November 2020

Transport Locality Assessments

Introductory Note and Assessments – Trafford allocations

GMSF 2020

GREATER MANCHESTER
DOING THINGS DIFFERENTLY

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1. Background

1.1 Greater Manchester Spatial Framework (GMSF)

1.1.1 The GMSF is a joint plan of all ten local authorities in Greater Manchester, providing a spatial interpretation of the Greater Manchester Strategy which will set out how Greater Manchester should develop over the next two decades up to the year 2037. It will:

- identify the amount of new development that will come forward across the 10 Local Authorities, in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused;
- ensure we have an appropriate supply of land to meet this need;
- protect the important environmental assets across the conurbation;
- allocate sites for employment and housing outside of the urban area;
- support the delivery of key infrastructure, such as transport and utilities;
- define a new Green Belt boundary for Greater Manchester.

1.1.2 The Plan focuses on making the most of Greater Manchester's brownfield sites, prioritising redevelopment of town centres and other sustainable locations. The Plan is required to demonstrate that Greater Manchester has enough land to deliver the homes and jobs people require up until 2037, and whilst there is an expectation that the focus of development will be on brownfield sites in the early years, it is recognised that some land will need to be released from the green belt to fully meet Greater Manchester's housing and employment requirement.

1.1.3 The comments from the Draft GMSF 2019, together with local and national policy, have helped to inform the Locality Assessments methodology for the Draft GMSF 2020. More information on the consultation comments can be found in the Consultation Statement and within each of the Allocation Locality Assessments.

1.1.4 This document has been prepared as evidence for the GMSF and is part of a suite of documents that examine the implications of the GMSF on transport in Greater Manchester. The other documents are:

- Greater Manchester Transport Strategy 2040 and supporting Five Year Transport Delivery Plan. These documents together set out our strategic aspirations for transport in Greater Manchester and articulate our plan for delivery.
- Greater Manchester Transport Strategy 2040 'Right Mix' Technical Note. This note describes the 'Right Mix' transport vision and sets out a pathway to achieving this vision.
- GMSF Existing Land Supply and Transport Technical Note. This describes the distribution and quantity of the Existing Land Supply, identified key growth areas, and considers the relationship of these growth areas to the transport schemes proposed within the Greater Manchester Transport Strategy Delivery Plan.
- GMSF Allocations Strategic Modelling Technical Note. This provides analysis of the potential strategic impact of growth on our transport network in a "policy-off" scenario.

1.2 Policy Context – The National Planning Policy Framework

1.2.1 The National Planning Policy Framework sets out the Government's planning policies for England and Wales and how these are to be applied. It provides a framework for which locally prepared plans for housing and development, such as the GMSF, can be produced.

1.2.2 The NPPF makes it clear that transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- the potential impacts of development on transport networks can be addressed;
- opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
- opportunities to promote walking, cycling and public transport use are identified and pursued;
- the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and
- patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.

1.2.3 The NPPF makes clear that when assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- safe and suitable access to the site can be achieved for all users; and
- any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

1.2.4 Importantly, NPPF states that: 'development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe'. (NPPF, Chapter 9, Para 109).

1.2.5 In order to ensure that the requirements of the NPPF were fully met and that that these allocations can be brought forward and operate sustainably within the context of the wider transport network, Transport for Greater Manchester (TfGM), on behalf of the ten Greater Manchester Local Planning Authorities, appointed SYSTRA Ltd to oversee the development of Locality Assessments for each site.

1.2.6 These Locality Assessments forecast the likely level and distribution of traffic generated by each Allocation and assess its impact on the transport network. Where that impact is considered significant, possible schemes to mitigate that impact and reduce it back to the reference level of operation have been developed, tested and costed. Potential mitigations could include the introduction of new public transport schemes, cycling and walking routes, as well as highway engineering solutions. Where suitable mitigations could not be identified, a decision to either reduce the level of development at the Allocation such that it had a lesser impact on the transport network, or to remove the site from the GMSF completely were considered.

1.2.7 It is important to note that the mitigation schemes developed are intended to demonstrate only that significant transport impacts of the Allocation can be appropriately ameliorated. As such they are indicative only, and are not intended to

act as a definitive proposal for the mitigation of any Allocation, which would be developed as part of a Transport Assessment submitted as part of a planning application at a later date.

1.2.8 The Locality Assessments are one of a number of pieces of evidence developed in order to assess and evaluate the impact of the GMSF proposals on the transport network and focus only on the sites being allocated in the Plan. The majority of sites proposed for development are actually contained within the existing land supply (ELS) and have been split into three subcategories; Homes (both houses and apartments), Offices, and Industry and Warehousing. A separate "Existing Land Supply and Transport Technical Note" describes the quantity and distribution of the ELS, the key growth areas and the relationship between areas and the transport schemes proposed to serve them.

1.2.9 Transport for Greater Manchester has also worked closely with Highways England to understand the impact that the Allocations may have on the Strategic Road Network (SRN). SYSTRA Ltd was asked to carry out an exercise to assign the 'with GMSF' traffic flows to an representation of an empty SRN network and to produce network stress maps which identified areas of significant delay on the network, as well as providing detailed breakdowns of GMSF Allocation traffic for key sections of the SRN. This exercise has enabled all parties to move towards a common understanding of where the most significant traffic impacts are likely to occur, and provides a common basis to enable Highways England to make investment decisions as part of future Road Investment Strategy (RIS) planning discussions.

1.3 Policy Context – Greater Manchester Transport Strategy 2040

1.3.1 It is important to recognise that the GMSF has been developed with the benefit of an adopted Local Transport Plan – the Greater Manchester Transport Strategy 2040 (hereafter referred to as the 2040 Transport Strategy). The 2040 Transport Strategy has an established long-term vision for transport, of providing *world class connections that support long-term, sustainable economic growth and access to opportunity for all*. The four key elements of this vision are:

- Supporting sustainable economic growth;
- Protecting the environment;
- Improving quality of life for all; and,
- Developing an innovative city region.

1.3.2 The 2040 Transport Strategy was first published in February 2017. The Strategy has undergone a 'light touch' refresh to reflect work undertaken and the changed context, since 2017. As well as refreshing the 2040 Transport Strategy, to support the GMSF an updated Five Year Transport Delivery Plan has also been prepared. It sets out the practical actions planned to deliver the 2040 Transport Strategy and achieve the ambitions of the GMCA and the Mayor, providing a coordinated approach to transport investment. It is also intended to inform the development of the Greater Manchester Infrastructure Programme (GMIP).

1.3.3 Covid-19 has had a massive health and economic impact on our city region, affecting every person and every business in our city-region. The impact from the pandemic has not been equal or fair, highlighting inequalities across Greater Manchester. Travel demand remains well below levels prior to the pandemic and, although it is increasing, it is clear that Greater Manchester's plans for transport and other policy areas will need to be adaptive as the recovery continues.

1.3.4 The aim will be to "lock in" some of the benefits our neighbourhoods, communities, towns and cities have experienced from lower vehicle traffic levels and embracing the opportunities to be more productive through flexible working and accessing services through high quality digital systems. The vision is for a future where walking and cycling are the obvious choice for shorter journeys and where the past dependency on the car is superseded by a reliable and responsive public transport system. Our Five Year Transport Delivery Plan sets out those first steps, from a transport and place making perspective to support leading the recovery and creating a stronger, sustainable and resilient Greater Manchester.

1.3.5 The Our Network policies in the GMSF and in Our Five Year Transport Delivery Plan support the implementation of "Our Network", a ten-year plan to create an integrated, modern and accessible transport network for Greater Manchester. The Delivery Plan brings together different modes of public transport –- bus, tram, rail,

tram-train and cycling and walking in an integrated, easy-to-use system with seamless connections, and simplified ticketing and fares.

1.3.6 The Five Year Delivery Plan has been prepared to respond to the transport opportunities and challenges facing Greater Manchester, in parallel with the development of the Greater Manchester Spatial Framework (GMSF). Together, these documents provide an integrated approach to transport and land use planning by identifying the strategic transport interventions required to deliver the scale of growth set out in the GMSF. It also supports the priorities of the Greater Manchester Strategy (2018).

1.3.7 A key ambition is to improve our transport system so that, by 2040, 50% of all journeys in Greater Manchester are made by public transport or active travel, supporting a reduction in car use to no more than 50% of daily trips. This will mean one million more sustainable journeys every day in Greater Manchester by 2040, enabling us to deliver a healthier, greener and more productive city-region – this is known as the "Right Mix". Achieving the Right Mix is expected to lead to zero net growth in motor vehicle traffic in Greater Manchester between 2017 and 2040.

1.3.8 Fundamental to delivering the Right Mix will be the adoption of a "Streets for All" framework – to enable more people to walk, cycle and use public transport, and improve reliability for, in particular, buses and freight vehicles on the key route network serving our towns and Regional Centre.

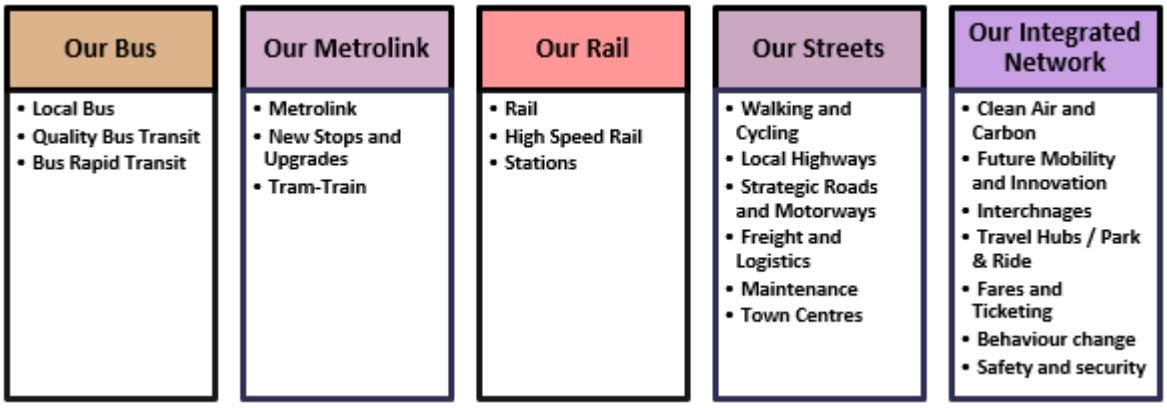
1.3.9 This will be one of the mechanisms used to grow bus patronage alongside:

- Bus Reform
- Integrated Ticketing
- Quality Bus Transit and Bus Corridor Upgrades
- Bus Rapid Transit

1.3.10 Following the introduction of the Bus Services Act (2017), the GMCA asked TfGM to carry out an assessment of a bus franchising scheme, have that assessment reviewed by an independent audit organisation, and carry out a consultation on a proposed franchising scheme which ran from 14 October 2019 to 8 January 2020. The Covid-19 pandemic has had a significant impact on Greater Manchester's bus market, including timetables, revenues, passenger numbers and the public's attitudes to public transport. Due to this, further work will be undertaken to assess the impact of coronavirus on the bus reform process.

1.3.11 Greater Manchester is also delivering the Bee Network - the UK's largest cycling and walking network as a key element in delivering the Right Mix vision. The Combined Authority has allocated £160m between 2018-2022 to fund the first phase of the Bee Network. The network has at its core a programme of new and upgraded pedestrian and cycling crossing points of major roads and other sources of severance, connected by a network of signed cycling and walking routes – known as Beeways – on existing quiet streets. These will be complemented by a number of routes on busier roads where Dutch style cycle lanes protected from motor traffic will be constructed.

1.3.12 Our Five Year Transport Delivery Plan sets out a comprehensive programme of work across all modes and in all Local Authorities which are focused on ensuring the realisation of the 'Right Mix' vision. It contains explanatory text and a summary of the interventions and their stage in the development and delivery process. These include committed, unfunded priorities for the next five years and our longer-term development priorities. The Delivery Plan sections are:



1.3.13 Many of these interventions support the GMSF Allocations directly, whilst others are intended to provide alternatives to private car travel more generally. The schemes demonstrate a clear plan for delivering strategic transport interventions for the first five years of the GMSF plan period, whilst also laying the foundations for longer term investment in sustainable transport across the length of the plan period.

1.3.14 Where relevant, each of the individual Locality Assessments will highlight elements of the Delivery Plan that are particularly relevant to each Allocation or the local area.

1.3.15 Our Five Year Transport Delivery Plan is supported by ten Local Implementation Plans (LIPs) covering the period 2020 to 2025. Each of the ten councils that make up Greater Manchester has its own LIP. The LIPs are designed to ensure local priorities are articulated in the Delivery Plan. The LIPs are included as an appendix to the Delivery Plan. They will be 'live' documents for a period of time and will be updated as councils develop and publish transport plans and strategies, or as new schemes are developed or delivered.

1.3.16 For more detail on the Greater Manchester Transport Strategy 2040 and Our Five Year Transport Delivery Plan visit the TfGM website.

1.4 Structure of this Note

1.4.1 This note sets out the process that was implemented to identify the sites considered as suitable for inclusion in the draft GMSF. It also sets out a summary of the Greater Manchester Accessibility Level (GMAL) model which is TfGM's tool for

assessing the accessibly of sites in public transport terms and which was used in assessing the transport requirements of the Allocations.

1.4.2 An associated exercise was carried out to assess the potential to introduce or extend bus services to the Allocations, and this note sets out the process implemented to assess the likely demand and revenue implications of these new services.

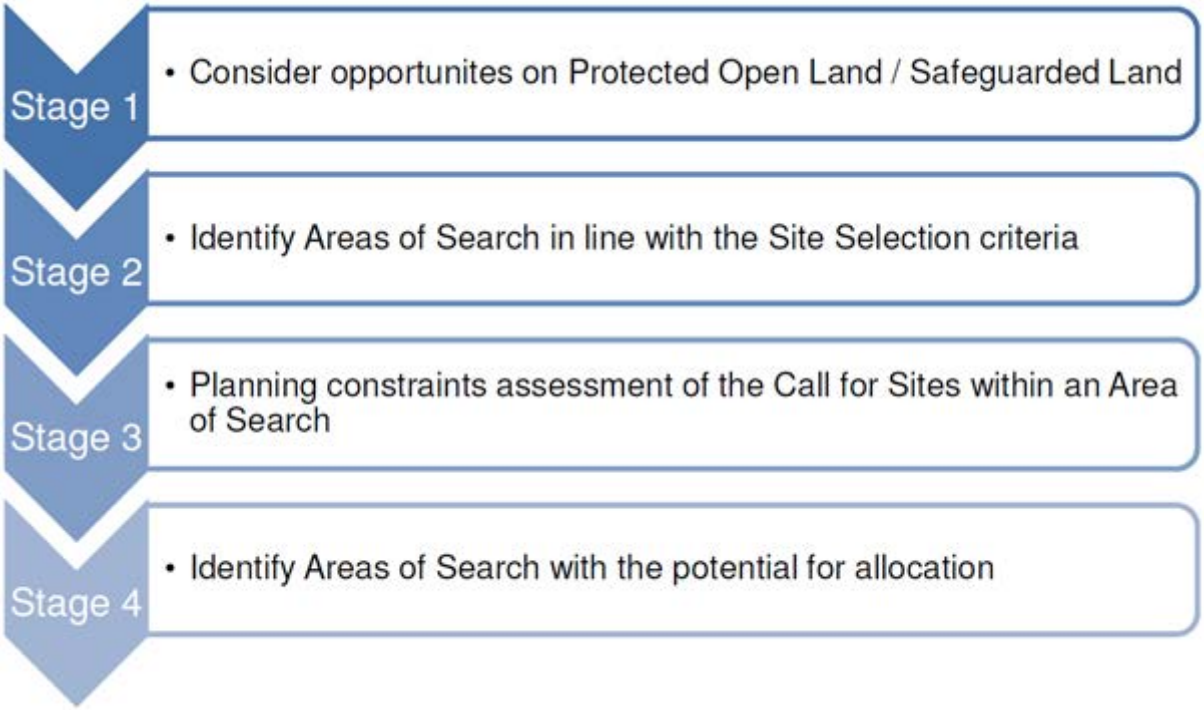
1.4.3 It then explains the approach to strategic modelling which was used to highlight the transport impacts of the Allocations on the transport network, and the process to identify, develop and categorise suggested mitigation schemes.

2. Site Selection

2.1 The Process

1.1.1 The process of identifying and selecting site allocations for the draft GMSF was led by the 10 Greater Manchester Authorities and provided the starting point for further investigation of the preferred sites through the Locality Assessments. It should be noted at the outset that a wide range of planning issues are considered when identifying sites for release, and transport is just one important aspect of this. A Site Selection methodology was developed that included seven criteria informed by the Vision, Objectives and Spatial Strategy in the GMSF 2019, and was used to guide the selection of sites for development within the green belt. A key objective for the process was to demonstrate a clear, consistent and transparent approach to the selection of sites in the GMSF.

1.1.2 The following stages set out the process used to identify the proposed allocations in the GMSF:



1.1.3 Stage One relates to land which is outside of the existing urban area but which is not in the green belt. This includes land which has been identified in Local Authority Local Plans as safeguarded land and/or protected open land (POL). This land is considered to be sequentially preferable to green belt. If stage one does not identify sufficient land to meet the need then it will be necessary to consider sites which are currently in the green belt as part of Stage two.

1.1.4 Stage Two is the identification of broad "Areas of Search" based on the Site Selection Criteria within which call for sites could be assessed. The Site Selection criteria reflect the priorities of the GMSF Spatial Strategy and objectives. The broad Areas of Search approach was chosen because of the volume of call for sites submitted and therefore it was necessary to undertake an initial high level sift to identify only those sites with the potential to meet the GMSF strategy. Sites which did not fall within an Area of Search were not considered to meet the strategy and were therefore excluded from the Site Selection process and not subject to any further assessment.

1.1.5 Based on the GMSF Spatial Strategy, plan objectives and guidance in the NPPF on green belt release, seven Site Selection Criteria were developed to identify the most sustainable sites in the green belt.

- Criterion 1 – Land which has been previously developed and/or land which is well served by public transport.
- Criterion 2 – Land that is able to take advantage of the key assets and opportunities that genuinely distinguish Greater Manchester from its competitors.
- Criterion 3 – Land that can maximise existing economic opportunities which have significant capacity to deliver transformational change and / or boost the competitiveness and connectivity of Greater Manchester and genuinely deliver inclusive growth.
- Criterion 4 – Land within 800 metres of a main town centre boundary or 800m from the other town centres' centroids.
- Criterion 5 – Land which would have a direct significant impact on delivering urban regeneration.
- Criterion 6 – Land where transport investment (by the developer) and the creation of significant new demand (through appropriate development densities), would support the delivery of long-term viable sustainable travel options and deliver significant wider community benefits.
- Criterion 7 – Land that would deliver significant local benefits by addressing a major local problem/issue.

1.1.6 Stage Three is an assessment of the sites within the identified Areas of Search to determine whether development in the Areas of Search would be appropriate, weighing the likely benefits against key planning constraints.

1.1.7 Stage four of the assessment identified proposed allocations within the Areas of Search. These Areas of Search were those which were considered to have no other significant constraints precluding development. Because the Areas of Search were derived from the Site Selection Criteria, it is considered that allocations within them represent the best fit for delivering the GMSF Spatial Strategy.

1.1.8 The Locality Assessments are not proposed to take the place of Transport Assessments (TA) which are a required part of individual Planning Applications. The Locality Assessments are intended to give a high-level assessment of how the site may impact on the surrounding transport network, in the absence of any detailed proposals for the configuration and phasing of a site. As such, they are intended to

highlight any significant 'show stoppers' that would suggest the site was not suitable for further consideration.

2.2 Greater Manchester Accessibility Levels

1.2.1 In order to support analysis of public transport accessibility and to assist in service development, TfGM has developed the Greater Manchester Accessibility Levels (GMAL) model, which provides a detailed and accurate measure of accessibility for any given location in the City Region for public transport (bus, rail and Metrolink), as well as flexible transport services such as Local Link.

1.2.2 GMAL provides a score of a location of between 1 to 8, where 1 represents the lowest level of accessibility and 8 represents the highest.

1.2.3 The GMAL measure reflects:

- Walking time from the point-of interest to the public transport access points;
- The number of services (bus, Metrolink and Rail) available within the catchment;
- The level of service at the public transport access points - i.e. average waiting time; and
- The operating areas of Local Link (flexible transport) services.

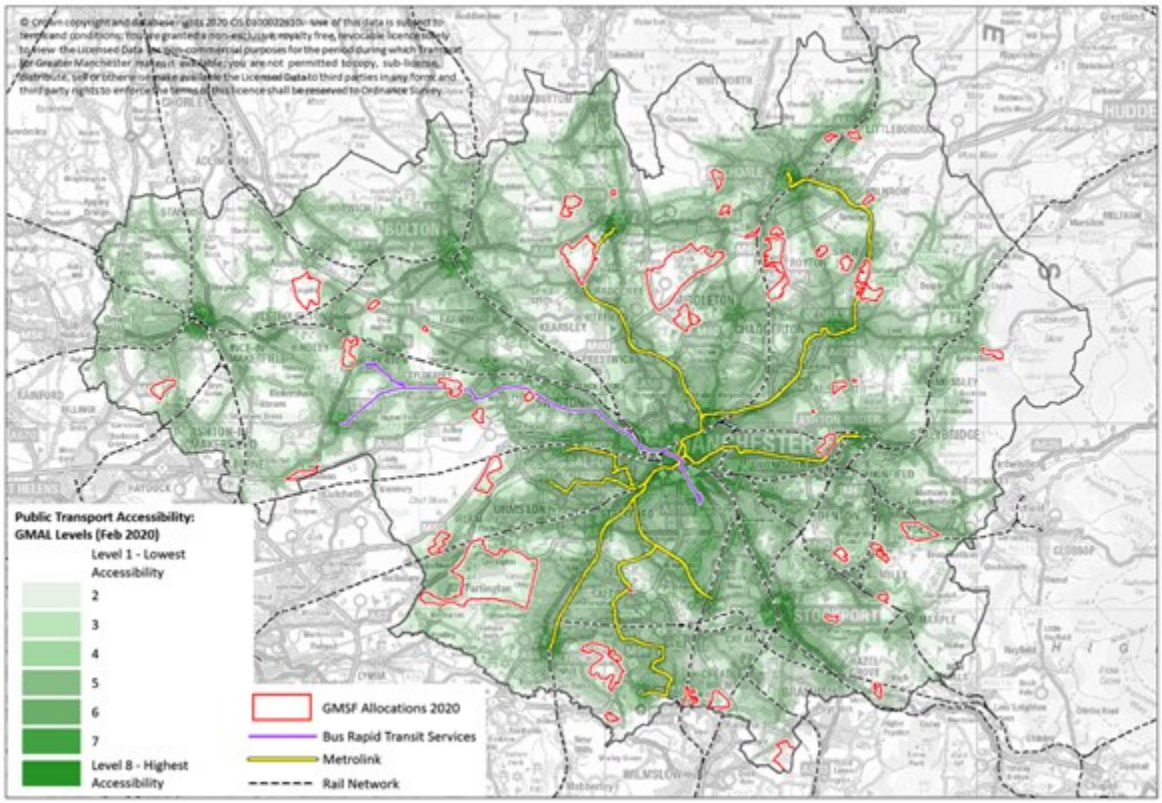
1.2.4 It does not consider:

- The speed or utility of accessible services;
- Crowding, including the ability to board services; or,
- Ease of interchange.

1.2.5 The map below displays the public transport accessibility of allocations within the Greater Manchester Spatial Framework. A representation of the Rail, Metrolink (including the Trafford Park Line completed in March 2020) and Bus Rapid Transit (Vantage bus services) corridors are provided for reference, as well as an indication of public transport accessibility through GMAL.

