road, the land is primarily industrial and is mostly in the ownership of one landowner (HIMOR). The eastern portion of the route corridor is comprised of farmland and a significant portion of this is in the ownership of HIMOR. **Figure 8** below shows the various landowners in the area.

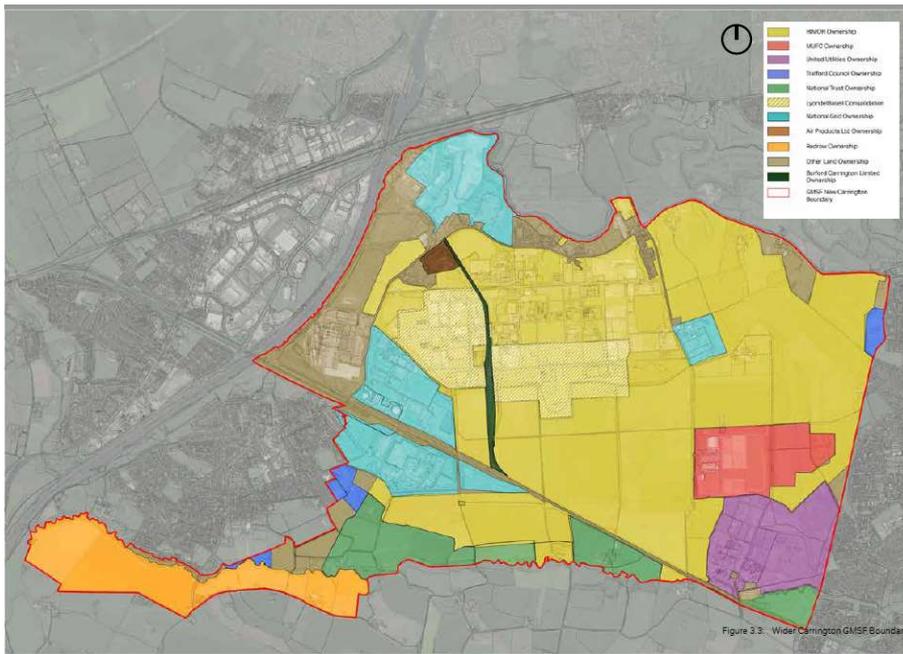


Figure 8: Land ownership plan (Taken from the New Carrington GMSF Masterplan dated September 2020)

Whilst the largest developer and landowner has previously been a strong advocate of a proposed relief road, indicating that land would be made available, there are various obstacles which will remain in any scenario such as:

- Long-term tenancies
- rationalisation of industrial infrastructure
- a significant risk of encountering costly former industrial contamination.

Any option developed, therefore, which requires the A1 route to be fully or partially adopted, will carry forward significant risk to the budget and delivery programme.

Several of the route options cross a strip of land owned by Burford Land Holding. The point of intersection of this with the A1 industrial estate road is at a privately owned bridge which crosses a dismantled railway, known as 'Burford Bridge'. The bridge is essentially a "up and over" bridge and the existing ground is generally flat and level – see **Figure 9** below. The bridge was reconstructed in 1997. Its arrangement is inadequate by modern day standards for the safe operation of traffic as the carriageway and verge widths do not conform to those currently prescribed by the Design Manual for Roads and Bridges. The verge width is narrower than the preferred minimum footway width of 2.0m

and the total width of the bridge presents a significant constraint to the carriageway and the non-motorised user provision that can be accommodated, which is a significant objective of the scheme. Under the Highways Act there would be various issues to be resolved should the bridge be required or adopted as part of any prospective scheme taken forward.



Figure 9: Burford Bridge

It is understood that further dialogue with the landowner is being undertaken in the background to ascertain the viability of the bridge, its potential demolition and use as green sustainable transport route to areas to the south and north providing good links to neighbouring areas. From site visits there are visible private services that would also require diversion if this route is deemed viable.

Whilst there are no formalised or adopted proposals for this strip of privately owned land at the time of this assessment, the presence of the bridge remains a risk to be resolved for potential options under consideration.

In considering the route options, land acquisition will be used as factor in this assessment process.

2.3.2 Ground Conditions

There are varying ground conditions across the site. A desktop study has been undertaken to assess the geo-environmental and geotechnical conditions for the relief road. The geology map shows that the bedrock geology comprises Wilmslow Sandstone Formation consisting of relatively uniform, red non-pebbly cross stratified, fine to medium grained sandstone. The map also shows the superficial deposits of sand and gravel, clay, sand and peat. Several of the route options for the relief road pass through these differing deposits in the greenbelt area outlined in **Figure 10** below.

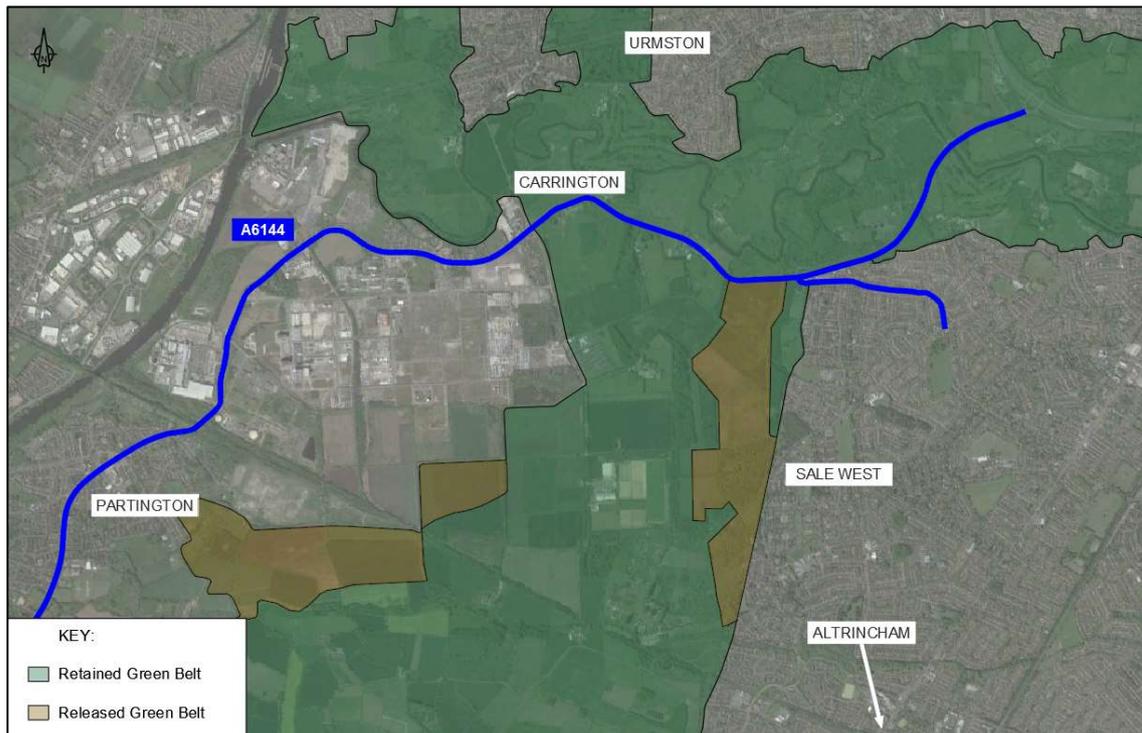


Figure 10: Greenbelt Extents

Historically, the western part of the route served as the production, storage and transfer area for a petro-chemical plant. Several of these structures have been demolished and the land is now vacant. A review of the available information has highlighted several potential sources of contamination from on-site and off-site sources that may have an impact upon the site. Potential sources of contamination include the made ground across the western part of the site, the petrochemical plant and associated railway sidings, the electrical substation near Isherwood Road, historic landfills, depots and other industrial activities in the wider industrial estate.

It is likely that within the made ground, contamination including metals, asbestos, TPH, PAHs, and sulphates may be found and across the historic landfill areas, metals, PAHs, sulphates and ammoniacal nitrogen may be found. Ground gas may also be present, along with degradable soil organic matter and other organics within the made ground and landfill material. If present, contaminants in the made ground may pose a risk to future site users and construction workers.

An explosive ordnance threat assessment for the wider Carrington Business Park was carried out in 2014, focussed on the western end of the A1 route. This report highlighted that Carrington Moss was used as a bombing decoy site located 0.48km south of the A1 route and that an abandoned bomb was discovered 1.8km south of the A1 route. There is also an RAF ammunition store located 2.5km south of the route, which the report states were subjected to a heavy bombing attack in 1941. The area of the business park was deemed to be low-medium risk and with the site east of Isherwood Road designated to be at medium high risk of unexploded ordnance due to its proximity to the decoy site and previously discovered ordnance.

East of Isherwood Road the site is agricultural fields and an intrusive ground investigation survey was undertaken in September 2020 across the area which has been identified as a potential route option. A number of exploratory window sample holes (up to 5 metres in depth) and boreholes (up to 10 metres in depth) were undertaken and samples taken away for laboratory geotechnical and contaminants testing.

From the available information from the site logs, the ground is generally consistent, of granular material and showing no sign of waste material. Small localised pockets of peat were found in one area only. Water seepage at shallow levels was found in several locations and should the preferred route cross through these fields, it is recommended that soakaway testing be undertaken to determine the drainage requirements associated with road construction.

In considering the route options, available geotechnical information will be used as factor in this assessment process.

2.3.3 Utilities Equipment

Preliminary enquiries were submitted to utility companies in 2018 using the procedure described in Appendix C2 of the Highway Authorities & Utilities Committee (HAUC) Code of Practice "Measures Necessary Where Apparatus is Affected by Major Works (Diversionary Works).

In addition, some of the relief road options pass through the former Shell Carrington petrochemical site. The site is now owned by HIMOR and has a large network of private services. HIMOR have obtained record drawings of these services.

A ground penetration radar (GPR) survey was also undertaken of the A1 Route in 2018 to locate the utility equipment along that route. These are legacy services located on the A1 Route and will need to be considered in detail against the development of the design. In addition, the C2's was refreshed and reviewed as part of the September 2020 ground investigation survey.

A report 'C2 Utilities Report - Carrington Relief Road' (Document Ref. CO00201181 / 030 Revision 01) dated 09/10/2018 provides details of all known utility equipment within the site boundary. This includes the following:

BT	Ducting, joint boxes, DP and poles
Carrington Gas Pipeline	Gas
Electricity Northwest Ltd	including various cables - LV, 6.6kV, 33kV, 132kV, 4x132kV underground cables leading to Overhead Line
National Grid above 2 bar below 2 bar	LHP Gas Main MP Gas Mains
Overhead Electric Cables	4No overhead lines
Essar Oil (UK) Pipeline	p1068/1016 Carrington - MSC Jetty Pipeline
United Utilities	Public sewers 4", 10", 12", 24" and 36" water mains
Virgin Media	Underground route and boxes
Vodafone / Zayo	Underground route and boxes
Trafford Council Apparatus	Street lighting columns and supplies. Traffic signal installations including power supplies, controllers and signal cables.

Mainline Pipelines Ltd Apparatus comprising a high pressure Seisdon to Manchester oil pipeline has also been identified within the scheme boundary. This is a significant constraint to any preferred route as this pipeline provides aviation fuel to Manchester Airport. The pipeline is deep and not expected to affect the road construction.

Another primary utility constraint is the presence of four high voltage overhead lines and associated towers crossing the relief road between Isherwood Road Junction and Carrington Lane Junction. A plan detailing this apparatus is included in **Appendix C**.

The overhead lines comprise the following:

- (a) 275kV/400kV overhead line between towers ZZN023B and ZZN023C operated by National Grid;
- (b) 275kV/400kV overhead line between towers ZQ001 and ZQ002 operated by National Grid;
- (c) 275kV/400kV overhead line between towers ZO008 and ZO009 operated by National Grid;
- (d) 132kV overhead line between towers AD44 and AD45 operated by Electricity North West

Consultation has been carried out with the two operators to establish appropriate vertical and horizontal clearances to overhead lines and towers which will be used to assess impact on the route options.

For appraising the route options, statutory undertaker's equipment will not be considered as part of the assessment as it not considered to be a significant factor to the choice of highway alignment. However, a budgetary figure has been included in the cost estimates for preferred options.

2.3.4 Former Shell Site Apparatus

The following Shell Site private apparatus has been identified near to the relief road and protection, lowering, diversion, decommissioning or removal of this apparatus may be necessary.

150N.S. Flare	Telephone Cables
150N.S. Propylene Line	150mm diameter nitrogen main
"Trenches and Cable Routes"	150mm diameter natural gas main
6", 8", 12", 14" and 16" Fire Mains	550mm diameter cooling water main
"Oily Drainage"	2x600mm diameter and 1x915mm diameter cooling water mains
"Sewage Drainage"	HV cables
"Trade Effluent Drain"	400mm diameter fire main
"6", 12", 33", 36" and 48" Surface Water Drains"	Comms Cables
"Towns Water Mains"	

Protection, lowering or diversion of both private and statutory utilities apparatus may be necessary, and each Utility will be asked via a New Roads and StreetWorks Act C3 Draft Scheme / Budget Estimates Request to provide details on affected apparatus and estimated cost once the preferred option has been determined.

2.3.5 Environmental & Protected Species Habitats

A desktop assessment proportionate with this phase of study was completed of the area to identify existing baseline conditions and any environmental constraints. This was completed using the following sources:

- Google Maps
- MAGIC Maps
- Environmental Agency Flood Maps
- Extrium Noise Maps

The constraints identified in this section are shown on Drawing "Environmental Constraints" shown in **Appendix E**.

(a) Air Quality

There are several small localised Greater Manchester Air Quality Management Areas (AQMAs), particularly in the eastern extents of the of the scheme (along the A6144 and Carrington Spur). Another AQMA is located within the study area, at the junction of A6144, B5158 and Isherwood Road. The surrounding area is predominantly commercial however, there are scattered sensitive receptors in close proximity, particularly to the east of the scheme, which have the potential to be impacted by the scheme.