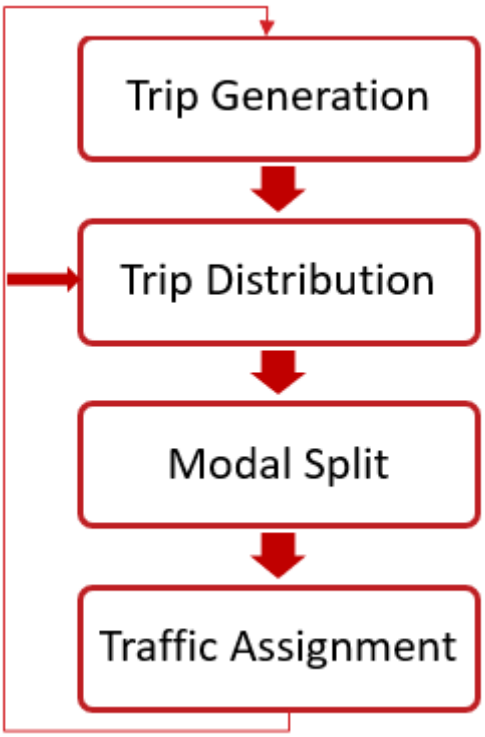
1.2.6 This accessibility data should be considered correct as of February 2020, providing a stable representation of the public transport network before changes in services associated with Covid-19. Since March 2020, public transport services have been under continuous review subject to the requirements of demand, social distancing

and funding. There have been a range of changes made regarding service frequencies across public transport networks, and while there was an initial reduction in services, much of this has now been restored, and this would still represent the areas best served by public transport within a stable service pattern.



3. Approach to Strategic Modelling

2.1 The GMSF Locality Assessments have been produced using data provided from TfGM's Variable Demand Model (GMVDM). This model is a mathematical representation of the transport network, which works by determining all of the origins and destinations of trips within a given area, matching these two together in order to generate a set of journeys, assigning these journeys to a mode (for example, car, bus, or cycling) and then assigning these trips to a route. The model runs numerous 'loops' in order to identify the best path (by generalised cost). This approach is summarised in the diagram below.



2.2 For this project, SYSTRA updated the model in order to produce a number of different scenarios to permit comparison and evaluation.

2.3 TfGM provided the Base Model to SYSTRA representing how the transport network operates at present (in 2017). SYSTRA made some refinements to the Base Model to add detail in the vicinity of some allocations. GMVDM is a strategic model and, as such, does have limitations in terms of investigating localised transport issues.

2.4 SYSTRA then produced a Reference Scenario, including the Existing Land Supply and committed transport infrastructure for two assessment years – 2025 and 2040. This facilitated an understanding of how the transport network was likely to operate in

the future, with the existing land supply identified in the GMSF, but without the introduction of the Allocations proposed in the plan.

2.5 Future trip generation to/from the site (i.e. how many people and vehicles will enter or leave the site) was estimated by applying a set of Greater Manchester-wide trip rates derived from an industry database known as TRICS (Trip Rate Information Computer System) to the agreed development quantum for each site. TRICS is a national system for trip generation analysis which allows users to establish potential levels of trip generation for a wide range of development types and scenarios. Trip rates were based on the Trafford Park Metrolink business case and were given for three periods, AM(0700-1000), Inter-Peak (1000-1600) and PM (1600-1900), different rates were also used for town centre and out-of-centre areas. Where Office or Industry and Warehouse was a part of the land use mix, floorspace was converted into a number of jobs, using densities derived from the Homes and Community Agency Employment Density Guide.

2.6 The distribution of trips (i.e. where they are going to or coming from) was derived by selecting nearby zones with similar land use characteristics as a proxy and using the existing distribution in the model.

2.7 In order to assess the cumulative impact of Greater Manchester allocations on the network, two test model scenarios were undertaken, a 'constrained' and 'high side' assessment. The constrained forecasts could reduce the number of future highway trips due to congestion on the highway network. This constraining process is undertaken by the GMVDM.

2.8 In simple terms, the GMVDM takes the unconstrained input demand and adjusts it to reflect changes in the costs of travel over time, due to:

- increased congestion due to the underlying increase in car trips forecast by the National Trip End Model (NTEM) a UK wide forecast of population, employment, car ownership and trip rates, produced by the Department for Transport
- the inclusion of significant new developments causing additional local congestion
- changes in values of time and vehicle operating costs
- changes in public transport fares

- introduction of new public transport services or changes to journeys times / headways for existing services
- introduction of new road infrastructure

2.9 The model adjusts the input demand based on how the cost of travel changes from the base year to the future. For example, for a shopping trip undertaken by car which becomes more congested in future, changes might be:

- travel via a different route
- travel via a different mode, e.g. walk/cycle, bus, Metrolink
- travel to some different shops
- travel at a different time of day
- some combination of the above

2.10 The 'standard' development planning approach would generally not assume that future highway trips are constrained by congestion on the highway network. Discussions between SYSTRA and TfGM pointed towards a need to also look at such a 'high-side' scenario with the GMSF development scenario which does not take account of future congestion on the road network.

2.11 The outputs of these four Test Cases ("GMSF Constrained" and "GMSF High Side", for both 2025 and 2040) were used to assess and mitigate the impact of the GMSF Allocations on the Greater Manchester transport network.

2.12 Further iterations of the above process were necessary in the case of some sites. When the process was completed, a comparison was made of the input TRICS trip rates and the output GMVDM development traffic flows, to confirm that both were broadly comparable.

4. Approach to Technical Analysis

4.1 Background

3.1.1 For each of the Site Allocations originally examined, SYSTRA worked with representatives of the ten Greater Manchester Local Authorities, TfGM and site promoters to identify key parts of the transport network (e.g. key road links and

junctions) likely to be impacted by the site. This was achieved by a combination of both professional judgement and local knowledge.

3.1.2 In almost all cases the junctions in a road network reach capacity before the road links. Hence, much of the analysis focused on the identified critical junctions. For each of these, a local junction model was built which replicated the current operation of the junction. Signalised junctions were assessed in detail using industry-standard modelling software 'LINSIG Version 3'. Where possible, traffic signal information (i.e. signal phasing and timings) and lane geometry (alignment, profile and lane position) were provided by TfGM to ensure that the local junction models reflected (as far as possible), the operation of the junctions on the ground. 'Junctions 9' software was used to assess priority and roundabout junctions.

3.1.3 Junction performance was tested for the "Reference", "GMSF Constrained" and "GMSF High Side" scenarios for both 2025 and 2040. Site traffic impacts were measured relative to the Reference scenario. Where these impacts were considered to be significant, transport mitigation schemes were developed to address these. Through discussions with TfGM and the Combined Authority, it was agreed that where mitigation was required, it should mitigate the impacts back to the Reference Case scenario – i.e. the allocations should mitigate their own cumulative impact rather than seek to mitigate the impact of general traffic growth arising from the Existing Land Supply. It should be noted that mitigating back to this level of operation may not mean that the junction operates within capacity by 2040.

4.2 Approach to identifying Public Transport schemes

3.2.1 Public transport interventions have been identified which could support non-car trips to and from the draft Allocation. In some instances sites have been proposed close to current or planned Metrolink stops or current rail stations, and for a majority of sites the introduction of new or extended bus services have been proposed and outline costs developed.

3.2.2 In order to develop these proposals, SYSTRA Ltd's bus service experts and TfGM's Operational Planning team held a workshop to identify potential new and improved services for each site, including any existing proposals identified during the early stages of the planning process. The identified services were then defined in more

detail to understand the likely catchments and patronage levels. Patronage was based on TRICS outputs moderated in line with the actual levels of services proposed (e.g. slow and/or low frequency services are unlikely to achieve the patronage implied by the raw TRICS outputs). The patronage forecasts were used to estimate the likely revenue levels to be generated by the new or improved bus service associated with each site.

3.2.3 Services were also costed using detailed costing information available to TfGM through its specification of current socially necessary bus services, to establish whether they could operate without subsidy, and, where subsidy was likely to be necessary, to understand the likely cost per passenger. Services with an unacceptably high cost per passenger subsidy were reviewed in order to understand if any changes could be made that would reduce the subsidy, which led to a reduction in the specification of some services.

3.2.4 Services which, following review, still had an unacceptably high cost per passenger subsidy were deemed to be unviable and were not included in the Locality Assessments.

3.2.5 It should be noted that the working environment for buses is likely to be substantially different in the future, and this exercise was intended to be indicative of the type of bus service that may be possible when an Allocation is developed. The opportunity for bus service improvements will need to be reviewed at the time of submission of the planning application (within the Transport Assessment) as circumstances and opportunities for service improvement may have changed.

4.3 Mitigations and Scheme Development

3.3.1 A number of the site allocations have a body of pre-existing planning information associated with them. This body of work includes consideration of how they could best be linked into the transport network. Therefore, for some sites, there were pre-existing proposals for interventions in the form of link roads, new rail or Metrolink stations, or extensions to existing or proposed bus, cycle and walking routes. Where these schemes had a base level of detail (which would allow them to be coded into the model), they could be examined to consider the level of relief they provided to the traffic impacts. In other instances, it was for the Locality

Assessment technical teams to identify possible interventions and off-site mitigations. Typical local mitigations that were considered included:

- priority junctions (both new priority junctions and modification of existing junctions)
- signalised junctions (both new signalised junctions, modification of existing signalised junctions and conversion of priority junctions to signalised arrangement)
- roundabouts (both mini and standard, modification of existing roundabouts and signalisation of standard roundabouts)
- carriageway construction (single and dual carriageway)
- installation of pedestrian / cycle crossings (pelican, toucan, puffin and zebra).

3.3.2 In addition, the team considered the introduction of new bus services, extensions to or increases in frequency for existing bus services, and the possible introduction of Demand Responsive Transport.

3.3.3 In parallel to the identification and costing of local mitigations, a costing exercise was undertaken to identify broad costs for each intervention to understand how these could be delivered and the extent to which they offered value for money. SYSTRA and other third-party consultants have pro-actively engaged with the Local Authorities and other stakeholders such as TfGM and Highways England throughout the assessment process and based on their inputs the list of transport interventions has been refined and consolidated.

3.3.4 In the case of certain allocations, it was necessary to undertake the process described above more than once. In the case of some larger and/or more complex sites, it was necessary to test the effectiveness of the identified mitigations via the GMVDM and to further check that traffic reassignment did not generate additional problems.

3.3.5 Each of the Locality Assessments has considered the full range of mitigations and interventions, from public transport, to highway schemes, to sustainable modes. Some of the sites allocated for development have proven to be more complex than others; due either to their size and composition, their proximity to other sites or their interaction with congested sections of the Strategic Road Network. In these instances, is has been necessary to complete several iterations of the process set out above. For example, mitigations developed for a site may not fully address the

issues identified, and further mitigations and/or reductions in development quantum have been considered in order to identify the correct level of scale. This has in some cases necessitated several rounds of strategic modelling.

3.3.6 In some instances, it was not possible to full identify interventions which could suitably mitigate the impact of the site on the network. Where this is the case, this became a contributing factor in decisions to either reduce the scale or remove the site completely from the GMSF (Appendix 1 gives a full list of the final GMSF Allocations). In other instances, the proposed intervention made a contribution to mitigating the site, but could not fully ameliorate the impact. In these instances, care has been taken to ensure that the Allocation is not proposed for delivery in the early part of the Plan period, in order to allow further work to be done to improve the transport network, and ensure that the Allocation can be brought forward safely and sustainably.

3.3.7 Mitigations have been grouped in one of four categories depending on their size and significance:

Necessary strategic interventions

3.3.8 These comprise significant interventions that have potential to have strategic benefits – i.e. benefits to the wider network not just the local network. There is a consensus that the intervention is required to support the implementation of a specific site and that the site could not come forward without it

Supporting strategic interventions

3.3.9 These comprise significant interventions; similar in magnitude to those defined in the previous category. These interventions are considered highly desirable and may be required in order to deliver the GMSF at a Plan level but are not necessarily linked to the delivery of any one Allocation.

Necessary local interventions

3.3.10 These are essential for a site to come forward, but do not have a wider strategic impact on the transport network. They are comprised of three main types:

- Site Access – Direct connections between the external road network and the site.

- Local Mitigation – Local transport mitigation measures proposed to address direct impacts of the site. These might comprise road network improvements, localised public transport improvements and measures to support the use of active modes.
- SRN Mitigation – Highway mitigation measures specifically intended to address identified issues on the Strategic Road Network arising from an Allocation.

Supporting local interventions

3.3.11 Site Access, Local Mitigation and SRN mitigation which are considered highly desirable but are not essential to the delivery of any one Allocation.

3.3.12 It is important to note that the interventions developed are intended to demonstrate only that significant transport impacts of the Allocation can be appropriately ameliorated. As such they are indicative only and are not intended to act as a definitive proposal for the mitigation of any Allocation, which would be developed as part of a Transport Assessment submitted as part of a planning application at a later date.

3.3.13 All of the interventions set out in the Locality Assessments are included in Greater Manchester's Five Year Transport Delivery Plan (or are covered within the associated Local Implementation Plans (LIP) for each local authority). This sets out those transport schemes which will be implemented or developed further across the next five-years in order to deliver on Greater Manchester's wider economic, social and environmental objectives for transport as set out in 2040 Transport Strategy.

3.3.14 The focus of the main Transport Delivery Plan is on those GMSF schemes that have strategic benefits, while the LIP documents enable the local interventions to be incorporated into the local sustainable transport and highway programmes.

3.3.15 In all cases, we would expect significant developer funding to enable the delivery of both the strategic and local schemes, and where appropriate other sources of public funding will be sought to help ensure delivery over the plan period. Funding and delivery priorities of the Delivery Plan, over the next 3-5 years, will be reflected in the Greater Manchester Infrastructure Programme (GMIP).

3.3.16 Further iterations of the Delivery Plan will be published at regular intervals, and as sites come forward for development, we would expect to see interventions necessary to ensure new Allocations can be delivered sustainably to be reflected in those iterations. TfGM, the Local Authorities, Highway England and site promoters will work together to ensure that schemes which are brought forward support the City Region's commitment to the Right Mix vision and the ambition to enable more people to walk, cycle and use public transport.

5. Conclusion

4.2 The completion of Locality Assessments on the proposed GMSF Allocations has ensured that each site has been subject to a thorough, robust and consistent evaluation of its likely contribution to transport impacts in Greater Manchester. The sites that have been selected for inclusion in the latest version of the GMSF have been found to be suitable from a transport perspective, and satisfy the requirements of National Planning Policy Framework in that they do not place an unacceptable impact on highway safety or severe impact on the road network. Where necessary, illustrative mitigation schemes have been developed, and their effectiveness in reducing traffic impacts has been demonstrated. Those schemes which have a strategic benefit and are likely to be needed in the next five-year period have been referenced in Our Five Year Transport Delivery Plan and form part of GMIP.

4.3 Nonetheless, it is clear that for some Allocations there is further work to be done in order to develop a solution that fully mitigates the site's impact on the transport network. In these instances care has been taken to ensure that the Allocation is not identified for delivery in the first five years of the Plan, to enable more work to be undertaken to ensure that the site can be delivered in a safe and sustainable matter at a later point in time.

6. GMSF Allocations List

Local Authority	2019 Ref	2019 Title	2020 Ref	2020 Title
Cross Boundary	GMA01.1	Northern Gateway Heywood Pilsworth	GMA1.1	Northern Gateway Heywood Pilsworth
Cross Boundary	GMA01.2	Northern Gateway Simister and Bowlee	GMA1.2	Northern Gateway Simister and Bowlee
Cross Boundary	GMA01.3	Whitefield	Withdrawn	Withdrawn
Cross Boundary	GMA02	Stakehill	GMA2	Stakehill
Cross Boundary	GMA03	Kingsway South	Withdrawn	Withdrawn
Bolton	GMA04	Bewshill Farm	GMA4	Bewshill Farm
Bolton	GMA05	Chequerbent North	GMA5	Chequerbent North
Bolton	GMA06	West of Wingates	GMA6	West of Wingates
Bury	GMA07	Elton Reservoir	GMA7	Elton Reservoir
Bury	GMA08	Seedfield	GMA8	Seedfield
Bury	GMA09	Walshaw	GMA9	Walshaw
Manchester	GMA10	Global Logistics	GMA10	Global Logistics
Manchester	GMA11	Roundthorn MediPark Extension	GMA3.1	Roundthorn MediPark Extension
Manchester	GMA12	Southwick Park	GMA11	Southwick Park
Oldham	GMA13	Ashton Road Corridor	GMA18	Land south of Coal Pit Lane (Ashton Road)
Oldham	GMA14	Beal Valley	GMA12	Beal Valley

Local Authority	2019 Ref	2019 Title	2020 Ref	2020 Title
Oldham	GMA15	Broadbent Moss	GMA14	Broadbent Moss
Oldham	GMA16	Cowlishaw	GMA16	Cowlishaw
Oldham	GMA17	Hanging Chadder	GMA17	Hanging Chadder
Oldham	GMA18	Robert Fletchers	GMA15	Chew Brook Vale (Robert Fletchers)
Oldham	GMA19	South of Rosary Road	GMA19	South of Rosary Road
Oldham	GMA20	Spinners Way	Withdrawn	Withdrawn
Oldham	GMA21	Thornham Old Road	Withdrawn	Withdrawn
Oldham	GMA22	Woodhouses	GMA13	Bottom Field Farm (Woodhouses)
Rochdale	GMA23	Bamford and Norden	GMA20	Bamford and Norden
Rochdale	GMA24	Castleton Sidings	GMA21	Castleton Sidings
Rochdale	GMA25	Crimble Mill	GMA22	Crimble Mill
Rochdale	GMA26	Land north of Smithy Bridge	GMA23	Land north of Smithy Bridge
Rochdale	GMA27	Newhey Quarry	GMA24	Newhey Quarry
Rochdale	GMA28	Roch Valley	GMA25	Roch Valley
Rochdale	GMA29	Trows Farm	GMA26	Trows Farm
Salford	GMA30	Land at Hazelhurst Farm	GMA27	Land at Hazelhurst Farm

Local Authority	2019 Ref	2019 Title	2020 Ref	2020 Title
Salford	GMA31	East of Boothstown	GMA28	East of Boothstown
Salford	GMA32	North of Irlam Station	GMA29	North of Irlam Station
Salford	GMA33	Port Salford Extension	GMA30	Port Salford Extension
Stockport	GMA34	Bredbury Park Extension	GMA31	Bredbury Park Extension
Stockport	GMA35	Former Offerton High School	GMA32	Former Offerton High School
Stockport	GMA36	Gravel Bank Road/Unity Mill	Withdrawn	Withdrawn
Stockport	GMA37	Heald Green	GMA33	Heald Green 1 (West)
Stockport	GMA38	High Lane	GMA35	High Lane
Stockport	GMA39	Hyde Bank Meadows	GMA36	Hyde Bank Meadows
Stockport	GMA40	Griffen Farm/Stanley Green	GMA34	Heald Green 2 (East)
Stockport	GMA41	Woodford Aerodrome	GMA37	Woodford Aerodrome
Tameside	GMA42	Ashton Moss West	GMA38	Ashton Moss West
Tameside	GMA43	Godley Green Garden Village	GMA39	Godley Green Garden Village
Tameside	GMA44	South of Hyde	GMA40	South of Hyde

Local Authority	2019 Ref	2019 Title	2020 Ref	2020 Title
Trafford	GMA45	New Carrington	GMA41	New Carrington
Trafford	GMA46	Timperley Wedge	GMA3.2	Timperley Wedge
Wigan	GMA47	Land South of Pennington	Withdrawn	Withdrawn
Wigan	GMA48	M6 Jctn 25	GMA42	M6 Junction 25
Wigan	GMA49	North of Mosley Common	GMA43	North of Mosley Common
Wigan	GMA50	Pocket Nook	GMA44	Pocket Nook
Wigan	GMA51	West of Gibfield	GMA45	West of Gibfield

Greater Manchester Spatial Framework

Locality Assessment:

New Carrington (GMA41)

Publication Version 2: November 2020

Identification Table	
Client	Trafford Council/TfGM
Allocation	New Carrington
File name	GMA41 Trafford - New Carrington LA 021020
Reference number	GMA41 (2020 GMSF) previously GMA45 (2019 GMSF)

Approval					
Version	**Role**	**Name**	**Position**	**Date**	**Modifications**
0	Author	JR	AD	16/09/20	Base report
	Checked by	JR	A	16/09/20	
	Approved by	JR	AD	16/09/20	
1	Author	John Cookson	TfGM	25/09/20	Consistency edits
	Checked by	Sarah Todd / Trafford Highways	Trafford Council	30/09/20	
	Approved by	Chris Morris	Trafford Council	30/09/20	

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Allocation Data	
Allocation Reference No.	GMA41
Allocation Name	New Carrington
Authority	Trafford
Ward	Bucklow-St Martins, Bowdon and Broadheath
Allocation Proposal	Approx. 4,300 Residential Units in plan period
Allocation Timescale	16 + years

Glossary

"2025 GMSF Constrained" - is the 2025 forecast case in which the model adjusts the input demand based on how the cost of travel changes from the base year to the future. For example, for a shopping trip undertaken by car which becomes more congested in future, changes might be travel via a different route, mode, location or time of day.

"2040 GMSF Constrained" - as above, but for a 2040 forecast year

"2025 GMSF High-Side"- is the 2025 forecast case in which the model does not adjust the input demand based on how the cost of travel changes. In this scenario congestion does not lead to a reassignment of traffic, and therefore road traffic flow will generally be higher.

"2040 GMSF High-Side" - as above, but for a 2040 forecast year

"2025 Reference Case" - is the Do Minimum scenario which includes delivery of all transport schemes already committed and assumed to be completed by 2025

"2040 Reference Case"- is the Do Minimum scenario which includes delivery of all transport schemes already committed and assumed to be completed by 2040

AADT - Annual average daily traffic, is a measure used in transportation planning to quantify how busy the road is

Bee Network - is a proposal for Greater Manchester to become the very first city-region in the UK to have a fully joined-up cycling and walking network: the most comprehensive in Britain covering 1,800 miles.

Bus Rapid Transit - is a bus-based public transport system designed to improve capacity and reliability relative to a conventional bus system. Typically, a BRT system includes roadways that are dedicated to buses, and gives priority to buses at junctions where buses may interact with other traffic

Existing Land Supply - these are sites across the county that have been identified by each local planning authority across Greater Manchester and are available for development

Greater Manchester Variable Demand Model (GMVDM) - the multi-modal transport model for Greater Manchester. This transport model provides estimates of future year transport demand as well as the estimates of travel behaviour changes and new patterns that the Plan is likely to produce. These include

changes in choices of routes, travel mode, time of travel and changes in journey destinations for some activities such as work and shopping.

“LRN” (Local Road Network) All other roads comprise the Local Road Network. The LRN is managed by the local highways authorities

National Trip End Model (NTEM) - is a Department for Transport forecast that ensures that measures of population, jobs and trips made by various modes are consistent across the whole of Great Britain.

Rapid transit services - refers to high frequency, high capacity metro style transport services including Metrolink and Bus Rapid Transit.

“SRN” (Strategic Road Network) The Strategic Road Network comprises motorways and trunk roads, the most significant ‘A’ roads. The SRN is managed by Highways England.

“TfGM” - Transport for Greater Manchester, the Passenger Transport Executive for Greater Manchester

Urban Traffic Control (UTC) - is a specialist form of traffic management that, by coordinating traffic signals in a centralised location, minimises the impact of stop times on the road user.