It is anticipated that both the operational and construction phase of the scheme will impact sensitive receptors as a result of dust generating activities and emissions from plant and traffic. It is recommended that NO₂ monitoring will be completed to allow further assessment of the impacts for the preferred route options once determined.

(b) Cultural Heritage

There are cultural heritage assets within close proximity to each of the options. There are Listed Buildings which are detailed below:

Ref. No.	Name/Address	Grade
LB 1067868	Church of St George, Manchester Road	II*
LB 1067866	Acker's farmhouse, Carrington Lane	II
LB 1067891	Barracks farmhouse & cottage, Churchfields	II

There are a number of undesignated recorded historic sites located throughout the scheme extents. These include historic buildings, findspots and the sites of demolished or otherwise removed features.

Due to the potential for unrecorded subsurface archaeological remains to survive within the Greenbelt areas traversed by the scheme, it is recommended that a written scheme of investigation is produced to outline appropriate measures to investigate that potential at the outline design stage.

(c) Landscape and Visual

The scheme is located within the Mersey Valley National Character Area (NCA) 60. The scheme is not located within an Area of Outstanding Natural Beauty (AONB) or National Park. There are a number of Public Rights of Ways (PRoWs) in close proximity to the scheme. These are detailed in Section 2.3.6. A number of options are partly within greenfield land which forms part of the greenbelt.

A Landscape and Visual Impact Assessment will be required to understand how receptors will be affected by this proposed scheme as part of the outline design stage.

(d) Biodiversity

An initial environmental desktop review has identified that several sites of biological importance (SBI), including the River Mersey, Jack Lane, Flixton sludge beds, wetlands at Carrington Moss, Carrington Power Station and Ashton-upon-Mersey sewerage works. Partington Nature Reserve is located to the south of the study area.

There is a specific SBI wetland area of Carrington Moss which is also designated as a priority habitat of Lowland Fens.

Carrington Moss is used as a breeding and feeding ground for various bird species.

The northern area of the study area is located in an area of Priority Habitat Inventory (Coastal and Floodplain Grazing Marsh). This area has records of birds such as Sparrow hawk, long-tailed tit, gold finch, swift, common frog and great crested newt.

Further assessment and ecological surveys will be required on the preferred options to fully understand the impacts that the proposed scheme will have on Biodiversity during construction and operation.

(e) Noise and Vibration

There are three Noise Important Action (NIA) Planning Areas (ID: 10812, 10813 & 1459) NIA which have potential to be impacted by the scheme. The surrounding area is predominantly commercial however, there are scattered sensitive receptors in some proximity, particularly to the east of the study area, which have the potential to be impacted by the scheme. There is also a community receptor located at Carrington Fire Station on the eastern end of the A1 route.

It is anticipated that both the operational and construction phase of the scheme will impact sensitive receptors from noise emissions from plant and traffic during construction and traffic using the new route during operation. It is recommended that a detailed assessment is completed along with a number of long term and short-term noise surveys once the preferred route options have been established.

(f) Materials Assets and Waste

The Carrington area was historically used as a landfill site in the early 19th Century. There are also other areas of landfill and historic landfill sites. The closest one is Collier Industrial Waste Ltd (EP3938AJ) which is located approximately 4km from the study area.

It is recommended that a quantitative assessment should be undertaken to investigate the potential of using recycled and/or locally sourced materials may provide opportunities to design-out waste during the design stages.

(g) Population and Human Health

The surrounding area is predominantly commercial however, there are scattered sensitive receptors in some proximity, particularly to the east of the study area. The majority of residential properties are located to the north, off Manchester Road, and to the east. Throughout the area there are number of scattered community receptors including; Carrington Fire Station, North Cheshire equestrian centre and Sale Sharks Rugby Training Ground. Other community uses which are located within the extended area include; All Saint Catholic Primary School, All Saints Roman Catholic Church, Bodmin Road Health

Centre, Manor High School, Firs Primary School and Firsway Health Centre. These are all have the potential to be impacted by the scheme.

(h) Road Drainage and the Water Environment

The River Mersey meanders north of the study area and has an expansive flood zone, with the potential for route options to cross the River Mersey and a large portion will be built within its floodplain. There is a large pond known as 'Shell Pool Reserve' south east of the industrial area within the study area. Areas of surface water are observed along the existing A6144 Manchester Road, which would indicate low land drainage ability. Much of the industrial area has shallow groundwater contamination.

It is recommended that a Flood Risk Assessment is completed in accordance with Environment Agency requirements to determine the effects of the proposed route on the surrounding area. Ground investigation should be completed to identify and mitigate potential impacts arising from ground contamination.

(i) Environmental Conclusions

In assessing the route options, environmental considerations will be reviewed against these constraints. Once the preferred route options have been identified a full Environmental Scoping Report will be produced to inform the requirements of an Environmental Statement.

2.3.6 Public Rights of Way

There are a number of existing public rights of way (PROW) which may be affected by the scheme. These include Carrington Restricted Byway 1, 21, 22 and 23 and also the Trans Pennine Trail / National Cycle Network Route 62. Footpath 19 and 34 may also be affected, and there are several roads used as public paths (RUPP) which also will be affected. **Figure 11** below shows the location of these existing public rights of way.

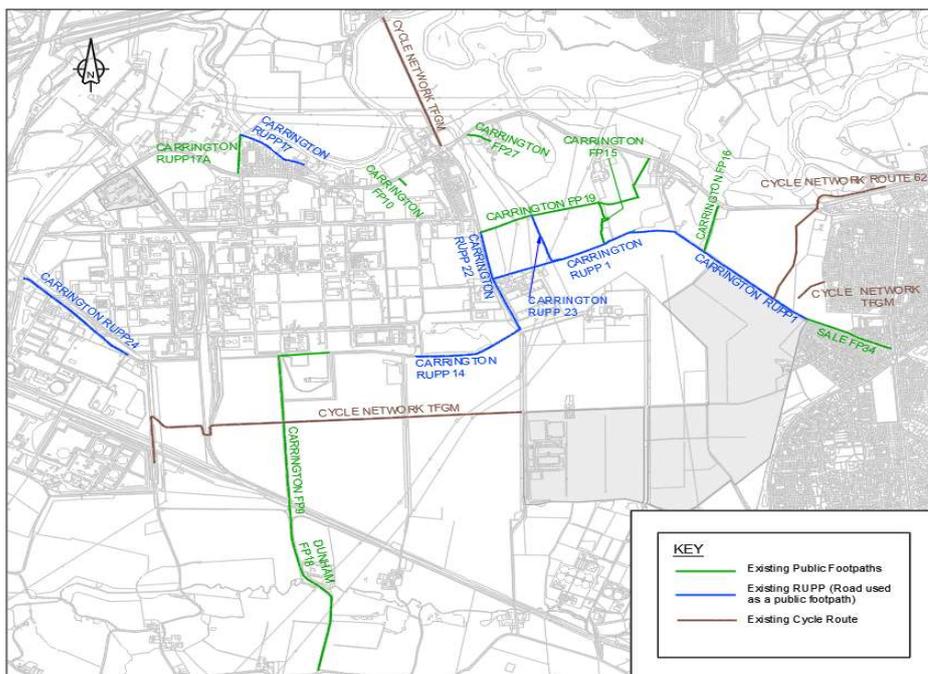


Figure 11: Known Public Rights of Way

There may be other unofficial PROW which need to be considered, but as part of the option route assessment all known public rights of way which are affected will be identified and highlighted.

Again, an allowance in the option cost estimates has been made for enhancing and improving crossing facilities where the proposed routes sever PROWs or RUPPs and this will be developed in the next stage of Outline Design.

2.3.7 Watercourses and Drainage

To the north of the proposed study area is the River Mersey and to the south is Sinderland Brook, which are both designated by The Environment Agency as 'Main Rivers'.

A drainage assessment proportionate with this phase of study suggests that the site generally either directly or indirectly drains to the River Mersey and the Manchester Ship Canal and has established that there are several existing watercourses, ditches and outfalls serving the existing site; namely: -

- Isherwood Brook
- School Lane Brook
- Outfall to Mersey via a private surface water sewer network
- Burford Brook
- Outfall to Manchester Ship Canal via Vicarage Brook

The agricultural land to the east of Isherwood Road is serviced by a network of drainage ditches which are assumed to drain to Sinderland Brook to the south. The former Shell site has a network of private surface water drains which collects to a series of pumping stations and discharges into the River Mersey to the north. **Figure 12** below shows the watercourses within the scheme boundary.

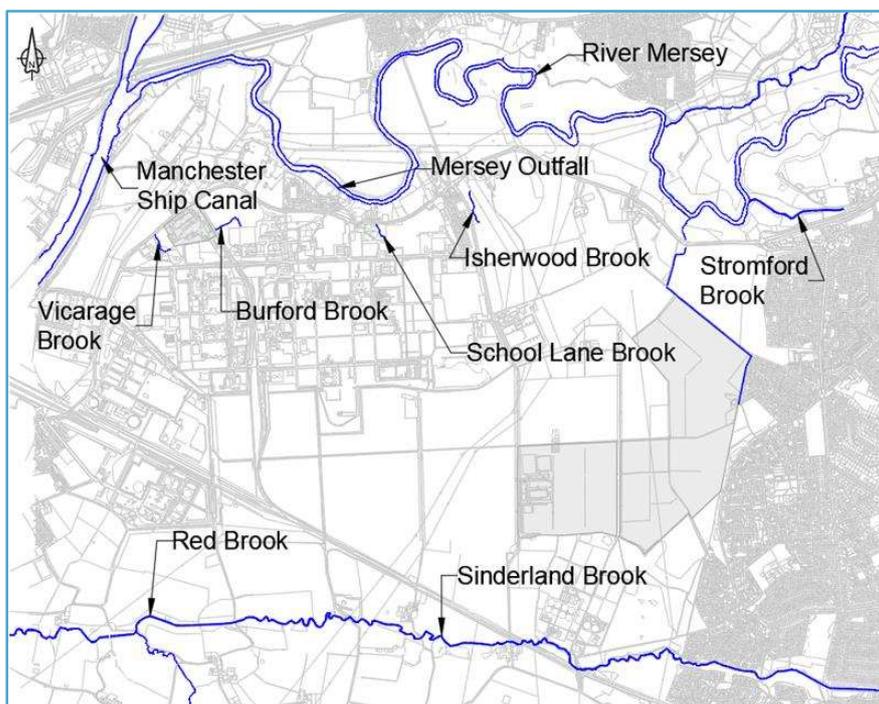


Figure 12: Watercourses in the area

A drainage and flood risk assessment proportionate with this phase of study notes there are long standing drainage and flooding issues in the area, particularly the eastern section of the area. The Local Lead Flood Authority states that the brownfield area of site is not located in a critical drainage area, however development shall not increase the risk of flooding elsewhere in the local area, and there may be opportunity for the proposed highway drainage to outfall into existing watercourses, subject to agreement with third party owners.

Environment Agency Flood zone maps have been referenced to determine which zone or zones each route option encroaches into, as this provides information from computer models to assess an area's long term risk from rivers and the sea, surface water, reservoirs and some groundwater, The results are an indicator of an area's flood risk, particularly the likelihood of surface water flooding.

Any route option which encroaches into Flood Zone 2 and 3 and as such will result in a loss of existing floodplain storage and will require compensatory storage to be provided for such loss on a level for level basis. This additional storage may require the purchase of additional third-party land over that required for the road alignment and associated SUDs features. Oversized pipework in the carrier drain network would also provide online storage volumes for storm water. Consideration of increased rainfall intensities due to climate change is a statutory requirement of the Environment Agency and will be incorporated in the proposed design. The integration of green infrastructure as sustainable urban drainage systems, such as swales, ponds and basins, will assist in improving the amenity and biodiversity and can help to create habitat, recreational and biodiversity areas and improve water quality.

The existing A1 road will also have a private drainage system and there may be opportunity to utilise this for some of the route options.

Several of the proposed route options cross existing Greenbelt and may interrupt existing land drainage networks. The use of culvert crossings or diversions would avoid isolating parcels of land and consideration will be given to raising the level of any proposed road alignment to overcome existing land drainage issues.

Drainage and flood risk will form a key part of the options appraisal.

2.3.8 Public Transport and Sustainable Travel

Significant enhancements to the existing public transport provisions in the vicinity of the scheme are planned as part of an integrated public transport strategy. Engagement with TfGM has begun to understand the wider strategies for the area, and it will be essential to ensure these public transport enhancements meet the aspirations of all key stakeholders.

Sustainable active travel includes the provision of a high-quality cycle and walk routes that are designed to promote active travel modes of transport so that they are more attractive for commuters, etc.

A new network of walking and cycling routes both along new highway infrastructure and through recreational / open space areas will be developed to facilitate localised and more strategic walking and cycling opportunities. This will also complement the Transport and Travel Plans associated with any adjacent development sites and proposals.

Any preferred options will include footpaths and dedicated cycle lanes that connect to and extend the Greater Manchester Bee network of strategic cycle routes. Three 'Bee' lines are planned to cross the development area: one following the A6144 which will connect into the Relief Road; a second along the path of the disused east-west railway; and a third traversing the site north-south along the path of the disused railway. The design and location of cycle lanes will be future proofed to allow for potential road widening / layout modifications.

A review of public transport opportunities for the Carrington development site was undertaken by AECOM on behalf of TfGM in February 2020 and this considered the modification of existing bus services, the identification of potential new services on existing highway, and the inclusion of services using bus only infrastructure. A key objective of the study was to identify solutions which primarily serve the development site, improving connectivity to the wider area, including neighbouring centres such as Flixton, Urmston, Altrincham and Sale, and key trip attractors such as Trafford Park and Trafford Centre and/or the Regional Centre. A high-level assessment of the potential impacts of proposed modifications to the existing bus network to serve the Carrington development site was undertaken using the Greater Manchester Public Transport Model (GMPTM).