1. Allocation, Location and Overview

1.1. Location

1.1.1. The Draft Greater Manchester Spatial Framework (GMSF) identifies the New Carrington allocation for approximately 4,300 units in the GMSF plan period. The allocation is also expected to provide approximately 370,000sqm of employment for industrial and warehousing floorspace; however, this will be on brownfield land within the allocation, on land which is already within the baseline supply. This locality assessment therefore assesses only the proposal for additional housing at the allocation. The allocation has the potential to deliver approximately 5,000 dwellings in total with delivery extending beyond the GMSF plan period to 2037. The Draft GMSF 2019 proposed the New Carrington allocation for approximately 6,100 units and up to 410,000 sqm employment floorspace, however following the development of the allocation's masterplan these quanta have been reduced.

1.1.2. The New Carrington allocation is located in the west of Trafford District and is situated between Partington, Carrington and Sale West. The allocation surrounds the existing urban area of Partington and borders the Manchester Ship Canal to the west, which is the administrative boundary between Trafford and Salford. It extends to the River Mersey and the A6144 Carrington Lane to the north, it borders the existing residential area of Sale West to the east and faces open land to the south.

1.1.3. The proposed employment area is located to the south of the existing Carrington community on the existing brownfield land; residential development is proposed on land to the south and east of Partington, as well as at Carrington Village and an extension to Sale West. A large proportion of the north and west of this area is not located in the Green Belt. The landscape in the south and east of the Carrington area is characterised by tracks or 'Rides', most notably in rows in a north-south direction. The smaller portion of the allocation consists of a wedge of land to the west of Sale (known as 'Sale West'). This land is predominantly greenfield. It is separated from the rest of the allocation by a wedge of land running north to south, encompassing the Manchester United FC training ground, which it is proposed would remain in the Green Belt.

1.1.4. Partington is the nearest existing local centre to the allocation, located to the south and west of Carrington. Partington provides a nearby local centre, larger town centres are Urmston, Altrincham, Sale and Stretford as well as further onward destinations towards the Regional Centre, such as Trafford Park, Salford Quays and Manchester City Centre. The New Carrington Masterplan also proposes a new local centre as part of the development which would be of an equivalent scale to Partington.

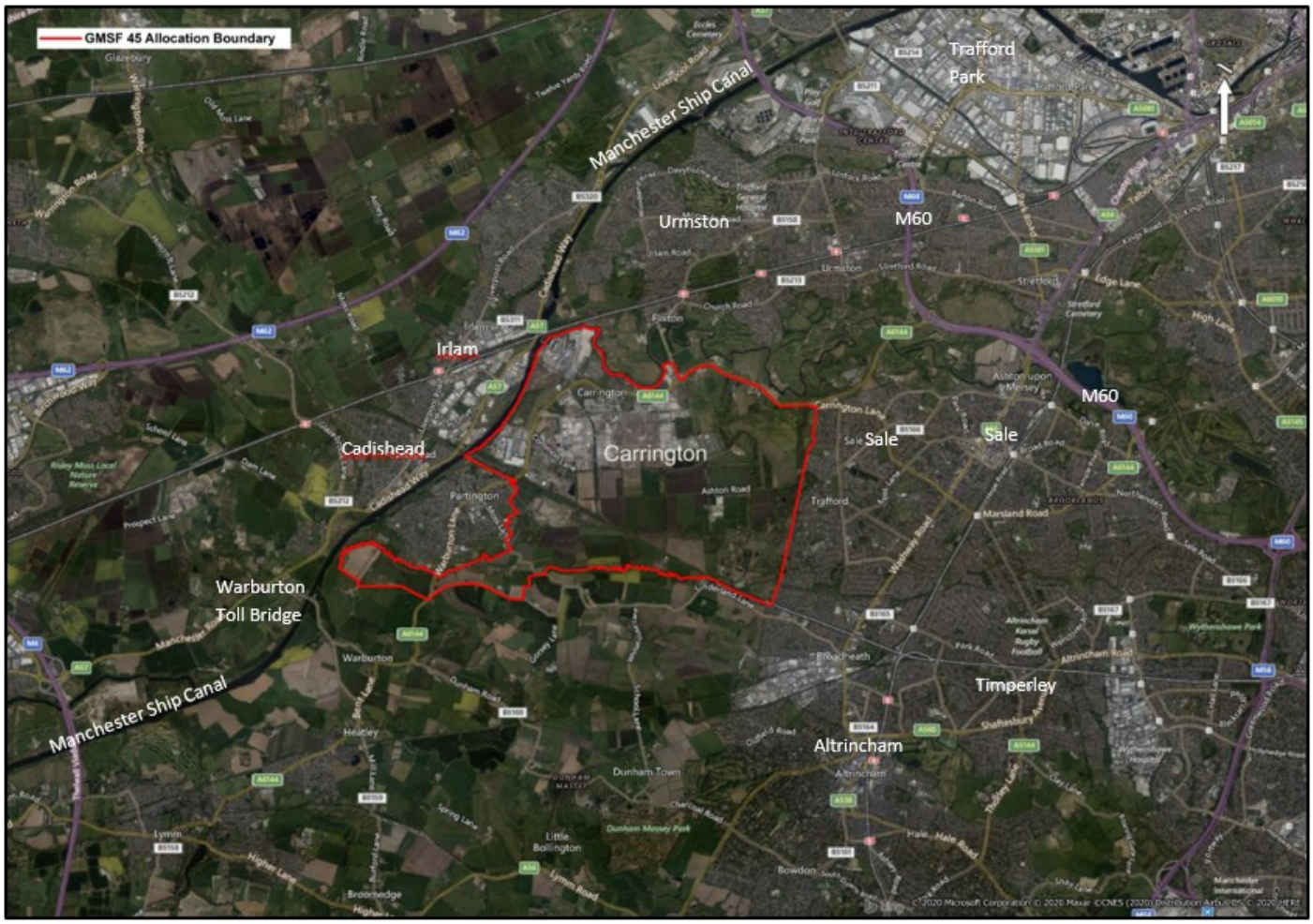
1.1.5. To the west of the allocation, the Manchester Ship Canal provides a physical boundary to Cadishead and Irlam, with the only access across the canal via the Warburton Toll bridge which sits south-west, outside the study area.

1.1.6. Figure 1 outlines the allocation boundary for Carrington and the surrounding area. Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps.

1.1.7. For the purposes of the testing the impact of the allocation through the strategic model, a total of 4,300 dwellings has been assumed to be built out by 2040. The GM transport modelling suite has a 2040 forecast year, as such it uses 2040 trajectory data as proxy for 2037 full build-out, this is not considered to materially impact on the analysis or conclusions of this report.

1.1.8. All phasing plans information contained in this Locality Assessment is indicative only and has only been used to understand the likely intervention delivery timetable. Final trajectory information and the final allocation proposal is contained in the GMSF Allocation Topic Paper.

Figure 1. GMA41 Allocation Location



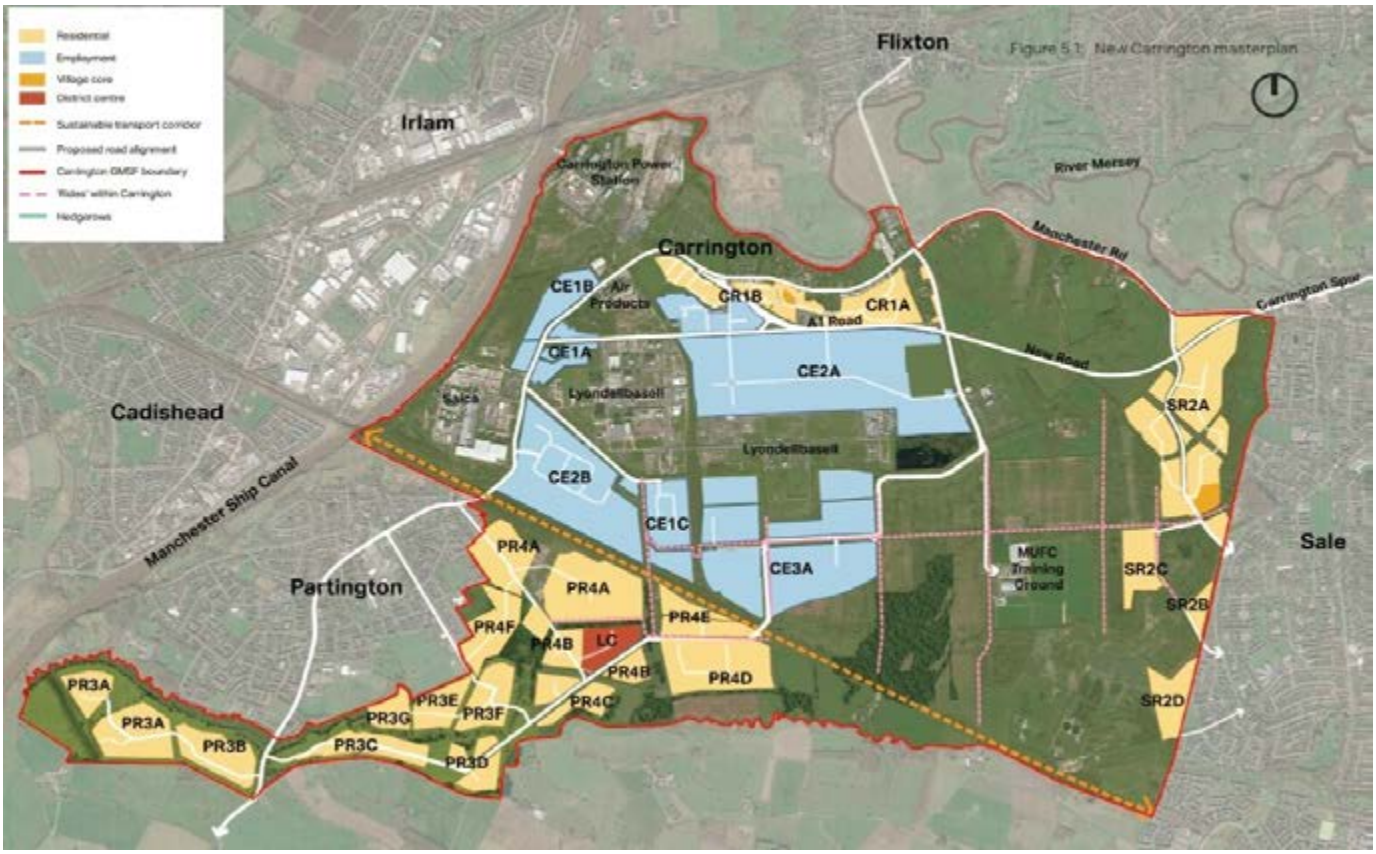
Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

1.2. Masterplan

1.2.1. To support the vision to transform the New Carrington, Sale West and South Partington areas into a "sustainable and attractive, mixed use residential and employment area" a masterplan framework has been prepared by Trafford Council, working in partnership with key landowners on the allocation.

1.2.2. The Masterplan, and its proposals (Figure 2) will inform and support the New Carrington policy in the GMSF. The Masterplan, along with a range of evidence base documents, demonstrates that the allocation is deliverable showing how the residential and employment development can be phased within the GMSF plan period to 2037. Note that this masterplan was up to date at time of writing, but further iterations are expected.

Figure 2. New Carrington Masterplan Proposal 2020



1.2.3. Within the New Carrington allocation, it is acknowledged that there is a need for a new strategic connection between Carrington and the Carrington Spur to support the development proposals. This link referenced as the Carrington Relief Road (CRR) will assist in reducing 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 this Locality Assessment, the strategic relief road (single lane in either direction) is a recognised infrastructure requirement for this allocation and is an assumed element in the Reference Case modelling scenario, noting that the exact alignment of the CRR will be the subject of further assessment.

1.2.4. The Locality Assessment considers the scale of the overall development quantum proposed for the New Carrington allocation and will therefore remain valid as part of future masterplanning exercises for the Carrington allocation. Detailed Transport Assessments will also be required to support development proposals at the planning application stage.

2. Justification for Allocation Selection

2.1. Overview

2.1.1. The New Carrington allocation offers an opportunity to bring forward a significant area of brownfield land. This section outlines the GMSF allocation selection process and how it offers a significant opportunity to deliver a transformational mixed-use development, delivering a positive socio-economic future for Carrington, Partington and Sale west.

2.2. Allocation Selection

2.2.1. The proposed allocations in the GMSF were identified through a Site Selection process led by the ten Greater Manchester authorities. A Site Selection methodology was developed, which includes seven selection criteria that reflect the GMSF vision, objectives and Spatial Strategy.

2.2.2. The New Carrington allocation was identified as the area meets a number of the selection criteria, including bringing forward a significant area of brownfield land. The allocation is also located within a strategically important location within Greater Manchester, close to Port Salford. It is able to capitalise on the existing opportunity at Carrington to provide significant residential and employment development delivering inclusive growth which is of benefit to new and existing residents. There is an opportunity to provide long term sustainable travel options which would be of significant benefit to the existing communities at Partington and Carrington.

2.2.3. See the GMSF Site Selection Topic Paper for more information.

3. Key Issues from Consultation

3.1. Overview

3.1.1. The comments made during the 2019 GMSF consultation on the New Carrington allocation related to three key transport themes:

- Roads;
- Public Transport; and
- Walking and Cycling.

3.2. Roads

3.2.1. Roads comments note that existing roads, such as the A6144 Carrington Spur and B5158 Flixton Road, are already congested and that rural lanes are in a poor state of repair and need widening. There was concern that development will increase congestion as well as the associated air pollution, noise pollution and damage to roads. Comments also said that road widening to manage congestion will be detrimental to local residents. Some consultees requested further details on potential traffic impacts and planned road infrastructure. Some objected to the proposed Carrington Relief Road (A1 Road) and said that the road has had no public consultation.

3.2.2. Representatives of Highways England note that there is no detail of the size and type of highway infrastructure schemes that are required to deliver the proposed allocation. They also highlight that the allocation is the largest in Greater Manchester and therefore the scale of the allocation is likely to have a significant impact on the M60 south-west corridor, including the M60 Junction 8, and the wider SRN.

3.3. Public Transport

3.3.1. Public transport comments highlighted that existing services are insufficient and that improvements are needed at Partington, Carrington and Sale West. Consultees noted that there are no firm commitments for sustainable and active modes of travel to support the development because they are only at business case level and that more detail is needed on what will be provided. It was also commented that public transport should be in place before the new housing. There was support for the re-establishment of the train line as public transport route for rail/Metrolink/bus services. Suggestions for new routes on the re-established train line included connections to Carrington, Partington, Irlam, Altrincham, Warrington and Urmston.

3.4. Walking & Cycling

3.4.1. Walking and cycling comments noted that safe cycling options are needed to the north both on and off-road. There is support for a cycle route along the dis-used railway corridor, but others raised concerns that some of the proposed roads would run alongside existing cycle routes and reduce safety for pedestrians and cyclists. There were also comments supporting the protection and enhancement of the Trans-Pennine Trail and public rights of way.

3.5. Other Issues

3.5.1. In discussions with representatives of Trafford Council, they noted the importance of the phasing of development and infrastructure for this large-scale allocation. The need for futureproofing of planned infrastructure was also raised as a key issue.

4. Existing Network Conditions and Site Access

4.1. Overview

4.1.1. This section outlines the highway layout and junction arrangement currently serving the New Carrington allocation.

4.2. Current Infrastructure

Existing Businesses/ Industry

4.2.1. The New Carrington allocation comprise of land formerly used as petrochemical plant and agricultural lands. Some significant business and industry already serve the new Carrington area, with the following industry/businesses accessing the current links (illustrated in Figure 3);

- Owens Group Haulage - Accessed from the A6144 Manchester Road via a priority access;
- Carrington Business Park – Accessed from the A6144 Manchester Road via a priority access;
- Industry Air Products - Accessed from the A6144 Manchester Road via a priority access;
- Carrington Power Station - Accessed from the A6144 Manchester Road via a priority access;
- One Trafford Environmental & Infrastructure Services - Accessed from the A6144 Manchester Road via a priority access;
- Sale Sharks Training Ground - Accessed from the A6144 Carrington Lane via a priority access;

- Airparks - Accessed from the Isherwood Road via a priority cross-roads opposite National Grid access.

- Manchester United AON Training Complex - Accessed from the Birch Road via priority access

Existing Highways

4.2.2. The A6144 Manchester Road is a single carriageway road subject to a 30-40mph speed limit. It passes through the New Carrington allocation and forms part of the Key Route Network managed by TfGM. It provides the primary route from Partington and other urban areas to the south-west, to Carrington and Urmston to the north and Sale West and the M60 Junction 8 to the east via Carrington Spur. A number of minor roads and accesses branch off this route. Footways and verges are available along the majority of the route; provision is improved through the middle section of the route.

4.2.3. 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 across the River Mersey approximately 500metres from the M60 Junction 8.

4.2.4. 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 Cross-Roads signalised junction and terminates at the private entry close to the Manchester Training Facility. Moss Lane is also a single carriageway road subject to a 30-mph 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 turns into an unclassified rural lane of approximately 5-5.5m 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.

4.2.5. As their designations suggest, both the A6144 Manchester Road, Carrington Spur and Moss Lane/Sinderland Lane have key local functions. 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.

4.2.6. The local routes identified in the Carrington area are connected at the following key junctions:

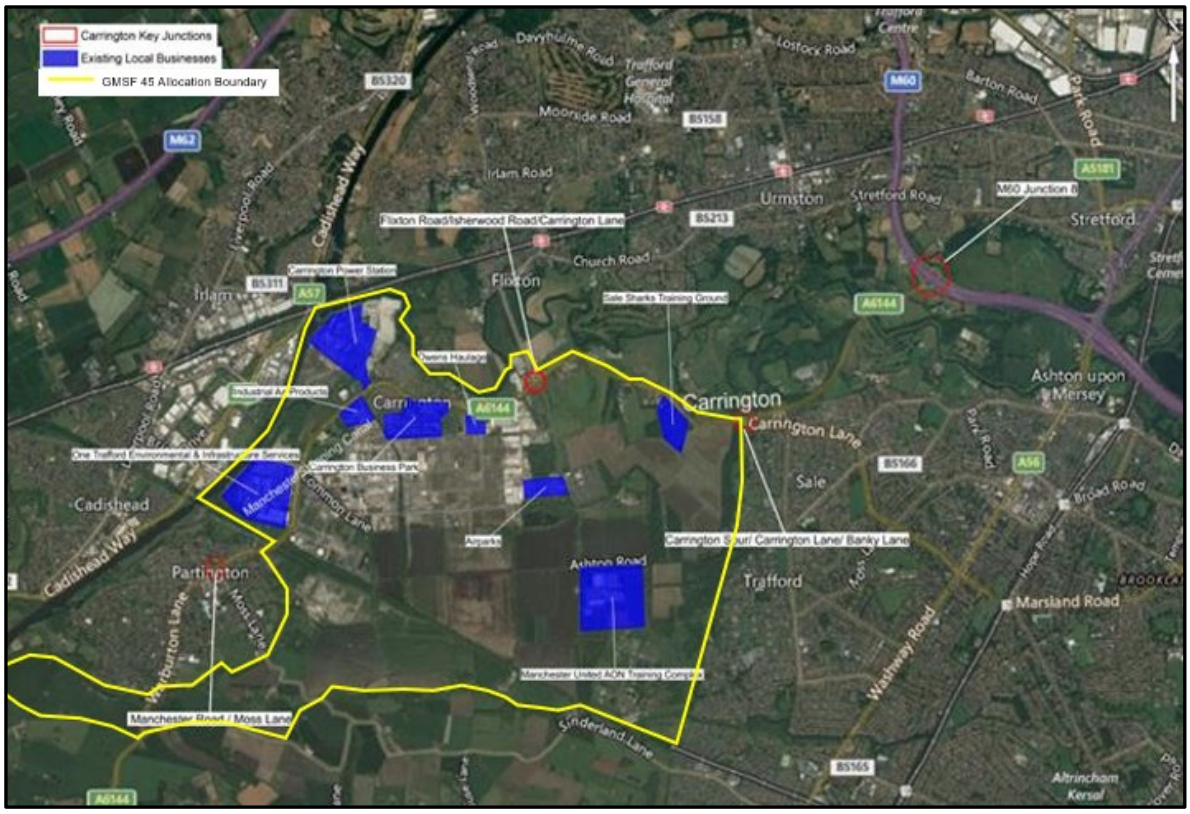
- 4-Armed roundabout junction at Manchester Road / Moss Lane;

- 4-armed signalised junction at Flixton Road / Isherwood Road Carrington Lane;

- 4-armed signalised junction at Carrington Spur/ Carrington Lane/ Banky Lane; and
- M60 Junction 8, grade separated interchange.

4.2.7. These junctions are all located along the busy routes and experience queuing and delay during certain periods of the day. This delay experienced by drivers currently impacts on driver reliability and performance through the New Carrington area. Figure 3 highlights the junction locations.

Figure 3. Current Key Land Uses and Junctions



Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps. Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

Road safety

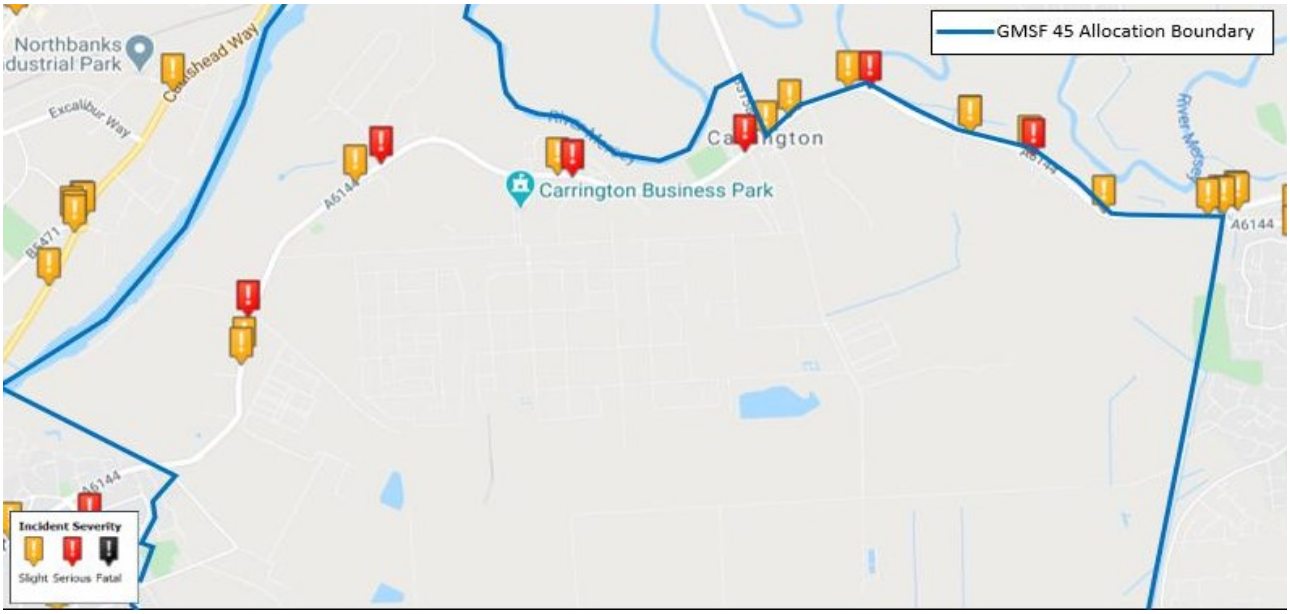
4.2.8. Table 1 and Figure 4 summarise the number of vehicle collisions recorded over the 5-year period (2014 to 2019) in the New Carrington area (1km). The collisions have been categorised to their location at junctions and links.