This study has identified potential route changes to existing bus services that may address service provision requirements at the future Carrington development sites. This analysis was performed following an initial assessment of the baseline GMPTM scenario, in which it was identified that demand matrices had to be adjusted to represent more adequately the future Carrington development site demand.

The assessment considered five options, with each option deriving from the previous scenario (i.e. Option 1 derived from 'Do Minimum', Option 2 derived from Option 1, etc.). This approach enabled the identification of key step-change impacts between the different assessed routing options, to define a set of recommendations for potential options to take forward in future studies.

Preliminary discussions are underway with TfGM Transport Strategy who are to develop bus priority measures and strategy for buses to get past the traffic. Once this strategy is agreed between Trafford Council and TfGM this will be implemented into the design of a preferred option.

Public transport provision itself will not form part of the options appraisal but will be fully considered and developed further once a preferred route has been determined.

2.4 Other Information

2.4.1 Topography

Topographical survey information indicates that the existing ground level at the western end of the existing A1 generally lies at around 19m AOD; whilst there is a slight rise to around 20.5m AOD at the eastern end of the A1; whilst at the eastern tie in junction with Carrington Lane the level rises to around 21m AOD.

This is a rise of only two metres over an approximate distance of four kilometres meaning the site boundary is predominantly flat and therefore no significant earthworks should be required. The area is known locally to suffer with poor drainage, localised flooding and standing water, but standard engineering drainage design principles including on-line and off-line storage will be provided to meet with statutory approvals. The current scheme value includes risk allowances against required land take and drainage requirements.

2.4.2 Uses of the Relief Road (lorries)

The existing A6144 Manchester Road / Carrington Lane is identified as an abnormal load route. As such, the existing highway infrastructure provides a 6m height clearance, a 150-tonne load capacity and junctions are constructed with removable furniture and low kerb faces where any radius is tight or there may be a difficulty with an abnormal load negotiating the junction. It should be considered whether the relief road would become the new abnormal load route, and then this can be taken into account during the design stages.

Heavy Goods Vehicle (HGV) use of the existing A6144 Manchester Road through the village is a significant of concern to local residents. A sample traffic count undertaken in July 2016 for traffic modelling purposes at the Flixton Crossroads junction suggested that HGV makes up between 4 and 14% of the total traffic passing through this junction, throughout the 12-hour period between 07:00 and 19:00. This is likely to increase given the already approved development in the area.

3. Route Options

3.1 General

Six route options, A to F, have been considered or developed as a potential route for a relief road, from west to east, within the scheme boundary. These options have been developed using digital highway alignment design software and are based on the general minimum design criteria set out earlier in the report and taking consideration of the DMRB. A combined plan of these options is shown in Drawing CO00201181/HD/007 Rev P0.0 which is included as **Appendix B**.

All options are discussed travelling from the west to the east.

Option F, which runs the length of the existing A1 before crossing the existing agricultural land, is the alignment previously developed to assist Trafford Council with funding applications, but all options are being considered equally to ensure the most appropriate route can be identified.

A description of each route option is provided below, along with the main pros and cons. A constraints table in relation to each route option is also included in **Appendix D**. This discusses each route option in further detail than set out in the individual option summaries below, against traffic issues, development (industrial / employment and residential), environmental impact, drainage, structures, geotechnical, land acquisition and cycling / walking.

As outlined earlier, the basis of this study will be on a single carriageway road, typically with a proposed nominal carriageway width of 7.3m. A segregated footway / cycleway, typically 5 metres in width would be provided on both sides of the route over its full length, as a minimum requirement.

It is expected that the road space will be widened to provide additional lanes on the approaches to any proposed traffic signal-controlled junctions to minimise congestion at these junctions.

3.2 Option A

This is an online option running partially centrally and partly to the north of the site, with a total length of 4.5km, as shown in **Figure 13** below.

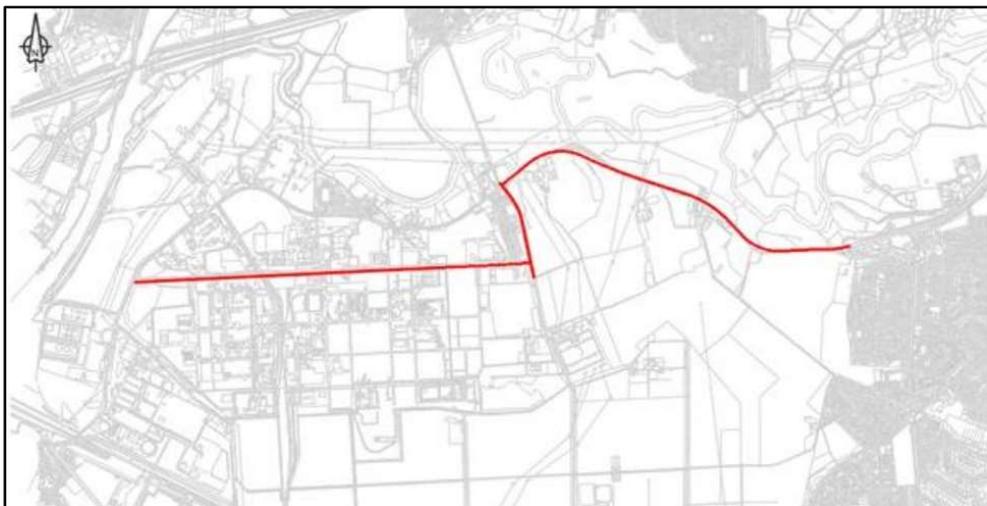


Figure 13: Option A Route Plan

Alignment Details

- The route commences to the west at the existing priority junction of the A6144 Manchester Road with the A1 route and follows the length of the existing A1;
- The existing priority junction is upgraded to a new signalised junction with the potential for a free flow southbound left turn lane;
- A new signalised junction is proposed where the A1 meets Isherwood Road;
- Isherwood Road is improved between the A1 junction to the existing signalised junction of A1644 Manchester Road / Carrington Lane / Isherwood Road in the north;
- Improvements to the Carrington Lane / Isherwood Road junction to provide free flow southbound left turn lane;
- Improvements to the section of Carrington Lane, between the Isherwood Road junction and Carrington Spur, including alignment improvements to reduce the severity of the bends;
- Realignment of Carrington Spur / Banky Lane junction.

Pros:

- Most direct route through the middle of the proposed industrial development site, giving good access to development on both sides of the road;
- May be possible to utilise the existing concrete road as the formation for the new road through the industrial area (subject to further investigations) along the A1 alignment;
- Avoids any major impact on the agricultural fields;
- Route provides relief to Carrington Village;
- Is compatible with the Outline Planning Permission which has been granted for New Carrington Village, with a "corridor" for the western section of the proposal; allows reallocation of the road space on the existing A6144 to achieve better provision for cyclists and pedestrians through Carrington Village (subject to traffic modelling).

Cons:

- Land is required at the western junction with the A1 route and A1644 Manchester Road;
- Crosses the old railway line at Burford Bridge which may incur ownership issues and is a constraint to widening;
- May require demolition of the bridge, removal of existing embankment to achieve at grade solution, as the current structure does not meet the required design standards;
- The straight alignment of the existing A1 may present unacceptable road safety issues such as inappropriate speed and overtaking;
- Likely to create an increase in traffic using the Isherwood Road / Manchester Road junction;
- Land acquisition required for the Carrington Lane widening, including land from Sale Sharks Rugby Club training ground and demolition of a number of properties (Dainewell Farm, Ackers Farmhouse and Ackersbarn Courtyard);
- Due to the alignment of the route it is likely to result in longer journey times;
- The constrained corridor along Carrington Lane limits opportunities for active travel and green infrastructure;
- Significant on-line improvements to existing A6144 and long construction programme and severe traffic disruption to facilitate the build;
- The section between Isherwood Road and Banky Lane would poorly serve the objective of reducing traffic and HGV's from Manchester Road and would not provide an adequate corridor to create the green sustainable travel enhancements set out in the GMSF.

Conclusion

This online improvement option provides a relief road to remove the majority of traffic from Carrington Village itself but it is unclear as to whether it is able to improve the existing road network between the Isherwood Road junction and Carrington Spur and will increase traffic using the Isherwood Road / Manchester Road Junction.

There is a risk that the two required major traffic signal junction's mid-way along the route may lead to congestion and not provide the journey time reliability required for significant public transport enhancements. There may be speeding and overtaking issues using the whole A1 route due to its long linear alignment and the width constraints at Burford Bridge will need to be overcome. In addition, there are land ownership issues to overcome, which may lead to lengthy land negotiations and the possibility for Compulsory Purchase Orders (CPO), which add significant risk to the project. Significant on-line improvements are likely to result in a long construction programme and severe traffic disruption during construction. However, as this route largely follows the existing road network it requires the least disturbance to the Greenbelt.

3.3 Option B

This option is the most southern option with a total length of 4.7km and is predominantly off-line traversing agricultural fields and the Carrington Moss, as shown in **Figure 14** below.



Figure 14: Option B Route Plan

Alignment Details

- This route starts at the existing junction of the A6144 Manchester Road and Common Lane, which will be upgraded to a signal-controlled junction;
- The route follows the direction of Common Lane for approximately 1.5km to join Ashton Road;
- The route then follows Ashton Road for approximately 580 meters;
- From here the route then crosses the open fields of Carrington Moss to link with the Carrington Spur.

Pros:

- Avoids other highway constraints meaning construction would have less impact on the network;
- The route provides relief to Carrington Village;

- Avoids Burford Bridge and the associated land ownership, width constraints and construction issues;
- Wider available corridor allows opportunity for green infrastructure to be provided;
- Avoids the potentially problematic continuous straight alignment of the A1.

Cons:

- It serves the proposed industrial development relatively poorly, requiring construction of additional north south links to provide access;
- It crosses Greenbelt land of Carrington Moss which is likely to attract public objection;
- The majority of construction required will be within Carrington Moss and potentially within landfill / contaminated land;
- Alignment is not easily accessible to provide for active travel opportunities;
- The longest of the options considered, therefore impacts journey times.

Conclusion

The Option B route provides full relief to Carrington Village but fails to properly serve the proposed industrial development site. As one of the longer routes, this option is likely to provide a poor cost / benefit value due to costs associated with building the majority of the alignment within Greenbelt land and Carrington Moss and hence additional earthworks requirements and potential remediation costs, etc.

Because of the high cost, environmental impact and relatively poor access to parcels of land identified as future development sites, it is recommended that this option is not developed further.

3.4 Option C

This option is the most northern option, partially located to the north of the current A6144 alignment, with a total length is 3.8km, as shown on **Figure 15** below.



Figure 15: Option C Route Plan

Alignment Details

- The route leaves the existing A6144 alignment to the east of the Air Products site and heads north-east requiring a new structure to cross the River Mersey;

- It then continues east across Greenbelt where it will again cross the River Mersey;
- It then turns south-east crossing the B5158 Flixton Road, with a new traffic signal junction;
- Then crosses the existing A6144 Carrington Lane, approximately 320 meters east of the Isherwood traffic signal junction;
- The route then continues east, across the Sale Sharks Rugby Club training ground, then following the route of the existing Carrington lane to link into the existing Carrington Spur.

Pros:

- The route provides relief to Carrington Village;
- Avoids other highway constraints meaning construction would have less impact on the network;
- Wider available corridor allows opportunity for green infrastructure to be introduced;
- Avoids Burford Bridge and the associated land ownership, width constraints and construction issues;
- Avoids the potentially problematic straight alignment of the A1.

Cons:

- This option requires construction of two new crossings of the River Mersey and creates an additional junction on the existing A6144 to the east of the existing Isherwood Road junction;
- May incur land ownership issues;
- Alignment is not easily accessible to provide for active travel opportunities;
- The route lies mostly within the flood plain and would need to be elevated;
- As the route is in the flood plain, compensatory storage would be required which would require other land take;
- It serves the proposed industrial development and former Shell Plant residential development relatively poorly;
- It crosses Greenbelt land which is likely to attract public objection.

Conclusion

This option provides relief to the Carrington Village area but fails to serve the proposed industrial and development sites. Due to buildability issues and excessive costs to construct crossings over the River Mersey, along with the requirement to purchase additional third-party land, this option it is recommended this option is not developed further.

3.5 Option D

This option is 3.9km in length and follows the same route as Option A for most of its length apart from the western end where it diverts from the A1 in a north western direction, with the objective of avoiding the Burford Bridge, as shown in **Figure 16** below.

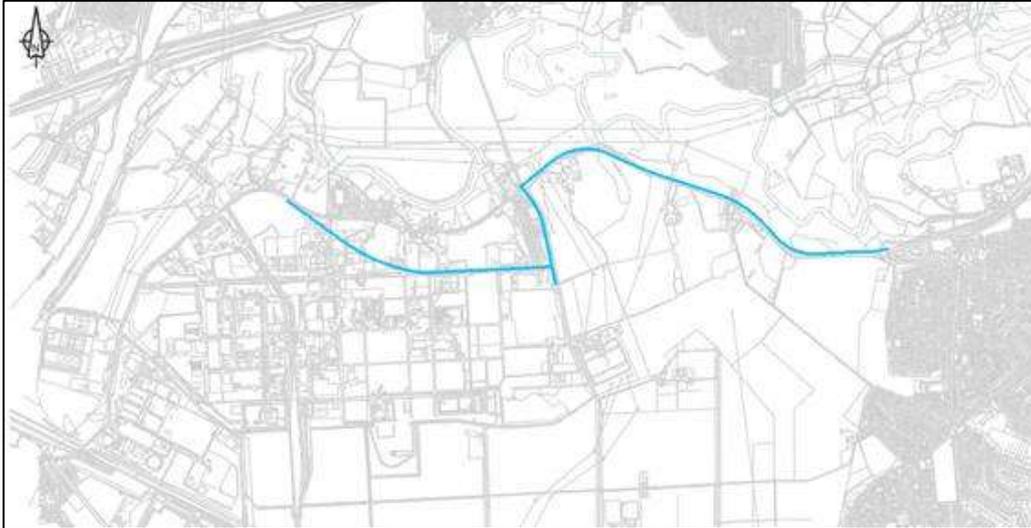


Figure 16: Option D Route Plan

Alignment Details

- A new off-line route is created, from a point approximately 300 metres west of the existing Business Park entrance, heading in a south easterly direction, for approximately 500 metres;
- This links into the road alignment along the A1 route at a new 3 arm signalised junction;
- This new 3 arm signalised junction which is created off the line of the existing A1 and connects the two links together at the south east end of the Business Park, with a side arm connecting the development site to the south;
- The route then follows the existing A1 alignment to a new signalised junction where it meets Isherwood Road;
- Isherwood Road is improved between the A1 junction to the existing signalised junction of A1644 Manchester Road / Carrington Lane / Isherwood Road in the north;
- Improvements to the Carrington Lane / Isherwood Road junction to provide free flow southbound left turn lane;
- Improvements to the section of Carrington Lane, between the Isherwood Road junction and Carrington Spur, including alignment improvements to reduce the severity of the bends;
- Realignment of Carrington Spur / Banky Lane junction.