4.2.9. A total of 9 collisions were recorded at local junctions with all but one described as slight; across the road links 31 collisions were recorded with 23 (74%) recorded as slight, 7 (23%) as serious and 1 (3%) as fatal.

Table 1: Collision data within New Carrington 5 years.

Junction / Link	Fatal	Serious	Slight	Total
Junction – A6144/ Moss Ln	0	0	2	**2**
Junction – A6144/ Carrington Ln/ Isherwood Rd	0	0	1	**1**
Junction – A6144/ Carrington Spur/ Banky Lane	0	0	2	**2**
Junction – M60 Jct 8	0	1	3	**4**
Link – A6144 M'ch'ter Rd (Moss Ln to Car'gton Sp)	0	6	11	**17**
Link – A6144 Car'ton Sp (Car'ton Ln to M60 Jct 8)	0	0	2	**2**
Link – Moss Ln / S'land Rd (M'chest Rd to D'hse Ln)	1	1	10	**12**

Figure 4. Collision Map - New Carrington



Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

Existing Active Travel Modes

4.2.10. At present the active travel network within the New Carrington allocation is very fragmented. This is predominantly due to the Carrington allocation covering a wide area with limited public access roads and its isolation from the wider urban area of Greater Manchester.

4.2.11. The National Cycle Network 62 currently runs along the eastern boundary of the allocation. This route connects to many local destinations such as Sale and Warrington, and connects to the wider cycle network; however, the standard of the route is not consistent that connects Fleetwood in Lancashire with Selby in North Yorkshire.

4.2.12. These active travel modes and their connections are discussed further in the Multi-modal accessibility Section of this document.

4.3. Proposed Highway

Strategic Links

4.3.1. The Draft GMSF 2019 outlined that the following highway infrastructure is required to deliver the development proposals associated with the New Carrington allocation;

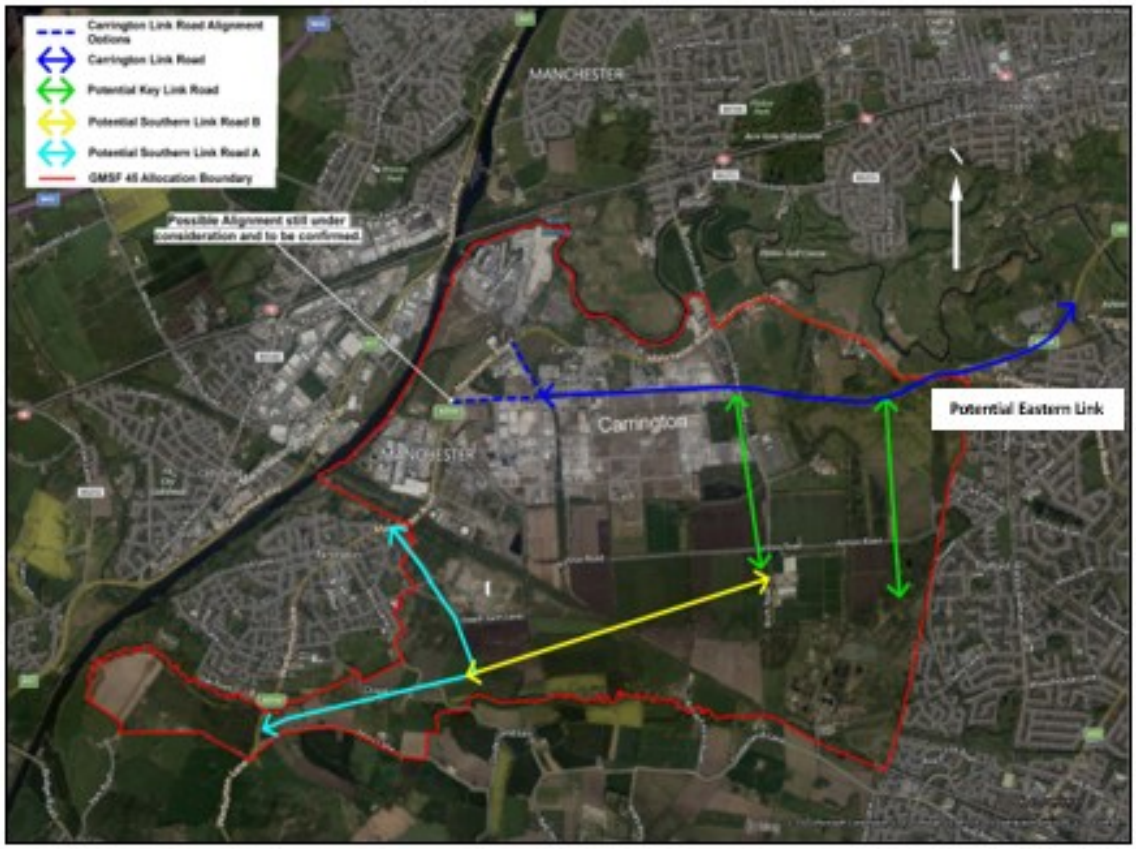
- Be in accordance with a masterplan or supplementary planning document approved by Trafford;
- Contribute towards schemes to mitigate the impact of traffic generated by the development on the Strategic, Primary and Local Road Networks, including public transport and highway infrastructure schemes;
- Deliver a network of safe cycling and walking routes through the allocation, including enhancements and protection of the Trans Pennine Trail, encouraging sustainable short journeys and promoting healthier lifestyles;
- Utilise the route of the disused railway through the allocation as a strategic sustainable transport corridor providing links from New Carrington to the wider area and contributing to improved east/west linkages;
- Coordinate the phasing of development with the delivery of infrastructure on the allocation, ensuring sustainable growth at this location;

4.3.2. This Locality Assessment will assist in identifying and testing transport infrastructure requirements required to deliver the New Carrington allocation.

4.3.3. To support the vision to transform the New Carrington allocation, HIMOR (the main landowner) initially developed a Masterplan and submitted this as a response to the draft GMSF 2019 consultation. The HIMOR masterplan identified potential future infrastructure links to serve the development allocation, and these are assessed as part of this Locality Assessment.

4.3.4. Figure 5 outlines the potential future links that potentially open up the New Carrington allocation and improve connectivity to the wider area. The arrows in Figure 5 relate to potential east to west and north to south linkages that will improve connectivity and enhance access to the wider Greater Manchester Area. These links will be assessed as part of the Locality Assessment and the location of these routes considered as part of the wider New Carrington Masterplan.

Figure 5. Key Infrastructure



Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps. Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

4.3.5. The blue line in Figure 5 highlights the Carrington Relief Road connection, a proposed primary route between the Carrington Spur (to the M60) and Manchester Road. This route has been identified as an important key connection required to help deliver the allocation and create residual capacity on the A6144 Manchester Road. Therefore, the relief road is included in the Reference case modelling assessment. The route as shown above in blue is purely indicative; for illustration purposes, two potential connections are shown and being considered in Figure 5 of which only one connection will be constructed. At this stage, the route has been assumed to be single carriageway road but there is potential for the right of way footprint to be designed to allow additional lanes to be constructed in future phases. To date an outline business case has been submitted and is based on a preferred option which involves the following:

- Realignment of Carrington Spur/Banky Lane junction;

- Provision of links, including access to the Sale West housing developments;
- Provision of 4km of new single carriageway linking Banky Lane to the A6144, via Isherwood Road;
- A new signalised junction where the link road crosses Isherwood Road;
- A new signalised junction to the east where the new link meets the A6144 and Carrington Spur;
- Improved road drainage to reduce ponding and contributing to longevity of the road surface; and
- Provision of a combined cycle/footway, improving the environment for walking and cycling and enhancing connectivity to existing cycle/pedestrian routes

4.3.6. The other routes highlighted in Figure 5 are routes and alignments to improve the north to south connections. They are shown as indicative directions of travel. Their need and requirement will be tested as part of this high-level assessment. Their design purpose at this stage is for the routes to improve residual capacity on existing links, open up the New Carrington allocation and support connectivity. These routes are described as;

- The green routes that extend southwards from the Carrington Relief Road (A1 Road) are highlighted as two separate branches: the western green link connection is also referred to as part of the Eastern Link (New Carrington Policy) is an upgrade of the current Isherwood Road alignment and the second green link along the Carrington Relief Road is a route to connect to the Sale West development parcel and potentially through to Firs Way;
- The light blue routes , also known as the Southern Link Road (New Carrington Policy) would connect to the A6144 Warburton Lane and the A6144 Manchester Road, providing a local route around the Partington urban area and easing congestion (various route options are being considered for the link to the A6144 Manchester Road).
- The yellow route is the Eastern link Road (New Carrington Policy) corridor that connect the Isherwood Road to the Southern Link Roads.

Committed Highway

4.3.7. The New Carrington allocation lands are owned by a number of different landowners including HIMOR Group, Redrow, National Trust, United Utilities and MUFC. Therefore, the New Carrington allocation and future highway infrastructure will be delivered through consented and future planning applications. At the time of writing this locality assessment the key planning applications for residential developments include the following proposals:

- A consented residential and employment development known as Carrington Village forms part of the New Carrington allocation (Reference CR1A and CR1B). There are a total of four residential access points proposed onto the A6144 Manchester Road. All access junctions are proposed as simple priority T-junctions. Mitigation works in the form of signal upgrades and widening on approaches was identified at the Flixton Road/ Isherwood Road/ A6144 Manchester Road and Carrington Lane/ Banky Lane/ A6144 Manchester Road signalised junctions. These mitigation works are due to be implemented in coming months and have been included in the Reference case modelling assessment.

- A proposed residential development (148 dwellings full planning permission and 452 dwellings outline) known as Land at Heath Farm Lane, Partington also forms part of the New Carrington allocation. Access to this development will be taken via simple priority T-junctions off Broadway and Moss View Road. (Reference PR4A). Mitigation works in the form of widening on approaches was identified at the Flixton Road/ Isherwood Road/ A6144 Manchester Road and Carrington Lane/ Banky Lane/ A6144 Manchester Road signalised junctions. It has been identified that mitigation works required to offset the development impact require third party lands and at this stage the final mitigation layout has not been agreed. Therefore, no improvement associated with this development have been included in the Reference case modelling assessment.

- Residential parcels to the east and west of Warburton Lane, Warburton (Reference PR3A & PR4A) have an application proposal for up to 400 residential units with new priority site accesses. Mitigation on the external network still to be confirmed as currently at appeal but if permitted will likely include junction upgrades and improvements at the Flixton Road/ Isherwood Road/ A6144 Manchester Road and the Carrington Lane/ Banky Lane/ A6144 Manchester Road signalised junctions. As outlined in the Heath Farm Lane application a suitable mitigation layout for these junctions has not been identified and approved and

therefore any improvement has not been included in the Reference case modelling assessment.

- Lock Lane, Partington has a pending approval for 550 units on lands alongside the Manchester Ship Canal. This proposal is not in the New Carrington allocation and is part of the wider proposals to assist the regeneration of Partington. The traffic will have an impact on the New Carrington allocation and infrastructure.

- Voltage Park fronts and accesses the A6144 Manchester Road adjacent to the Shell Carrington Facility and SAICA Paper Mill. This application still under planning review, is for the erection of five buildings for use within Use Classes B1c (Light Industrial) / B2 (General Industrial) / B8 (Storage & Distribution) comprising 62,442 sqm GIA to provide flexible employment purposes with ancillary offices, car parking and service yards. The application will have an impact on the New Carrington allocation and surrounding infrastructure, particularly the increased HGV traffic. A mitigation upgrade for the Flixton Road/ Isherwood Road/ A6144 Manchester Road signalised junction has yet to be agreed for this junction.

4.3.8. The Transport Assessments supporting the above planning applications detail the site access capacity assessments and required external interventions (includes highway, walk and cycle measures) based on the suggested quantum of development, they have concluded that the priority junction arrangements and local interventions for each of the individual developments would be sufficient to accommodate the expected level of demand and mitigate their development impact on the local highway network. To date the Carrington Village application is the only application approved, and the mitigation at the signalised junctions of Flixton Road/ Isherwood Road/ A6144 Manchester Road and Carrington Lane/ Banky Lane/ A6144 Manchester Road identified. The required interventions at these junctions for the other applications to mitigate the development impact has yet to be agreed with the local authority and changes to the junction will require third party lands to accommodate the necessary widening.

5. Multi Modal Accessibility

5.1. Overview

5.1.1. This chapter outlines the accessibility of the New Carrington allocation by all sustainable travel modes currently and the future opportunities being explored for the allocation in line with the Greater Manchester Spatial Framework (GMSF) 2019 draft document. The future opportunities have been sourced from the study report undertaken by AECOM – 'Bus Opportunities GMSF – Carrington Site'.

5.2. Current Provision

5.2.1. The key trip attractors within New Carrington include nearby local centres, such as Partington (southwest), Altrincham (southeast), Sale (east), Urmston (north), Flixton (north) and onward travel to the Trafford Centre Trafford Park and Manchester City Centre. The biggest attractors for the allocation will be the regional centres, Altrincham, the Trafford Centre and Trafford Park.

5.2.2. A review of the 2011 Census Journey-to Work data for the area has indicated a significant reliance on the private car with 90%+ of journeys being made from New Carrington and surrounding areas such as Partington being made by the private car.

5.2.3. This reliance on the private car, would confirm that alternative travel modes are not that attractive to patrons from the New Carrington allocation and Partington areas. Long and unreliable journey times experienced by current public transport services, at this location are a main reason for low public transport patronage numbers in the area. This is caused by the remote location of Carrington and the congestion already experienced on the surrounding routes.

Existing Bus Services

5.2.4. The key bus services and routes relevant to this study area are summarised in Table 2.

Table 2: Existing Bus Services

Service No.	Service Route	Peak Frequency
247/248	Altrincham to Trafford Centre (via Partington and Flixton/Urmston)	2 bus phr
255	Partington to Manchester (via Urmston and Stretford)	2 bus phr
CAT5a	Altrincham to Warrington (via Partington and Lymm)	1 bus phr
260	Partington to Sale (via Ashton-upon-Mersey)	1 bus phr
262	Ashton-upon-Mersey to Sale (circular route)	1 bus phr
19	Wythenshawe – Benchill – Sale - Altrincham	3 bus phr

5.2.5. The bus services in Table 2 serve a wide range of destinations, reflecting the local nature of public transport journeys within this corridor the key local trip attractors of Altrincham, Sale, Flixton and Urmston.

5.2.6. The bus services 247, 248 and 255 provide access to Flixton Rail Station and services 248 and 255 provide access to Urmston Rail Station.

5.2.7. Very little bus priority infrastructure is currently provided along these routes therefore journey times can be quite long during peak hours and car journey times are often much quicker. To demonstrate this, journey times for both cars and public transport services are compared for routes between Partington and local attractors (Source – Study Report – Bus Opportunities GMSF Carrington Site);

- Partington / Carrington to Altrincham – **Bus** -32 mins (Service 247); **Car** – 12-22mins
- Partington / Carrington to Sale – **Bus** -22mins (Service 260); **Car** – 18-35mins
- Partington / Carrington to Flixton – **Bus** - 12mins (Service 247); **Car** – 10-20mins

- Partington / Carrington to Urmston – **Bus** - 16mins (Service 255); **Car** – 10-20mins
- Partington / Carrington to Trafford Centre– **Bus** -28mins (Service 247); **Car** – 12-18mins
- Partington / Carrington to Manchester (Piccadilly Gardens) - **Bus** – circa 80mins (Service 255); **Car** – 30-70mins
- Partington / Carrington to Lymm - **Bus** - 36mins (Service CAT5A); **Car** – 9-12mins

5.2.8. The Carrington development allocation covers a wide area and presently there are no public access roads through the allocation which results in currently limited demand for public transport in this area. The current bus services routes are either via A6144 Manchester Road/Carrington Lane (north), or Sinderland Lane (south).

Rail and Metrolink

5.2.9. The New Carrington allocation does not have a railway station or Metrolink stop within walking distance of the development. As a result, for wider journeys that require accessibility to rail and Metrolink, an interchange from local bus services serving Carrington is required for those intending to travel by public transport.

5.2.10. The nearest railway station to the allocation is Flixton, located north of Carrington. Flixton railway station is on the Manchester to Liverpool via Warrington Central line and is served by regional services operated by Northern Rail. During peak periods, services towards Liverpool and Manchester have a frequency of between 2-3 services per hour. In total there are approximately 40 services stopping at Flixton rail station during a typical weekday. As this rail station is greater than 2km away from the majority of the allocation it is therefore outside the acceptable desirable (+1.2km) walking distances (CIHT Guidelines) and is not easily accessible for pedestrians. Some passengers may make use of bus or bicycle to access the station, though the percentage of passengers who do so is likely to be low.

5.2.11. Access to Irlam Train Station (to the west) is impeded by the Manchester Ship Canal and the only realistic access to this train station from Carrington and Partington is via the Warburton Toll bridge which is very heavily trafficked and unattractive for active travel users. The Trafford Greenway project proposes to open the Cadishead/ Partington viaduct for pedestrians and cyclist which will significantly improve and attract active travel trips between Carrington, Partington and Irlam Train Station if constructed.

5.2.12. There are currently eight lines that radiate from Manchester City Centre to termini at Altrincham,

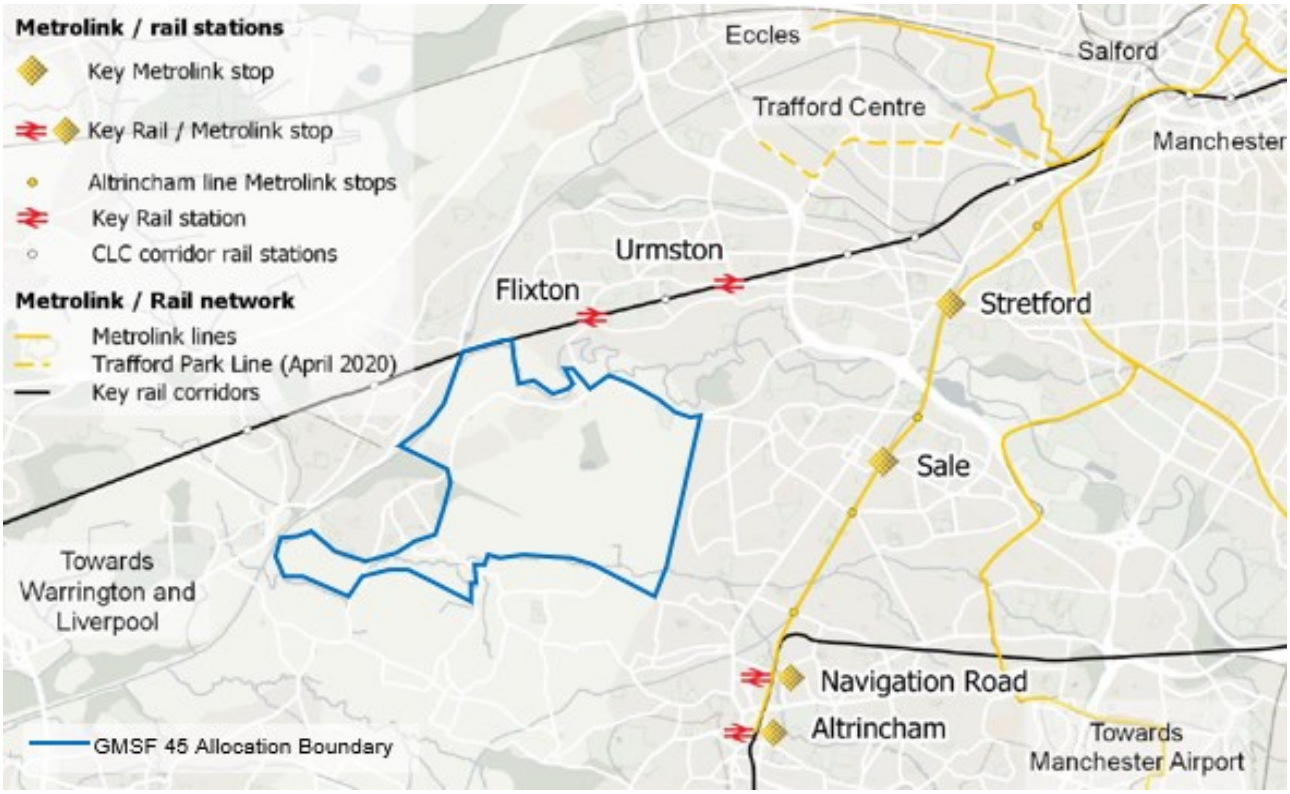
Ashton-under-Lyne, Bury, East Didsbury, Eccles, Manchester Airport, Rochdale and Trafford Centre. The closest line to the Carrington allocation is the Altrincham Line where trams run to both Manchester Piccadilly or Bury on a 12 minute frequency during the peak and interpeak periods. These line runs south-west from Manchester City Centre, along the streets of central Manchester, Trafford Bar and towards Cornbrook.

5.2.13. The closest Metrolink stops along the Altrincham line are the Sale and Brooklands stops; both located well outside the acceptable walking distances (approximately 5km). Figure 6 outlines the Metrolink stops located along Altrincham line in proximity to the Carrington allocation (red circle). The Metrolink Trams frequency via these stops in both directions are every 6 minutes Monday to Saturday.

5.2.14. Due to the distance, current trips from Carrington on the Metrolink network would need to be facilitated via a 'linked' trip using either private car, drop offs or cycle trips to access the Metrolink network.

5.2.15. Key relevant rail and Metrolink corridors surrounding the Carrington allocation are shown in Figure 6 for reference.

Figure 6. Carrington connectivity (key rail stations and Metrolink stops)

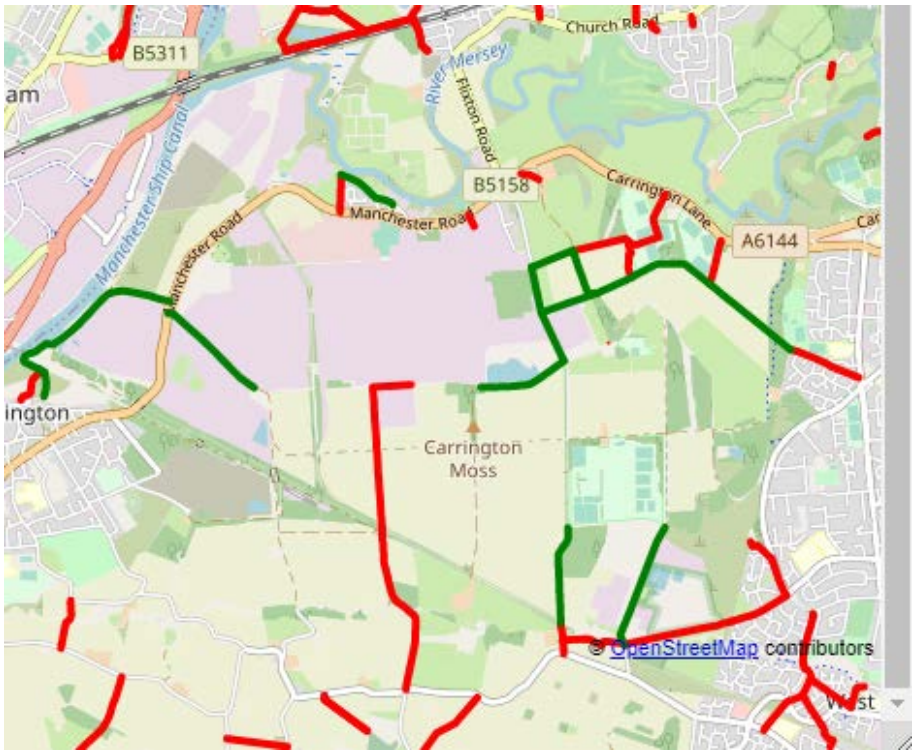


Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps. Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

Pedestrian Facilities

5.2.16. Varying standards of fragmented footway connections are available along sections of the A6144 Manchester Road route. Apart from short stretches of footway, no pedestrian footways or connections are available along the A6144 between the signalised junctions at Banky Lane and Isherwood Road. Footways and connections exist from the Isherwood Road junction in a western direction; these footways exist along both sides of the route with uncontrolled and designated controlled crossing facilities located along the route at the signalised junctions and east of the Carrington Business Park access. Upgraded pedestrian crossing facilities are proposed and conditioned by Carrington Village planning application at the signalised junctions of Flixton Road/ Isherwood Road/ A6144 Manchester Road and Carrington Lane/ Banky Lane/ A6144 Manchester Road.