Pros:

- Avoids Burford Bridge and the associated land ownership, width constraints and construction issues;
- May be possible to utilise the existing concrete road as the formation for the new road through the industrial area (subject to further investigations) along the A1 alignment;
- Avoids any major impact on the agricultural fields;
- Avoids the potentially problematic continuous straight alignment of the A1;

- Is compatible with the Outline Planning Permission which has been granted for New Carrington Village, with a “corridor” for the western section of the proposal; allows reallocation of the road space on the existing A6144 to achieve better provision for cyclists and pedestrians through Carrington Village (subject to traffic modelling).

Cons:

- Land required at the western junction with the A1 route and A1644 Manchester Road;
- Location of the western entrance to the route does not bypass the entire Carrington village area;
- Partial demolition of Carrington Business Park;
- Likely to create an increase in traffic using the Isherwood Road / Manchester Road junction;
- Land acquisition required for the Carrington Lane widening, including land from Sale Sharks Rugby Club training ground and demolition of a number of properties (Dainewell Farm, Ackers Farmhouse and Ackersbarn Courtyard);
- Due to the indirect alignment this route is likely to result in longer journey times;
- The constrained corridor along Carrington Lane limits opportunities for active travel and green infrastructure;
- Significant on-line improvements to existing A6144 and long construction programme and severe traffic disruption to facilitate the build;
- The section between Isherwood Road and Banky Lane would poorly serve the objective of reducing traffic and HGV’s from Manchester Road and would not provide an adequate corridor to create the green sustainable travel enhancements set out in the GMSF.

Conclusion

As described in the main Option A above, this option also does not significantly improve the existing road network between the Isherwood Road junction and Carrington Spur and is likely to increase traffic at the Isherwood Road / Manchester Road junction. There is a risk that the two required major traffic signal junction’s mid-way along the route may lead to congestion and not provide the journey time reliability required for significant public transport enhancements.

In addition, there are land ownership issues to overcome, which may lead to lengthy land negotiations and the possibility for Compulsory Purchase Orders (CPO), which add significant risk to the project. Significant on-line improvements are likely to result in a long construction programme and severe traffic disruption during construction. However, as this route largely follows the existing road network it requires the least disturbance to the Greenbelt.

Whilst this route could be beneficial in avoiding the Burford Bridge crossing, it does not provide relief to the entire Carrington village area.

It is therefore recommended that this option is not developed further at this stage. However, there is potential to revisit this route option should there be no agreement over the Burford Bridge Crossing.

3.6 Option E

This option has a total length of 3.3 km making it the shortest option, as shown in **Figure 17** below.



Figure 17: Option E Route Plan

Alignment Details

- The route commences at A6144 Manchester Road approximately 300m west of the existing access to the Business Park;
- The road alignment runs in a south easterly direction for approximately 350m to a new junction with the A1 where the route joins the existing A1 alignment;
- The route then follows the alignment of the existing A1 industrial estate Road to a new realigned signalised junction to the south of the existing junction at Isherwood Road;
- East of Isherwood Road, the route crosses open field skirting south of existing electricity pylons to meet Carrington Lane at the end of the Carrington Spur.

Pros:

- Avoids Burford Bridge and the associated land ownership, width constraints and construction issues;
- Direct route through the middle of the proposed industrial development giving good access to development on both sides of the proposed road;
- May be possible to utilise the existing concrete road as the formation for the new road through the industrial area (subject to further investigations) along the A1 alignment;
- Avoids the potentially problematic continuous straight alignment on the A1 route;
- The wider available corridor between Isherwood Road and Carrington Spur provides greater opportunity for active travel and green infrastructure;
- Is compatible with the Outline Planning Permission which has been granted for New Carrington Village, with a "corridor" for the western section of the proposal; allows reallocation of the road space on the existing A6144 to achieve better provision for cyclists and pedestrians through Carrington Village (subject to traffic modelling).

Cons:

- Location of the western entrance to the route does not bypass the entire Carrington village area;

- A new section of road is required on the western extents of the scheme which would require some demolition of Carrington Business Park;
- It crosses Greenbelt land which is likely to attract public objection;
- It does not provide relief to the whole of Carrington Village.

Conclusion

Whilst this is the shortest option it requires a new section of road at its western extents. This new section of road will require demolition of some of the existing Carrington Business Park and does not bypass the entire Carrington Village area.

It is therefore recommended that this option is not developed further at this stage. However, there is potential to revisit this route option should there be no agreement over the Burford Bridge Crossing.

3.7 Option F

This option uses the whole length of the existing A1 route through industrial estate, from the A6144 to Isherwood Road, before following the same route as Option E to Carrington Spur. It has a total length of 3.9km, as shown in **Figure 18** below.

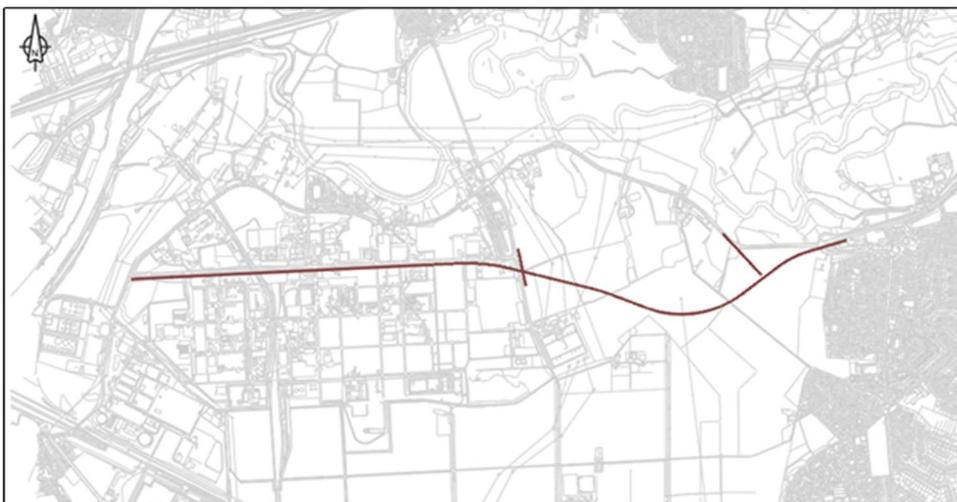


Figure 18: Option F Route Plan

Alignment Details

- Route F starts at the junction between the A6144 and the A1 where a new junction would be required;
- It then follows the alignment of the existing A1 industrial estate Road to a new junction at Isherwood Road;
- East of Isherwood Road, the route crosses open field skirting south of existing electricity pylons to meet Carrington Lane at the end of the Carrington Spur.

Pros:

- Most direct route through the middle of the proposed industrial development and giving good access to development on both sides of the road;

- The route provides relief to Carrington Village;
- The wider available corridor between Isherwood Road and Carrington Spur provides greater opportunity for active travel and green infrastructure;
- May be possible to utilise the existing concrete road as the formation for the new road through the industrial area (subject to investigation).

Cons:

- Crosses the old railway line at Burford Bridge which may incur ownership issues and constraint;
- Potentially requires a demolition of the, removal of existing embankment to achieve at grade solution, as the current structure does not meet the required design standards;
- The straight alignment of the existing A1 may present unacceptable road safety issues such as inappropriate speed and overtaking;
- Further land on the Western section is required to tie into the existing A1 route and A1644 Manchester Road;
- The route crosses Greenbelt land which is likely to attract public objection.

Conclusion

This option is one of the shortest options and provides relief to Carrington Village from through traffic. It reduces traffic using the Isherwood Road / Manchester Road junction but will require development through Greenbelt land. This option provides a desirable route if the speeding and overtaking issues using the whole A1 route due to its long linear alignment, and the ownership issues and width constraints at Burford Bridge can be overcome.

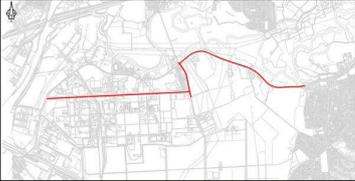
3.8 Other Options

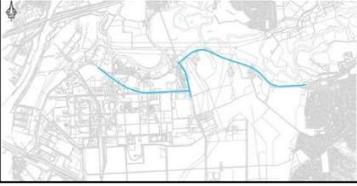
This report has not evaluated other potential strategies, such as not constructing any new infrastructure, on the basis that all indicative work carried out to date on the Future Carrington GMSF indicates a requirement for significant highway network improvements. Moreover, it is widely accepted that the following conditions will continue to prevail or worsen:

- Route remains congested with slow journey times and associated risks with safety and environmental;
- No improvement to access to potential industrial and residential development sites;
- No stimulus for development;
- Areas remain in state of dereliction;
- No economic benefits for area;
- Protects greenbelt land of Carrington Moss;
- Avoids traffic impacts of construction work;
- Existing poor pedestrian and cycling facilities;
- No opportunity to improve public transport infrastructure to improve connectivity to the wider area.

3.9 Initial Conclusion of Route Options

To summarise, six options A to F were considered on their merits and the following conclusions determined. As outlined earlier, reference should also be made to the constraints table in relation to each route option which is also included in **Appendix D**. This table discusses each route option in further detail than set out in the individual option summaries below, against traffic issues, development (industrial / employment and residential), environmental impact, drainage, structures, geotechnical, land acquisition and cycling / walking.

<p>Option A – red line</p> 	<p>This online improvement option provides a relief road to remove the majority of traffic from Carrington Village itself but it is unclear as to whether it is able to improve the existing road network between the Isherwood Road junction and Carrington Spur and will increase traffic using the Isherwood Road / Manchester Road Junction.</p> <p>There is a risk that the two required major traffic signal junction’s mid-way along the route may lead to congestion and not provide the journey time reliability required for significant public transport enhancements. There may be speeding and overtaking issues using the whole A1 route due to its long linear alignment and the width constraints at Burford Bridge will need to be overcome. In addition, there are land ownership issues to overcome, which may lead to lengthy land negotiations and the possibility for Compulsory Purchase Orders (CPO), which add significant risk to the project. Significant on-line improvements are likely to result in a long construction programme and severe traffic disruption during construction. However, as this route largely follows the existing road network it requires the least disturbance to the Greenbelt.</p>
<p>Option B – orange line</p> 	<p>The Option B route provides full relief to Carrington Village but fails to properly serve the proposed industrial development site. As one of the longer routes, this option is likely to provide a poor cost / benefit value due to costs associated with building the majority of the alignment within Greenbelt land and Carrington Moss and hence additional earthworks requirements and potential remediation costs, etc.</p> <p>Because of the high cost, environmental impact and relatively poor access to parcels of land identified as future development sites, it is recommended that this option is not developed further.</p>
<p>Option C – pink line</p> 	<p>This option provides relief to the Carrington Village area but fails to serve the proposed industrial and development sites. Due to buildability issues and excessive costs to construct crossings over the River Mersey, along with the requirement to purchase additional third-party land, this option it is recommended this option is not developed further.</p>

<p>Option D – blue line</p> 	<p>As described in the main Option A above, this option also does not significantly improve the existing road network between the Isherwood Road junction and Carrington Spur and is likely to increase traffic at the Isherwood Road / Manchester Road junction. There is a risk that the two required major traffic signal junction’s mid-way along the route may lead to congestion and not provide the journey time reliability required for significant public transport enhancements.</p> <p>In addition, there are land ownership issues to overcome, which may lead to lengthy land negotiations and the possibility for Compulsory Purchase Orders (CPO), which add significant risk to the project. Significant on-line improvements are likely to result in a long construction programme and severe traffic disruption during construction. However, as this route largely follows the existing road network it requires the least disturbance to the Greenbelt.</p> <p>Whilst this route could be beneficial in avoiding the Burford Bridge crossing, it does not provide relief to the entire Carrington village area.</p> <p>It is therefore recommended that this option is not developed further at this stage. However, there is potential to revisit this route option should there be no agreement over the Burford Bridge Crossing.</p>
<p>Option E – green line</p> 	<p>Whilst this is the shortest option it requires a new section of road at its western extents. This new section of road will require demolition of some of the existing Carrington Business Park and does not bypass the entire Carrington Village area.</p> <p>It is therefore recommended that this option is not developed further at this stage. However, there is potential to revisit this route option should there be no agreement over the Burford Bridge Crossing.</p>
<p>Option F – brown line</p> 	<p>This option is one of the shortest options and provides relief to Carrington Village from through traffic. It reduces traffic using the Isherwood Road / Manchester Road junction but will require development through Greenbelt land. This option provides a desirable route if the speeding and overtaking issues using the whole A1 route due to its long linear alignment, and the ownership issues and width constraints at Burford Bridge can be overcome.</p>

It has therefore been concluded that Options B to E have not been recommended as the preferred options. However, options A and F will be considered further to determine which has the greatest cost / benefit value.

4. Cost Estimates

A budget estimate was prepared in September 2019 for funding applications and has recently been re-assessed against the preferred route options.

Options A and F have been costed up as follows:

Option A	£33,238,427
Option F	£35,485,135

The following table summarises what is included and excluded from these cost estimates above. More detailed pricing will be carried out once the preferred route is determined and a full independent review of the costings will be undertaken by a Quantity Surveyor.

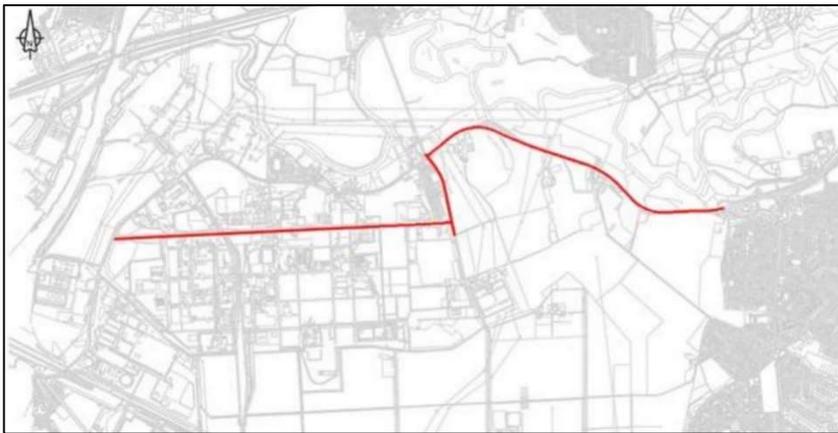
Included	Excluded
<ul style="list-style-type: none"> • Carriageway & Footway / Cycleway Construction • Localised Accommodation Works & Other Preliminary Works • Junctions and signage; new and upgrade of existing • Public Rights of Way improvement works including user crossings on the Greenbelt • Uplift due to uncertainty associated with contamination, ground conditions, earthworks, high water table, culverting watercourses etc. for the Greenbelt section of the site • Uplift due to potential for contamination under existing A1 Route and dealing with relic obstructions • Landscape & Ecology Requirements • Burford Bridge - Demolition and removal of the earth bund • Stats diversions/protection – private • Fees associated with the Project • Contingency & Risk Allowance • Inflation • Land Value 	<ul style="list-style-type: none"> • Future proofing provision for services • Foul drainage runs and services for future developments • No uplift for uncertainty associated with the Brownfield element as this is covered under the remediation project for HIMOR • New Highway network to south of area to new alternative alignment • Junction at Common Lane • Stats diversions / protection – public – assumed any present are covered by other HIMOR packages or made redundant during rationalisation programme • Legal Fees

5. Further Consideration of Options A and F

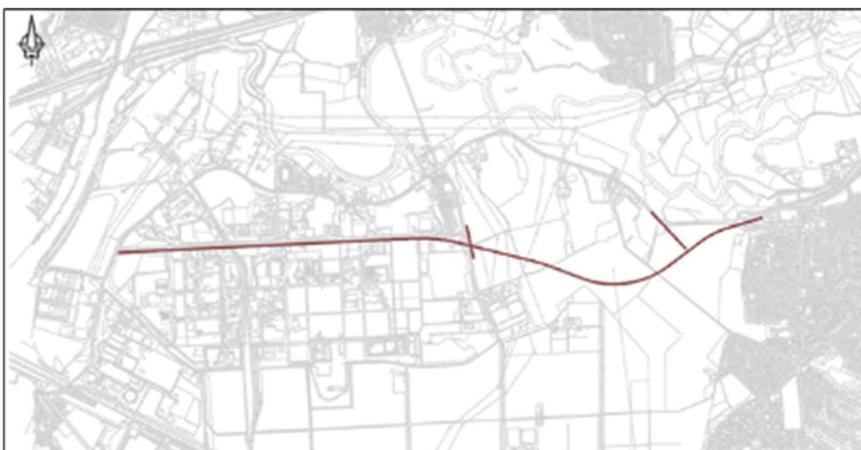
5.1 General

Following the options appraisal above, there are two remaining options which require further consideration, being Option A and Option F. A summary of each of these routes is included below for reference.

Option A (below in red) is an online option running partially centrally and partly to the north of the site, which uses the whole length of the existing A1 route through the industrial estate, between the A6144 Manchester Road to Isherwood Road, before heading north along Isherwood Road and then east using Carrington Lane to Carrington Spur. It has a total length of 4.5km.



Option F (below in brown) again uses the whole length of the existing A1 route through industrial estate, from the A6144 to Isherwood Road, with a new realigned signalised junction to the south of the existing junction at Isherwood Road. To the east of Isherwood Road, the route crosses open field skirting south of existing electricity pylons to meet Carrington Lane at the end of the Carrington Spur. It has a total length of 3.9km.



In order to arrive at a preferred option there is a need to focus on the distinction between the two schemes, Options A and F. Both options share the existing A1 route, with various issues to be addressed and to increase understanding of the requirements and risks associated with the two route options.

Whilst some risks will be inherent to both routes, others will be specific to / or vary for each route. These risks are discussed below.

Road Network

Both options A and F carry the residual risk of using the existing A1 route and will require land at the western side, to provide an improved junction off the existing A6144 Manchester Road onto the existing A1 route.

The straight through option F has been tested under the Locality Assessment transport modelling work which shows that it provides the necessary network capacity for the next phase of development, with a requirement for widening the eastern section between Isherwood Road and Carrington Spur to dual carriageway by a design year of 2040. The corridor of land required for this option should include that required for this future dualling.

Further evaluation of transport modelling is required for Option A, the online improvement option. This will include testing junction and link capacities, and journey time reliability and will be a key element of the final decision making. In addition, Option A will need to demonstrate whether it can create the necessary infrastructure for future public transport improvements.

Burford Bridge

Both Options A and F cross the existing privately owned Burford Bridge location. This alignment carries risk due to the constrained width over the current structure and uncertainty over the legal status of the bridge. It is envisaged this risk can be reduced through further discussions with the landowner and an assessment be undertaken to understand these legal issues, along with an assessment of demolition and outline development of an at-grade solution.

A1 Alignment

Both route options follow the straight alignment of A1. There is a perceived risk that this long, straight stretch may lead to issues with speeding and overtaking, leading to traffic accidents. This risk will need to be considered during the outline design and methods to discourage this behaviour should be implemented.

It should also be stressed that use of the A1 route as a public highway cannot be used until rationalisation works have been undertaken to clear the land of legacy services. The existing GPR survey will assist in this.

Statutory Undertakers Services

There are numerous Statutory Undertakers Services along the route. A New Roads and Streetworks Act 'C2' search has been carried out and a summary of the findings for Options A and F is summarised in the table below. Further investigation into the requirements for diversion and protection of services will be required when considering the outline design for the options.

Statutory Undertaker	Option A	Option F
BT	Highly affected along Carrington Lane and A1	Affected along A1 road
Cadent Gas (National Grid)	MP mains highly affected LP mains potentially affected	LP mains potentially affected
Cadent Overhead Lines	Affected	Affected

Carrington Gas Pipeline	N/A	N/A
Electricity Northwest	LV and MV ducts affected	MV ducts affected
Essar Oil Pipeline	Crossing at Carrington Lane	Crossing at north of Carrington Moss
Fisher German	Pipes affected where the route ties in Carrington Lane	Two crossings at south of Carrington Lane
GTC	At the junction of Manchester Road with Isherwood Road	N/A
United Utilities Water Mains	Along Carrington Lane, Isherwood Road, where the route ties in Manchester Road and a potential crossing at A1	Along Isherwood Road (upgrade section) and a potential crossing at A1
United Utilities Sewer	Along Isherwood Road and where the route ties in Manchester Road	Along Isherwood Road (upgrade section)
Virgin Media	Along Carrington Lane, where the route ties in Manchester Road and Carrington Lane and around Carrington Business Park	Where the route ties into Carrington Lane
Vodafone	Along Carrington Lane and Isherwood Road and where the route ties in Manchester Road and Carrington Lane	Along Isherwood Road (upgrade section) and where the route ties in Carrington Lane
Zayo (Linesearch)	Along Carrington Lane, where the route ties in Manchester Road and Carrington Lane	Where the route ties into Carrington Lane
HT Cables	Along A1	Along A1
Natural Gas	Along A1 and where the route ties in Manchester Road	Along A1
Nitrogen	Potential crossing at A1	Potential crossing at A1
Telephone Cables	Along A1	Along A1

As can be seen, a significant number of individual services require further investigation, although it should be noted that some of these services, particularly along the existing A1 route may be redundant and able to be removed. In addition, there may be private services on the HIMOR site which may require diversion, lowering or protection.

5.2 Option A Risks

The table below highlights the main risks with Option A – the online option.

Risk	Comments
Compulsory Purchase Order / Land Acquisition Requirements	<p>The existing A6144 Carrington Lane (between Isherwood Road and Carrington Spur) will require widening and realignment at some locations to meet the requirements of CD 109.</p> <p>An initial exercise has been carried out to look at the extent and nature of the land acquisition. It is likely that lengthy land negotiations and potential CPO purchases present risk into the project both in terms of costs and delivery to programme.</p>

	<p>An indicative plan and table showing the land acquisition required for a 20m corridor are provided by widening the corridor to the south of the current alignment is shown in Figure 19 below. Figure 20 below provides a more detailed view of the potential effect on residential properties; Dainewell Farm, Ackers Farmhouse and Ackersbarn Courtyard.</p> <p>Any land acquisition requirements will carry risks and could potentially lead to delays. These requirements will need to be investigated further in the outline design phase. Talks with landowners and legal processes should be started as early as possible to avoid delays impacting on the programme. It is likely that land will be in a variety of ownerships which could result in protracted land negotiations.</p>
Isherwood Road / A6144 Junction	<p>Previous transport planning studies suggest capacity and safety issues at the junction between the A6144 and Isherwood Road. As Option A utilises this junction there is a risk these issues cannot be sufficiently reduced. Further traffic modelling and outline design work is required to understand the improvements that can be made to this junction.</p>
Environmental	<p>There are a significant number of well-established hedgerows and mature trees that would require removal to widen and realign the A6144 Carrington Lane, and to a lesser extent along Isherwood Road. This could present environmental and ecological issues. This risk will be understood better once the Environmental Scoping Report is available.</p>
Lack of Dualling Capacity	<p>The utilisation of the A6144 Carrington Lane means there is little to no possibility of any future improvements to dual the route along this section. This option does however provide the opportunity to provide a route through Carrington Moss in the future to increase capacity, provided future developments on the moss do not constrain this route.</p>
Online Construction	<p>Significant on-line improvements to a Trafford Key Route Network whilst keeping it open to traffic are likely to result in a long construction programme and severe traffic disruption during construction.</p>

An indicative plan and table showing the land acquisition required for a 20m corridor are provided in **Figures 19, 20 and 21** below, along with an indication of approximate areas and the different current types of land use.



Figure 19: Option A - Indicative Land Acquisition Sketch for Option A

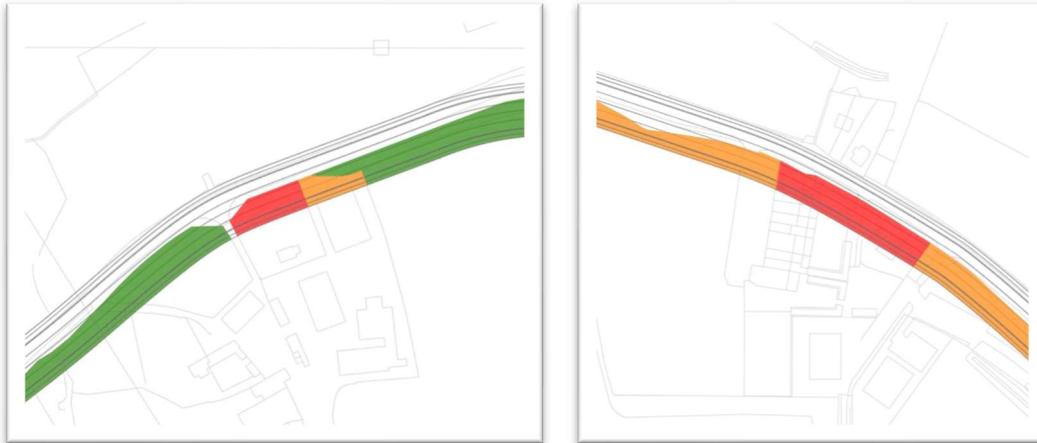


Figure 20: Indicative Impact on Residential Properties - Dainewell Farm, Ackers Farmhouse and Ackersbarn Courtyard

Use of Land for Acquisition	Approx. Area (m ²)
Agricultural (Green)	16,440
Business (Orange)	8,460
Residential (Red)	2,360
Total	27,260

Figure 21: Approximate areas of land use for Acquisition

5.3 Option F Risks

The table below highlights the main risks with Option F.

Risk	Comments
Compulsory Purchase Order / Land Acquisition Requirements	<p>Agricultural land to the east of the route has various tenants but one landowner which could result in protracted land negotiations. It is likely that lengthy land negotiations and potential CPO purchases present risk into the project both in terms of costs and delivery to programme.</p> <p>These requirements will need to be investigated further in the outline design phase. Talks with landowners and legal processes should be started as early as possible to avoid delays impacting on the programme.</p> <p>The route crosses the Burford Bridge and the existing structure does not meet current standards in terms of its width and vertical alignment. It would require demolition and removal of the approach to achieve an acceptable at-grade crossing.</p>

6 Next Steps and Summary

Availability of Land - Further dialogue with HIMOR is required, along with the land agents who represent the landowners or tenants', to fully understand the existing legal agreements that are in place and how these impact the remaining two route options.

Ground Conditions - further intrusive ground investigation surveys should be considered for the widening option, and the impact of their findings should be considered for both remaining route options.

Environmental & Protected Species Habitats - An Environmental Scoping Report should be considered for both Options A and F to determine the impact of each route.