Figure 7. Public Rights of Way



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5.2.17. As well as the formal pedestrian facilities along the A6144 there are Public Right of Ways (PROW) throughout the allocation. Figure 7 illustrates the PROW through the Carrington allocation; red lines depict a footpath and green lines outline restricted byway. To the north east of the allocation, there are PROW that extend from Isherwood Road to the east towards Sale. These PROW connect to the Trans Pennine Trail, an important north-south route that runs to the west of Sale. A PROW also runs along the southern edge of the employment area either side of Manchester Road. Within the allocation, there is also an existing PROW which extends from the A6144 Manchester Road (i.e. to the west of Ackers Lane). These PROW vary in standard and condition with some areas in a poor state of repair.

5.2.18. To the west of the allocation the Manchester Ship Canal currently necessitates pedestrians and cyclists to undertake an extensive diversionary route either via Irlam Locks or Warburton Toll Bridge which are both heavily trafficked. As part of the potential Trafford Greenway which is discussed in the proposed section 5.3.4, there is an aspiration to reopen the Cadishead/ Partington viaduct for both pedestrians and cyclists. This opening across the ship canal and construction of a greenway would provide an attractive connection for active travel users.

Cycle Facilities

5.2.19. Figure 8 outlines the current designated cycle routes through the New Carrington allocation and the proximity of the national cycle networks 62 and 82.

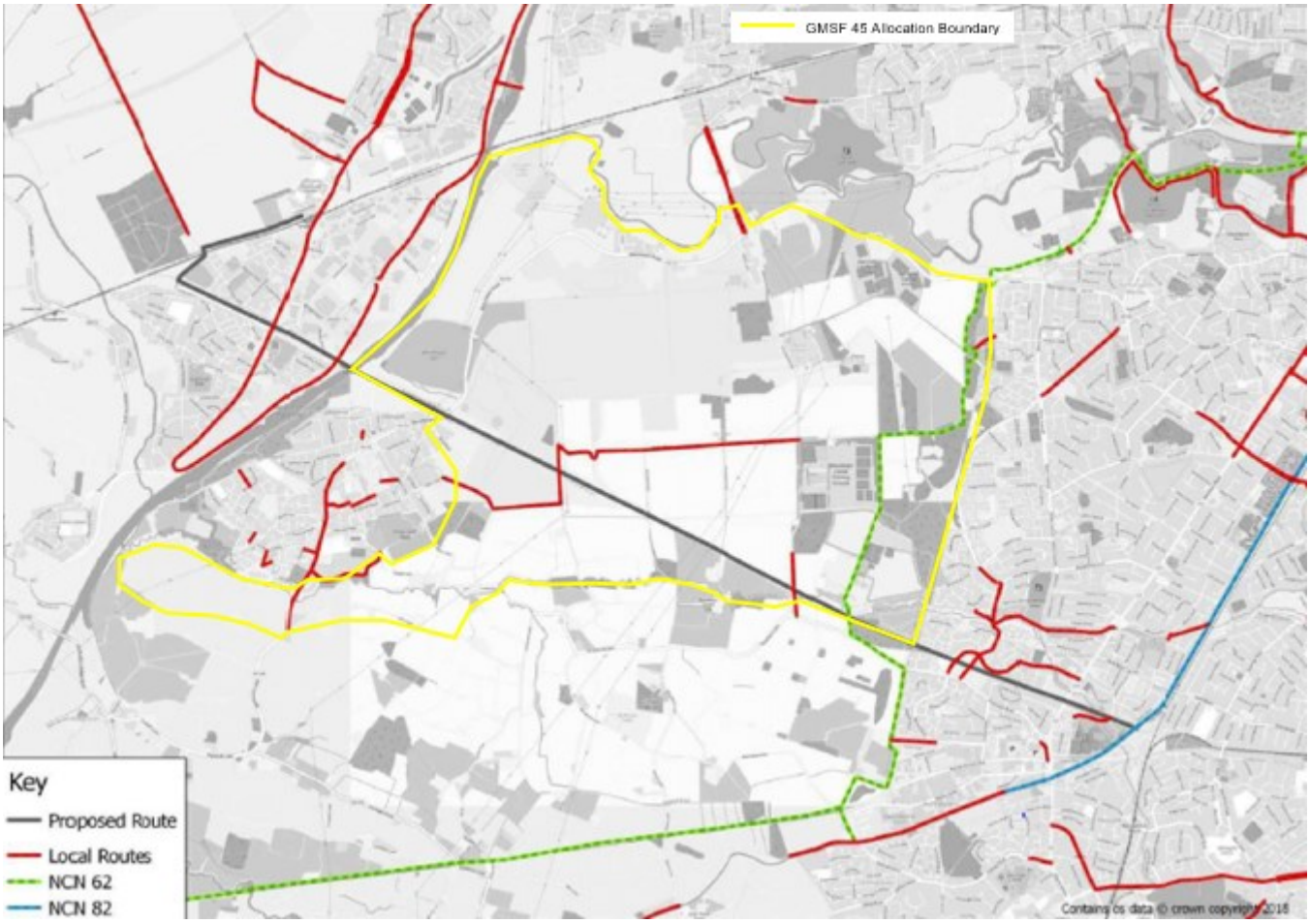
5.2.20. The New Carrington allocation benefits from being close to the National Cycle Network (NCN) Route 62., This route provides access from Carrington to Dunham Massey and along the River Mersey to Stockport. NCN Route 62 runs along the western edge of Sale before crossing Manchester Road at the junction with Banky Lane and running parallel to Carrington Spur on its northern side. This routes surface is of varying quality and condition, which is not attractive to users during winter and cold conditions.

5.2.21. Within close proximity to the GMA41 allocation, there is also an existing network of local cycle routes. These include a designated shared cycle/footway that extends to the north along Flixton Road and a traffic-free route that extends from Isherwood Road to the south along Birch Road and Sinderland Lane. Though it is important to note that this traffic free route is overgrown and doesn't appear to be well maintained.

5.2.22. Cycle provision extending to the north along Flixton Road benefits from an off-road shared cycle/pedestrian facility lane for approximately 700m which provides a connection to Flixton Train Station and further-afield. Local routes to the south are on road, and do not currently benefit from

formal designated segregated cycle facilities.

Figure 8. Current cycle facilities at New Carrington



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5.3. Proposed Provision

Proposed Bus Interventions

5.3.1. In February 2020, AECOM completed a GMSF Bus Opportunities study for Carrington and Sale West. In this study, there was a focus on reviewing the existing bus services and identified potential changes that will provide growth betterment and support for the future Carrington developments. Along these routes, intervention was also identified to support these route changes and make public transport more attractive and accessible to patrons.

5.3.2. Through public transport modelling, Table 3 summarises the route interventions that were assessed and being proposed to serve the New Carrington site.

Table 3: Route Summary Proposals

Service (Bus per hour)	Option Route	Description
255 (2bus phr)	Partington to Manchester	• Route diverted via development new A1 road to better serve Carrington.
247 (2bus phr)	Altrincham to Trafford Centre	• Route diverted via development new A1 road; • Route also diverted via the development allocation (local transport hub) instead of Sinderland Lane, to serve the Carrington development hub; • Route also diverted to serve Trafford College.
CAT 5A (1bus phr)	Warrington to Altrincham	• Diverted via Carrington local centre (once complete) instead of Sinderland Lane; • Potential increase in frequency of CAT5A from Partington to Altrincham; • Route also diverted to serve Trafford College.
260 (2bus phr)	Partington to Sale	• Increase frequency of 260 from 1bph to 2bph • Diverted via the development allocation • Extended to Springfield Rd Sale – closer to Metrolink • Loop back via Woodlands Rd, serving Sale Leisure Centre
261/262 (1bus phr)	Sale to Ashton-upon-Mersey/Manor Avenue Loop	• Consolidate from 2 separate loops to a wider loop, 1bph
260a (2bus phr)	Partington to Sale	• Second feeder bus to Sale, as per 260, re-routed to serve the southern part of the development, and also not looping in Partington.

Service (Bus per hour)	Option Route	Description
255x (2bus phr)	Partington to Manchester (Express)	• Express version of the 255 between Partington and the city centre (bypassing Flixton & Urmston)

5.3.3. The public transport modelling concluded that there was a benefit to altering the services (as described in Table 3) for bus service 247, 255 260, 261, and 262. These extensions would assist in connecting all the settlements within the New Carrington allocation.

5.3.4. For service 247, the changes concluded there would be an increase in patronage due to the enhanced connection to Flixton and there being a clear demand for Altrincham via Trafford College; For service 255 there is not as much benefit offered for patronage figures but its changes alongside other service changes will provide operating cost benefits; The altered CAT5A service provides benefit for the Partington to Lymm link; Changes to Service 260 has a positive effect with increase patronage figures for its connections to Sale and opportunity for interchanging with Metrolink. If this was implemented, along with the joining of the 261 and 262 services, it was forecast that the increase in operating cost would be lowered during peak hours.

Bus Infrastructure

5.3.5. Table 4 summarises the infrastructure intervention identified for the route changes. These improvements have been assumed to be in place for the route changes.

Table 4: Public Transport Infrastructure Interventions

Bus Corridor	Improvements Identified
Carrington to Stretford (via Urmston)	• Bus stop improvements (i.e. additional bus shelter. Southbound nearby Flixton rail station) • Flixton Rd / A1644 junction improvement (bus gateway) and localised widening improvements for any bus lane or road widenings connecting new A1 road to Manchester Rd.
Access to Altrincham	• New bus stops at Waitrose, serving the local centre (both directions)

Bus Corridor	Improvements Identified
	• New bus stops at Trafford College, in both directions • Junction improvements at Manchester Rd A56 with Stamford Brook Rd for right turn bus priority (right turn widening and signal modifications)
Access to Sale	• Improvements at Carrington Lane / A6144 junction (dedicated bus priority linking to new A1 road) • Improvements at A56 Washway Rd / B1566 Ashton Ln junction (dedicated ahead lane) • Junction lane widening for improved bus right turn at Woodlands Rd with B5166 Northenden Rd • Enhanced bus stop (terminal-like) at Sale town centre (i.e. waiting areas / shelter) • New high-quality sheltered bus stop and relocation of taxi rank next to Sale Metrolink station

Linkage Upgrades to Rail & Metrolink

5.3.6. The previous section outlined the extension of public transport services that will improve local connections to the Flixton and Irlam Train Station improving connectivity and accessibility. These service extensions will be a minimum requirement to enhance the attractiveness of public transport travel to patrons living, working and visiting the New Carrington allocation.

5.3.7. The former railway line that runs through the New Carrington allocation has considerable potential to further enhance public transport and connect to the Metrolink lines to the east. In the Draft Spatial Framework document, the disused railway line through New Carrington is highlighted as an opportunity for rapid transit that could link to the existing network in south Manchester and hence provide good connections to key economic locations such as the City Centre and Manchester Airport, and also extend through to Cadishead in Salford to enable better movement across the Manchester Ship Canal. Further study on the viability of this disused railway line as a sustainable transport corridor will still need to be undertaken and will be dependent on the future allocation

land-uses, phasing and its demands.

5.3.8. As a route that travels through the New Carrington allocation and the proximity of the proposed Trafford Greenway route, there is the potential to provide a high standard cycle, pedestrian and equestrian route that will complement the Trafford Greenway, thus improving connections to Irlam Train Station and the Altrincham Metrolink line. This will enable occupants, visitors and employees to establish sustainable travel habits.

5.3.9. The utilisation of the disused railway through the allocation as a strategic sustainable transport corridor providing links from New Carrington to the wider area and contributing to improved east/west linkages is outlined as a key site requirement for the allocation.

Proposed Pedestrian & Cycling Facilities

5.3.10. The network delivery of safe cycling and walking routes through the New Carrington allocation, including enhancements and protection of the Trans Pennine Trail is identified in the key site requirements for the allocation.

5.3.11. Each of the residential planning applications proposed within the allocation highlight their walking and cycling connections throughout their developments and proposed enhancements to the external routes and connections to other existing/ future routes such as the NCN 62, 82, the Trans Pennine Trails, Urmston Bee Lines and the potential Trafford Greenway.

5.3.12. These high-grade segregated connections from development will also include safe and desirable connections to the proposed Trafford Greenway and/or the disused rail link through the New Carrington allocation.

Trafford Greenway

5.3.13. Trafford have an aspiration to deliver a high standard continuous Trafford Greenway that connects the boroughs of Trafford and Salford. Figure 9 illustrates the potential route of the greenway and its proximity to the south of the New Carrington allocation.

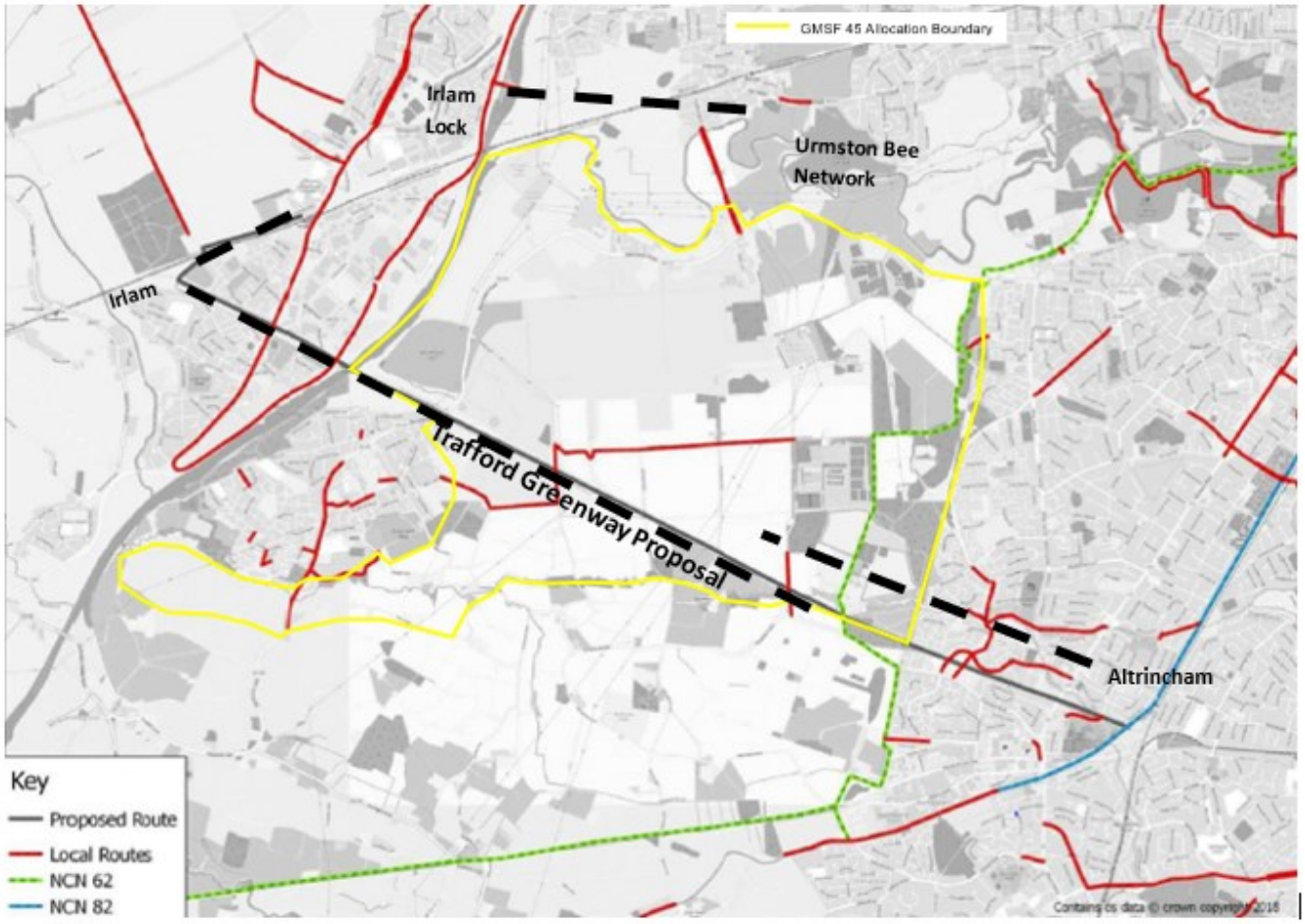
5.3.14. The Trafford Greenway proposal describes an 8.6km route which would comprise of off-road pedestrian footpaths, equestrian facilities and a two-way cycleway. Along this route access points to Carrington, Partington and Cadishead will be available, opening up the New Carrington allocation to attractive active travel modes.

5.3.15. The greenway routes will link the Irlam Train Station at the northern end to the Metrolink Altrincham line to the south and proposes a new pedestrian and cycle link across the Manchester Ship Canal via the disused Cadishead / Partington Viaduct. The centres of Cadishead and Partington/Carrington are only 1.2km apart but due to the canal the only direct pedestrian and

cycle route is 8km. Therefore, this new connection across the viaduct would bring the distance down to less than 1.5km making active travel journey times very competitive compared to private vehicles. The strategic impact of providing this high standard route is that Irlam Rail Station will be an easy cycling distance from Partington and the New Carrington allocation, thus providing a real opportunity to reduce private car trips.

5.3.16. The opening of the viaduct crossing for pedestrians and cyclists will significantly improve the accessibility across the canal as the routes currently available between Carrington/ Partington and Cadishead are heavily trafficked routes due to the limited links across the canal and therefore very unattractive for active travel users. The opening of the viaduct will provide journey times for active users that will be competitive with the private car thus assisting in promoting sustainable travel connections in an east to west direction for allocations such as New Carrington.

Figure 9. Trafford Greenway route proposal



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Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps.

5.3.17. Along this proposed greenway route, outdoor fitness equipment and local amenities will be located for users to avail of without using the private car. This land use planning and the off-road active travel connections from within the New Carrington allocation will be developed as a key consideration in the overall masterplan.

5.3.18. In addition, the walking cycling proposals within New Carrington will need to align with Bee Network routes being constructed and proposed across Greater Manchester. In addition to the Trafford Greenway currently a Bee Network project is being constructed north of Carrington in Urmston. This Urmston Bee Network project will develop a safe and attractive walking and cycling network for the Urmston area, providing connection through Flixton and across the Irlam Locks. The cycling and walking measures outlined in the approved masterplan will be integral to the success of the site, ensuring the mix of trip modes generated by the site is as sustainable as possible.

5.3.19. Enhanced walking and cycling routes to public transport nodes will also assist in complimenting the modes alongside improvements to encourage greater walking and cycling use for commuting and leisure. Throughout the allocation a network of walking and cycling routes both along new highway infrastructure and through recreational / open space areas to facilitate localised and more strategic walking and cycling will need to be provided.

6. Site Trip Generation and Distribution

6.1. Overview

6.1.1. This section describes the trip generation and assignment generated from the output model runs using the GMVDM. The two assessment years modelled in the GMVDM are 2025 and 2040, which is the same assessment years used for all the GMSF allocation.

6.1.2. Future trip generation to/from the Carrington allocation (i.e. how many people and vehicles will enter or leave) was estimated by applying a set of GM-wide trip rates to the agreed development quantum for each allocation. The distribution of trips (i.e. where they are going to or coming from) was derived by selecting nearby zones with similar land use characteristics as a proxy and using the existing distribution in the model.

6.2. Trip Generation

6.2.1. The Draft GMSF 2019 proposed the overall GMA41 Carrington allocation for 6,100 residential units and 410,000 sqm of Industry and Warehousing. For this Locality Assessment and in line with the latest Masterplan phasing the number of residential units has been reduced to 4,300 units within the GMSF plan period. The strategic modelling GMVDM runs already assumes a proportion of this development mix to be committed –1,418 residential units and 370,000sqm of industry and warehousing. This committed quantum is in the Reference modelling scenario.

6.2.2. The New Carrington development quantum assumed in the GMSF model runs is summarised in Table 5.

6.2.3. In addition to the existing quantum assumed, in forecast year 2025 the GMVDM model assumes 19% (817 units) of the development demand is predicted to be constructed and occupied, whilst in forecast year 2040, 100% (4,300 units) of the new allocation is assumed to be constructed and occupied. All industry and employment is assumed to be in the committed quantum of development.

Table 5: Development Quantum: New Carrington

Land Use	Sub Category	Development Quantum 2025	Development Quantum 2040
Residential	**Houses**	661	2786
Residential	**Apartments**	156	697
	Total	**817**	**3483**

6.2.4. Based on the development quantum outlined in Table 5, Table 6 outlines the forecast traffic assumed and modelled in the GMVDM for each forecast demand year scenarios for the New Carrington allocation. The description of the GMSF Constrained and the GMSF High side model scenarios are provided in the Glossary section at the start of the report. The High side scenario is the worst-case scenario and has been used to test and identify interventions in this Locality Assessment.

Table 6: Allocation Traffic Generation: New Carrington

	AM Peak Hour Departure	AM Peak Hour Arrivals	PM Peak Hour Departure	PM Peak Hour Arrivals
2025 GMSF Constrained	290	88	148	324
2025 GMSF High Side	290	111	176	324
2040 GMSF Constrained	922	267	454	1023
2040 GMSF High Side	975	376	596	1023
Units are in PCU (passenger car units/hr)				

6.3. Trip Distribution

6.3.1. Given the scale of the allocation traffic will distribute across a wide area. From interrogation of the GMVDM outputs for the 2040 forecast scenario (when all development is constructed and occupied), the majority of traffic will travel to/from the north-east via the A6144 Carrington Spur (~70%) towards the M60 and the A56 towards Manchester. Table 7 summarises the forecast traffic distribution for the 2040 GMSF High Side scenario assessed in the GMVDM. This distribution has been identified before major intervention was identified and has been derived from the GMVDM.

Table 7: Allocation Traffic Distribution, 2040 GMSF High Side New Carrington

Route	AM Peak Hour	PM Peak Hour
A6194 Warburton Lane	9%	4%
School Lane	3%	4%
Blackmoss Road	5%	3%
Sinderland Lane	5%	3%
Woodhouse Lane	0%	1%
A6144 Harboro Road	2%	2%
B5166 Ashton Lane	1%	1%
Glebelands Road	1%	0%
A6144 Carrington Spur	70%	78%
B5158 Flixton Road	4%	2%
A6194 Warburton Lane	9%	4%

6.3.2. Table 8 outlines the multi-modal travel splits assumed in the GMVDM for forecast year 2040. These percentage splits in 2040 are based on the model forecasts generated in the model and do not include any interventions identified in this Locality Assessment for the New Carrington site. Table 8 highlights that travel in the model from the New Carrington allocation using private vehicle is high with around 90% throughout the day and circa 70% during the peak weekday hours. For this assessment, this modal split is considered to be a worst-case forecast; in 2040 upgraded public transport services and attractive active travel measures will assist in reducing this vehicle dominance.