Utility Equipment – A New Roads and Street Works Act 'C3' Draft Scheme / Budget Request should be carried out for each potential route. Further investigation into the requirements of rationalisation, protection, lowering, diversion, decommissioning or removal of the former Shell site private services within the A1 corridor and affect the proposed route alignments should also be carried out.

Public Rights of Way - Consideration for non-motorised users should be reviewed with a Walking, Cycling and Horse-Riding Assessment and Review (WCHAR), undertaken to the DMRB standard GG 142 (formerly HD 42/17).

The purpose of this WCHAR is to facilitate the inclusion of all walking, cycling and horse-riding modes in the highway scheme development process from the earliest stage, enabling opportunities for new or improved facilities and their integration with the local and national network(s).

Given the number of existing pedestrian, cycling and horse-riding opportunities within the area, this WCHAR is likely to be extensive.

Public Transport and Sustainable Travel – Continued engagement with TfGM to ensure public transport enhancements meet the aspirations of key stakeholders and that the bus priority measures, and Bee Network requirements are included in the designs, along with ensuring the wider strategic requirements are met.

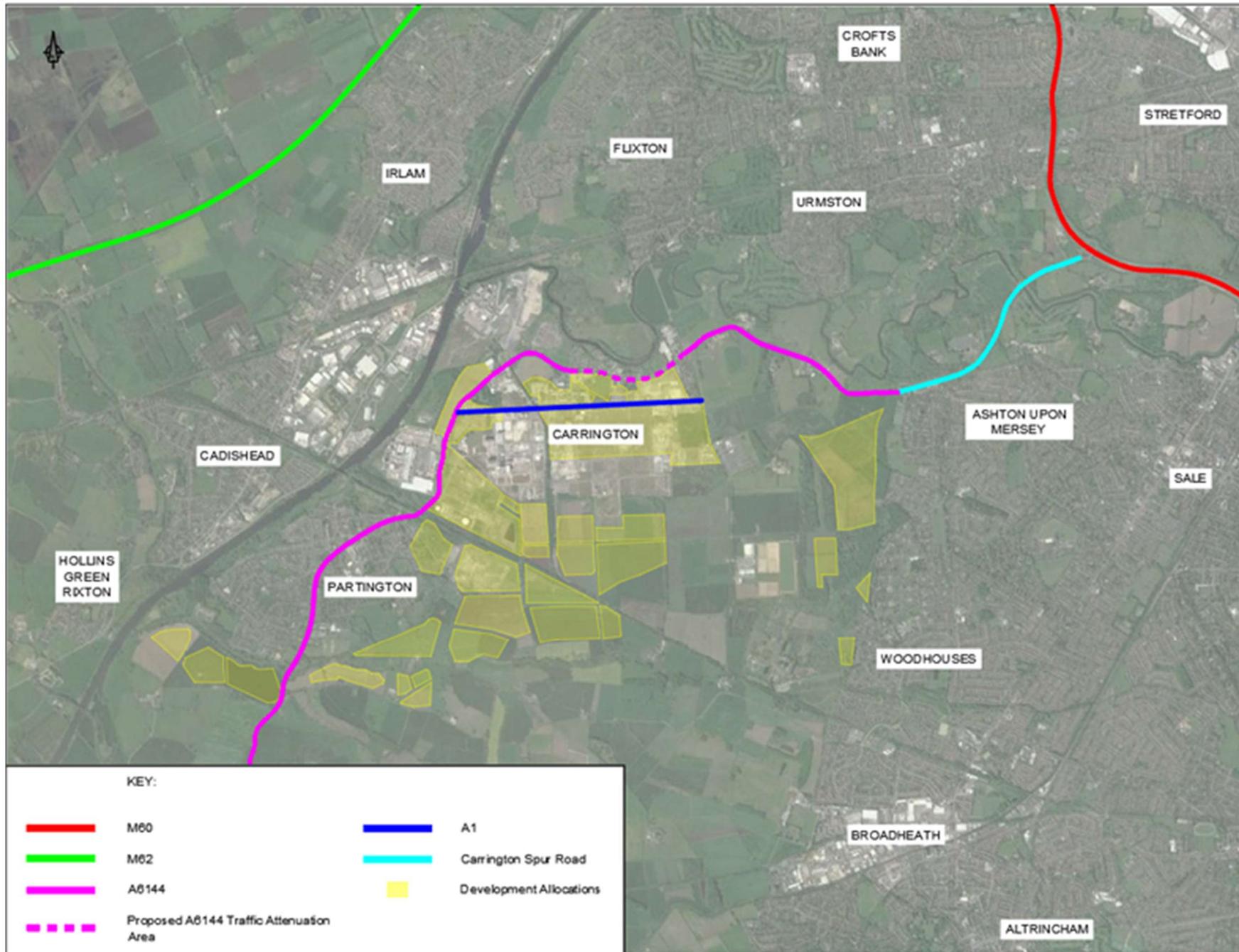
Watercourses and Drainage - Further investigations such as CCTV surveys should be carried out to fully establish the existing drainage networks prior to development of any proposed drainage design. A full assessment of the existing highway drainage network should be undertaken, including appropriate hydraulic modelling to establish existing outfall points, before developing a drainage solution for the Relief Road.

Burford Bridge: Further investigation and discussions with the landowner regarding demolition of this bridge should be progressed to reduce the risk value.

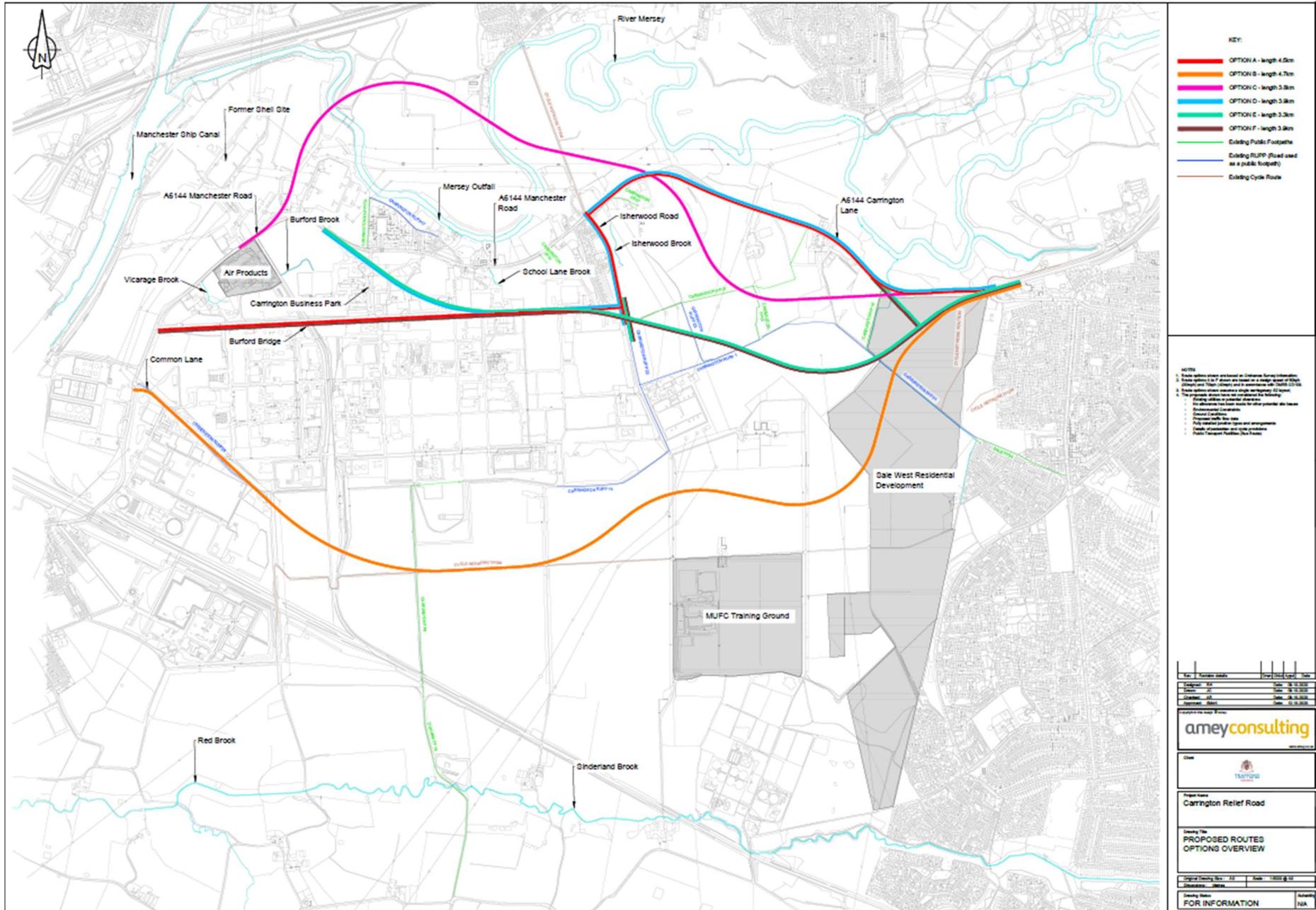
Consultation and Engagement: The Stakeholder Management Plan should be updated, and public engagement strategy developed further, outlining timetable for engagement as and when appropriate.

Development of Outline Design – the design of the two preferred options should be developed to outline design both horizontally and vertically in line with current design standards.

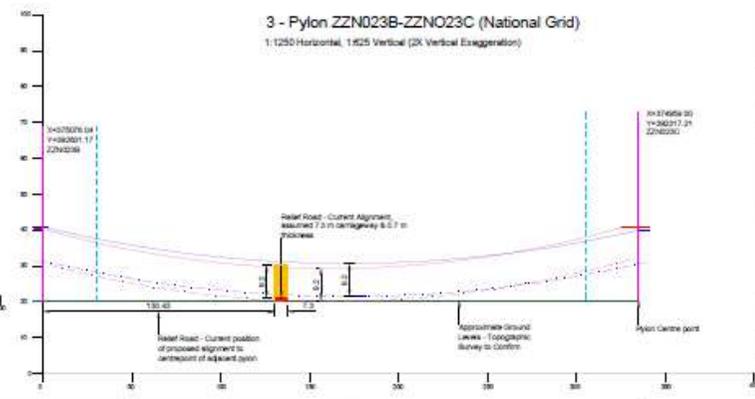
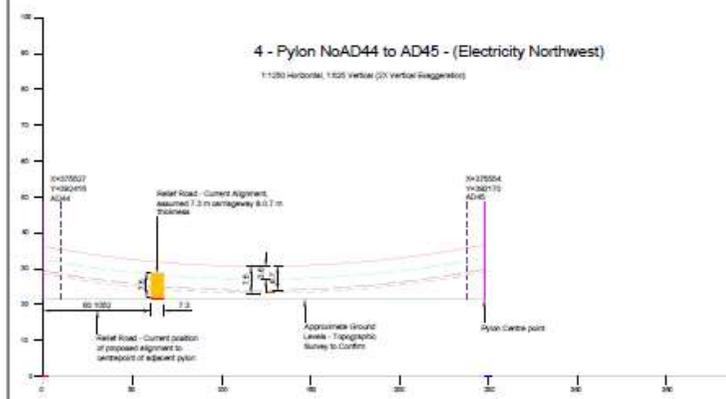
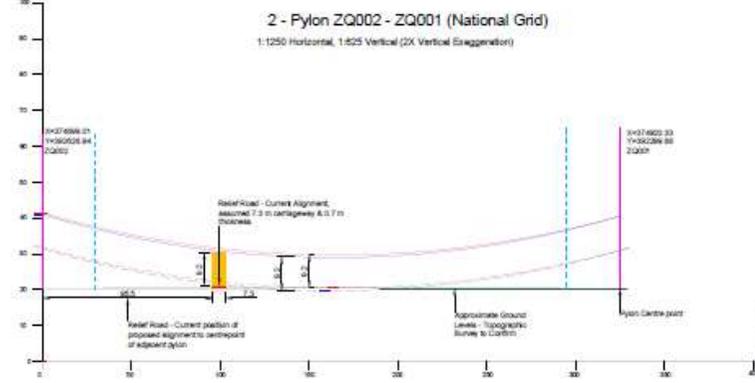
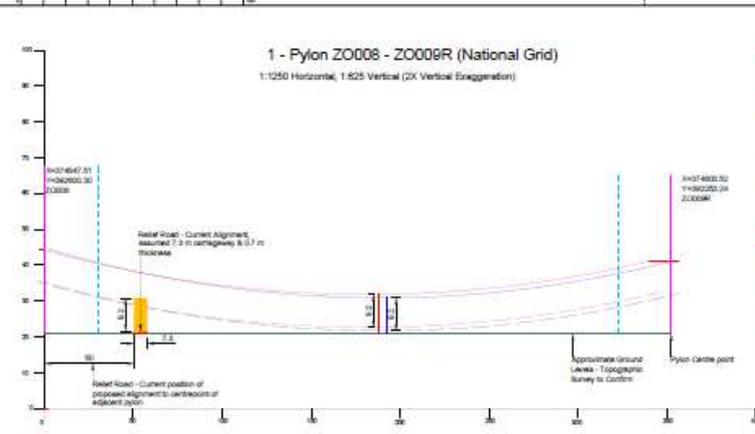
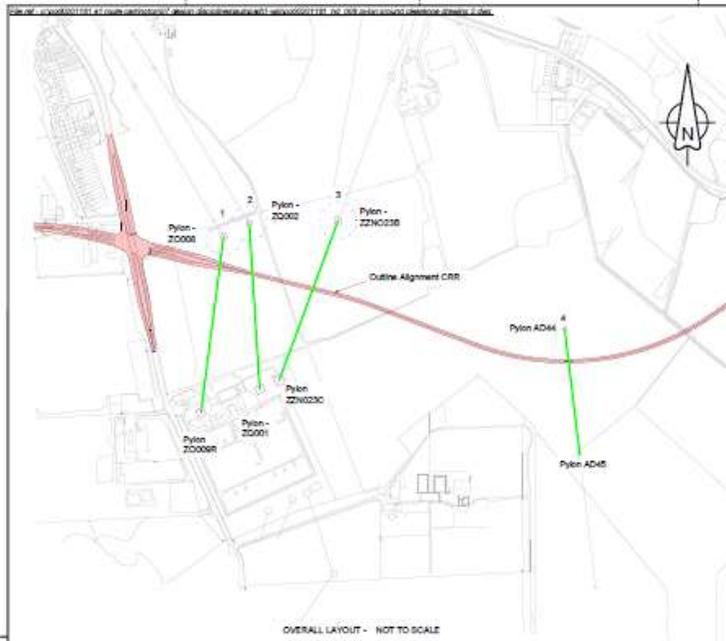
Appendix A: Site Location Plan



Appendix B: Proposed Options A to F



Appendix C: Pylon Line Clearances



- KEY**
- Preliminary Relief Road Cross Section
 - Preliminary Relief Road Alignment
 - Minimum Carriageway Corridor
 - Electricity Pylon
 - Approximate Ground Level (Taken from National Grid Plans)
 - Pylon Maintenance Access Clearance (30 m)
 - 400kV Cable
 - 275kV Cable
 - 132 kV Cable
 - Centre line of Electricity Cable
 - 400kV - Safety Clearance Zone of 9.0 m
 - 275kV - Safety Clearance Zone of 6.3 m
 - 132 kV - Limit of Approach 3.0 m
 - 132 kV - Ground Clearance of 9.7m
 - 132 kV - Safety Clearance of 7.5 m
 - 10 m Elevated clearance (from transmission line tower leg)
- NOTES**
1. Highway Alignment indicative and subject to detail design
 2. Approximate Ground Levels for pylons drawing 1, 2 and 3 have been taken from National Grid Pylon Cross Section
 3. Approximate Ground Levels for pylon drawing 4 have been taken from the Electricity Northwest Pylon Cross Section
 4. Data taken from drawings provided by Cadent Gas Ltd & National Grid Electricity Transmission and Electricity Northwest

Pylon Clearance		
Item	Description of Clearance	Minimum Clearance (m)
1	400kV - Safety Clearance Zone	9.0
2	275kV - Safety Clearance Zone	6.3
3	132 kV - Limit of Approach	3.0
4	132 kV - Ground Clearance	9.7
5	132 kV - Safety Clearance	7.5
6	10 m Elevated clearance	10.0

Rev	Revision details	Drawn	Checked	Appr	Date
01	Issue for Design	JL	DL	DL	02/03/2018
02	Issue for Design	JL	DL	DL	02/03/2018
03	Issue for Design	JL	DL	DL	02/03/2018
04	Issue for Design	JL	DL	DL	02/03/2018

Client:

Project Name: Carrington Relief Road

Drawing Title: Carrington Pylon Line Clearances

Original Drawing Size: A1 Scale: As Shown

Drawing Status: DRAFT

Drawing No: CO00201181/HD/008

Rev: PD

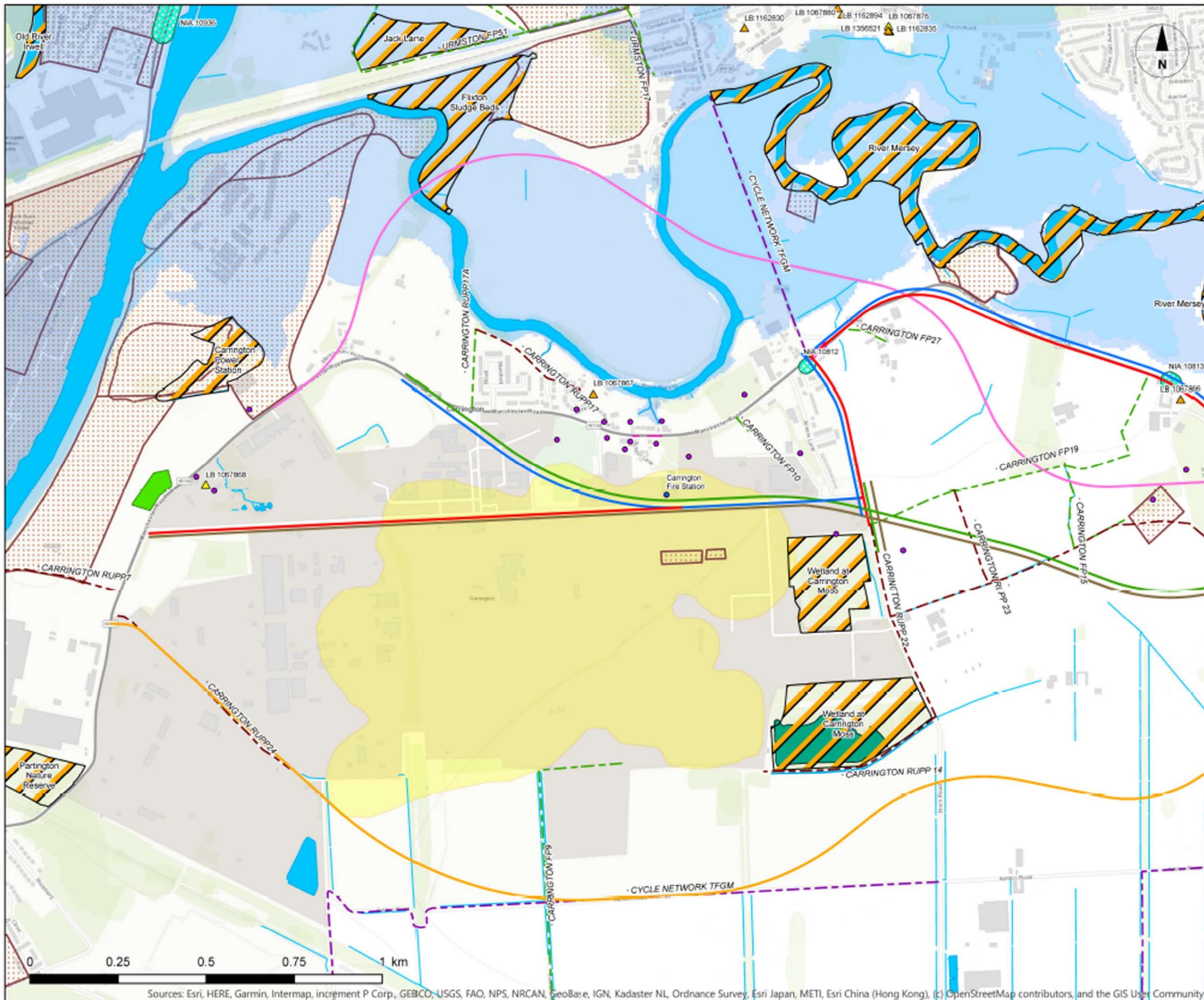
Appendix D: Route Options Summary Table

	Through Traffic	Development	Environmental	Drainage	Structures	Land Acquisition	Cycling / Walking	Geotechnical
Option A (red)	<p>Upgrade of existing junction of A6144 and A1 route to traffic signals. Use of A1 route for full length with online improvements. Upgrade of existing junction of A1 route and Isherwood Road to traffic signals. Improvements to Isherwood Road, from new improved junction with A1 industrial estate road and Carrington Lane. Improvement of A6144 Carrington Lane junction with Isherwood Road to provide free flow southbound left turn lane into Isherwood Road. Online upgrade of existing A6144 from Carrington Spur to Isherwood Road junction. Journey times unlikely to improve due to restrictions from introduction of traffic signal junctions and will result in an increase of traffic using the Manchester Road / Isherwood Road junction.</p> <p>The long, straight stretch along the existing A1 may lead to speeding and overtaking issues.</p>	<p>Serves the industrial development area well by passing through the middle of the area along the full length of the existing A1 route, reducing the need for additional spur roads.</p> <p>Provides access to the proposed residential development at the former Shell Plant site from the A1 route.</p>	<p>The route predominantly follows the alignment of the existing A1 route, A6144 and Isherwood Road, where there will be minimal loss of existing grassland and a section of hedgerow. However, the section between Isherwood Road junction with the A6144 and Carrington Lane will require the loss of a significant volume of well-established hedgerows and mature trees, which will have an impact on the environment. Demolition of several properties and businesses would also be required, as well as affecting accesses to properties and businesses due to the carriageway widening required. Other key constraints located near or within Option A extents include; a number of AQMA, 2 NIAs, 3 Listed Buildings, undesignated recorded historical sites, Mersey River Flood Zone, wildlife corridor a number of public rights of way and a historical landfill.</p>	<p>As this is the online option, it will make use of existing drainage infrastructure with upgrades to current drainage design standards where possible. It may be necessary to provide additional attenuation, either as on-line storage or as associated SUDS features.</p>	<p>Route crosses the disused rail line at the privately owned Burford Bridge. As the existing structure does not meet current standards in terms of its width and vertical alignment it would require re-construction with associated improved embankments, or infilling of old rail line to achieve an at-grade crossing. An alternative would be demolition of the structure to provide an at-grade crossing.</p>	<p>Majority of on-line works to the east are within the existing highway boundary. Land would be required at the junction of the A6144 and A1 to the west of the scheme to provide an improved junction. Similarly, for any junction improvements at the Flixton Crossroads.</p> <p>Majority of the land within the industrial development area is in the ownership of HIMOR who are working in partnership with Trafford Council to promote the Carrington development project. However, the redundant rail line crossed by Burford bridge is in separate ownership.</p> <p>Landownership of the land bounding Carrington Lane, which could be re-aligned and widened to provide green infrastructure, would need to be determined, including several properties and businesses.</p>	<p>Walking and cycling facilities along the existing routes will be improved, subject to available space.</p> <p>Improved pedestrian and cycling facilities could also be provided on the downgraded existing road through Carrington Village. Little opportunity exists for the provision of facilities on the retained section of the A6144 between Partington and the existing A1 junction without land take.</p> <p>This option crosses Carrington FP19, FP27 and Cycle Network 62.</p>	<p>The existing A1 concrete road could be used as a suitable formation to the new road construction subject to further investigations.</p> <p>No requirement for any significant earthworks design.</p>
Option B (orange)	<p>Provides an indirect longer route but avoids the existing poor road alignment through Carrington Village and the Isherwood Road junction.</p> <p>Long length of route which impacts journey times.</p>	<p>Slightly improved access to the industrial development area but would still require the construction of additional spur roads. Potential to provide access to the proposed residential development at the former Shell Plant if additional link roads are constructed between the site and the route.</p>	<p>Route crosses agricultural land which forms part of the Greenbelt, agricultural fields and Carrington Moss area. This is likely to attract public objection.</p> <p>Other constraints include; a number of public rights of way and AQMAs along and in proximity of the option. A wildlife corridor is located approximately 400m to the west.</p>	<p>Sited within agricultural fields, Carrington Moss and known flooding areas as well as crossing existing Greenbelt, the route may interrupt existing land drainage networks</p> <p>Potential to raise level of the route alignment as an engineering design solution to avoid clashes with proposed highway drainage and any required culvert crossings.</p>	<p>No significant structures on the route</p>	<p>Ownership of the agricultural land and Common Lane is currently unknown but likely to be in a variety of ownerships with existing tenancy agreements which could result in protracted land negotiations.</p>	<p>New relief road provides opportunities for active travel and green infrastructure, including cycling and walking along the new route. Improved pedestrian and cycling facilities could also be provided on the downgraded existing road through Carrington Village. Little opportunity exists for the provision of facilities on the retained section of the A6144 between Partington and Common Lane without land take.</p> <p>This option crosses RUPP 27 and Cycle Network 62.</p>	<p>Likely to be issues with contaminated land on either side of Common Lane which would need to be widened to accommodate the new relief road.</p> <p>Ground conditions across the green field sections would require careful earthworks design but recent geotechnical investigation surveys do not provide any areas of concern.</p>
Option C (pink)	<p>Provides an indirect route between Partington and Carrington Spur road with two crossings of the River Mersey and retaining a significant unimproved length of the existing A6144.</p> <p>Provides relief to Carrington Village from through traffic.</p>	<p>Provides no access to the proposed industrial development area and hence would retain industrial traffic on the existing A6144 route.</p> <p>Provides no access to the proposed former Shell Plant residential development site.</p>	<p>It is likely that the flood plain area is a habitat for protected species.</p> <p>Route crosses Greenbelt and is likely to attract public opposition.</p> <p>Other constraints include; a number of public rights of way and AQMAs along and in proximity of the option. A wildlife corridor is located approximately 400m to the west.</p>	<p>Highway drainage outfalls to the River Mersey would be possible on this route, however as the section of the route between the two river crossings is a flood plain area, this would present significant challenges to drainage.</p>	<p>Two structures would be required to cross the river Mersey. In addition, it is likely that a significant embankment or viaduct structure would be required to cross the flood plain between the river crossing points.</p>	<p>Land ownership for this route is currently unknown but likely to be in a variety of ownerships with existing tenancy agreements, which could result in protracted land negotiations.</p>	<p>Wider available corridor allows opportunity for green infrastructure to be introduced. Provides no access to residential or employment areas and is a longer through route between Partington and Sale.</p> <p>It is unlikely to present a benefit to cyclists and pedestrians unless the existing A6144 can be downgraded to allow better walking and cycling opportunities.</p> <p>This option crosses Carrington FP15, FP16, FP19, FP27 and TfGM Cycle Network.</p>	<p>Ground conditions across the green field sections would require careful earthworks design and possible issues with poor ground conditions across the flood plain area between the river crossings. Invasive ground investigation surveys would be required for this route.</p>