6.3.3. Table 9 summarises the cross-boundary trip distribution derived from the GMVDM model. These cross-boundary trips relate to those neighbouring authorities that patrons who reside or work in New Carrington travel between.

Table 8: Multi-Modal Trips, 2040 GMSF High Side New Carrington

Mode	AM Peak	PM Peak	Daily
Person Trips (peak hr)	1810	2205	20597
Vehicle Trips	1056	1142	11263
PT Share (%)	3.0%	2.0%	1.1%
Walk/ Cycle Share (%)	18.8%	17.7%	9.6%

Table 9: Cross Boundary Trip Distribution at 2040 - New Carrington

Route	Share AM Peak Hour	Share PM Peak Hour	2 Way Flow AM Peak Hour	2 Way Flow PM Peak Hour
All	11%	12%	143	116
A6144 Birchbrook Road (Warrington)	7%	3%	90	27
A56 Dunham Road (Cheshire East)	3%	6%	35	63
A538 Wilmslow Road (Cheshire East)	1%	3%	18	25
Units are in PCU (passenger car units/hr)				

7. Current Highway Capacity Review

7.1. Current Network Pressures

7.1.1. Google traffic images are presented in Figures 10 and 11 showing the typical traffic patterns experienced during the weekday AM and PM peaks across the network surrounding Carrington. The orange and red areas on the routes show the current traffic congestion experienced; the areas of orange and red indicate slow moving traffic and congestion, the red areas being the worst queuing.

7.1.2. Routes within the surrounding area of Carrington that currently experience delay and congestion are outlined below;

- **A6144 Manchester Road** – associated with the Flixton Crossroad Signalised junction;
- **B5158 Flixton Road** – associated with the Flixton Crossroad Signalised junction;
- **Carrington Spur Link** – associated with the Carrington Lane Signalised junction and M60 Junction 8;

- **Carrington Lane Link** – associated with the Carrington Lane Signalised junction;
- **M60 Strategic Route** – extensive queuing along the main line from M60 Junction 12; and
- **A56 Corridor** – associated with the signalised junctions located along corridor

Figure 10. Current Traffic Patterns - AM Peak

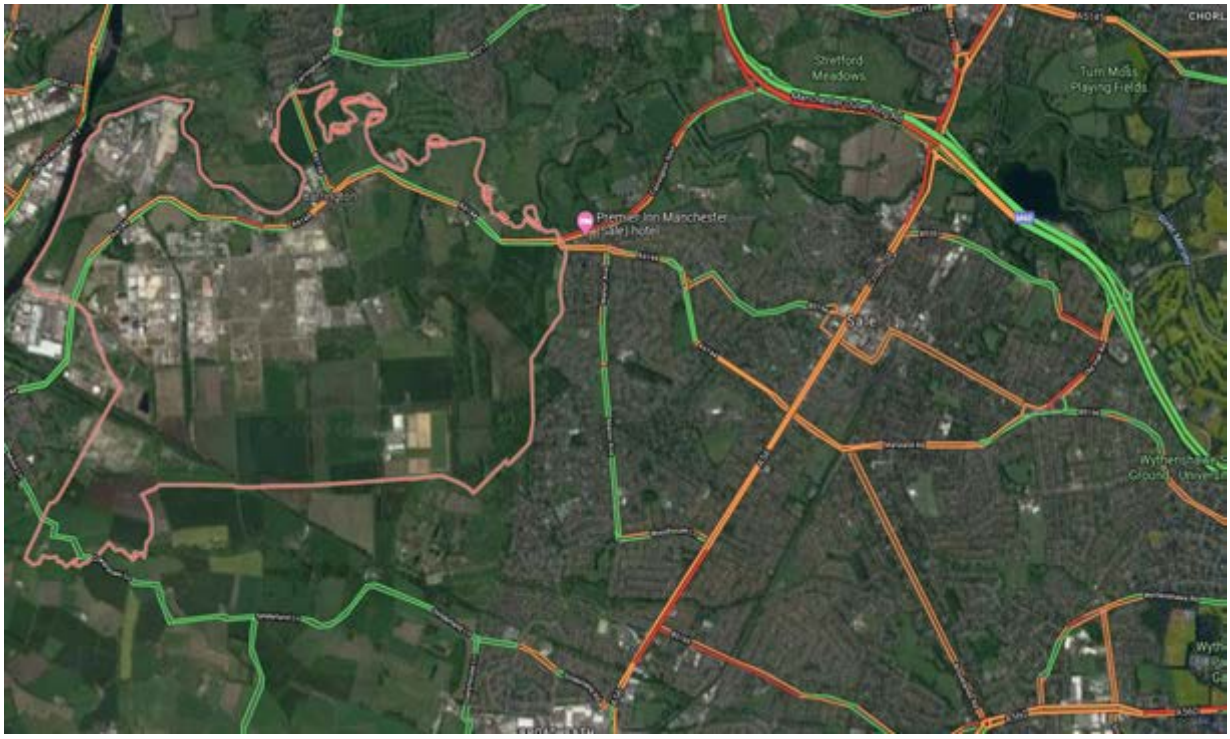


Figure 11. Current Traffic Patterns - PM Peak

7.1.3. The main cause of the slow-moving traffic and congestion along the strategic routes is that key junctions along these local and strategic routes are operating above their design capacity.

7.1.4. For example, the results of the initial modelling assessments (volume over capacity) indicate that 10 junctions currently operate at their design capacity.

7.1.5. From the Base GMVDM model runs (without GMSF), the following junctions currently experiencing capacity pressures in the AM and PM peaks include:

- The M60 Motorway route between Junction 12 and Junction 8 in both directions;
- M60 Junction 7 – Signalised Junctions (2);
- M60 Junction 8 – Grade Separated Roundabout;
- M60 Junction 9 – Grade Separated Signalised Roundabout;
- M60 Junction 10 – Grade Separated Signalised Roundabout;
- A6144 Carrington Lane/Carrington Spur/Banky Lane – Signalised Crossroads;

- A6144 Manchester Road/Carrington Lane/B5158 Flixton Road/Isherwood Road – Signalised Crossroads;
- A56 Junction – Washway/ Woodhouse Lane –Signalised crossroad junction;
- A56 Junction – Washway/ Marsland Rd/ Harboro Way – Signalised crossroad junction;
- Moss Lane – Manchester Road – Roundabout Junction; and
- Warburton Bridge Road – Bent Lane Junction – Priority T-Junction.

7.1.6. Each of these junctions will worsen in the 2025 and 2040 Reference Year forecasts following the application of 11% and 33% traffic growth to account for other committed and planned developments (including the existing land supply) and background traffic growth.

7.1.7. 28 external junctions were identified from the GMVDM that appear to be approaching or at their design capacity in the 2040 Reference model scenario. It is important to note that the Reference model scenario excludes all GMSF traffic.

7.1.8. Figure 12 outlines the locations of these identified junctions in the 2040 Reference Case. Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps.

Figure 12. Identified Junction Locations

Junction Reference	Junction Location
Reference 1	M60 Junction 10
Reference 2	M60 Junction 9
Reference 3	M60 Junction 8
Reference 4	M60 Junction 7 - On/ Off South Signals
Reference 5	M60 Junction 7 - On/ Off North Signals
Reference 6	A56 Junction - Glebelands Road / Cross Road Signals
Reference 7	A56 Junction - Washway / Hayfield Street Cross Road Signals
Reference 8	A56 Junction - Washway / Sibson Road / Oaklands Drive Cross Road Signals
Reference 9	A56 Junction - Washway / Marsland Road / Oaklands Drive Cross Road Signals
Reference 10	A56 Junction - Washway / Woodhouse Lane / Eastway Cross Road Signals
Reference 11	A56 Junction - Washway / Woodcote Rd / Park Road
Reference 12	A56 Junction - Manchester Road/ Stamford Brook Rd
Reference 13	A56 Junction - Washway / Sinderland Road / Salibury Road
Reference 14	A56 Junction - Manchester Road - Barrington Road Signalised Junction
Reference 15	Carrington Link - Carrington Spur- Carrington Link - Bank Lane Cross Road Signals
Reference 16	Carrington Link - Manchester Road - Carrington Link - Flixton Road Signalised Junction
Reference 17	Urmston - Flixton Road - Brook Road - Bowfell Road Signals
Reference 18	Urmston - Moorside Road - Bowfell Road - Cornhill Road Roundabout
Reference 19	Urmston - Barton Road - Davyhulme Road - Lostock Road Roundabout
Reference 20	Altrincham - A56 Dunham Road - St Margarets Road Junction
Reference 21	Altrincham - A56 Dunham Road - Highgate Road
Reference 22	Altrincham - A56 Dunham Road - Park Road - Charcoal Road
Reference 23	M56 - Bowden Roundabout Junction
Reference 24	Heatley - Townfield Lane - Bent Lane Junction
Reference 25	Heatley - Paddock Lane - Bent Lane Junction
Reference 26	Heatley - Warburton Bridge Road - Bent Lane Junction
Reference 27	Partington - Moss Lane - Manchester Road - New Manchester Road
Reference 28	Rixten - Manchester Road - Warburton Bridge Road Junction

8. Treatment of Cumulative Impacts

8.1. GMSF Allocation

8.1.1. The transport impacts of the allocation need to be considered cumulatively with those of other nearby GMSF allocations. The development traffic forecasts generated for each of the GMSF allocations is included in the GMSF 2025 and 2040 GMVDM model runs. In order to assess the cumulative impact of GM allocations on the network, for each separate model run, two model runs were undertaken, a 'constrained' and 'high side' assessment. The constrained forecasts could reduce the number of future highway trips due to congestion on the highway network. This constraining process is undertaken by the GMVDM.

8.1.2. The constrained and high side model runs take account of traffic associated with all GMSF allocations.

8.1.3. Three GMSF allocations have been identified within a circa 10km radius of the New Carrington allocation. The description and allocation is described below.

- North of Irlam Station – 1,300 residential units allocation proposal;
- Port Salford Extension – 3,200,000sqm of Class B2/B8 allocation proposal; and
- Timperley Wedge – 2,429 residential units allocation proposal.

8.1.4. To understand the impact of these neighbouring allocations on the surrounding network and to apportion any shared costs for intervention Table 10 summarises the forecasted traffic generation for each allocation for the 2040 High Side scenario.

Table 10: 2040 HS Allocation Traffic Generation: North of Irlam, Port Salford Extension and Timperley Wedge

	AM Peak Hour Departure	AM Peak Hour Arrivals	PM Peak Hour Departure	PM Peak Hour Arrivals
North of Irlam Station	351	135	214	328
Port Salford Station	741	1232	813	399
Timperley Wedge	698	257	427	755
Units are in PCU (passenger car units/hr)				

9. Impact of Allocation Before Mitigation

9.1. Overview

9.1.1. To understand the GMSF traffic impact, the 'high side' runs from the GMVDM were used to forecast years 2025 and 2040. These flows were then entered into junction-based models for the junctions identified in section 9. Flows from the 2025 and 2040 reference case scenario (including the existing baseline land supply position) were also extracted to provide a comparison between the operation of those junctions in the 2025, 2040 reference case and the 2025, 2040 with GMSF development scenarios.

9.1.2. These assessments were then used to identify the junctions where there was considered to be a substantial impact, relative to the operation of the junction in the 2025 and 2040 reference cases, and hence where mitigation was considered to be required in order to bring GMSF allocation forward. Through discussions with TfGM and the Combined Authority, it has been agreed that where mitigation is required and possible, it should mitigate the impacts back to the reference case scenario. It should be noted that mitigating

back to this level of impact may not mean that the junction operates within capacity by 2025 and 2040.

9.1.3. This section looks at the impact on the network at the junctions highlighted in section 7. Signalised junctions were assessed in detail using industry-standard modelling software LINSIG version 3. Where possible, traffic signal information was requested from TfGM in order to ensure that the local junction models reflected (as far as possible), the operation of the junctions on the ground. Junctions 9 software was used to assess priority and roundabout junctions.

9.2. GMVDM Model Run

9.2.1. Tables 11 and 12 provides a comparison between the operation of the in-scope junctions in the 2025, 2040 reference case scenarios and the 2025, 2040 'High Side' scenarios, as well as the development flows through each respective junction. The table shows a comparison between the ratio of flow to capacity on the worst-case arm at each junction as well as the total development flows through the junction. **Note:** Although the 6100 development allocation for the allocation is reduced, this development quantum was initially used in this Locality Assessment to identify the areas on the network where capacity pressures occurred as a result of the GMSF traffic.

9.2.2. For reference, the green cells identify where the worst arm capacity is within its design capacity <85%; red cells denote where the worst arm has exceeded its capacity > 100%; and cyan where capacity is approaching its capacity 85%-100%.

9.2.3. Figures 13 and 14 are GIS extracts of the links coded and modelled in the GMVDM for the Reference model scenario and the 'High Side GMSF Run 1' scenario. The white links in the layouts reference the traffic routes coded in the GMVDM model.

9.2.4. Both model scenarios assume in 2040 that the Carrington Relief Road is constructed and operational. In the Reference model scenarios, the existing development quantum is generating the traffic associated with 1,418 residential units and 370,000sqm of employment, whilst in the 'High Side GMSF scenario' the full allocation is assumed constructed and occupied.

9.2.5. In this initial model run, comparison of the coding differences between the models only relate to the New Carrington allocation where new links have been introduced to reflect internal routes that will serve the New Carrington developments land plots in the model.

These routes have been derived indicatively to reflect the Masterplan layout.

Figure 13. Reference Model Layout - GMVDM Extract for GMA41

Figure 14. High Side GMSF Run 1 - GMVDM Extract for GMA41

Table 11: 2025 Results of Local Junction Capacity Analysis Before Mitigation:

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
1 - **M60** Junction 10	73.2%	78.1%	71.4%	77.9%	-57	-8
2 - **M60** Junction 9	92.5%	101.5%	89.4%	104.2 %	48	25
3 - **M60** Junction 8	63.0%	53.0%	64.0%	58.0%	149	411

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
4 - **M60** Junction 7 - On/ Off South Signals	85.4%	76.4%	84.3%	76.1%	-70	24
5 - **M60** Junction 7 - On/ Off North Signals	83.2%	85.4%	82.6%	83.6%	-52	28
6 - **A56 Junction** - Glebelands Road / Cross Road Signals	86.4%	82.9%	83.9%	81.9%	-44	-72
7 - **A56 Junction** - Washway / Hayfield Street Cross Road Signals	50.7%	59.9%	48.1%	58.9%	-18	-34
8 - **A56 Junction** - Washway / Sibson Road / Oaklands Drive Cross Road Signals	53.3%	61.2%	54.8%	61.9%	2	-27
9 - **A56 Junction** - Washway /	118.3.%	121.6%	114.1 %	130.6 %	-17	20

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Marsland Road / Harboro Rd Cross Road Signals						
10 - A56 Junction - Washway / Woodhouse Lane / Eastway Cross Road Signals	96.2%	83.8%	81.0%	72.7%	-128	-67
11 - A56 Junction - Washway / Woodcote Rd / Park Road	88.6%	84.2%	84.9%	81.5%	-112	-49
12 - A56 Junction - Manchester Road/ Stamford Brook Rd	64.7%	54.3%	62.2%	52.1%	-181	-39
13 - A56 Junction - Washway /	102.2%	90.1%	110.1 %	95.4%	-39	-9

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Sinderland Road / Salibury Road						
14 - **A56 Junction** - Manchester Road - Barrington Road Signalised Junction	90.4%	78.1%	149.9 %	75.3%	174	-60
15 - Carrington **Link** - Carrington Spur- Carrington Link - Banky Lane Signals	105.6%	98.5%	106.7 %	106.5 %	221	271
16- **Carrington Link** - Manchester Road - Carrington Link - Flixton Road Signalised Junction	109.3%	104.6%	74.8%	103.0 %	93	235
17 - **Urmston** - Flixton Road -	38.8%	40.6%	42.8%	46.1%	140	92

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Brook Road - Bowfell Road Signals						
18 - **Urmston** - Moorside Road - Bowfell Road - Cornhill Road Roundabout	60.0%	35.0%	60.0%	36.0%	39	86
19 - Urmston - Barton Road - Davyhulme Road - Lostock Road Roundabout	87.0%	63.0%	87.0%	64.0%	-3	36
20 - Altrincham - A56 Dunham Road - St Margarets Road Junction	94.0%	97.0%	93.0%	100.0 %	2	23
21 - Altrincham - A56 Dunham Road - Highgate Road	152.0%	170.0%	154.0 %	172.0 %	-15	43

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road	89.7%	110.2%	96.0%	112.4 %	116	76
23 - M56 - Bowdon Roundabout Junction	60.2%	79.1%	59.6%	91.9%	5	241
24 - Heatley - Townfield Lane - Bent Lane Junction	1.0%	1.0%	1.0%	1.0%	51	-8
25 - Heatley - Paddock Lane - Bent Lane Junction	99.0%	127.0%	107.0 %	127.0 %	55	-27
26 - Heatley - Warburton Bridge Road - Bent Lane Junction	78.0%	109.0%	82.0%	110.0 %	3	-17
27 - Partington -	146.0%	107.0%	70.0%	36.0%	-1110	-1143

Junction (Results Based 19% Of 6100 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Moss Lane - Manchester Road - New Manchester Road						
28 - Rixten - Manchester Road - Warburton Bridge Road Junction	80.3%	89.3%	80.2%	87.5%	-20	-15

Table 12: 2040 Results of Local Junction Capacity Analysis Before Mitigation:

Junction (Based on All 6100 Res Units)	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
1 - **M60** Junction 10	89.7%	89.9%	90.1%	85.5%	81	-102
2 - **M60** Junction 9	113.5%	124.0%	115.1%	121.3%	122	-2
3 - **M60** Junction 8	89.0%	87%	94.0%	92.0%	254	8
4 - **M60** Junction 7 - On/ Off South Signals	87.0%	82.5%	88.3%	84.7%	128	318
5 - **M60** Junction 7 - On/ Off North Signals	91.5%	90.5%	93.9%	94.1%	371	378
6 - **A56 Junction** - Glebelands Road / Cross Road Signals	95.9%	90.6%	97.0%	92.9%	151	336
7 - **A56 Junction** - Washway / Hayfield Street Cross Road Signals	63.0%	63.5%	64.5%	74.9%	139	245
8 - **A56 Junction** - Washway / Sibson Road / Oaklands Drive Cross Road Signals	62.5%	68.3%	68.6%	78.9%	112	252

Junction (Based on All 6100 Res Units)	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
9 - **A56 Junction** - Washway / Marsland Road / Harboro Rd Cross Road Signals	124.1%	129.7%	126.4%	120.5%	64	213
10 - **A56 Junction** - Washway / Woodhouse Lane / Eastway Cross Road Signals	97.8%	83.8%	88.3%	81.5%	-45	51
11 - **A56 Junction** - Washway / Woodcote Rd / Park Road	91.0%	87.5%	89.3%	88.8%	-6	114
12 - **A56 Junction** - Manchester Road/ Stamford Brook Rd	67.4%	77.3%	62.2%	67.7%	-41	167
13 - **A56 Junction** - Washway / Sinderland Road / Salibury Road	108.6%	96.2%	124.6%	108.2%	30	126
14 - **A56 Junction** - Manchester Road -	158.0%	84.9%	211.7%	85.0%	110	25

Junction (Based on All 6100 Res Units)	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Barrington Road Signalised Junction						
15 - **Carrington Link** - Carrington Spur- Carrington Link - Bank Lane Cross Road Signals	104.2%	107.9%	110.3%	97.9%	419	-27
16- **Carrington Link** - Manchester Road - Carrington Link - Flixton Road Signalised Junction	130.2%	131.8%	88.0%	119.8%	-176	187
17 - **Urmston** - Flixton Road - Brook Road - Bowfell Road Signals	49.7%	49.4%	57.3%	55.1%	89	191
18 - **Urmston** - Moorside Road - Bowfell Road - Cornhill Road Roundabout	67.0%	41.0%	70.0%	45.0%	41	92
19 - **Urmston** - Barton Road - Davyhulme Road -	87.0%	70.0%	86.0%	70.0%	-8	24

Junction (Based on All 6100 Res Units)	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Lostock Road Roundabout						
20 - Altrincham - A56 Dunham Road - St Margarets Road Junction	103.0%	106.0%	108.0%	109.0%	1	-42
21 - Altrincham - A56 Dunham Road - Highgate Road	153.0%	278.0%	171.0%	273.0%	11	40
22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road	109.4%	113.3%	97.3%	114.1%	123	128
23 - M56 - Bowdon Roundabout Junction	81.7%	105.2%	97.2%	183.2%	208	293
24 - Heatley - Townfield Lane - Bent Lane Junction	69.0%	72.0%	76.0%	81.0%	147	104
25 - Heatley - Paddock Lane - Bent Lane Junction	133.0%	136.0%	140.0%	135.0%	150	111

Junction (Based on All 6100 Res Units)	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
26 - Heatley - Warburton Bridge Road - Bent Lane Junction	106.0%	115.0%	104.0%	110.0%	-1	13
27 - Partington - Moss Lane - Manchester Road - New Manchester Road	141.0%	99.0%	84.0%	59.0%	-1056	-1028
28 - Rixten - Manchester Road - Warburton Bridge Road Junction	98.5%	96.1%	94.1%	97.6%	189	26

9.2.6. Table 11 and 12 confirm that in 2025 and 2040 when the GMSF traffic is included in each of the respective forecast years, all 28 junctions will likely experience a change in traffic volumes compared to the 2025, 2040 Reference scenarios.

- **Reference 1 M60 Junction 10** - Junction results indicate that the GMSF traffic has no significant impact on the grade separated M6 Junction 10 performance. In both the 2025 and 2040 the junction has not exceeded its design capacity. As a consequence, **no mitigation** has been investigated as the junction still operates at its capacity as a stand-alone junction. Discussed further in Section 12.

- **Reference 2 M60 Junction 9 -** The junction results indicate that the junction is operating at its capacity for Reference and GMSF scenarios. In 2025 the GMSF traffic is <50pcus and has minimal impact on junction performance. In 2040, the peak traffic volumes

travelling through this junction is circa 7500 pcus of which less than 2% is GMSF. The modelling results suggest there is a high volume of traffic from Parkway on the circulatory travelling to the M60 NB and SB; this is creating queueing and delay on Parkway, Barton Rd and M60 NB approaches. **No mitigation** is proposed at this junction as the GMSF traffic increase at this junction is less than 2% in AM peak and negligible in PM peak. There is a potential to increase the circulatory on south carriageway to 4 continuous lanes and a re-designation of lane markings from Parkway but not being considered at this stage. Discussed further in Section 12.

- **Reference 3 M60 Junction 8 –** Though the capacity results indicate the junction is operating within capacity, the current queuing on the M60 from Junction 12 and on the on-slips and off-slips is not considered in the stand-alone modelling. To improve the residual capacity on the M60 improvements and relieve impact on junction on/off slips there needs to be intervention at Junction 12 to improve traffic progression. A review of GMSF traffic impact reveals that in 2025 and 2040 confirms an increase at the junction in the AM and PM peaks. **A junction intervention has been identified.** To mitigate the impact of the New Carrington allocation and GMSF traffic approaching via Carrington Spur there is opportunity to widen the approach to two lanes and designate these lanes M60 northbound and southbound. With yellow box markings on the circulatory of Junction 8 this will assist in reducing delay and queuing**.** Discussed further in Section 12.

- **Reference 4 & 5 M60 Junction 7 –** The results show that the M60 Junction 7 will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. In 2040, the GMSF traffic at this junction is 2% in AM peak and 5% in the PM peak. Amey understands these strategic junctions have recently undergone a recent signal upgrade which would explain the residual capacity available. **No further intervention has been identified to further improve the junction.** Discussed further in Section 12.

- **Reference 6 - A56 Junction - Glebelands Road / Cross Street Signals –** In 2025 there is no impact at this junction. In 2040 the results show that the A56 junction is approaching its design capacity with and without GMSF traffic. 7% of the traffic in the GMSF 'high side' scenario is GMSF traffic**. No tangible intervention** has been identified at this

junction due to the land constraints around the junction and any widening would require reducing footway widths. Pedestrian activity is unknown but the modelling has assumed pedestrian movements every cycle on the Cross Street southern arm. **No intervention identified.**

- **Reference 7 - A56 Junction - Washway / Hayfield Street / Cross Road Signals -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. **No mitigation required.**

- **Reference 8 - A56 Junction - Washway / Sibson Road / Harboro Road Cross Road Signals -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. **No mitigation required.**

- **Reference 9 - A56 Junction - Washway / Marsland Road / Harboro Cross Road Signals –** Though the capacity results show that the junction requires intervention in both 2025 and 2040 forecast scenarios, due to its urban location on A56 corridor the junction is too constrained for further substantial improvements to improve capacity; any widening would require footway removal or third-party lands. This junction already is large with two running lanes in either direction along Washway with right turn movements. **No intervention identified.**

- **Reference 10 - A56 Junction - Washway / Woodhouse Lane / Eastway Cross Road Signals -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. **No mitigation required.**

- **Reference 11 - A56 Junction - Washway / Woodcote Rd / Park Road –**The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. GMSF traffic only appears to impact this junction in the PM peak (3% of total traffic). **No intervention identified.**

- **Reference 12 - A56 Junction - Washway / Woodcote Rd / Park Road-** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040

forecast scenario with and without GMSF traffic. GMSF traffic only appears to impact this junction in the 2040 PM peak (3% of total traffic).**No intervention required.**

- **Reference 13 - A56 Junction - Washway / Sinderland Road / Salibury Road -** Though the capacity results show that the junction requires intervention, due to its urban location on A56 corridor the junction is too constrained for further improvements. **No intervention identified.**

- **Reference 14 - A56 Junction - Manchester Road - Barrington Road Signalised Junction – A junction intervention has been identified.** A proposed improvement is to provide an indicative arrow signal for northbound right turning traffic into Barrington Road. Intervention modelling results indicate that the capacity will improve with the introduction of this indicative arrow phase as the right turn demand intermittently impacts capacity in both 2025 and 2040 forecast scenarios.

- **Reference 15 - Carrington Link - Carrington Spur- Carrington Link - Banky Lane Cross Road Signals – Intervention** at this junction location has already been identified for planning applications Carrington Village and Commons Lane. They have proposed an extension of the right turn lanes and upgrade of signal equipment to mitigate their development impact. Further intervention is required to extend the lane approaches to 2 lanes (75metre +) to increase capacity.

- **Reference 16- Carrington Link - Manchester Road - Carrington Link - Flixton Road Signalised Junction - Intervention** at this junction location has already been identified for planning applications Carrington Village and Commons Lane. They have proposed widening on the eastbound and westbound approach to facilitate two lanes by approximately 50 metres. This intervention has mitigated their development impact. Further extension (100metres) or dualling on these approaches would improve capacity and will be required for 2025 and 2040 forecast scenarios.

- **Reference 17 - Urmston - Flixton Road - Brook Road - Bowfell Road Signals -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenarios with and without GMSF traffic. **No mitigation required.**

- **Reference 18 - Urmston - Moorside Road - Bowfell Road - Cornhill Road Roundabout -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenarios with and without GMSF traffic. **No mitigation required.**

- **Reference 19 - Urmston - Barton Road - Davyhulme Road - Lostock Road Roundabout -** The results show that the A56 junction will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. **No mitigation required.**

- **Reference 20 - Altrincham - A56 Dunham Road - St Margarets Road Junction** – Though the junction is operating at its design capacity and intervention is required at this junction the flow comparison and junction performance results show that there is negligible volume difference in either 2025 or 2040 GMSF scenarios. Therefore, **no mitigation required at this junction;** GMSF not the cause.

- **Reference 21 - Altrincham - A56 Dunham Road - Highgate Road –** The results for this junction show that the junction will exceed its design capacity with or without GMSF traffic in both 2025 and 2040. I**ntervention has been identified** to improve the performance of junction. There is potential to realign and straighten the Highgate Road to improve the flare and also potential for right turn lane. From initial assessment this will improve capacity and safety at the junction.

- **Reference 22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road -** Though the capacity results show that the junction requires intervention, due to its urban location on A56 corridor the junction is too constrained by active third party lands for further improvements. Controlled pedestrian crossings are not provided at this signalised junction which would indicate the throughput on the A56 is a priority. I**ntervention has been identified.** To improve accessibility for all road users the junction the signals will be upgraded to include controlled crossings.

- **Reference 23 - M56 - Bowdon Roundabout Junction -** I**ntervention has been identified** to improve the performance of junction. An intervention to increase the circulatory carriageway at the south west side of the roundabout from 2 lanes to 3 lanes and

provide a two lane exit into Lymm Road. This will require new lane makings and designation on the carriageway. Also, on the A556 off slip (NB) approach the long lanes should be lane 1 and 2 and lane 3 should be changed to a short lane (based on the traffic demand). On the circulatory, lane 1 will feed Lymm Road only; lane 2 will feed Lymm Road and circulatory and lane 3 circulatory only. Discussed further in Section 12.

- **Reference 24 - Heatley - Townfield Lane - Bent Lane Junction -** The results show that this local junction will operate within its design capacity in the 2025 and 2040 forecast scenarios with and without GMSF traffic. **No mitigation required.**

- **Reference 25 - Heatley - Paddock Lane - Bent Lane Junction -** I**ntervention has been identified** to improve the performance of the junction. Junction performance is poor across all scenarios in both the Reference and GMSF scenarios. There is a potential to introduce a right turn lane on Bent Lane utilising the available verge area around the junction and minor modifying the Paddock Lane approach to improve visibility. **Note:** Although not included in this Locality Assessment, the footprint of a protected HS2 line has been identified through this area and therefore a roundabout arrangement has been preliminarily proposed for this location. This roundabout design has not been included as we are not in receipt of the design and this will most likely require third party lands.

- **Reference 26 - Heatley - Warburton Bridge Road – Paddock Lane -** Though the junction is operating at its design capacity and intervention required, the flow comparison and junction performance results show that there is a negligible difference between the Reference and GMSF scenarios. Therefore, **no mitigation required** as GMSF traffic is not the cause.

- **Reference 27 - Partington - Moss Lane - Manchester Road - New Manchester Road -** Though junction operating at its design capacity, the flow comparison and junction performance results show that traffic is reduced in the 2025 and 2040 GMSF scenario. Therefore, **no mitigation** is required; GMSF traffic is not the cause.

- **Reference 28 - Rixton - Manchester Road - Warburton Bridge Road Junction** - I**ntervention has been identified.** In 2025 there is no capacity impact, however in 2040

the junction is approaching its design capacity and therefore intervention has been explored. A flow comparison indicates that GMSF traffic will have an impact in the AM peak (7% additional traffic) and negligible impact in the PM peak. Mitigation at junction has been identified in form of widening on the Warburton Bridge Road - extend length of two-lane approach; and widening of the eastbound Manchester Road approach to lengthen the right turn lane.

10. Transport Interventions Tested on the Local Road Network

10.1. Highway Mitigation

10.1.1. In Section 9.0 the 2025 and 2040 'high side modelling Run 1' comparison identified eight junction locations where intervention improvements were achievable, whilst another four junction locations were identified where intervention was required but due to land constraints and construction costs, tangible mitigation was not achievable at these locations.

10.1.2. Table 13 summarises the junction locations where mitigation was identified. These mitigation proposals are not definitive solutions and have been outlined to demonstrate the GMSF allocations that have the potential to be mitigated against. These mitigations have been costed later in this locality assessment.

Table 13: Approach to Mitigation: GMA41 New Carrington

Junction	Mitigation Approach
3 - **M60** Junction 8	New yellow box markings on the Junction 8 circulatory at the mouth of the Carrington Spur approach to assist exiting traffic and proposed widening of the Carrington Spur approach to two lanes from the current one lane +short flare. With two long lanes on the Carrington Spur approach, lanes will be

Junction	Mitigation Approach
	designated M60 northbound and southbound to assist traffic progression and reduce delay. This intervention will improve capacity as M60 southbound traffic (lane 2) will not need to queue in the same lane as northbound M60 traffic (were upstream blocking occurs). Clear advanced lane designation will need to be provided on the Carrington Spur. **Note:** The River Mersey crossing is approximately 500metres back from the M60 Junction 8; any widening beyond this length will require bridge widening and significant costs. The road widening to two lanes will improve capacity and its length will be related to the capacity benefit.
14 - **A56 Junction** - Manchester Road - Barrington Road Signalised Junction	Upgrade of signal equipment and signal heads at junction to include an indicative arrow signal for northbound right turning traffic into Barrington Road.
15 - Carrington **Link** - Carrington Spur-Carrington Link - Bank Lane Cross Road Signals	Upgrade of signal equipment at the junction; widen the approaches from both the east and west to extend the right turn lanes and separately control the right turn lanes in the signal sequence. Right turn lanes extended to 70m length.

Junction	Mitigation Approach
16- **Carrington Link** - Manchester Road - Carrington Link - Flixton Road Signalised Junction	Upgrade of signal equipment at the junction; widen the western and eastern approaches to extend the designated left turn slips. Widened lanes extended to 50m length
21 - Altrincham - A56 Dunham Road - Highgate Road	Proposed realignment of the Highgate Road approach to increase the length of the flare at mouth of junction and the provision of a right turn pocket to improve capacity and safety at the junction.
22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road	To improve accessibility for all road users the junction the signals will be upgraded to include controlled pedestrian crossings.
23 - M56 - Bowdon Roundabout Junction	Localised widening in the circulatory carriageway at the south west side from 2 lanes to 3 lanes and provide a two-lane exit into Lymm Road. Proposal will require new lane makings and designation on roundabout. Also, on the A556 offslip (NB) approach the long lanes should be lane 1 and 2 and lane 3 should be changed to a short lane (based on the traffic demand). On the circulatory, lane 1 will feed Lymm Road only and lane 2 will

Junction	Mitigation Approach
	feed Lymm Road and circulatory and lane 3 circulatory only.
25 - Heatley - Paddock Lane - Bent Lane Junction	Introduce a right turn lane on Bent Lane utilising the available verge area around the junction and minor alignment modification at the Paddock Lane approach to improve visibility. This will improve capacity and safety at the junction. **Note:** HS2 have a proposal also for this junction but has not been included as HS2 not part of this assessment and roundabout proposal will require third party lands.
28 - Rixten - Manchester Road - Warburton Bridge Road Junction	Signalised junction in a rural location with no formal pedestrian crossings and narrow footways. Potential to increase the Warburton Bridge Road approach to extend the length of the approach lanes and increase the length of the A57 Manchester Road Right Turn Lane to improve capacity. Third party lands (fields) will be required but is achievable.
Intervention required but none identified.	
6 - **A56 Junction** - Glebelands Road / Cross Road Signals	Urban signalised junction location with land constraints. Already a significant large

Junction	Mitigation Approach
	junction with controlled movements. Any further widening will impact pedestrian footways and crossing locations. No mitigation achievable.
9 - **A56 Junction** - Washway / Marsland Road / Harboro Rd Cross Road Signals	Urban signalised junction location with land constraints. To improve throughput on A56 at this location widening is required to segregate right turn movements. Any widening will impact pedestrian footways and crossing locations. Therefore, No mitigation achievable.
13 - **A56 Junction** - Washway / Sinderland Road / Salibury Road	Urban signalised junction location with land constraints. Already the junction has no controlled pedestrian crossings incorporated into its design which would suggest they have been removed to improve traffic capacity. Any widening to segregate right turn movements and change the stage sequencing will impact pedestrian footways and crossing locations significantly. Therefore, No mitigation achievable.

11. Impact of Interventions on the Local Road Network

11.1. Overview

11.1.1. After Model Run 1, it was agreed that the development quantum allocated for New Carrington was to be reduced to 4300 residential units to align with the latest Masterplan. The Model Run 1 outputs are still relevant as they identify the network pressures caused by all the GMSF allocations including New Carrington.

11.1.2. The next GMVDM model run, referenced for this study as 'Run 3' included the following model updates: a reduced development quantum; the proposed junction upgrades described in Sections 9.0 and 10.0; and the dualling of the Carrington Relief Road from the Isherwood Road towards the M60 Junction 8 and the severance of the Sale West development access (only onto Carrington Link).

11.1.3. Figure 15 is the GIS extract of the links coded and modelled in the GMVDM 'Run 3'.

Figure 15. High Side GMSF Run 2 - GMVDM Extract for GMA41

11.2. High Side Model 'Run 3

11.2.1. Table 14 provides a comparison between the operation of the in-scope junctions in the 2040 reference case and the 2040 'high side' scenarios after mitigation, as well as the development flows through each respective junction. **Note:** The model changes in Run 3 will result in a reassignment of traffic in the GMVDM.

Table 14: 2040 GMS Local Junction Capacity Analysis After Highway Intervention:

Junction (Based On 4300 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
1 - **M60** Junction 10	89.7%	89.9%	94.3%	94.6%	**252**	**237**
2 - **M60** Junction 9	113.5%	124.0%	134.9%	141.3%	**588**	**419**
3 - **M60** Junction 8**(MITIG)**	89.0%	87%	98.9%	97.4	**1220**	**1190**
4 - **M60** Junction 7 - On/ Off South Signals	87.0%	82.5%	94.6%	97.5%	**553**	**552**
5 - **M60** Junction 7 - On/ Off North Signals	91.5%	90.5%	98.1%	102.1%	**530**	**667**
6 - **A56 Junction** - Glebelands Road / Cross Road Signals	95.9%	90.6%	103.5%	95.7%	**509**	**565**
7 - **A56 Junction** - Washway / Hayfield Street Cross Road Signals	63.0%	63.5%	81.1%	76.5%	**537**	**471**

Junction (Based On 4300 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
8 - **A56 Junction** - Washway / Sibson Road / Oaklands Drive Cross Road Signals	62.5%	68.3%	78.9%	80.8%	**329**	**404**
9 - **A56 Junction** - Washway / Marsland Road / Harboro Rd Cross Road Signals	124.1%	129.7%	110.5%	118.5%	**138**	**369**
10 - **A56 Junction** - Washway / Woodhouse Lane / Eastway Cross Road Signals	97.8%	83.8%	85.0%	73.2%	**-65**	**-181**
11 - **A56 Junction** - Washway / Woodcote Rd / Park Road	91.0%	87.5%	92.0%	88.2%	**119**	**47**
12 - **A56 Junction** - Manchester Road/ Stamford Brook Rd	67.4%	77.3%	61.5%	59.3%	**-395**	**-261**
13 - **A56 Junction** - Washway /	108.6%	96.2%	94.8%	99.5%	**-49**	**66**

Junction (Based On 4300 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
Sinderland Road / Salibury Road						
14 - **A56 Junction** - Manchester Road - Barrington Road Signalised Junction **(MITIG)**	158.0%	84.9%	81.5%	87.8%	**-227**	**16**
15 - **Carrington Link** - Carrington Spur- Carrington Link - Banky Lane Signals**(MITIG)**	104.2%	107.9%	145.3%	142.1%	**1891**	**1787**
16- **Carrington Link** - Manchester Road - Carrington Link - Flixton Road Signalised Junction **(MITIG)**	130.2%	131.8%	84.1%	82.8%	**-9**	**-34**
17 - **Urmston** - Flixton Road - Brook Road - Bowfell Road Signals **(MITIG)**	49.7%	49.4%	48.5%	49.5%	**-57**	**-2**

Junction (Based On 4300 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
18 - **Urmston** - Moorside Road - Bowfell Road - Cornhill Road Roundabout	67.0%	41.0%	67.0%	38.5%	**-1**	**-116**
19 - Urmston - Barton Road - Davyhulme Road - Lostock Road Roundabout	87.0%	70.0%	87.5%	74.5%	**24**	**-16**
20 - Altrincham - A56 Dunham Road - St Margarets Road Junction	103.0%	106.0%	97.2%	81.8%	**-10**	**-301**
21 - Altrincham - A56 Dunham Road - Highgate Road **(MITIG)**	153.0%	278.0%	99.5%	97.8%	**182**	**162**
22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road	109.4%	113.3%	111.3%	114.1	**245**	**139**

Junction (Based On 4300 Res Units)	Reference Case AM	Reference Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
23 - M56 - Bowdon Roundabout Junction **(MITIG)**	81.7%	105.2%	78.6%	84.5%	**165**	**-5**
24 - Heatley - Townfield Lane - Bent Lane Junction	69.0%	72.0%	84.8%	87.2%	**514**	**654**
25 - Heatley - Paddock Lane - Bent Lane Junction **(MITIG)**	133.0%	136.0%	111.0%	91.5%	**526**	**598**
26 - Heatley - Warburton Bridge Road - Bent Lane Junction	106.0%	115.0%	99.9%	115.8%	**-30**	**4**
27 - Partington - Moss Lane - Manchester Road - New Manchester Road	141.0%	99.0%	73.4%	74.0%	**-1167**	**-646**
28 - Rixten - Manchester Road - Warburton Bridge Road Junction **(MITIG)**	98.5%	96.1%	82.9%	81.6%	**106**	**-9**

11.2.2. Table 14 highlights the performance of the network and its junctions for the 2040 High Side Model Run 3 results where intervention identified at Model Run 1 have been included and the section of the Carrington Relief Road from Isherwood Road towards M60 Junction 8 has been dualled in the GMVDM network.

11.2.3. The allocation flow columns indicate that the network changes have resulted in another reassignment of GMSF traffic across the network with a number of junctions attracting more GMSF traffic in Run 3. The junctions significantly impacted by additional traffic are the Flixton Road signalised junction, the Carrington Spur, Carrington Lane, Banky Lane signalised junction and the M60 Junction 8. This is a consequence of the proposed dualling attracting more drivers to the strategic route corridor along the Carrington Relief Road, Carrington Spur and M60 Junction 8.

11.2.4. Regarding the junction capacity results, 6 of the 8 junctions where mitigation has been identified and assumed constructed has improved the junctions design life and its residual capacity. The two junctions that have not are the Flixton Road signalised junction and the Carrington Spur, Carrington Lane, Banky Lane signalised junction. This decrease in performance is a consequence of capacity improvements being made along this route and being more attractive to drivers compared to other less strategic routes in the network. Further junction upgrades are required at these junctions as the latest Run 3 results suggest that the forecast high side traffic in 2040 will exceed the junctions design capacity.

11.2.5. The consequence of this corridor being more desirable, is that the junctions along the route are operating above their design capacity, even with the intervention identified previously.

12. Impact and Mitigation on Strategic Road Network

12.1. Overview

12.1.1. This chapter covers those impacts where traffic generated by the GMSF allocations meets the Strategic Road Network (SRN). Junctions at the interface between the Local Road Network (LRN) and the Strategic Road Network (SRN) have been assessed using a similar approach to that described in the preceding chapters. Wider issues relating to the SRN mainline are being assessed separately as described below.

12.1.2. SYSTRA is currently consulting with Highways England on behalf of TfGM and the Combined Authority in relation to the wider impacts of the GMSF allocations on the Strategic Road Network (SRN). This consultation is ongoing and it is expected that it will allow Highways England to gain a strategic understanding of where there is an interaction between network stress points and GMSF allocation demand which will facilitate further discussion and transfer of information between TfGM and Highways England (yet to be defined) in reaching agreement and/or common ground relating to the acceptability of GMSF allocations in advance of Examination in Public (EiP).

12.1.3. The strategic junctions that were identified in this assessment relate to the M60 corridor, junctions 7 to 10 and the M56 Bowdon Roundabout junction.

12.2. Impact of the Allocation before Mitigation on the Strategic Road Network

12.2.1. As was the case for the local junctions assessed in Section 9.0, Table 15 provides a comparison between the operation of the in-scope junctions in the 2040 reference case and the 2040 ‘high side’ scenarios, as well as the development flows through each strategic junction location.

Table 15: Results of Strategic Junctions Capacity Analysis Before Mitigation: New Carrington

Junction	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
1 - **M60** Junction 10	89.7%	89.9%	90.1%	85.5%	81	-102
2 - **M60** Junction 9	113.5%	124.0%	115.1%	121.3%	122	-2
3 - **M60** Junction 8	89.0%	87%	94.0%	92.0%	254	8
4 - **M60** Junction 7 - On/ Off South Signals	87.0%	82.5%	88.3%	84.7%	128	318
5 - **M60** Junction 7 - On/ Off North Signals	91.5%	90.5%	93.9%	94.1%	371	378
22 - Altrincham - A56 Dunham Road - Park Road - Charcoal Road	109.4%	113.3%	111.3%	114.1	**245**	**139**
23 - M56 - Bowdon Roundabout Junction **(MITIG)**	81.7%	105.2%	97.2%	183.2%	208	293

12.2.2. The modelling results highlight that the M60 Junction 9 and the M56 Bowdon Roundabout will operate above their design capacity in 2040 with the GMSF traffic. The other junctions, M60 Junction 10, 8 and 7 (north) are approaching their design capacity with the addition of GMSF traffic.

12.2.3. It is important to highlight these capacity results relate to stand-alone modelling and doesn't take account of the queuing and delay on the M60 corridor north and south. Referencing current traffic conditions (Section 8) on the M60 corridor experienced between Junctions 12 and 7, congestion and delay is experienced during peak hours of the day, thus throttling the upstream and downstream route either side of the junctions.

In summary:

- **Reference 1 M60 Junction 10** - Junction results indicate that the GMSF traffic has no significant impact on the grade separated M6 Junction 10 operational performance. In 2040 the stand-alone junction modelling has indicated that the junction has not exceeded its design capacity. It is acknowledged that this junction's operation is impacted by the queuing and delay already experienced on the M60 (source M60 Junction 12). As a consequence, **no mitigation** has been investigated at this stage as the junction still operates at its capacity at 2040.

- **Reference 2 M60 Junction 9 -** The junction is operating at its capacity for Reference and GMSF scenarios. This was the case in the 2025 and 2040 forecast scenarios. The peak traffic volumes travelling through this junction is circa 7500 pcus of which less than 2% is GMSF. The modelling results suggest there is a high volume of traffic from Parkway on the circulatory travelling to the M60 NB and SB; this is creating queueing and delay on Parkway, Barton Rd and M60 NB approaches. **No mitigation** is proposed at this junction as the GMSF traffic increase at this junction is less than 2% in the AM and PM peaks. There is a potential to increase the circulatory on the south carriageway to 4 continuous lanes and a re-designation of lane markings from Parkway. This is not being considered at this stage of assessment as although widening will assist stacking capacity on the circulatory, it is felt this will create weaving safety issues at the junction for vehicles.

- **Reference 3 M60 Junction 8 –** I**ntervention has been identified.** Though the capacity results indicate the junction is operating within capacity, the current queuing on the M60 from Junction 12 and on the on-slips and off-slips is not considered in the stand-alone modelling. To improve the residual capacity on the M60 improvements there needs to be intervention at Junction 12 to improve traffic progression. GMSF traffic at this junction equates to approximately 7% in the AM and PM peaks. To improve traffic progression and journey time reliability on the Carrington Spur and particularly for southbound M60 traffic there is the opportunity to widen the approach to two lanes with designated M60 north and southbound markings and advanced signage. The length of the widening on the approach is restricted by the Mersey bridge crossing 500 metres back from the junction due to the significant costs associated with bridge widening. **Note:** The longer the length where widening on the Carrington Spur can be implemented the greater operational benefits will be achieved.