	Through Traffic	Development	Environmental	Drainage	Structures	Land Acquisition	Cycling / Walking	Geotechnical
Option D (blue)	<p>A new off-line route is created from the A61ff Manchester Road, travelling south east until it links into the existing road alignment part way along the A1 route. Upgrade of existing junction of A1 route and Isherwood Road to traffic signals. Improvements to Isherwood Road, from new improved junction with A1 industrial estate road and Carrington Lane. Improvement of A6144 Carrington Lane junction with Isherwood Road to provide free flow southbound left turn lane into Isherwood Road. Online upgrade of existing A6144 from Carrington Spur to Isherwood Road junction. Journey times unlikely to improve due to restrictions from introduction of traffic signal junctions and will result in an increase of traffic using the Manchester Road / Isherwood Road junction.</p> <p>This new section of road does not bypass the entire Carrington Village area.</p>	<p>Serves the eastern half of the industrial development area, retaining the western half of the existing A1 route to service the remainder. Provides access to the proposed residential development at the former Shell Plant site from the A1 route.</p>	<p>The route predominantly follows the alignment of the existing A1 route, A6144 and Isherwood Road, where there will be minimal loss of existing grassland and a section of hedgerow. However, the section between Isherwood Road junction with the A6144 and Carrington Lane will require the loss of a significant volume of well-established hedgerows and mature trees, which will have an impact on the environment. Demolition of several properties and businesses would also be required, as well as affecting accesses to properties and businesses due to the carriageway widening required. Other key constraints located near or within Option A extents include; a number of AQMA, 2 NIAs, 3 Listed Buildings, undesignated recorded historical sites, Mersey River Flood Zone, wildlife corridor a number of public rights of way and a historical landfill.</p>	<p>As this is the online option, it will make use of existing drainage infrastructure with upgrades to current drainage design standards where possible. It may be necessary to provide additional attenuation, either as on-line storage or as associated SUDS features.</p>	<p>Avoids the existing Burford Bridge on the A1 Industrial Estate Road which is the only existing significant structure and constraint on the route.</p>	<p>Majority of on-line works to the east are within the existing highway boundary. Land would be required at the junction of the A6144 and A1 to the west of the scheme to provide an improved junction. Similarly, for any junction improvements at the Flixton Crossroads.</p> <p>Majority of the land within the industrial development area is in the ownership of HIMOR who are working in partnership with Trafford Council to promote the Carrington development project. However, the redundant rail line crossed by Burford bridge is in separate ownership.</p> <p>Landownership of the land bounding Carrington Lane, which could be re-aligned and widened to provide green infrastructure, would need to be determined, including several properties and businesses.</p>	<p>Walking and cycling facilities along the existing routes will be improved, subject to available space.</p> <p>Improved pedestrian and cycling facilities could also be provided on the downgraded existing road through Carrington Village. Little opportunity exists for the provision of facilities on the retained section of the A6144 between Partington and the existing A1 junction without land take.</p> <p>This option crosses Carrington FP19, FP27 and Cycle Network 62.</p>	<p>The existing A1 concrete road could be used as a suitable formation to the new road construction subject to further investigations.</p> <p>No requirement for any significant earthworks design.</p>
Option E (green)	<p>Shortest route utilising the existing Manchester Road from Partington to Carrington Business Park before diverting to utilise the eastern half of the existing A1 industrial estate road.</p> <p>Whilst this is the shortest option it requires a new section of road at its western extents to provide an upgraded junction with traffic signals.</p> <p>This new section of road does not bypass the entire Carrington Village area.</p>	<p>Serves the eastern half of the industrial development area, retaining the western half of the existing A1 to service the remainder.</p> <p>Provides access to the proposed residential development at the former Shell Plant site from the A1 route.</p>	<p>Eastern half of the route crosses agricultural land which form part of the greenbelt and Carrington Moss area. This is likely to attract public objection.</p> <p>This option also crosses a number of public rights of way, AQMAs and areas of surface water. It is located near or within a number of undesignated recorded historic sites. A wildlife corridor is located approximately 400m to the west.</p>	<p>The western section of the route is mainly along the existing A1 route so would utilise the existing drainage infrastructure with upgrades to current drainage design standards where possible. It may be necessary to provide additional attenuation, either as on-line storage or as associated SUDS features. A new drainage system will be required for the new section of road at the western end. The eastern section crosses existing Greenbelt and may interrupt existing land drainage networks and potential to raise level of the route alignment to avoid clashes with proposed highway drainage and any required culvert crossings.</p>	<p>Avoids the existing privately owned Burford Bridge on the A1 Industrial Estate Road which is the only existing significant structure on the route.</p>	<p>Majority of the land within the industrial development area is in the ownership of HIMOR who are working in partnership with Trafford Council to promote the Carrington development project.</p> <p>Agricultural land to the east is in various ownerships with existing tenancy agreements which could result in protracted land negotiations.</p>	<p>New relief road provides opportunities for active travel and green infrastructure, including cycling and walking along the new route. In addition, improved pedestrian and cycling facilities can be provided on the downgraded existing road. Little opportunity exists for the provision of facilities on the retained section of the A6144 between Partington and Carrington Business Park.</p> <p>This option crosses Carrington FP19, Sale FP34 and RUPP 1, 22 and 23, along with Cycle Network 62.</p>	<p>Possible issues with poor ground conditions across the eastern green field section and contaminated land through the western industrial section.</p> <p>The existing A1 concrete road could be used as a suitable formation to the new road construction subject to further investigations.</p>

	Through Traffic	Development	Environmental	Drainage	Structures	Land Acquisition	Cycling / Walking	Geotechnical
Option F (brown)	<p>Utilising the existing Manchester Road from Partington to Carrington Business Park before diverting to utilise the eastern half of the existing A1 industrial estate road.</p> <p>Whilst this is one of the shortest options it requires a new section of road at its western extents to provide an upgraded junction with traffic signals.</p> <p>This new section of road does not bypass the entire Carrington Village area.</p>	<p>Servises the eastern half of the industrial development area, retaining the western half of the existing A1 to service the remainder.</p> <p>Provides access to the proposed residential development at the former Shell Plant site from the A1 route.</p>	<p>Eastern half of the route crosses agricultural land which form part of the greenbelt and Carrington Moss area. This is likely to attract public objection.</p> <p>This option also crosses a number of public rights of ways, AQMAs and areas of surface water. It is located near or within a number of undesignated recorded historic sites. A wildlife corridor is located approximately 400m to the west.</p>	<p>The western section of the route is mainly along the existing A1 route so would utilise the existing drainage infrastructure with upgrades to current drainage design standards where possible. It may be necessary to provide additional attenuation, either as on-line storage or as associated SUDS features. A new drainage system will be required for the new section of road at the western end.</p> <p>The eastern section crosses existing Greenbelt and may interrupt existing land drainage networks and potential to raise level of the route alignment to avoid clashes with proposed highway drainage and any required culvert crossings.</p>	<p>Avoids the existing privately owned Burford Bridge on the A1 Industrial Estate Road which is the only existing significant structure on the route.</p>	<p>Majority of the land within the Industrial development area is in the ownership of HIMOR who are working in partnership with Trafford Council to promote the Carrington development project.</p> <p>Agricultural land to the east is in various ownerships with existing tenancy agreements which could result in protracted land negotiations.</p>	<p>New relief road provides opportunities for active travel and green infrastructure, including cycling and walking along the new route. In addition, improved pedestrian and cycling facilities can be provided on the downgraded existing road. Little opportunity exists for the provision of facilities on the retained section of the A6144 between Partington and Carrington Business Park.</p> <p>This option crosses Carrington FP19, Sale FP34 and RUPP 1, 22 and 23, along with Cycle Network 62.</p>	<p>Ground conditions across the green field sections would require careful earthworks design. There is contaminated land through the western industrial section which may require dealing with to provide green infrastructure.</p> <p>The existing A1 concrete road could be used as a suitable formation to the new road construction subject to further investigations.</p>
Do Nothing	No benefits to through traffic	Provides no improvement to access to industrial or residential development areas.	No impact on environment due to construction works, but existing impacts on noise and air quality remain.	No impact on drainage.	No impact on existing structures or requirements for new structures.	No land acquisition required	No opportunity to improve facilities for cyclists and pedestrians.	No geotechnical issues

Appendix E: Environmental Constraints



Legend

Proposed Options

- Option A
- Option B
- Option C
- Option D
- Option E
- Option F

Environmental Constraints

- Sites of Biological Importance
- Greater Manchester AQMA
- Noise Important Action Planning Areas
- Tree Preservation Orders

People and Communities

- Sensitive Receptors
- Public Rights of Way
- Carrington RUPP
- Cycle Network TFGM
- Footpath

Cultural Heritage

- Undesignated Recorded Historic Sites
- Listed Building - Grade II
- Listed Building - Grade II*

Water and Drainage

- Surface water
- Surface Water Area
- Shell Pool Reserve Pond
- Flood zone 3
- Flood zone 2

Geology/Soils/Waste

- Landfill Site
- Historic Landfill
- Carrington Shallow Groundwater Contamination

Rev	Revision Details	Drawn	Chkd	Appd	Date

Designed: JB Date: 29/06/20
 Drawn: JB Date: 29/06/20
 Checked: KB Date: 23/10/20
 Approved: AW Date: 23/10/20

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Client:

Project Name: **A1 Route Carrington**

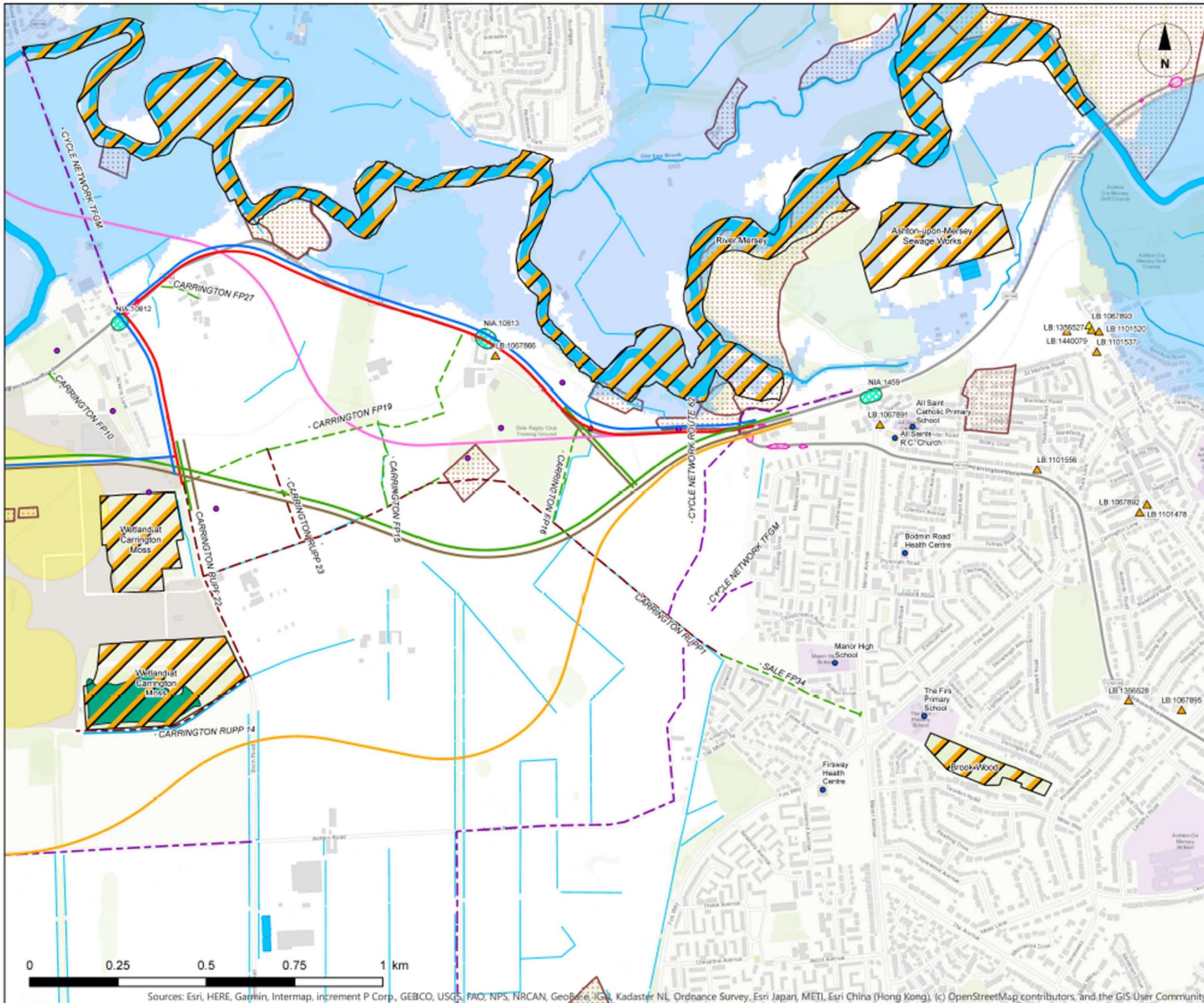
Drawing Title: **Appendix E Environmental Constraints**

Original Drawing Size: A3	Scale: 1:10,000
Dimensions: -	Page 1 of 2

Drawing Status: Suitable for Stage Approval	Suitability: S4
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Drawing No: CO00201388-AMEY-GEN-CRR-DR-3000-01

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBare, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Proposed Options

- Option A
- Option B
- Option C
- Option D
- Option E
- Option F

Environmental Constraints

- Sites of Biological Importance
- Greater Manchester AQMA
- Noise Important Action Planning Areas
- Tree Preservation Orders

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- Cycle Network TFGM
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- Flood zone 2

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Rev	Revision Details	Drawn	Chkd	Appd	Date
Designed	JB				Date: 29/06/20
Drawn	JB				Date: 29/06/20
Checked	KB				Date: 23/10/20
Approved	AW				Date: 23/10/20

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Client:

TRAFFORD COUNCIL

Project Name:

A1 Route Carrington

Drawing Title:

**Appendix E
Environmental Constraints**

Original Drawing Size	A3	Scale	1:10,000
Dimensions	-	Page	2 of 2
Drawing Status	Suitable for Stage Approval	Suitability	S4
Drawing No	CO0201388-AMEY-GEN-CRR-DR-3000-01		