- **Reference 4 & 5 M60 Junction 7 –** The results show that the M60 Junction 7 will operate within its design capacity in the 2025 and 2040 forecast scenario with and without GMSF traffic. GMSF traffic at this junction is 2% in the AM peak and 5% in the PM peak. Amey understands these strategic junctions have recently undergone a recent signal upgrade which would explain the residual capacity. **No further intervention has been identified to further improve the junction.**

- **Reference 23 - M56 - Bowdon Roundabout Junction -** I**ntervention has been identified** to improve the performance of junction. An intervention to increase the circulatory carriageway at the south west side of the roundabout from 2 lanes to 3 lanes and provide a two lane exit into Lymm Road. This will require new lane markings and designation on the carriageway. Also, on the A556 off slip (NB) approach the long lanes should be lane 1 and 2 and lane 3 should be changed to a short lane (based on the traffic demand). On the circulatory, lane 1 will feed Lymm Road only; lane 2 will feed Lymm Road and circulatory and lane 3 circulatory only.

12.3. Transport Interventions tested on the Strategic Road Network

12.3.1. Table 16 compares the operation of the in-scope junctions in the 2040 reference case and the 2040 'high side' scenarios when the local and strategic interventions were coded into the GMVDM (Model Run 3). Also included in the table is the development flows through each strategic junction location.

Table 16: Results of Strategic Junctions Capacity Analysis After Mitigation: New Carrington

Junction	Ref Case AM	Ref Case PM	GMSF High AM	GMSF High PM	Allocation Flows AM	Allocation Flows PM
1 - **M60** Junction 10	89.7%	89.9%	94.3%	94.6%	**252**	**237**
2 - **M60** Junction 9	113.5%	124.0%	134.9%	141.3%	**588**	**419**
3 - **M60** Junction 8 **(MITIG)**	89.0%	87%	98.9%	97.4	**1220**	**1190**
4 - **M60** Junction 7 - On/ Off South Signals	87.0%	82.5%	94.6%	97.5%	**553**	**552**
5 - **M60** Junction 7 - On/ Off North Signals	91.5%	90.5%	98.1%	102.1%	**530**	**667**
23 - M56 - Bowdon Roundabout Junction **(MITIG)**	81.7%	105.2%	78.6%	84.5%	**165**	**-5**

12.3.2. The modelling results in Table 16 indicate that in Run 3 there has been a re-assignment of traffic with more GMSF traffic attracted to the strategic junctions 1 to 3. This would indicate that the interventions along Carrington Relief Road and through the New Carrington allocation has made the strategic routes more attractive.

12.3.3. The modelling results show that as the capacity of the Carrington Relief Road and Carrington Spur is increased the route becomes more attractive for road users. Important to highlight that this run included the dualling of both the Carrington Relief Road and Carrington Spur from the Isherwood Road.

12.3.4. The dualling on the Carrington Spur has improved capacity at the M60 Junction 8, however its available residual capacity created has attracted and accommodated more vehicles to this route. These results would indicate that there is capacity benefit at Junction 8 in widening the Carrington Spur with lanes designated northbound and southbound; This does not necessarily have to be the full dualling, it could involve widening 500 metres back from the M60 Junction 8 avoiding the Mersey bridge crossing.

12.3.5. There would be potential to incorporate bus priority along stretches of a dualled or widened Carrington Spur though this has not been included in this assessment.

12.3.6. At M60 Junction 9, there is no obvious intervention apart from increasing the circulatory carriageway to 4-lanes around the junction to improve stacking capacity, but this would increase the level of vehicle weaving on a very highly trafficked roundabout thus creating a potential safety hazard for road users. For this reason, this measure has not been considered any further in this assessment. At this junction the GMSF traffic is 7% of the total AM traffic travelling through the junction and 4% in the PM, therefore GMSF traffic is not the main contributor to the congestion and delay in 2040.

12.3.7. It is important to note that the cumulative impact of all the GMSF allocations requires the interventions identified, not solely the New Carrington allocation.

13. Final list of interventions

13.1.1. Table 17 summarises the interventions identified to support the delivery of the New Carrington allocation in this assessment. It is important to note that all these interventions are not definitive solutions and have been presented to support how the allocation could be delivered in 2040 only.

13.1.2. For reference, Figure 16 illustrates the junction locations where the highway intervention is identified.

Table 17: Intervention Summary Table: GMA41 New Carrington

Mitigation	Description
Site Access	**Site access** design and capacity assessment for each development plot within the allocation will be presented and assessed in their own individual Transport Assessments. These have and will be approved by Trafford's Planning and Development Service and compliment the masterplan vision for the allocation.
Carrington Allocation Internal Routes (Refer to Key Infrastructure Plan Figure 16)	To deliver the New Carrington development quantum the following key routes have been identified:
Necessary Strategic interventions (Figure 16 illustrates locations)	**1.** Carrington Spur widening – Widening on eastbound approach to M60 Junction 8. Improve stacking distance for vehicles and designate lanes 1 and 2 for northbound and southbound M60 traffic with yellow boxes on the circulatory roundabout. 500 metres length of widening will avoid bridge widening across River Mersey.

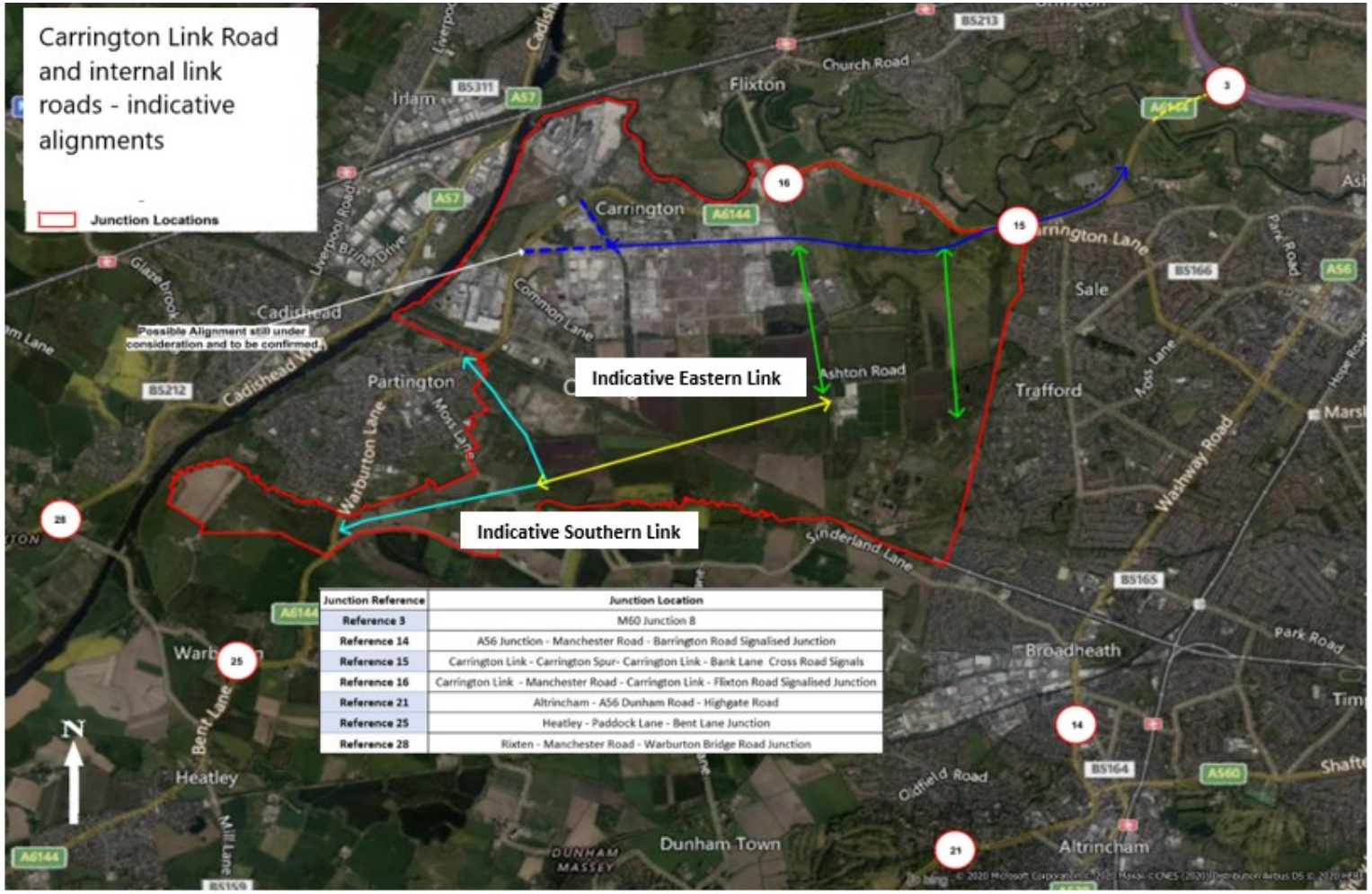
	2. Flixton Road Signalised junction - Junction stage/sequence upgrade with lane widening on approaches. Also, bus priority to be provided. **3.** Carrington Link/ Carrington Spur / Banky Road – Junction stage/sequence upgrade with lane widening on approaches. **4.** Upgrade of the Isherwood Road route (part of the Eastern Link) to a minimum 7.3m wide design with footways along both sides. Route will connect the A6144 Manchester Road, Carrington Relief Road and proposed southern link. This is internal to the allocation. **5.** The Southern Link Road construction is a route (approx. 2.0 km) required to open up the southern part of the allocation and will provide an alternative east to west connection. This route is a secondary route (6-7metres in width with footways) with the rail link crossing width at Dunham Road being maintained. This is internal to the allocation. **6.** The Eastern Link Road is a connection (approx. 1.8km) between the Isherwood Road Partington and will open up the allocation. It is a secondary route approximately 6-7 metres wide with footways along both sides. This is internal to the allocation. **7.** The Sale West Link Road will provide a connection (approx. 1km in length) to the Sale West lands. The route will be approximately 6-7 metres wide with footways provision along both sides. This is internal to the allocation. **8.** New Carrington Relief Road – Dualling between the Isherwood Road junction and the Carrington Spur with a merge arrangement of 2 lanes into 1 lane eastbound on the Spur.

	9. Carrington Relief Road construction. Single carriageway from A6144 Manchester Road western connection to Isherwood Road. **This route is a committed scheme and was assumed constructed in the Reference scenario** as it has been determined as a route essential to make network improvements in the Carrington area by the Council for a number of years. This is internal to the allocation.
Strategic Road Network Mitigations	**1.** M56 Bowdon Roundabout Junction (Reference 23) – Proposed works include circulatory widening, re-designation of lanes both on circulatory and on exit approaches
Supporting Strategic Interventions	**1. Western Gateway Infrastructure Scheme (WGIS)** – Full WGIS has been assumed constructed and operational in both the Reference and GMSF model scenarios. This full WGIS has been assumed to be constructed in line with the Trafford Waters Masterplan delivery. Operational by 2025. **2. Trafford Greenway** is a proposed 8.6km route which would comprise of off-road pedestrian footpath, equestrian facilities and a two-way cycleway connecting the metropolitan boroughs of Trafford and Salford. The greenway routes will link the Irlam Train Station at the northern end to the Metrolink Altrincham line to the south.
Necessary Local Mitigations (Figure 16 illustrates locations)	**1.** A56 Junction - Manchester Road - Barrington Road Signalised Junction – Upgrade of signal equipment and introduce RT indicative arrow for Barrington Road bound turning traffic.

2. Altrincham - A56 Dunham Road - Highgate Road – Realignment of Highgate Road approach to improve the available flare and introduce a RT pocket to improve capacity and safety.
3. Heatley - Paddock Lane - Bent Lane Junction – Introduce a right turn lane and widen radii to improve visibility. Improve capacity and safety.
4. Greenway link to Sale - Cycleways and footway connections throughout the residential development that compliment and contribute to the Bee Network and the overall sustainability Masterplan vision.
5. PROW improvements - Upgrade and resurface of the PROW that are currently in poor repair.
6. Controlled pedestrian crossings at the A56 Dunham Road - Park Road - Charcoal Road.
7. Public transport measures:
    - Access to Altrincham Package:
        - New bus stops at Waitrose and Trafford College in Altrincham
        - Junction improvements at Manchester Rd A56 with Stamford Brook Rd for right turn bus priority (right turn widening and signal modifications)
    - Access to Sale Package:
        - Improvements at Carrington Lane / A6144 junction (dedicated bus priority linking to new A1 road)
        - Improvements at A56 Washway Rd / B1566 Ashton Ln junction (dedicated ahead lane)

	• Junction lane widening for improved bus right turn at Woodlands Rd with B5166 Northenden Rd • Enhanced bus stop (terminal-like) at Sale town centre (i.e. waiting areas / shelter) • New high-quality sheltered bus stop and relocation of taxi rank next to Sale Metrolink station • Carrington to Stretford (via Urmston) Corridor: • Junction improvements at A6144/Flixton Road junction and money for improvements for bus lane or road widenings through the development • Bus stop improvements in Flixton near station. These route changes will be supported by new bus infrastructure measures such as real time bus stops and shelters with journey time information provided throughout the allocations. • Extend/reroute 260 and increase frequency

Figure 16. Intervention Locations



Junction Reference	Junction Location
Reference 3	M60 Junction 8
Reference 14	A56 Junction - Manchester Road - Barrington Road Signalised Junction
Reference 15	Carrington Link - Carrington Spur- Carrington Link - Bank Lane Cross Road Signals
Reference 16	Carrington Link - Manchester Road - Carrington Link - Flixton Road Signalised Junction
Reference 21	Altrincham - A56 Dunham Road - Highgate Road
Reference 25	Heatley - Paddock Lane - Bent Lane Junction
Reference 28	Rixten - Manchester Road - Warburton Bridge Road Junction

Note that all boundaries shown were correct at time of writing – for definitive boundary information refer to the GMSF allocation maps. Since the production of these images the reference numbers of the allocation has changed from GMA45 to GMA41.

14. Strategic Context – GM Transport Strategy Interventions

14.1. Overview

14.1.1. This section sets different transport interventions, including policies and programmes that will play a part in limiting traffic growth and will help enable this New Carrington development to be delivered more sustainably.

14.2. Greater Manchester Bee Network

14.2.1. The Bee Network proposed for Greater Manchester will be the largest joined-up system of walking and cycling routes in the UK and has been developed with all 10 Greater Manchester local authorities. Once built, the network will better connect every community in Greater Manchester, benefitting 2.7 million people and making cycling and walking a real alternative to the car.

14.2.2. The Bee Network plan is about making better places to live and work by giving people a real choice about how they travel. In doing so, we'll make the city -region healthier and more prosperous. This vison aligns with the sustainable vision for the Carrington allocation.

14.2.3. The Bee Network includes the Trafford Greenway and the New Carrington allocation included in the network. The provision of high grade cycle and walking connections through the Carrington allocation will contribute to encouraging travel by alternative travel modes between different land uses and boroughs and therefore a mode shift away from the private car.

14.3. Metrolink Development & Extensions

14.3.1. The Metrolink Tram System is one of Greater Manchester's major rapid transit success stories. Therefore, Metrolink continue to explore new ways to expand the Metrolink network and develop new rapid transit schemes as part of the Greater Manchester Transport Strategy 2040.

14.3.2. To deliver significant additional capacity on the rapid transit network and to support future growth there has already been recent major expansions of Metrolink connections to Oldham, Rochdale, Ashton, Manchester Airport and Trafford Park. Further extensions and additional capacity are required by 2040 particularly around the City Centre.

14.3.3. No immediate Metrolink extensions have been proposed for the New Carrington allocation yet, though the disused rail line through the allocation has been identified as a potential route for rapid transit in the future. Current connectivity from the New Carrington allocation to the nearest Altrincham Metrolink line is poor and fragmented. This connectivity will improve with the high-grade Trafford Greenway.

14.4. Other Relevant Interventions

14.4.1. Trafford have confirmed the following transport interventions in future plans:

Committed to delivery in the next 5 years (i.e. 2020-2025)

- Carrington Relief Road
- Metrolink Capacity Improvements (Bury – Altrincham)

In next 5 years (i.e. 2020-2025) aim to complete business cases for early delivery of:

- Further phases of WGIS
- New rail link to Port Salford
- Early development of a route alignment for Metrolink extension (Trafford Centre to Port Salford)
- New Carrington Bus Corridor (A56 to New Carrington/Partington)
- Sale West Bus Corridor
- Tram/train pathfinder project at Altrincham

Longer term

- Investigation of potential rapid transit corridors, including Airport – Carrington – Irlam

15. Phasing Plan

15.1.1. The New Carrington proposal comprises of lands within several ownerships, which needs to be set out in a Masterplan Framework which is being undertaken under a separate study.

15.1.2. Table 18 summarises the phasing plan in line with the Masterplan for the New Carrington allocation.

15.1.3. For the purposes of the testing the impact of the allocation through the strategic model, a total of 4,300 dwellings has been assumed to be built out by 2040. The GM transport modelling suite has a 2040 forecast year, as such it uses 2040 trajectory data as proxy for 2037 full build-out, this is not considered to materially impact on the analysis or conclusions of this report.

15.1.4. All phasing plans information contained in this Locality Assessment is indicative only and has only been used to understand the likely intervention delivery timetable. Final trajectory information and the final allocation proposal is contained in the GMSF Allocation Topic Paper.

Table 18: Allocation Phasing Table: New Carrington (Indicative)

Allocation Phasing	2020 25	2025 30	2030 2037	2038+	Total
Carrington Village	340	257	-	-	**597**
Sale West	79	527	654	183	**1,443**
Partington East	183	560	1,477	362	**2,582**
Warburton Lane	-	156	95	170	**421**

15.1.5. Table 19 summarises when the interventions outlined in Section 13 will be required to support the delivery of the allocation and surrounding GMSF allocations. At this stage these are estimates and are based on the 2025 and 2040 GMVDM model forecast runs.

Table 19: Indicative Intervention Table: New Carrington

Mitigation	2020 2025	2025 2030	2030 2037
Site Access			
Site Accesses in line with Planning Applications and Masterplan Framework	✓	✓	✓
Necessary Strategic Interventions			
Carrington Relief Road	✓		
Carrington Spur widening		✓	
Carrington Relief Road Widening			✓
Flixton Road Signalised junction Phase 1	✓		
Flixton Road Signalised junction Phase 2		✓	
Carrington Link/ Carrington Spur / Banky Road Phase 1	✓		
Carrington Link/ Carrington Spur / Banky Road Phase 2			✓
Isherwood Road widening		✓	
Southern Link & Eastern Link		✓	
Sale West Link		✓	
SRN Mitigations			
M56 Bowdon Roundabout		✓	
Supporting Strategic interventions			

Mitigation	2020 2025	2025 2030	2030 2037
Western Gateway Infrastructure Scheme		✓	
Trafford Greenway & Bee Network Bridge		✓	
Necessary Local Mitigations			
Junction upgrade A56 Junction - Manchester Road - Barrington Road Signalised Junction		✓	
Altrincham - A56 Dunham Road - Highgate Road - Realignment		✓	
Heatley - Paddock Lane - Bent Lane Junction - Widen Radii		✓	
Hollins Green - Manchester Road - Warburton Bridge Road Junction			✓
Public Transport Measures: Carrington to Stretford (via Urmston) Corridor	✓		
Public Transport Measures: Access to Altrincham Package	✓		
Public Transport Measures: Access to Sale Package		✓	

Mitigation	2020 2025	2025 2030	2030 2037
Public Transport Measures: Extend/reroute 260 service and increase frequency	✓		
Greenway Link to Sale	✓		
PROW improvements	✓		
Controlled pedestrian crossings at the A56 Dunham Road - Park Road - Charcoal Road.	✓		

16. Summary & Conclusion

16.1.1. Amey has prepared this Locality Assessment report for the New Carrington allocation located in the west of Trafford District and situated between Partington, Carrington and Sale West. The Greater GMSF document has identified this allocation for approximately 4300 dwellings and 370,000sqm of employment floorspace in the plan period to 2037.

16.1.2. Ongoing public consultation has been carried out for this allocation and the comments received related to three main transport themes:

- Roads – Current network already congested and in poor condition and standard;
- Public Transport – Need to upgrade services and connections to/from allocation. Current connections and services not attractive and with unreliable journey times, the private car is still more attractive.
- Active Travel – Need for safe segregated cycling infrastructure through the allocation.

16.1.3. These themes and issues have been taken on board through this high level Locality Assessment.

16.1.4. A masterplan for the New Carrington allocation has been prepared by Trafford Council, working in partnership with key landowners on the allocation showing how the residential and employment development can be phased within the GMSF plan period to 2037. The Masterplan vision is to "transform the allocation into a sustainable and attractive, mixed use residential and employment area".

16.1.5. The aim of this high level Locality Assessment is to identify and test interventions that will assist in delivering the New Carrington allocation and address the concerns highlighted in the 2019 public consultation. These public concerns related to: the poor infrastructure condition, pollution and congestion currently experienced on the Carrington and M60 network; the insufficient public transport service and connections (Bus, Train & Metrolink) available in the area; and the fragmented varying standard of active travel infrastructure connections in the local area, including the restrictive connections across the Manchester Ship Canal to the west.

16.1.6. To deliver a sustainable, attractive development a focus of this assessment has been the interventions that can be provided to support more public transport and active travel

modes. A public transport study was commissioned that identified the services, frequency and new infrastructure required to serve the allocation. These measures focussed on permeability through the New Carrington allocation, bus priority locations to improve journey time reliability and the connections to other bus hubs and local Train/ Metrolink stations. High standard connections to the Trafford Greenway offer opportunities for attractive 'linked travel trips' to Irlam Train Station and the Altrincham Metrolink line.

16.1.7. High standard off-road walk and cycle connections are a key design consideration in the Masterplan and delivery of the allocation. Segregated footway, cycleway, and equestrian connections will be provided throughout, that will connect into the Trafford Greenway, the National Cycle Networks (62, 82) and support the Bee Cycle network across the local area. The opening of the viaduct crossing for pedestrians and cyclists will significantly enhance the route for users as unattractive heavily trafficked routes only exist between Carrington/ Partington and Cadishead due to limited links across the canal. These high grade connections between land uses, settlements and public transport hubs offer a real opportunity for active travel modal shifts. The public transport and active travel measures are all outlined in Section 5.0 of this report.

16.1.8. Highway intervention across the network in this assessment was identified using the 'High Side' GMSF model capacity outputs exported from the GMVDM, forecast scenarios 2025 and 2040. Traffic associated with all GMSF allocations are included in these strategic model runs. In the 2040 High Side GMSF model outputs, where the full development quanta are assumed constructed and occupied, the New Carrington allocation generated 1056 and 1142 pcus in the AM and PM peaks respectively across the network.

16.1.9. Using stand-alone modelling software 28 junctions were analysed and their operational performances compared against the Reference model outputs, where no GMSF traffic was included. The modelling exercise identified pressures at junctions on the Carrington Relief Road, Carrington Spur, M60 corridor, A56 corridor and Partington. Eight junction interventions were identified across the network which included both the strategic and local networks. Also, internal Carrington routes critical to the delivery of the allocation are identified, including carriageway widening. These interventions are described, analysed and costed in Sections 10 to 16.

16.1.10. The interventions identified were tested in further high side GMVDM model runs. The

conclusion of these model runs is that the traffic impact (High Side- worst case) associated with the New Carrington allocation can be mitigated against, with the interventions highlighted assisting in making the Greater Manchester network less severe across the majority of the network. Furthermore, the public transport and active travel measures offer further opportunities to reduce this traffic impact across the Greater Manchester network.